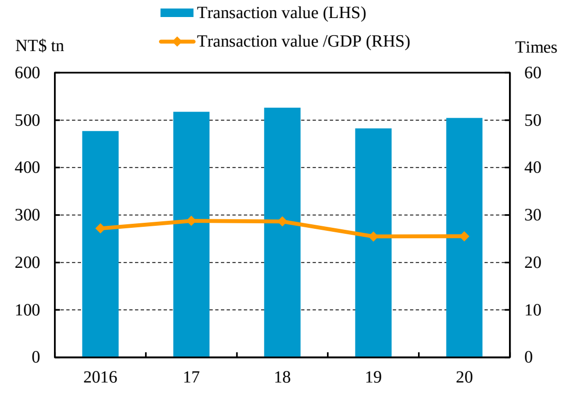
3.3 Financial infrastructure

3.3.1 Payment and settlement systems

Overview of the CIFS's operation

The CIFS uses required reserves[58] deposited with the Bank to deal with large-value interbank funds transfers, e.g., foreign exchange transactions.[59] It also electronically conducts the final settlement of NTD interbank transfers, connecting to each clearing system,[60] such as those for domestic securities, bills, bonds and retail payments. In 2020, the amount of funds settled via the CIFS was about NT$505 trillion, approximately 25.5 times the GDP for the year (Chart 3.57). The daily average reserves deposited for settlement [61] was about NT$814.1 billion, through which the transaction amount completed was approximately NT$2.01 trillion.

Chart 3.57 Funds transferred via the CIFS

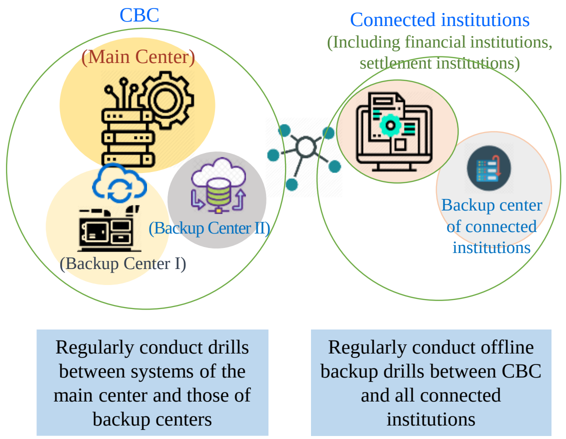


Sources: CBC and DGBAS.

In response to the pandemic, the Bank took measures to maintain the smooth operation of the payment systems as follows:

1. Preparing the onsite and offsite data backup facilities for the CIFS and performing drills on a regular basis to ensure uninterrupted system operation (Chart 3.58).
2. Working off-site and working from home. In line with the government's pandemic prevention policies, some of the Bank's employees carried out work off-site from March 6, 2020 and then resumed normal

Chart 3.58 Schematic diagram of CIFS backup mechanism in CBC



Source: CBC.

58 The required reserves deposited by banks are a type of central bank money and are deemed an asset without credit risk.
59 Large-value interbank funds transfers include foreign exchange transactions, interbank loans, interbank transfers, and book-entry central government bond payments, etc.
60 The CIFS links every domestic clearing system, handling negotiable instruments exchanges, interbank payment services, credit cards, and clearance services of the settled amounts of bills, listed/over-the-counter (OTC) stocks, and government bonds.
61 Refer to the balance deposited by banks in the CBC Reserves Accounts A.

work back to the office on June 1 as the pandemic eased. However, in mid-May 2021, owing to an upsurge of domestic cases, the mechanism of working off-site and working from home (WFH) was reinstated.

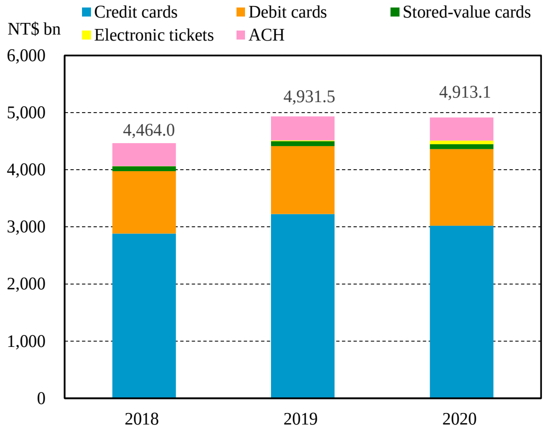
3. Formulating the *Precautions for the Implementation of the CIFS and Open Market Operation System in Response to a Major Epidemic*. Financial institutions were required to adopt relevant measures[62] in unison, ensuring normal functioning of liquidity management.

The FISC's Inter-bank Financial Information System (hereinafter abbreviated as FIS) uses the funds of the Interbank Funds Transfer Guarantee Special Account (referred to as the Guarantee Account)[63] under the CIFS to clear and settle one by one interbank payment transactions of remittances, automated teller machines (ATM) withdrawals, transfers, etc. The annual transaction amount in 2020 was approximately NT$174.8 trillion. As the demand for interbank electronic payment transactions increased, the daily average balance of the Guarantee Account in 2020 amounted to about NT$302.2 billion, while the average daily transaction amount of the FIS using the funds of the Guarantee Account was about NT$699.1 billion.

Consumption via domestic electronic payment instruments

In 2020, the overall consumption expenditure via various electronic payment tools[64] was NT$4.91 trillion (Chart 3.59), decreasing slightly by 0.37% year on year. Among them, the consumption amount via credit cards, ACH interbank collection, and electronic ticketing declined by about NT$200 billion, NT$12.5 billion, and NT$4.4 billion, respectively. The declines were mainly caused by the impact of the pandemic under which people could not travel abroad and face-to-face transactions in physical stores reduced.

Chart 3.59 Overview of electronic retail payment transactions



Notes: 1. The consumption statistics of debit cards include consumer purchases with domestic chip bank cards, VISA and other international debit cards, UnionPay cards, and ATM transfers for shopping payments.
2. ACH inter-bank collection means that the payment institutions handle deduction and account entry through the ACH system of the TCH after obtaining the entrustment of the public.

Sources: CBC, FSC and FISC.

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62 Relevant measures include: (1) to prepare an offsite backup system and operating manpower; (2) to transfer funds via offline media or by manual billing if the connection is interrupted; (3) to avoid relevant personnel from being quarantined, thus affecting fund dispatching, another financial institution can be entrusted to appropriate funds on its behalf; (4) to notify the Bank as soon as possible when the headquarters initiates the mechanism of working off-site or entrusts another financial institution to appropriate funds.

63 To deal with the clearance and settlement of retail interbank payment transactions, the Bank agrees all banks shall jointly open an Interbank Funds Transfer Guarantee Special Account at the Bank. The Guarantee Account is a collective account within the sub-account of each bank. Each bank can transfer funds from its reserves account to this special account as a guarantee for clearing of interbank payments on a one by one basis.

64 See Note 9.

Overview of the development of domestic mobile payment in 2020

In order to promote the use of mobile payment, the National Development Council has set a target of 90% penetration rate of mobile payment in 2025. According to a survey,[65] the penetration rate[66] in September 2020 was 67.5% as the public mindful of pandemic prevention tended to reduce cash transactions and stores used related promotion schemes to lure customers, boosting the willingness to use mobile payments. In order to improve the domestic mobile payment environment, the Bank urged the FISC to establish a common QR Code payment standard,[67] and promoted it jointly with banks. Since its launch in September 2017, the accumulated number of transactions processed using this common standard has exceeded 40 million with a total value of approximately NT$153.7 billion at the end of December 2020. The number and the value of transactions in 2020 increased respectively by 130% and 74%[68] year on year.

To facilitate inter-institutional connection between banks and non-bank payment institutions and thus promote the efficiency of the overall payment market, the FSC completed the amendment to the *Act Governing Electronic Payment Institutions,*[69] *to* be enacted on July 1, 2021, along with its sub-regulations. The Bank had already instructed the FISC to establish an inter-institutional electronic payment platform and to complete the development of functions such as fund transfers and shopping payments. Once the relevant sub-regulations are amended, the FISC will apply to the competent authority for this business and begin to accept participation by electronic payment institutions in the platform.

The role of central banks and new currency paradigms in the era of digital payment

As digital innovations are changing the landscape of payment service, central banks in many countries have actively embraced payment innovations, continued to improve payment systems, and started research on CBDCs. In terms of research progress on a CBDC, the Bank was in step with the world and had completed the first phase program in June 2020 with a technical

65 MIC survey data from the Institute for Information Industry.
66 See Note 10.
67 Competition in the domestic mobile payment market is fierce. In order to seize the market opportunities, telecommunication industries have developed their own brands, resulting in incompatibility of specifications, which hinders the long-term development. With the support and assistance of the Ministry of Finance, the FISC and government-owned banks launched the common QR Code payment standard in September 2017.
68 The analysis of transactions processed via the common QR Code payment standard in 2020 shows: 1.in terms of the number of transactions, transfers were the most (accounting for about 44%), while shopping grew the fastest (doubling); 2. in terms of transaction amounts, transfers were still the most (about 69%) and shopping also grew the fastest (multiplying 1.8 times).
69 The key points of the amendment include: (1) to abolish the *Act Governing Issuance of Electronic Stored Value Cards*, and to include issuing institutions of the electronic stored value cards in the scope of the amended *Act*; (2) to expand the scope of services, which include cross-institutional money transfer services and small amount remittances services.

report on the feasibility of a wholesale CBDC, and moved on to the second phase program on a general purpose CBDC in September of the same year (Box 4).

3.3.2 The FSC revised the regulations governing risk weights of real estate exposures on domestic banks

The Basel Committee on Banking Supervision (BCBS) issued the Basel III final reform document in December 2017.[70] The revised capital requirements of real estate exposures applied different risk weights according to loan-to-value ratios of the exposures (hereinafter referred to as the LTV approach), with an addition of the capital requirement for "land acquisition, development and construction" (ADC) exposures.

In view of the new BCBS capital requirements being more sensitive to risks, the FSC amended the capital requirements for real estate exposures for domestic banks in December 2020, effective at the end of June 2021. However, well prepared banks were permitted to early adopt the new approaches by the end of 2020.[71] The revised risk weights of real estate exposures are shown in Table 3.3. The main amendments are as follows:

- Domestic banks may choose to either adopt the new LTV approach for residential and commercial real estate exposures or apply the current simplified method.
- Residential and commercial real estate exposures may be either general or income-producing exposures, depending on whether repayments of the loans rely on cash flows generated by the real estate. The risk weights assigned to these exposures will be determined based on their LTV ratios.
- Risk weights assigned to exposures with LTV ratios below 80% will be lower; whereas risk weights will be increased for exposures with LTV ratios higher than 80%.
- The new ADC exposures will be risk-weighted at 150% in general, which will be higher than the existing risk weight of 100% assigned to corporate exposures without external credit ratings.

Eleven banks were permitted to adopt the new LTV approach by the end of 2020 based on the pilot test results that the adoption will be favorable to the calculations of capital ratios.[72] The

70 Basel Committee on Banking Supervision (2017), "Basel III: Finaliing post-crisis reforms," December.
71 The adoption of a new LTV approach for overseas exposures (including exposures of overseas branches and subsidiaries) will be postponed until January 2023.
72 Banks that adopted the LTV approach earlier include: Taiwan Cooperative Bank, Taipei Fubon Commercial Bank, Cathay United Bank, Shin Kong Commercial Bank, Yuanta Commercial Bank, Bank SinoPac, E.Sun Commercial Bank, Taishin International Bank, Jih Sun International Bank, CTBC Bank, and Sunny Bank, amounting to 11 banks.

FSC will require the banks to apply the simplified method again, to make an improvement or to raise additional capital charges when banks fail to meet the minimum operation requirements.

Table 3.3 The newly revised risk weights of real estate exposures

<table>
<tr><th rowspan="2">Type of exposures</th><th colspan="8">Risk weights based on LTV ratios</th></tr>
<tr><th colspan="7">Applicable exposures</th><th rowspan="2">Inapplicable exposures</th></tr>
<tr><td rowspan="3">Residential real estate exposures</td><td colspan="2">LTV ratios</td><td>≤50%</td><td>50%-60%</td><td>60%-80%</td><td>80%-90%</td><td>90%-100%</td></tr>
<tr><td>General</td><td>LTV approach</td><td>20%</td><td>25%</td><td>30%</td><td>50%</td><td>70%</td><td>Risk weight of the counterparty</td></tr>
<tr><td>Income-producing</td><td>LTV approach</td><td>30%</td><td>35%</td><td>45%</td><td>75%</td><td>105%</td><td>150%</td></tr>
<tr><td rowspan="3">Commercial real estate exposures</td><td colspan="2">LTV ratios</td><td colspan="2">≤60%</td><td>60%-80%</td><td colspan="2">>80%</td><td>Inapplicable exposures</td></tr>
<tr><td>General</td><td>LTV approach</td><td colspan="2">60% or the risk weight of the counterparty (whichever is lower)</td><td colspan="3">Risk weight of the counterparty</td><td>Risk weight of the counterparty</td></tr>
<tr><td>Income-producing</td><td>LTV approach</td><td colspan="2">70%</td><td>90%</td><td colspan="2">110%</td><td>150%</td></tr>
<tr><td>ADC exposures</td><td colspan="8">At 150%, in principle; at 100%, for those meeting the criteria in Basel III</td></tr>
</table>

Notes: 1. "Applicable exposures" are real estate exposures which meet the following six requirements: (1) the properties securing the exposures are finished properties; (2) any claims on the properties taken must be legally enforceable in all relevant jurisdictions; (3) the exposures are claims over the properties; (4) borrowers are able to repay; (5) properties must be valued according to specific criteria; (6) documentation requirements are met.
2. Risk weights of exposures to individuals are 75% and those to SMEs are 85%; for exposures of other corporate counterparties, the risk weights applied would be those assigned to corporate exposures.

Source: FSC.

3.3.3 Financial institutions actively advanced sustainable development in unison

In recent years, as international investment institutions and global industrial chains have increasingly attended to sustainability-related issues, corporate governance and responsible investment have gradually become important drivers in major global capital markets. In order to promote the sustainable development of corporates, establish a competent environmental, social, and governance (ESG) ecosystem, and strengthen the international competitiveness of Taiwan's capital markets, the FSC officially launched the Corporate Governance 3.0 - Sustainable Development Roadmap (hereinafter referred to as CG 3.0) in August 2020. The CG 3.0 centers on the following five action plans: (1) strengthening the duties and functions of the boards; (2) enhancing information transparency; (3) strengthening communication with stakeholders; (4) encouraging stewardship; (5) deepening a corporate culture of governance and sustainable development.

In addition, considering that green finance is an integral part of the government's overall environmental, economic, and industrial policies, the FSC formulated the Green Finance Action Plan 1.0 in November 2017, encouraging financial institutions to provide the green energy industry with investment and financing, with the aim of enhancing effective operation of the domestic green finance market and advocating overall developments in sustainable finance. Furthermore, in order to achieve Taiwan's carbon reduction and sustainable development goals, the FSC proposed the Green Finance Action Plan 2.0 (hereinafter referred to as Action Plan 2.0) in August 2020. The Action Plan 2.0 expanded the scope of sustainable finance and included a total of 38 measures that cover the following eight aspects: credit, investment, capital market fundraising, professional development, information disclosure, promotion of further development of green financial products or services, prudential supervision, international connections, and incentive mechanisms.

However, financial institutions still face some challenges in the course of promoting sustainable finance, such as harmonizing the definitions of sustainable finance, improving the quality of ESG disclosure, removing in-house hindrances to the advancement of sustainable finance, and synchronizing stakeholder engagement. The FSC is establishing Taiwan's classification standards for sustainable firms and planning a database platform for sustainable development of industries, which could serve as a reference for financial institutions in choosing investment and financing targets or cooperation partners and in disclosing relevant information. Looking forward, it is hoped that the vision of sustainable finance ecosystem can be achieved through close cooperation between the public and private sectors in the future (Box 5).

3.3.4 Encouraging banks to engage in Open Banking data sharing services

To speed up the process of Taiwan's financial data sharing, the FSC encourages banks to initiate open banking services based on their business needs in a voluntary, self-disciplined and progressive manner. In cooperation with Third-party Service Providers (TSPs), the open banking services would help banks to provide more innovations in financial services and enable digital finance transformation so as to promote the development of financial inclusion.

The FSC planned to promote open banking in three phases that would be reviewed on a rolling basis. The focus of planning and the current status for each phase are as follows:

1. Phase I - “public information inquiry”: the first phase aims at facilitating the inquiry of non-transactional financial information. Consumers can compare goods and services of each bank through a third-party platform developed by TSPs by accessing such information as interest rates, exchange rates, ATM locations, branch status, and financial products. In September 2019, the FSC approved the applications of 25 banks to launch Phase I service in cooperation with seven TSPs.

2. Phase II - “customer information inquiry”: the second phase focuses on the information of financial transactions, such as bank savings account balance and transaction details. Since this type of information involved customer data ownership, personal information protection, customer interests, dispute resolution mechanisms, and standards for the management of TSPs, the FSC assigned the Bankers Association and the FISC to formulate guidance on institutional and technical standards for banks and TSPs to follow. In December 2020, the FSC approved the applications of seven banks to conduct Phase II service in cooperation with two TSPs. More banks have filed applications and are waiting for approval.

3. Phase III - “transaction information”: the third phase mainly involves the process of banking transactions and payments. Bank customers, after giving consent for TSPs to consolidate their personal accounts across banks, may make a debit, payment, adjustment, or disbursement of account funds through an account-linked app. The FSC will review the outcomes of Phase II operations before moving on with Phase III.

3.3.5 The relaxation of wealth management regulations and the enhancement of related supervisory measures are expected to increase the competitiveness of the domestic wealth management industry

To meet the needs of high-net-worth customers for investment and wealth management, and in light of a wave of offshore funds repatriation, the FSC launched the New Wealth Management Scheme in 2020 and relaxed the relevant regulations. The deregulation allows financial institutions to provide more diverse financial products and consulting services to high-net-worth customers, i.e., HNW customers defined as those hold NT$100 million or above in net worth of investable assets and insurance products, possess professional knowledge and trading experience in financial products, and have adequate risk tolerance. This, coupled with the enhancement of related supervisory measures, is expected to take Taiwan's wealth management industry to a more sophisticated level.

When financial institutions apply for permission to engage in wealth management business for HNW customers, the FSC requires them to meet the standards set in accordance with the principle of differentiated supervision. Moreover, the applicants should strengthen their risk management by establishing management mechanisms related to product suitability and risk disclosure, product review and monitoring, liability for issuers of offshore financial products, internal control, cyber security, and fraud-prevention measures for digital financial services, and risk management and code of conduct. Moreover, applicants' board of directors should be responsible for building a corporate culture of integrity and establishing a comprehensive code of conduct for consumer protection, in order to fulfill the principle of treating clients fairly. The FSC also introduced the "senior manager accountability scheme" in a bid to understand the vision and commitment of senior management of financial institutions for business operations in terms of "corporate culture and code of conduct" and "treating clients fairly." Since December 2020, the FSC had approved the applications of several financial institutions to conduct such businesses.

3.3.6 FX regulation amendments

To keep up with the trends of financial digitalization and FX business development, and to promote the development of domestic bank debentures market and the diversification of financial products, the Bank amended the *Regulations Governing Foreign Exchange Business of Banking Enterprises* in January 2021 to relax some restrictions on banks' FX business. The major amendments included the following:

- Stipulating the definition of foreign currency bank debentures, relaxing the restrictions on authorized banks' issuing within the territory of the ROC foreign currency bank debentures linked to derivatives or structured notes, and amending the rules that authorized banks shall comply with.

- Simplifying qualifications for banks applying to the Bank for approval to become authorized FX banks by deleting the provision that banks shall participate in joint processing of foreign exchange business with other authorized banks for a minimum accumulated amount.[73]

- Streamlining the application procedure for banks applying to the Bank for approval to become authorized FX banks, including deleting the provision that the application made to the Bank for reviewing the qualifications shall be forwarded via the competent authority.

- Stipulating that authorized banks shall obtain approval from the Bank to engage in FX derivatives business before offering any FX derivatives, and amending the definition of an FX swap product.

[73] In line with the digital development of financial technology and FX business trends, the amendment deleted the provision that banks shall participate in joint processing of foreign exchange business with other authorized banks for an accumulated amount up to US$400 million or up to 7,000 transactions before applying for approval.

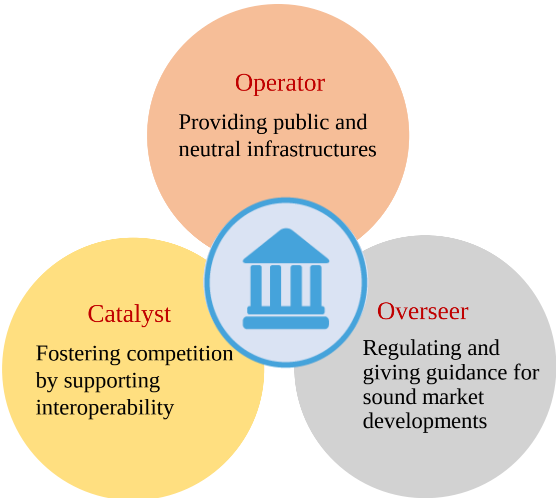
Box 4
Central banks' roles and currency forms in the digital payment era

As the world continues shifting to the digital era, the payment system has become more diverse and the environment more competitive. For the purpose of facilitating a safer and more efficient payment ecosystem, as well as fostering an environment more conducive to innovation, central banks play a pivotal role by ensuring trust in money.[1] Besides this, central banks can take advantage of the opportunities that digital technology opens up to engage in innovations as well. In particular, if experiments confirm its feasibility, the central bank digital currency (CBDC) is expected to serve as a new basis for digital payments in the future.

1. Central banks help construct a sound functioning payment system by playing three key roles

Central banks play a key role in the development of digital payments by promoting a safe and efficient payment ecosystem (Chart B4.1).

Chart B4.1 Central banks' roles in the digital payment era



Source: BIS (2020).

1.1 As an operator to provide public and neutral infrastructures

Most central banks run crucial payment infrastructures in their countries and directly provide public and neutral payment services aimed at maximizing public interest instead of pursuing commercial profits. For instance, physical cash issued by central banks can be used for various small-value retail transactions, while the Real Time Gross Settlement Systems (RTGSs) operated by central banks, which deal with interbank settlements and connect retail clearing systems, serve as a basis for private payment providers to deploy a nationwide network.

1.2 As a catalyst to promote interoperability so as to foster competition

Payment systems are supposed to be scalable in order to accommodate as many users as possible, with the intention of bringing a network effect into full play. Nevertheless, private payment providers tend to offer an independent and closed-loop network, resulting in the phenomenon of fragmented payment markets. Central banks and other authorities can break down the barriers between payment networks and reduce the obstacles to entry by supporting the development of common standards for payment systems, thereby delivering a more competitive market.

1.3 As an overseer to regulate and guide sound market development

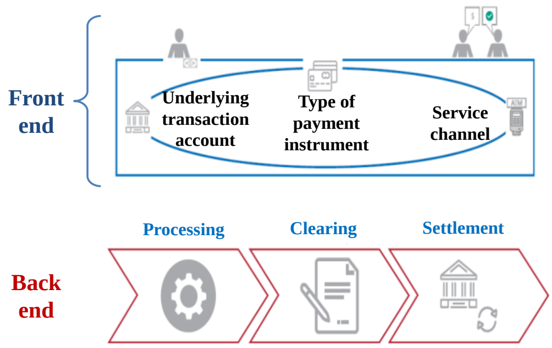
The regulatory approaches launched by central banks and competent authorities are keeping up with the times, especially those guarding against risks lurking around digital innovations to consumer protection and privacy. Furthermore, measures that are increasingly emphasized globally, such as know-your-customer (KYC) and anti-money laundering and combating the financing of terrorism (AML/CFT), also lay down important foundations for sound development in payment markets.

2. Central banks provide the solid foundation for payment systems by underpinning the public's trust in money

Payment systems are usually built upon a two-tier structure operated by central banks together with financial institutions. On one side, the former ensures trust in money, while the latter serves the public and is able to carry out innovations. On the other side, central banks supply the safest systems (e.g., the RTGS) and payment instruments (e.g., physical cash) for settling both wholesale and retail transactions, while financial institutions provide diverse retail electronic payment instruments, meeting the needs of various payment scenarios for the public.

Owing to the latest wave of innovation in digital payments, payment services put into contact with the public have continued to evolve in recent years. A sound payment system is still based on the trust in money ensured by the central bank. Under this condition, financial institutions are able to concentrate on the innovative development of payment services and increase users' willingness to accept such new services as well.

Chart B4.2 Payment infrastructure elements and arrangements



Source: BIS (2020).

3. Digital innovation is radically reshaping the provision of payment services and attemping to change the forms of currency

3.1 Digital innovation is altering customer experience of payment services

Digital innovation has been undergoing a comprehensive change in front-end and back-end services supported by payment systems (Chart B4.2). For the front-end services, a "transaction account" is not limited to those opened at banks but includes electronic payment accounts as well. CBDCs may be used as "payment instruments" in the future. The "service channel" includes not only physical facilities such as automated teller machines (ATMs), point-of-sale (POS) terminals, but also more popular and means that have become the leading trend, namely internet and mobile applications (apps). For the back-end services, arrangements of payment flows, including processing, clearing, and settlement, continue to improve with technological evolution. Moreover, the emergence of distributed ledger technology (DLT) has sparked off discussion on the feasibility of applying decentralized frameworks in clearing and settlement systems.

3.2 Private providers are challenging to change the form of money, while central banks continue upgrading their systems and embracing this innovation

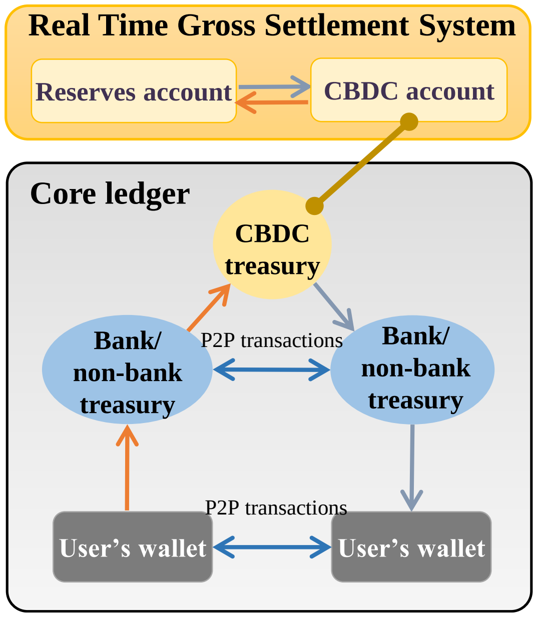
With continuing innovation in payment services, private payment providers also begin to challenge the core foundation of payment systems, attempting to change the existing forms of money. In this view, central banks have been improving and upgrading their payment systems, actively embracing innovations. Those central banks engaging in the study of CBDCs currently account for about 86% of global peers.[2] In October 2020, the Bank for International Settlements (BIS) and seven central banks, including those of the US, the UK, Japan, and the euro area, published the *CBDC: Foundational Principles and Core Features*, which emphasizes that a central bank should not compromise monetary or financial stability by issuing a CBDC and that it should incorporate core features such as convertibility, safety and financial inclusion as a guiding principle of CBDC issuance by national authorities.[3]

3.3 The Bank has completed research on a wholesale CBDC and proceeded to an experiment on a general purpose CBDC

With its CBDC research keeping pace with international studies, the Bank already completed the first phase program with a technical report on the feasibility of a wholesale CBDC[4] in June 2020. The results showed that DLT has the potential to increase the resilience of systems. However, when applying DLT to the financial front of a CBDC, its efficacy would be affected by the need for additional mechanisms in pursuit of privacy protection and supervision (e.g., AML/CFT).

Starting from September 2020, the Bank moved on to the second phase program on a general purpose CBDC, planning to adopt a two-tier structure under a public-private partnership between the Bank and financial intermediaries. Its functional process is structured as the following: the Bank issues the CBDC to intermediaries, such as banks, which enables customers to hold the CBDC with these intermediaries. Financial intermediaries and end users are allowed to directly conduct peer-to-peer (P2P) transactions using the CBDC (Chart B4.3).[5] With regard to CBDC design, the Bank would use a "centralized system with partial functions operated through DLT." In other words, the plan is to establish a centralized transaction platform, aiming at achieving efficacy in dealing with large-sum and high-frequency transactions through a general-purpose CBDC while fulfilling the need for privacy and supervision. In addition, the DLT is used to store transaction data with the aim of building operational resilience and avoiding business interruption. The whole program is expected to be completed within two years, and the Bank will continuously reassess the timetable with a rolling review, depending on the progress of the trial and global CBDC development trends. Three main test scenarios preliminarily planned are as follows: (1) large-sum transactions under the delivery versus payment (DvP) mechanism; (2) domestic consumption and transfers; and (3) cross-border outward remittances in small amounts.[6] These scenarios would cover the major application fields of a general purpose CBDC.

Chart B4.3 The concept of the CBC's general purpose CBDC



Note: In the core ledger, the wallets of CBDC treasury, bank/non-bank treasury and user's wallet, which belong to the Bank, intermediaries and customers, respectively, store information about CBDC account balances.
Source: CBC.

Notes: 1. BIS (2020), "Central Banks and Payments in the Digital Era," *BIS Annual Economic Report*, June.
2. Boar, Codruta and Andreas Wehrli (2021), "Ready, Steady, Go? – Results of the Third BIS Survey on Central Bank Digital Currency," *BIS Papers*, No. 114, January.
3. BOC, ECB, BOJ, Riksbank, SNB, BOE, Fed and BIS (2020), "Central Bank Digital Currencies: Foundational Principles and Core Features," October.
4. In comparison to traditional central bank money, which include cash for retail payment use and reserves for wholesale payment use, the CBDC can be split into two categories: general purpose and wholesale. A general purpose CBDC is widely accessible in all payment scenarios, while a wholesale one mainly serves for interbank payments.
5. Money transfers can be directly conducted using a CBDC wallet on a P2P basis, while the RTGS

would only allow CBDC transactions among financial institutions.

6. With regard to experimentation on cross-border outward remittances in small amounts, the Bank would focus on reducing the inconvenience and costs arising from domestic cash payment based on its preliminary plan. Cross-border and overseas transactions would be operated under the current mechanism. For instance, foreign workers may be able to send the CBDC money to companies in charge of small-amount foreign remittances without the need to send their own remittances through convenience stores or via authorized institutions engaging in collecting and making payment as an agent.

Box 5
The development and challenges of sustainable finance in Taiwan

Financial institutions, which take in funds from the public and manage and utilize those funds by undertaking activities such as lending and investment, are a key force in steering public attention toward sustainable development. Against this backdrop, in recent years, more and more economies have incorporated sustainable finance as a core strategy of their financial development policies. In order to ensure that the financial system plays its role and function of driving the society in the pursuit of sustainable development in Taiwan, the FSC adopted several measures. The Bank also continued to pay attention to international trends of sustainable finance. However, domestic financial institutions still face some challenges to their efforts of promoting sustainable finance. It is thus hoped that a vision of sustainable finance ecosystem will be achieved through close coordination and cooperation among relevant government agencies, the private sector, and international organizations.

1. The definition of sustainable finance

The research on sustainable finance is still in the early stages, so there is no universal definition or taxonomy for sustainable finance. According to the IMF,[1] sustainable finance is defined as the incorporation of environmental, social, and governance (ESG) principles into business decisions, economic development, and investment strategies. Furthermore, promoting economic and financial stability is also the objective pursued by various competent authorities to support sustainable finance.

Sustainable finance not only focuses on the environmental and climate issues related to green and climate finance but also values social finance so as to enhance social well-being. In some cases, it even extends to cover “impact finance,” which incorporates both financial aspects mentioned above.

2. The development of sustainable finance in Taiwan

2.1 The FSC implemented green finance and revised the relevant regulation

In order to enhance effective operation of the domestic green finance market and promote comprehensive development in sustainable finance, the FSC formulated the Green Finance Action Plan 1.0 in November 2017, encouraging financial institutions to provide the green energy industry with investment and financing. Furthermore, the FSC proposed the Green Finance Action Plan 2.0 (hereinafter referred to as Action Plan 2.0) in August 2020, with the range further expanded to cover sustainable finance. The short-term focus of Action

Plan 2.0 is to develop a clear definition and taxonomy for sustainable development industries, and enhance the quality and transparency of ESG disclosure in corporate financial reporting. The mid- to long-term action will be establishing an ESG data integration platform and a database for sustainable development to resolve the pending issues related to sustainable development.

Action Plan 2.0 included a total of 38 measures that cover the following eight aspects: credit, investment, capital market fundraising, professional development, information disclosure, promotion of further development of green financial products or services, prudential supervision, international connections, and incentive mechanisms. The FSC will study the international development trends, and establish the relevant regulations and guidelines based on the legal environment and the directions of industrial development in Taiwan.

2.2 Financial institutions have actively complied with international principles for sustainable finance and incorporated ESG factors into their risk management strategies

In recent years, financial institutions in Taiwan have actively complied with international trends, cooperated with the government to promote sustainable finance, and established dedicated units or teams to promote the relevant policies. Moreover, some financial institutions also have voluntarily supported or adopted internationally sustainable finance standards, such as the Equator Principles (EPs), the recommendations by the Task Force on Climate-Related Financial Disclosure (TCFD), and the Principles for Responsible Banking (PRB). In addition, some financial institutions have incorporated ESG factors into their risk management strategy so as to raise awareness of sustainable finance-related issues and strengthen governance effectiveness within the organization. As of the end of March 2021, eight domestic financial institutions[3] have adopted the EPs, while 16 domestic financial institutions have embraced the TCFD framework.

In addition, some financial institutions have worked together with academic institutions to assess the potential impacts of climate-related risks on their own financial positions, and sought to enhance their resilience to weather the climate risk and to address those impacts in a timely manner.

2.3 The Bank has increasingly taken sustainable finance into consideration for policymaking

As many central banks have incorporated green bonds in their investment portfolios recently, the Bank has also gradually included ESG financial products as part of its FX reserves investment strategy, such as ESG bonds issued by international organizations like the World Bank, the Asian Development Bank, and the European Investment Bank. Furthermore, if needed, the Bank is ready to act as the lender of last resort should financial institutions suffer significant losses from climate-related risks and face liquidity problems.

In light of the fact that the approaches to assessing climate-related risks are still in their infancy, coupled with unavailability of the relevant data, the Bank will continue to pay attention to international development trends and domestic implementation of green finance and climate risk disclosure conducted by financial institutions, and utilize the information for assessing related risks in the future.

3. Challenges facing financial institutions in promoting sustainable finance

3.1 Inconsistencies in the definitions of sustainable finance

As sustainable finance involves a wide range of issues and exhibits high complexity, relevant information seems to be under continuous development. However, some economies have developed the taxonomy for sustainable economic activities in recent years. Currently, Taiwan does not yet have uniform and clear definitions or criteria to determine whether an economic activity or asset qualifies as green or sustainable. As a result, there is a lack of reliable and consistent information and criteria as the basis for financial institutions to make judgement upon, and this is also unfavorable for the competent authority to make peer comparisons.

3.2 Quality improvement in corporate ESG disclosure

The global sustainable finance initiatives and related principles proposed by international organizations as well as the FSC’s Action Plan 2.0 tend to require or encourage financial institutions to disclose ESG-related information of their investment and financing targets and of the customers getting credit from them. However, listed companies in Taiwan have not fully disclosed the aforementioned information, which makes it difficult for financial institutions to acquire related information in full. This could create hurdles when they attempt to comply with international principles.

3.3 Hindrances to the advancement of sustainable finance within organizations

For financial institutions, the path to sustainable finance within the organization tend to involve hefty costs such as internal communication, organization restructuring, and employee training. Among them, the processes of internal communication and organization restructuring are time consuming. Moreover, cultivating expertise in sustainable finance and building professional capabilities are neither easy tasks. All of these increase the difficulty of promoting related practices within financial institutions.

3.4 Difficulties in stakeholder engagement

When promoting sustainable development in the corporate sector, on the one hand, financial institutions need to engage with their stakeholders. For example, they are expected to share experiences with enterprises on ESG issues, jointly respond to sustainable initiatives with their customers, and encourage enterprises to embark on gradual transformation towards low-carbon industries. However, on the other hand, in order to comply with ESG principles or standards, enterprises would have to change their business models, resulting in a substantial increase in operating costs. Since domestic enterprises are mainly small and medium-sized enterprises, the additional costs deriving from ESG implementation might have a great impact on their revenue. This therefore dampens the willingness of enterprises to change, increasing the difficulty for financial institutions to engage with them towards sustainable development.

4. Conclusion

In order to help domestic enterprises and the financial industry clearly understand the scope of sustainable economic activities, communicate in a common language, and avoid green washing, the FSC and the Environmental Protection Administration, Executive Yuan jointly commissioned a research project on the sustainable finance taxonomy, which is expected to be completed by the end of 2021. In addition, the FSC proposed to integrate climate and environmental information from relevant government agencies to build a database platform for sustainable development of industries. Such a platform will serve as a basis for enterprises and the financial industry to conduct risk assessments and scenario analysis.

In the future, it is expected that relevant parties will jointly discuss and learn about international development trends through close coordination and cooperation among agencies, the private sector, and international organizations so as to fine-tune their legal systems as well as the directions of industrial development in Taiwan and establish effective frameworks and foundations for promoting markets for green and sustainable finance. Furthermore, it is also expected that the role of financial institutions in the financial markets may be leveraged to raise the awareness of enterprises and investors regarding ESG issues, thereby bringing about a healthy cycle of investment and sustainable development and helping the country attain emissions reductions and sustainable development goals.

Notes: 1. IMF (2019), *Global Financial Stability Report*, October.

2. Impact finance is the financing of businesses or economic activities which could generate verifiable, direct, and positive impacts on society and/or the environment based on agreed metrics and benchmarking while also seeking market aligned or better financial returns. See ICMA (2020), "Sustainable Finance: High Level Definition," May.

3. As of the end of March 2021, 16 domestic financial institutions have adopted TCFD recommendations, including 14 life insurance companies and financial holding companies, as well as one management consulting company and one vehicle financing company.

4. Stakeholders here include employees, shareholders, investors, customers, suppliers, academics and experts, government, competent authorities, and other financial institutions.