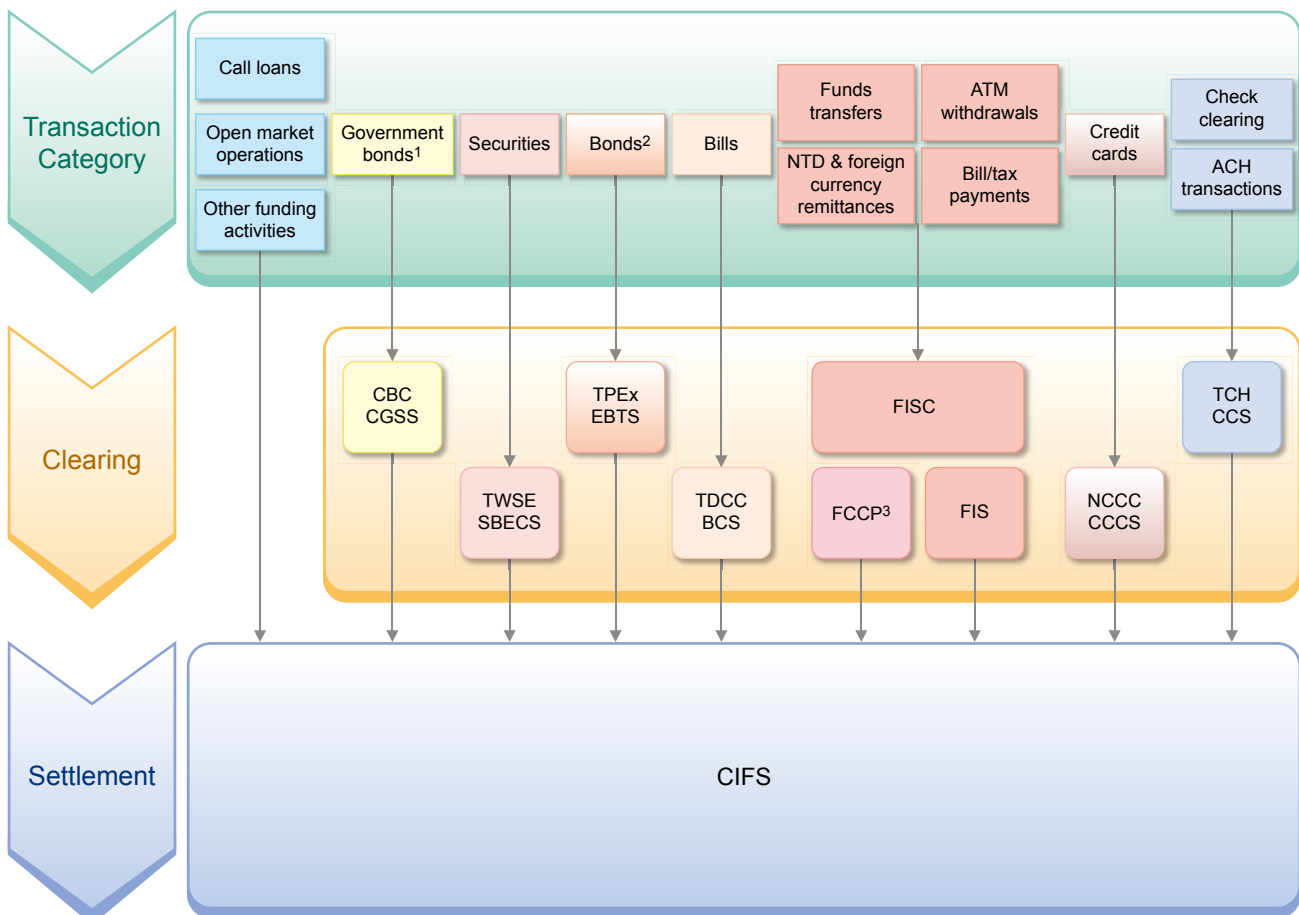


## 4. Payment and Settlement Systems

The Bank plays a crucial role in the functioning of Taiwan's payment and settlement systems, and operates the CBC Interbank Funds Transfer System (CIFS) and the Central Government Securities Settlement System (CGSS).

The CIFS serves as the hub of Taiwan's payment and settlement systems, linking the interbank clearing systems operated by the FISC, the Taiwan Clearing House (TCH), the National Credit Card Center of R.O.C. (NCCC), the Taiwan Depository and Clearing Corporation (TDCC), the TPEX, and the TWSE, as well as the CGSS, together to construct a comprehensive system.

### CIFS Settlement Services



Notes: 1. Including DVP settlements for interbank transactions of central government bonds and treasury bills.  
 2. Including netting settlements for outright trades of government bonds, corporate bonds, and bank debentures.  
 3. The CIFS is only responsible for settlements involving NT dollars, while settlements involving foreign currencies are performed by designated commercial banks.  
 Source: Department of Banking, CBC.

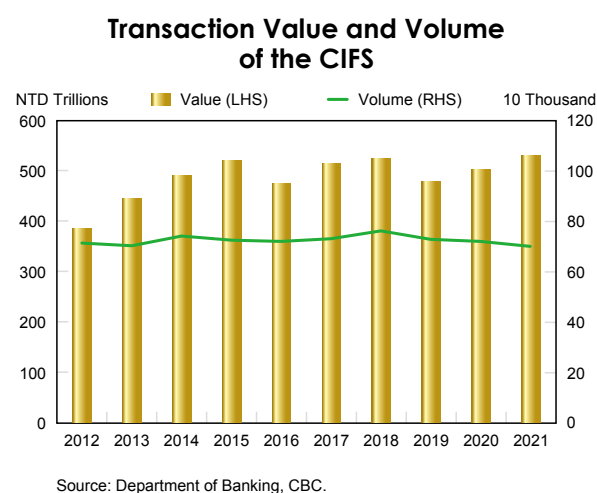
In addition, the Bank monitors major payment systems based on the *Principles for Financial Market Infrastructures* released by the Bank for International Settlements (BIS) to ensure sound operation of these systems and to promote stability of the financial system.

## Operation of Payment and Settlement Systems

### (1) Funds Transfers via the CIFS

As a large-value electronic funds transfer system, the CIFS not only deals with interbank funding, open market operations, and funds settlements in financial markets, but also provides interbank final settlement services for each clearing institution.

In 2021, two more banks joined the CIFS. At the end of 2021, there were 84 participants of the CIFS, including 69 banks, eight bills finance companies, Chunghwa Post, and six clearing institutions, namely the FISC, the TCH, the TDCC, the TWSE, the TPEX, and the NCCC. In the year 2021, the number of transactions via the CIFS was 704,219, and the amount of funds transferred totaled NT\$533 trillion. Meanwhile, the daily average number of transactions via the CIFS was 2,840, decreasing by 1.97% over the previous year, whereas the daily average amount of funds transferred was NT\$2,147 billion, increasing by 6.35% from a year before.<sup>10</sup>



### (2) Transactions via the CGSS

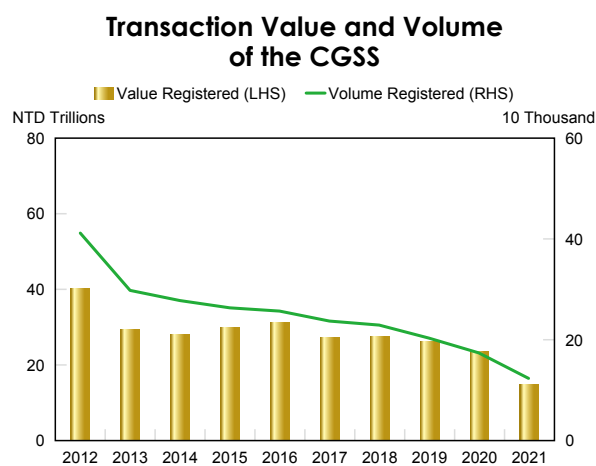
Established in September 1997, the CGSS is a system for issuance, transfer, redemption, and interest payment of book-entry central government securities. Since its inception, central government bonds have been issued in book-entry form. Treasury bills were included in this system in October 2001 and have since been issued in book-entry form.

Since April 2008, when the CGSS linked up with the CIFS, fund settlements, principal redemptions, and interest payments have been handled through the CIFS using a delivery-versus-payment (DVP) mode. The DVP mode, promoted by the BIS, is an arrangement in a securities settlement system to ensure that securities delivery occurs at the same time as the

<sup>10</sup> The average transaction volume decreased primarily owing to declines in primary and secondary market transactions in central government bonds and interbank foreign exchange market transactions. On the other hand, the average transaction value increased mainly because of rises in transactions in certificates of deposit and interbank call loans.

funds transfer, effectively eliminating potential principal risk during the transaction process.

As of the end of 2021, there were 19 clearing banks with 1,678 branches that handled the registration of central government securities transfers. In 2021, this system processed 124,202 transfers with a total amount of NT\$14.9 trillion. The declines in transaction value and volume of the CGSS in 2021 were mainly caused by the impact of the domestic COVID-19 flare-up as well as market expectations of the Fed tapering faster and raising rates at the end of the year, dimming the outlook for bond markets and thus decreasing bond trading incentives.



Source: Department of the Treasury, CBC.

## Oversight of Payment and Settlement Systems

To ensure sound operation of domestic payment and settlement systems and maintain their safety and efficiency, the Bank conducted the following oversight activities in 2021:

### (1) Making Amendments to Relevant Regulations

In February 2021, the Bank amended the *Directions for the Central Bank of the Republic of China (Taiwan) to Govern Electronic Interbank Funds Transfer and Settlement* after thoroughly examining the relevant directions on payment and settlement risk management.

### (2) Monitoring the Operation of the Large-Value Payment Systems

The Bank continued to monitor the operation of the large-value payment systems in 2021. During the year, 22 applications for the CIFS operation time extensions were filed by participating institutions because of system malfunctions or other contingencies. The Bank required these institutions to improve the time extension issue.

### (3) Requiring Payment Institutions to Submit Information on Electronic Payment Business

Payment system operators and electronic payment service providers were required by the Bank to submit information about their operations and activities with regard to electronic payments on a regular basis. Furthermore, the Bank kept close watch on the development of financial technology (fintech) and innovations in the payment industry to assist in providing sound retail payment infrastructure.

#### (4) Supervising Contingency Drills Performed by Clearing Institutions

To ensure business continuity of payment and settlement systems, the Bank supervised clearing institutions conducting testing of business continuity plans and remote backup operations in case of emergency. In December 2021, the Bank, together with participants of the CIFS, performed system-wide testing of the operating procedures to ensure that the backup systems would operate smoothly when an emergency occurs and relevant personnel would be familiar with contingency procedures in response to disruptions to the system network.

#### (5) Performing Backup Drills with Clearing Banks

Since 2019, the Bank has supervised all clearing banks performing backup drills in the event of malfunction or line interruption of a CGSS participant's mainframe system annually. In November 2021, this drill was conducted successfully with 19 clearing banks.

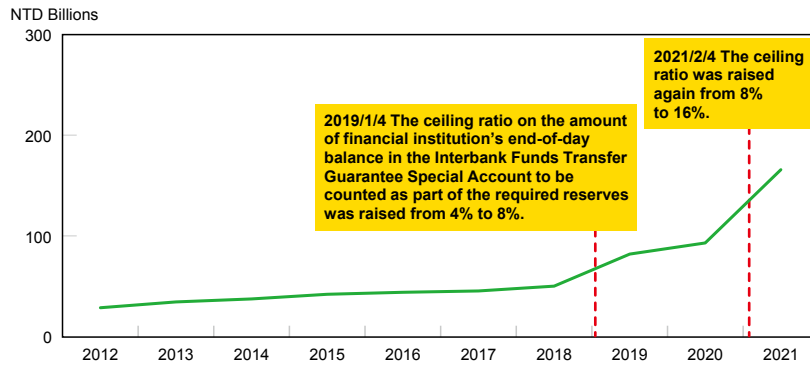
#### (6) Organizing Conferences to Enhance Payment System Operation

The Bank invites the FSC and clearing institutions to jointly hold two conferences on "Promoting Sound Operation of the Payment Systems" every year. However, owing to the COVID-19 pandemic, the conference held for securities clearing institutions including the TDCC, the TPEX, and the TWSE was suspended and replaced with report submission by the aforesaid institutions. The November meeting was held as scheduled and attended by payment clearing institutions including the FISC, the TCH, and the NCCC. The Bank urged clearing institutions to strengthen business continuity planning, enhance backup drills, and allocate appropriate operational staff to maintain business continuity in response to the pandemic or other emergencies.

#### (7) Strengthening Liquidity Management of the Interbank Funds Transfer Guarantee Special Account under the CIFS

In light of significant growth in interbank retail payment transactions and the commencement of internet-only banks, the Bank raised the ceiling on the amount of financial institutions' end-of-day balance in the Interbank Funds Transfer Guarantee Special Account to be counted as part of the required reserves from 8% to 16%, effective from February 2021. In 2021, the daily average balance of the Special Account as guarantee funds to ensure the smooth functioning of the interbank retail payment system on a 24/7 basis was approximately NT\$167 billion.

### Daily Balance of the Interbank Funds Transfer Guarantee Special Account under the CIFS



Source: Department of Banking, CBC.

### Ensuring Business Continuity of Payment and Settlement Services During the Pandemic Period

To ensure business continuity of payment and settlement systems during the pandemic, CIFS participating institutions were requested to continue complying with the guidance promulgated by the Bank. For example, participating institutions should deploy appropriate operational staff depending on the pandemic situation and take the following measures when necessary, such as implementing remote backup systems and operational measures, entrusting other participating institutions to assist with transfer or payment of funds, and transferring funds using physical checks.

Furthermore, in May 2021, the Bank reiterated the pandemic precautions for the CGSS operations which were stipulated in 2020 as guidance to ensure that all CGSS participants maintain business continuity by means of off-site working and other measures. As a whole, the domestic payment and settlement systems operated smoothly throughout the year without being disrupted by the pandemic.

### Continuing to Urge the FISC to Assist in Providing Sound Mobile Payment Infrastructure for Financial Institutions

To enhance information transmission and to facilitate transfer of funds between electronic payment institutions and between electronic payment institutions and financial institutions, the Bank required the FISC to construct an "inter-institutional electronic payment institutions platform," which was launched in October 2021, to provide the funds transfer service. The platform would also be expected to offer tax and bill payment services in 2022.

In addition, to improve the convenience of interbank funds transfer, the FISC launched the

"mobile number funds transfer" service in September 2020 to allow users to transfer funds by linking one mobile phone number to one bank account as a payee account. Later, the service was expanded for users to designate one mobile number to multiple bank accounts in September 2021. As of the end of 2021, 29 financial institutions provided the service of mobile number funds transfer. Among them, eight financial institutions offered users the option to link multiple bank account with one mobile number.

### **Extending the PoC Project to a General Purpose CBDC**

The Bank completed the first phase of the CBDC research, which was a technical study on the feasibility of a wholesale CBDC in June 2020. The results showed the limitations of applying distributed ledger technology (DLT) to CBDCs because the DLT's performance could not meet the needs for real-time, high-frequency, and large-scale payment transactions. The ongoing second phase is a proof-of-concept (PoC) study on a general purpose CBDC, which already entered the technical experimentation stage. A prototype for a CBDC platform was established to simulate the CBDC in retail payment use cases, and the study is expected to be completed in September 2022. The experiment results will be disclosed at an appropriate time and serve as a basis for public discussion, which the Bank plans to use to broadly solicit stakeholders' opinions to assess the possibility of CBDC issuance.