

3.3 Financial infrastructure

3.3.1 Payment and settlement systems

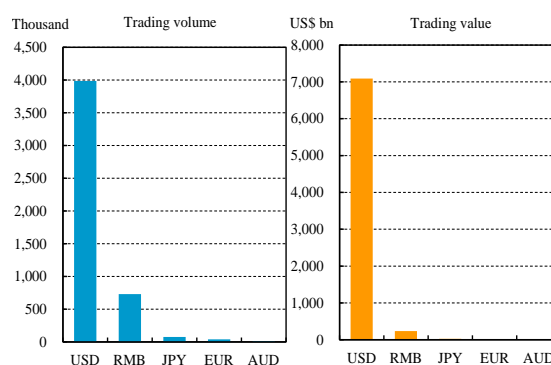
Overview of the three NTD SIPSs

There are three SIPSs in Taiwan, including the CBC Interbank Funds-Transfer System (CIFS), the Interbank Remittance System (IRS) and the Check Clearing House System (CCHS), which provide clearing and settlement services for NTD electronic payment and check clearing. Compared to the previous year, the funds transferred via the CIFS and IRS increased by 7.6% and 3.3%, respectively, while those via the CCHS slightly decreased by 0.7% owing to the emergence of electronic payment instruments.

Overview of the foreign currency clearing platform

The foreign currency clearing platform provides US dollar, renminbi, Japanese yen, euro and Australian dollar remittance services, as well as delivery-versus-payment (DVP)⁵⁸ and payment-versus-payment (PVP)⁵⁹ mechanisms for settlement services. The functions of AML/CFT were also integrated into this platform in 2017. By the end of 2017, the accumulated trading volume and value of funds transferred via this platform recorded 4.85 million and US\$7.4 trillion (equivalent to NT\$ 216 trillion), respectively (Chart 3.55). Because domestic remittances can be settled directly through the foreign currency clearing platform rather than through foreign third parties, remittance fees paid by the public are estimated to have decreased by the substantial amount of NT\$2.9 billion from the first day of platform operation to the end of 2017.

Chart 3.55 Trading volume and value via the foreign currency clearing platform



Note: Figures are from March 2013 to the end of 2017.
Source: CBC.

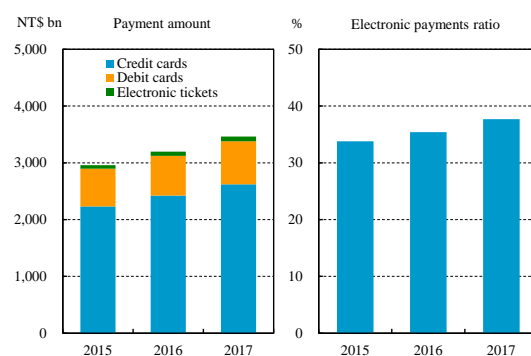
⁵⁸ DVP is a clearing mechanism that complies with international standards and ensures that the party that delivers securities (or payment) actually receives the payment (or securities) so as to effectively prevent the risk of default.

⁵⁹ PVP is a mechanism to control the settlement risk of FX transactions. Taking the USD/NTD currency swap as an example, the PVP mechanism can ensure that one party that pays in USD (or NTD) will receive NTD (or USD) without settlement default risk.

Overview of electronic payment transactions

The financial infrastructure in Taiwan is well established, as large-valued payments have been fully digitized and retail payments can also be carried out through diverse and convenient electronic payment instruments. Among them, card-based payments, such as those with credit cards, debit cards and stored-value cards have increased in the past three years. Their total trading value registered NT\$3.5 trillion in 2017, which accounted for 37.7% of total private consumption expenditure of NT\$9.2 trillion in the year (Chart 3.56).

Chart 3.56 Growth of electronic payments



Note: Electronic payment ratio refers to the ratio of the trading value of card-based payment to private consumption expenditure.

Sources: FSC and FISC.

The transaction value of domestic mobile payments posted substantial growth in 2017.⁶⁰ However, as mobile payment companies were dedicated to developing their own brands, the systems, card reading machines and QR codes provided by different companies failed to be fully integrated. Consequently, there is still room for improving the mobile payment penetration rate among merchants and consumers. In order to increase the adoption of mobile payments, the government has set a policy target of achieving a 90% mobile payment penetration rate by 2025,⁶¹ and has been promoting it by coordinating the related ministries and agencies. In 2017, the FISC, urged by the CBC, actively helped private hospitals to establish an E-Health Pay platform and developed common standards for QR codes to deepen financial inclusion (Box 4).

Concerns over the applications of DLT in clearing and payment services

In recent years, central banks in Canada, the UK, Europe, Japan, and Singapore have conducted DLT⁶² experimentation for interbank clearing and payments. The results showed that at this stage, DLT technology was not mature enough and therefore unsuitable for practical uses while some problems remained to be solved.⁶³

⁶⁰ According to the FSC's statistics, from January to November in 2017, the transaction value of domestic mobile payments was approximately NT\$15.1 billion, 5.4 times higher than the NT\$2.36 billion recorded in 2016.

⁶¹ The penetration rate of mobile payments refers to the ratio of mobile payment users to mobile device users.

⁶² According to the definition by the Bank for International Settlements (BIS), DLT refers to a technology that allows computers in different locations to propose and validate transactions and update records in a synchronized way. See BIS (2017), *International Banking and Financial Market Developments*, Quarterly Review, September.

⁶³ DLT has the problems of poor processing speed and single point of failure as follows: (1) to reach an agreement of all nodes on the ledger, it takes time to conduct a consensus algorithm, resulting in lower processing speed than the existing centralized system; (2) if the operation relies on one node, the dysfunction of this node may cause a breakdown of the entire system, and thus fails to meet the intended purpose of DLT which is avoiding single point of failures.

In order to understand whether DLT can be adopted in domestic payment and settlement systems, the CBC assisted the Taiwan Clearing House (TCH) to cooperate with academic institutions in carrying out a DLT trial on interbank automated clearing house (ACH)⁶⁴ transactions and their clearing and settlements. The trial aimed to investigate the efficiency of DLT employed in real time gross settlement (RTGS) systems and hybrid systems when dealing with those transactions. The results showed that processing speeds in both types of systems when adopting DLT were much slower than in the current ACH centralized system, indicating that DLT technology was not yet fully mature and needed to be further improved. In the future, the CBC will continuously work with external professional teams to conduct other case studies such as using DLT technology in the Central Government Securities Settlement System (CGSS), and urge the FISC and the TCH to cooperate with banks in testing other application cases such as blockchain-based financial confirmations and e-checks.

3.3.2 Measures to enhance information security in Taiwan

In recent years, cyber attacks on domestic financial institutions have become more relentless in terms of frequency, showing that information security (InfoSec) protection is the main issue in financial security management. As major countries in the world have successively established financial security information sharing and analysis institutions, the FSC opened the F-ISAC in December 2017 so as to enhance cyber security protection in the domestic financial system.

The FSC entrusted the FISC to operate the F-ISAC. The Center aims to provide financial institutions, including banking, insurance, securities and futures, and securities investment trust and consulting industries, with nine services, such as security breach notification, information analysis, cyber security information sharing, etc. The objective of the Center is to gradually build a joint financial defense system for InfoSec in Taiwan.

To increase the awareness of InfoSec for financial industries, the FSC amended the internal control regulations of financial holding companies, banking, insurance, and securities and futures industries. The amendments required those financial institutions to establish an InfoSec unit and appoint a delegate to take charge of InfoSec activities, as well as allocating adequate human resources and equipment for InfoSec. The FSC also conducted differentiated supervision according to financial institutions' asset scale and business models. Additionally, the FSC would strengthen examinations on InfoSec management of financial institutions.

⁶⁴ The existing ACH system handles interbank fund transfers by way of designated timing, batches, and net settlement.

3.3.3 Assessing the feasibility of implementing a D-SIBs framework in Taiwan

At present, Taiwan's domestic banks are not identified by the Financial Stability Board (FSB) as global systemically important banks (G-SIBs). However, some domestic financial institutions such as large financial holding companies or banks are considered to be domestically systemic important in terms of size, interconnectedness, substitutability and complexity. In order to reinforce financial supervision and comply with international supervisory standards, the FSC has collected information regarding a D-SIBs identification and supervision framework from the Basel Committee on Banking Supervision (BCBS) and other countries to assess the feasibility of its implementation. In addition, aiming to strengthen the evaluation and supervision of D-SIBs, the TCH of the CBC has entrusted academics to conduct research on D-SIBs identification and evaluation⁶⁵ for reference relating to financial stability assessment.

3.3.4 Enforcing Regulations Governing the Implementation of the Common Standard on Reporting and Due Diligence for Financial Institutions

As the world is strengthening standards for information transparency and in order to safeguard taxation fairness and ensure appropriate tax revenues, the Ministry of Finance (MOF) formulated the *Regulations Governing the Implementation of the Common Standard on Reporting and Due Diligence for Financial Institutions* in November 2017. The Regulations is in reference to the *Common Standard on Reporting and Due Diligence for Financial Account Information* (“Common Reporting Standards,” CRS) set out in the *Standard for Automatic Exchange of Financial Account Information in Tax Matters* released by the Organization for Economic Co-operation and Development (OECD). Any financial institution⁶⁶ within the territory of the Republic of China (ROC) shall perform due diligence for financial account information in tax matters of foreign residents, and report the information of reportable persons to tax authorities. These regulations mainly include: (1) stipulating review time limits and due diligence procedures for reporting financial institution accounts; (2) requiring the reporting financial institution to identify indicia associated with the countries or jurisdictions of residence⁶⁷ and status identification of account holders; (3)

⁶⁵ Yu-Ning Hwang and Nan-Kuang Chen (2016), *Identifying and Evaluating Domestic Systemically Important Banks in Taiwan*, TCH internal paper, May.

⁶⁶ The term “financial institutions” shall mean any of the following: depository institutions, custodial institutions, investment institutions or specified insurance companies. Governmental entities, international organizations, or central banks are exempted from the obligation of performing due diligence and reporting requirements.

⁶⁷ In Taiwan's case, the wider approach is applied. The financial institutions should identify all the information covering the countries or jurisdictions of residence of account holders. The approach is different from that of the *Foreign Account Tax Compliance Act (FATCA)*, which merely requires financial institutions to identify if the account holder is a US citizen or resident.

formulating the reporting time limits and the related information for reporting financial institutions.

3.3.5 Implementation of the Financial Technology Development and Innovative Experimentation Act in Taiwan

To promote Taiwan's financial technology innovation, the *Financial Technology Development and Innovative Experimentation Act* ("Experimentation Act") became effective on 30 April 2018.⁶⁸ The *Experimentation Act* provides a legal basis for building a financial technology innovative experimentation mechanism in Taiwan. The key points of the *Experimentation Act* are as follows:

- Regardless of whether they are financial or non-financial service firms, all start-ups can apply for innovative experiments to the extent that the proposed innovative technologies are regarded as chartered financial services approved by the FSC.
- The experimental period is up to one year and the applicant may apply for a one-time extension up to six months if necessary. However, when the relevant regulations are to or need to be amended, the experimental period is not subject to the restriction of a one-time extension and the overall period can be prolonged up to three years.
- To protect the interests of participants in the experiment, the *Experimentation Act* applies provisions regarding dispute resolution procedures of the *Financial Consumer Protection Act*. Moreover, if the innovative experimentation involves a situation that is materially adverse to financial markets or to the interests of experimental participants, the FSC may revoke the approval for the innovative experimentation.

3.3.6 FX regulation amendments

Relaxing FX regulations for banks

In order to promote development of the financial services industry in the context of financial globalization and liberalization, the CBC revised the *Regulations Governing Foreign Exchange Business of Banking Enterprises* and related regulations in January 2018. The main amendments included the following: (1) approving authorized banks to engage in the opening of digital foreign currency deposit accounts conducted by customers via the Internet; (2)

⁶⁸ Three related pieces of regulations were enacted along with the *Experimentation Act* on the same day for regulatory compliance by relevant industries, and follow-up sub-laws will be drafted in the future as required.

stipulating application procedures and matters of compliance for authorized banks conducting foreign currency trust business and issuing foreign currency bank debentures outside the ROC; and (3) simplifying application procedures for authorized banks engaging in FX business with customers through electronic and communications equipment.

Relaxing FX regulations related to securities firms

In order to strengthen the competitiveness of securities firms, expand their business scope, and provide customers with additional services, the CBC amended the *Regulations Governing Foreign Exchange Business of Securities Enterprises* in March and December 2017, so as to help securities firms to expand their FX business. The key amendments included the following: (1) allowing a securities firm to conduct spot FX transactions between the NTD and foreign currencies, and expanding its FX business to derivative products involving the NTD exchange rate and other foreign currencies; (2) allowing a securities firm, which accepts orders to trade foreign securities with receipt/payment in foreign currencies, to set up the customer's personal subaccount in a segregated foreign currency account opened under the securities firm's account with the authorized bank for custody of settlement funds purposes; and (3) allowing the settlement payment for a securities firm upon maturity, which intends to engage in business that involves repo trade of foreign currency securities, to come from FX against the NTD, upon being approved by the CBC.

Box 4

Recent developments to enhance mobile payments in Taiwan

Thanks to high penetration of the internet and ubiquitous use of mobile devices, especially among the young Touch-Screen Generation, mobile commerce has flourished rapidly and is driving the demand for mobile payments. Together, these developments have created favorable conditions in the market to enhance mobile payments in Taiwan.

1. Mobile payment tools in Taiwan

Benefiting from the high penetration rate of smart phones in Taiwan and increasing understanding of mobile payment usages by the public, mobile payments have become a popular tool for making purchases and transferring funds. Currently, user-binding payment tools provided by operators include credit cards, debit cards/VISA debit cards, bank accounts, and electronic tickets. In addition, contactless and QR code-based payments are the main payment methods (Table B4.1).

Table B4.1 Categories of mobile payment methods

| Payment methods | User-binding payment tools | | | |
|-----------------|----------------------------|-------------|---------------|--------------------|
| | Credit cards | Debit cards | Bank accounts | Electronic tickets |
| Contactless | ✓ | ✓ | | ✓ |
| QR code-based | ✓ | ✓ | ✓ | ✓ |

Note: Debit cards include VISA debit cards.
Source: CBC.

2. Current problems

As international mobile payment providers entered the Taiwan market, the trading volume of mobile payments grew in 2017, but the penetration rate still has room for improvement.

(1) Various mobile payment tools with different brands and standards

In terms of contactless payment, because of different standards of sensor devices, merchants have to install various card reading machines. Consumers also need to own mobile devices that meet certain standards. These setbacks result in limited usage scenarios. As for QR code payment, because respective operators develop their own codes, merchants are forced to post different kinds of QR codes, which are difficult to recognize and do not allow cross-usage.

(2) Intense market competition

While the domestic mobile payment market is small, there are various mobile payment operators vying for it, including banks, telecommunications companies,

mobile phone manufacturers, e-commerce companies, and electronic tickets issuing institutions. Strong competition and little collaboration in the market make it hard to gain the benefits of economies of scale.

3. Measures promoted by the government

To accelerate the popularity of mobile payments, the National Development Council proposed a cross-ministry plan in 2017 to promote mobile payments. Moreover, in accordance with government policies, the FSC implemented a number of measures, such as developing multiple payment tools, expanding payment channels, and reviewing related regulations.

Furthermore, to assist the development of mobile payments, the CBC urged the Financial Information Service Co., Ltd. (FISC) to implement the following measures in 2017:

(1) Helping the establishment of the E-Health Pay platform

The FISC cooperated with private hospitals, clinics and VISA to establish the medical mobile payment platform, E-Health Pay. It allows the public to complete payment by mobile phone for medical bills in certain hospitals or clinics. Currently, 70 hospitals and clinics have joined this platform. In the future, it will be promoted further to increase the convenience of medical payments.

(2) Setting up a standardized QR code in collaboration with financial institutions and promoting it among micro businesses

The FISC has worked with financial institutions to promulgate a domestic standard for QR codes and has already provided functions such as P2P transfer, bill payment, tax payment, and consumption with debit cards. In 2018, they plan to cooperate with international credit card organizations to bring credit cards into QR code payment services.¹

4. Conclusion

In view of the popularity of mobile payments, the Financial Stability Board (FSB) issued a report² in 2017, reminding authorities around the world to be aware of cyber risk and to urge third-party service providers to meet safety standards, so as to avoid erosion of public confidence in mobile payments arising from disorderly events.³ The trading volume of domestic mobile payments is modest now, but market potential presents an optimistic outlook. The CBC will continue to urge the FISC to promote mobile payments in order to deepen financial inclusion.

- Notes: 1. International organizations, such as VISA and MasterCard, plan to carry out a global QR code standard. They will cooperate with the FISC in the future to integrate standards into one.
2. FSB (2017), *Financial Stability Implications from FinTech: Supervisory and Regulatory Issues that Merit Authorities' Attention*, June.
3. Considering the difficulties in mitigating significant cyber attacks, the FSB suggests that related authorities should adopt measures such as contingency plans, information security sharing, monitoring, and the incorporation of cyber-security mechanisms into the early design of systems, in order to minimise the potential impact of cyber events on financial stability.