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FOREWORD

This issue of *Nomura Journal of Asian Capital Markets* features articles from experts on a wide range of themes involving financial and capital markets in Asia.

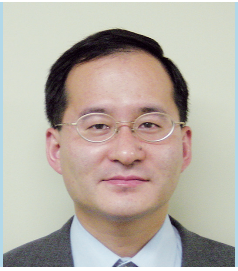
Eiichi Sekine, Managing Director in the Beijing Representative Office of Nomura Institute of Capital Markets Research (NICMR), discusses the current status of RMB internationalization. RMB-denominated trade settlements increased sharply in 2022 to a record high, with policy support and deregulation as key factors. Initiatives such as the expansion of RMB-denominated transactions between mainland China and Hong Kong are also promoting the internationalization of the RMB.

Dr. Marjan Muhammad, Senior Research Fellow at INCEIF University, presents Islamic fintech as a means to accelerate financial inclusion in Malaysia. The government and financial authorities have put in place various frameworks to promote fintech and digitalization that are the key enablers for an inclusive financial system. Backed by such initiatives, individuals' and micro-, small and medium-sized enterprises' access to financial services through digital channels is improving.

Dr. Woo Jun Jie, Senior Research Fellow at the Institute of Policy Studies, discusses the digital assets space in Singapore, focusing on regulatory trends. Against a backdrop of negative events surrounding cryptocurrencies, the financial regulator has become more cautious about retail investors' cryptocurrency investments, while aiming to make Singapore a hub for digital assets under an appropriate regulatory approach.

Yohei Kitano, Senior Analyst at NICMR in Singapore, writes about carbon credit trading in Singapore. Singapore, having already established itself as a hub for commodity trading in Asia, is now aiming to be a regional hub for carbon services. In 2021, Climate Impact X was established under public-private cooperation as the new international carbon credit exchange, bringing carbon credit trading in Singapore into greater focus.

This issue of the journal also includes a summary report on the Asian Capital Markets Roundtable held by the Nomura Foundation in February 2023. Financial and capital market experts from Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Japan participated in panel discussions on The Role of Infrastructure Financing and ESG Activities by Capital Markets to Promote Sustainable Growth, The Potential of Fintech and Financial Innovation in Capital Markets for Asian Economies and Society, and The Importance of Pension Systems and Asset Management in Preparing for Population Aging in the Region.



EIICHI SEKINE

Nomura Institute of Capital Markets Research

RMB-Denominated Trade Settlements Increased Sharply in 2022 –Current Status of RMB Internationalization–

Record High Cross-Border Payments Denominated in RMB

The People's Bank of China (PBOC) released its China Monetary Policy Report Q4 2022 on February 24, 2023. The report provides the latest evidence that RMB's internationalization is progressing, with cross-border RMB settlements increasing to RMB42.1 trillion in 2022, the highest level since China lifted its ban on RMB trade settlements in July 2009 (Table 1). In addition, RMB-denominated settlements accounted for 49% of China's total annual cross-border settlements denominated in both RMB and foreign currencies, the highest ratio on record.

RMB-denominated settlements under China's current account, which includes settlements for trade in goods and services as well as income and current transfers increased 32.0% year-on-year in 2022 to a record high of RMB10.5 trillion. Cross-border settlements under the capital account, which includes direct investments, securities investments, and other investments, also reached a new high in 2022, totaling RMB31.6 trillion, although a detailed breakdown was not available

Table 1: RMB-Denominated Cross-Border Settlement Amounts

unit: RMB trillion

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total for RMB settlements	—	12.1	9.9	9.2	15.9	19.7	28.4	36.6	42.1
(Year-on-year growth rate)	—	21.7%	-18.6%	-6.7%	46.3%	24.1%	44.3%	29.0%	15.0%
(Share of total cross-border settlements)	23.6%	28.7%	25.2%	22.3%	32.6%	38.1%	46.2%	47.4%	49.0%
Current account transactions	6.6	7.2	5.2	4.4	5.1	6.0	6.8	8.0	10.5
(Year-on-year growth rate)	41.6%	10.4%	-27.7%	-17.0%	19.0%	18.2%	12.1%	17.4%	32.0%
(Share of all current account transactions)	20.0%	22.6%	16.9%	13.0%	14.0%	16.1%	17.8%	17.3%	—
Goods	5.9	6.4	4.1	3.3	3.7	4.2	4.8	5.8	7.9
Services	0.7	0.8	1.1	0.6	0.8	1.0	0.9	1.1	2.6
Income & current transfers				0.5	0.7	0.8	1.0	1.0	
Capital account transactions	—	4.9	4.6	4.8	10.8	13.6	21.6	28.7	31.6
(Year-on-year growth rate)	—	43.4%	-5.1%	4.7%	65.0%	26.7%	58.7%	32.8%	10.0%
(Share of all capital account transactions)	—	47.9%	56.8%	66.0%	88.7%	96.5%	92.3%	91.6%	—
Direct investments	1.0	2.3	2.5	1.6	2.7	2.8	3.8	5.8	—
Securities investments	—	0.3	0.2	1.9	6.4	9.5	16.5	21.2	—
Other investments	—	—	—	1.3	1.7	1.3	1.3	1.6	—

Notes: 1. Growth rates and percentages are as reported in the PBOC statistics or calculated by the author if not included in PBOC statistics.
2. RMB share of all capital transactions is calculated by the author.
3. RMB share of current account settlements in 2014-2016 is for trade in goods only.
4. Securities investments in 2015 and 2016 refer to Stock Connect transactions only.

Source: Nomura Institute of Capital Markets Research, based on the PBOC's annual "RMB Internationalization Report" and its China Monetary Policy Report Q4 2022 at the time of this writing. This article discusses the progress of RMB internationalization in 2022, based on information obtained from published materials available as of May 2023.

Trends in RMB-Denominated Trade Settlements in 2022

RMB-denominated settlements accounting for larger share of China's trade

As noted above, China lifted its ban on RMB-denominated trade settlements in July 2009. After totaling RMB3.58 billion in 2019, RMB-denominated trade settlements rose steadily to an initial peak of RMB7.23 trillion in 2015, when the RMB was first included in the basket of currencies that determines the value of the International Monetary Fund's (IMF) Special Drawing Rights (SDRs). RMB-denominated settlements accounted for 25.0% of China's total trade in 2015.

Fast-forwarding to 2022, RMB-denominated trade settlements on a quarterly basis totaled RMB2.07 trillion in January-March (21.9% of China's trade during the quarter), RMB2.51 trillion in April-June (24.3%), RMB2.92 trillion in July-September (25.9%), and RMB3.01 trillion in October-December (27.3%). As this data shows, RMB-denominated settlement is on the rise in terms of both absolute value and share of China's total trade (Figure 1).

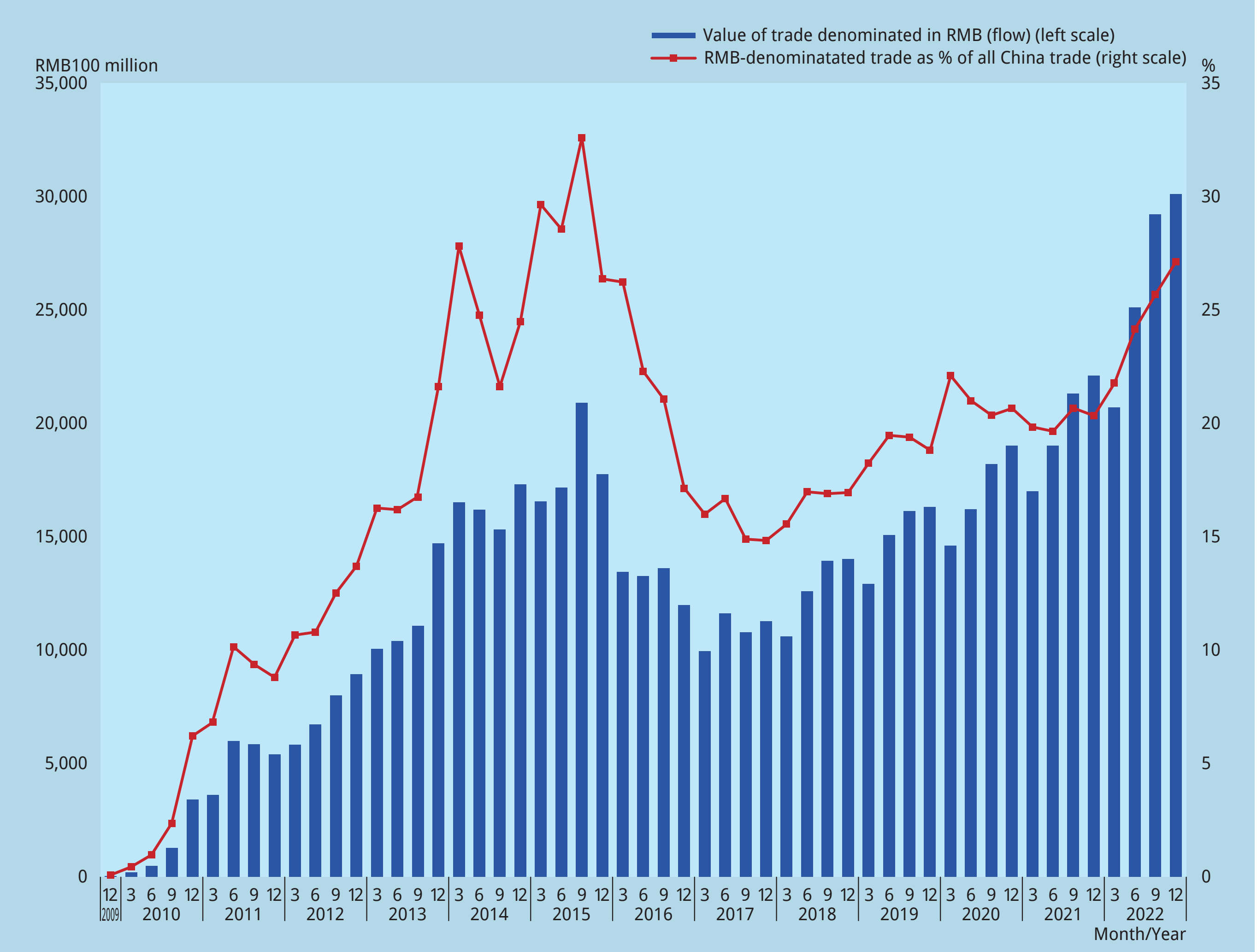
Turning to the global foreign exchange market turnover statistics released by the Society for Worldwide Interbank Financial Telecommunication (SWIFT), RMB's share has been rising recently, from 1.78% in February 2022 to 4.72% in April 2023 (Figure 2). That 4.72% figure ranks RMB as third among major currencies used in trade finance, with the USD first at 83.95% and the EUR second at 6.54%. The JPY is fourth at 1.41%.

Factors behind the increase in RMB-denominated trade settlements

- **RMB internationalization as an economic stimulus**

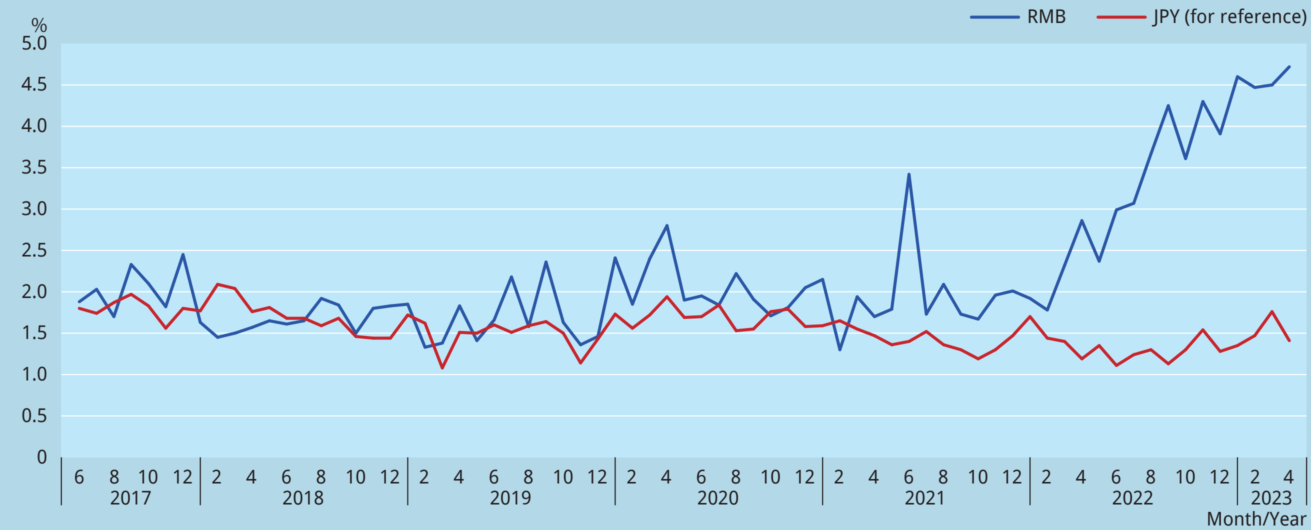
No detailed analyses of the increase in RMB-denominated trade settlements in 2022 are yet available in the Chinese-language literature, partly due to statistical

Figure 1: RMB-Denominated Trade Settlement Amount and Share of China's Total Trade (Flow)



Source: Nomura Institute of Capital Markets Research, based on data from CEIC Data (downloaded on April 12, 2023)

Figure 2: RMB's Share as Global Currency in Trade Finance Market



Note: Data available from June 2017.
Source: Nomura Institute of Capital Markets Research, based on SWIFT data

constraints. However, several possible factors for the increase are worth examining. One is support from government policy, as indicated in notifications and guidance given to enterprises and banks.

Among finance-related economic measures implemented by the Chinese government in 2022, the PBOC and the State Administration of Foreign Exchange (SAFE) issued the *Notice on Strengthening Financial Services for COVID-19 Containment and Socio-Economic Development*, on April 18, 2022.[1] This notice consists of 23 articles, including the following two articles indicating support for companies' exports and foreign exchange risk hedging that also contribute to RMB internationalization.

(Article 16) Step up facilitation for trade:
- We will expand the policy for facilitating trade-related foreign exchange payments and receipts of quality enterprises nationwide, steadily carry out the pilot programs for a higher-level facilitation of RMB settlement for trade and investment, and encourage banks to incorporate more quality small and medium-sized enterprises (SMEs) into the coverage of the facilitation policies.

(Article 18) Improve exchange-rate risk management service for enterprises:
- Financial institutions should promptly meet the needs of foreign trade enterprises and other market entities for hedging exchange-rate risks, support enterprises to expand cross-border RMB settlement, improve management of and services for foreign exchange derivatives, and reduce enterprises' costs for hedging risks.

In a follow up to the 23-article notification, the PBOC issued the *Notice of the People's Bank of China on Supporting Cross-Border RMB Settlement for New Business Forms of Foreign Trade* on June 20, 2022. This notice instructs domestic commercial banks to accept and recommend RMB-denominated trade settlements not only from commercial banks but also from non-banking payment institutions that have obtained internet payment business permits and from other qualified clearing institutions in order to promote trade by individuals and micro-enterprises.

- **RMB internationalization under the framework of an economic partnership agreement**

The Regional Comprehensive Economic Partnership (RCEP) Agreement is a large-scale free trade agreement signed by 15 Asia-Pacific nations, including Japan and China, that account for about 30% of the world's population, global Gross Domestic Product (GDP), and global trade. With the RCEP Agreement scheduled to come into effect for the first 10 ratifying countries on January 1, 2022, the Standing Committee of the State Council of the People's Republic of China (executive cabinet of China's government) decided on a policy at its December 23, 2021, meeting for steadily implementing the RCEP Agreement to promote the development of China's trade and investment and the upgrading of domestic industry.

On January 24, 2022, China's Ministry of Commerce and five other government ministries, including the PBOC, announced the *Guiding Opinions on the High-Quality Implementation of the RCEP*.[2] The Guiding Opinions' key tasks in the area of financial support include "Improve the role of RMB settlement in supporting the development of trade and investment." The PBOC is tasked with overseeing the following specific measures to realize that goal.

- Promote the use of RMB settlements in trade and investment activities in the RCEP region, help market players reduce exchange costs, and avoid exchange rate fluctuation risks.
- Continue to optimize policy arrangements and infrastructure construction to provide a good institutional environment for the cross-border use of RMB.
- Guide financial institutions to improve their financial services, support financial institutions in innovating RMB trading, investment, and hedging products, and provide

market players with convenient and efficient cross-border RMB financial products and services.

• **Deregulation initiatives**

On April 28, 2022, the Shanghai Securities News introduced Shenzhen City efforts related to the pilot test to enhance the convenience of cross-border RMB payments. In June 2020, under the Guangdong Pilot Free Trade Zone (FTZ), the geographical scope of the test was expanded from the Qianhai-Shekou area to the entire city of Shenzhen, and transaction screening was shifted from pre-screening of each payment to inspections of sample post-payments by designated blue-chip companies. Under the pre-screening system, external payments required the submission of a large number of materials, such as remittance application forms, contracts and receipts, customs declaration forms, etc., and the contents of major transactions were examined one by one. The shift to inspections of post-payment samples greatly simplified business processes and reduced average processing time for the applicant company to one-third the time required under the pre-screening system.

• **Impact from trade structure**

The above policy support for and deregulation of RMB-denominated trade settlements may have promoted changes in China's trade structure in 2022.

According to data released by General Administration of Customs China (GACC) on January 13, 2023, China's total trade value in 2022 increased 4.4% year-on-year to USD6,309.6 billion, with exports expanding 7.0% to USD3,593.6 billion and imports rising 1.1% to USD2,716.0 billion, record highs for both exports and imports. A GACC spokesperson stated that China's share of exports in the global market in 2022 was 14.7%, maintaining China's position as the world's largest exporter for the 14th consecutive year. The total value of China's trade in RMB terms increased 7.7% year-on-year, with the export value up 10.5% and import value up 4.3%.

As for RMB-denominated trade, it may have become easier for Chinese importers to win acceptance of RMB-denominated transactions and settlements in the resource sector, where domestic demand conditions increased Chinese importers' bargaining power with trade partner countries seeking to expand exports to China. According to statistics released by China's National Bureau of Statistics on February 28, 2023, soaring global commodity prices pushed up the import values for such items as soybeans, crude oil, natural gas, and coal, despite decreased import volumes. For example, the value of crude oil imports in 2022 amounted to RMB243.5 billion, up 45.9% year-on-year. Looking at major trade trends by country and region, strengthened China-Russia relations, which have come into greater focus owing to the current international situation, contributed to China's exports to Russia expanding 17.5% year-on-year to RMB512.3 billion, accounting for 2.1% of China's total exports, while imports from Russia increased 48.6% to RMB763.8 billion, 4.2% of China's total imports.

Developments Related to Promotion of RMB Internationalization since 2022

Measures to expand RMB-denominated transactions between mainland China and Hong Kong

• **Hong Kong as the main hub for RMB-denominated cross-border settlements**

RMB-denominated cross-border settlements in 2022 totaled RMB42.1 trillion, of which current account transactions accounted for RMB10.5 trillion, or 24.9% of the total, and capital account transactions accounted for RMB31.6 trillion, 75.1% of the total.

At the time of this writing, RMB-denominated settlements' share of all cross-border current account transactions and capital account transactions has not been disclosed. However, the data for 2021 (Table 1 above) included in the PBOC's 2022 RMB Internationalization Report show that RMB-denominated cross-border settlements totaled RMB36.6 trillion, of which current account transactions accounted for RMB8 trillion, 17.3% of all China cross-border transactions on its current account, while RMB-denominated capital account transactions of RMB28.7 trillion accounted for 91.6% all cross-border transactions on China's capital account. The geographical distribution of cross-border RMB settlements with mainland China reveal that Hong Kong accounted for 48.6% of all RMB-denominated cross-border settlements in 2021, followed by Singapore (11.3%), the United Kingdom (5.4%), and Macau (3.9%). Other than current account transactions, securities investment in mainland China via Hong Kong (qualified investors, Stock Connect, and Bond Connect) contributed significantly to the increase in RMB-denominated settlements.

- **Two new Connect channels**

The promotion of RMB internationalization via Hong Kong has included several key developments since 2022. For starters, two new Connect channels were established in 2022, the 25th anniversary of Hong Kong's return to mainland China (July 1, 2022).

The first new channel is exchange-traded fund (ETF) Connect, a mutual market access program for trading ETFs in mainland China and Hong Kong. ETF Connect allows Hong Kong qualified investors and brokers to buy and sell 83 ETFs listed in mainland China and mainland investors to buy and sell four Hong Kong–listed ETFs. Trading via the ETF Connect began on July 4, 2022.

The second new channel, announced on July 4, 2022, is Swap Connect, a mutual market access program for trading derivatives. In its initial stage, Swap Connect will enable trading of interest rate swaps in mainland China from the Hong Kong side in the so-called "Northbound" route. Regulations governing trading on Swap Connect were announced on May 5, 2023, by the PBOC, the Hong Kong Securities and Futures Commission, and the Hong Kong Monetary Authority. Trading began on May 15, 2023.

- **Strengthening the RMB-denominated securities trading platforms**

During 2022, several new measures to strengthen platforms for RMB-denominated securities trading via Hong Kong were announced. On September 2, 2022, the China Securities Regulatory Commission (CSRC) announced the following three measures aimed at deepening mutual stock market access between mainland China and Hong Kong and further promoting RMB internationalization: (1) expansion of the range of stocks eligible under the Stock Connect channels for trading between mainland China and Hong Kong by including foreign companies primary-listed in Hong Kong and a wider range of companies listed on the Shanghai and Shenzhen markets (implemented from March 13, 2023); (2) establishment of an RMB-denominated stock trading platform in Hong Kong to support RMB internationalization; and (3) the introduction of central government bond futures trading in Hong Kong to accelerate the opening of the government bond futures market to both domestic and overseas investors.

Revision of currency weights in IMF's SDR currency basket

- **RMB's weight raised from 10.92% to 12.28%**

On May 14, 2022, the IMF announced the result of its latest quinquennial review of weightings in the basket of currencies that make up its SDRs.

On November 30, 2015, the IMF Executive Board decided to include the RMB as a constituent of its SDR currency basket and set new weightings for currencies in the basket as follows: USD 41.73%, EUR 30.93%, RMB 10.92%, JPY 8.33%, and GBP 8.09%, making the RMB the third largest currency in the basket (Figure 3).[3] The timing of the IMF's next quinquennial review was delayed by the COVID-19 pandemic, but on May 14, 2022, the IMF Executive Board announced the results of its review of SDR basket weightings as follows: USD 43.38%, EUR 29.31%, RMB 12.28%, JPY 7.59%, and GBP 7.44%. The updated basket weightings went into effect on August 1, 2022.[4]

- **PBOC statement**

On May 15, the day after the IMF's announcement, the PBOC issued a press release reporting the results of the IMF's review of SDR currency weightings and indicated its intention to continue working together with other financial supervisory and regulatory authorities to "push forward the opening-up of the Chinese financial market."[5] Specific opening-up measures mentioned in the PBOC release included (1) simplifying the procedures for foreign investors to invest in the Chinese market, (2) enlarging the universe of investable assets, (3) extending the interbank foreign exchange market's trading hours, and (4) improving data disclosures.

These measures indicate that the PBOC was conscious of the statement in the IMF release that "Directors broadly acknowledged the progress made on financial market reforms in China, while calling for additional efforts to further open and deepen the onshore RMB market, with some Directors also stressing the need to further enhance data transparency." Accordingly, later that same month on May 27, the PBOC, the CSRC, and SAFE, released a joint announcement outlining matters related to facilitating investment in China's bond market by overseas institutional investors.

Changed wording in reference to RMB internationalization

- **New policy approach revealed in *Report to the 20th National Congress of the Communist Party of China***

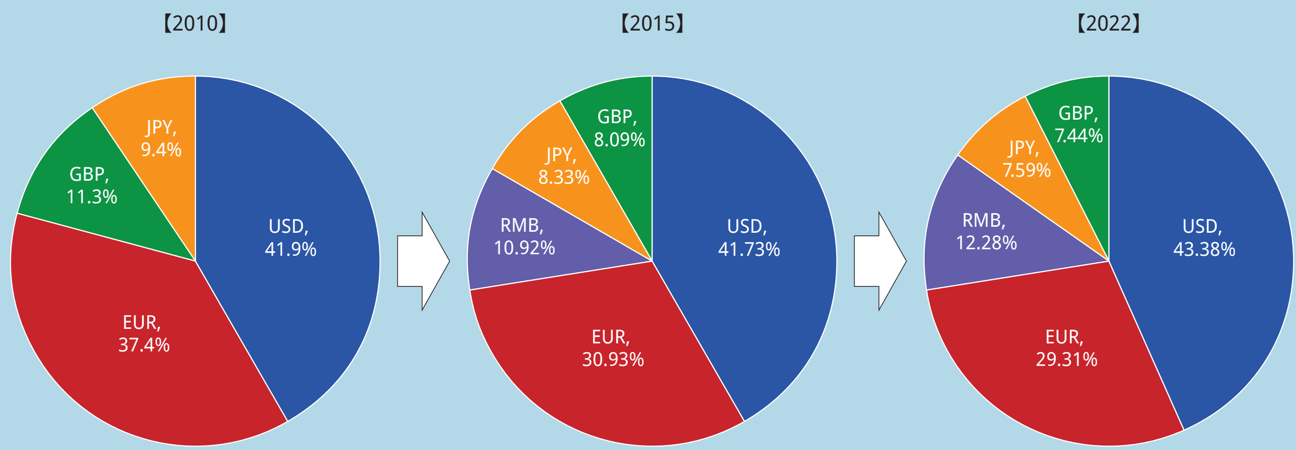
Not long after the IMF revised its SDR currency weightings and China eased restrictions on RMB-denominated transactions in May 2022, the PBOC released its *China Monetary Policy Report for Q2 2022* on August 10, 2022. In this report, the PBOC stated that it would (1) "continue to advance RMB internationalization stably and prudently" and (2) "steadily move ahead with the convertibility of the RMB under the capital account."

However, in President Xi Jinping's *Report to the 20th National Congress of the Communist Party of China* held in October 2022, the reference to RMB internationalization was "promote the internationalization of the RMB in an orderly way," changing the previous wording from "stably" to "orderly." Some researchers have interpreted this change in wording to mean that the Chinese government intends to accelerate its efforts to realize RMB internationalization by strengthening independent and systematic efforts (Tu Yonghong, Deputy Director at the International Monetary Institute at Renmin University of China).

- **Foreign exchange trading hours extended**

In line with this new RMB interna-

Figure 3: SDR Currency Basket Composition



Source: Nomura Institute of Capital Markets Research, based on IMF materials

tionalization policy approach, trading hours at the Shanghai Foreign Exchange Market have been extended from 9:30 a.m. to 11:30 p.m. local time to 3 a.m. the next day, since January 3, 2023. As this extension aims to increase the convenience of transactions with investors in different time zones in Europe and the United States and enhance the attractiveness of investing in RMB-denominated assets, it may be said to be a response to the aforementioned IMF advice.

Looking Ahead

According to SAFE, RMB-denominated settlements accounted for 48.6% of all cross-border settlements by non-banking sectors (companies, individuals, and non-banks) in March 2023, exceeding the share of USD-denominated settlements (46.7%) for the first time. Looking forward, the following recent developments may be considered factors that will further increase cross-border RMB settlements.

First, China and Brazil agreed on March 30, 2022, to abandon the USD as an intermediary currency and settle all bilateral trade and financial transactions using the RMB and Brazil's real. Earlier, in February 2023, the two countries' central banks agreed to establish an RMB clearing bank in Brazil. In addition, during his visit to the New Development Bank[6] in Shanghai on April 13, 2023, Brazilian President Luiz Inacio Lula da Silva urged the BRICS nations to make international payments in their own currencies.

Second, Argentina announced on April 26, 2023, that it would shift payments on its imports from China from the USD to the RMB. As a result, Argentina is now making payments in RMB equivalent to USD1.04 billion in April and about USD790 million a month from May. The Argentine government's decision is a response to the depreciation of the Argentine peso and capital outflows.

Third, on March 28, 2023, China National Offshore Oil Corporation (CNOOC) and French oil giant TotalEnergies SE completed the first RMB-denominated settlement of a purchase of liquefied natural gas (LNG) through the Shanghai Petroleum and Natural Gas Exchange (SHPGX, established in March 2015). CNOOC purchased about 65,000 tons of LNG produced in the United Arab Emirates. The CNOOC-TotalEnergies transaction was the first concrete result following President Xi Jinping's advocacy at the first China-Gulf Cooperation Council (GCC) Summit held Riyadh, Saudi Arabia on December 9, 2022, for making full use of the functions of the SHPGX to promote RMB-denominated settlements for oil and natural gas trades. In the future, SHPGX plans to cooperate with China's Cross-Border Interbank Payments System (CIPS), Chinese and foreign financial institutions, and other interested parties to establish a safe, stable, and highly efficient cross-border RMB-denominated settlement system for oil and other products.

There are two types of RMB internationalization that perhaps should be considered separately. The first is RMB internationalization related to increasing the ratio of RMB settlements in China's transactions with external entities. The second is the promotion of the RMB as an international currency widely used in transactions involving third-country entities. Under the new RMB internationalization policy approach implemented since China's 20th National Congress, deregulation and promotional measures to increase the use of the RMB in China's transactions with other countries are steadily advancing. Under the PBOC's RMB-denominated bilateral currency swap agreements with other countries' central banks, the outstanding balance of RMB withdrawn by other countries' central banks totaled RMB109.085 billion as of the end of March 2023, up RMB20.0 billion from the end of 2022 and the second largest quarterly increase on record. The PBOC does not disclose RMB amounts used by other countries, but it

has suggested that central banks in other countries have increased their use of RMB withdrawals to settle trade and investment transactions with China. As for the second type of RMB internationalization, the international situation that has emerged since February 2022 has led some countries, especially emerging economies, to begin reducing their dependence on the USD in foreign exchange transactions. This so-called "de-dollarization" trend is focusing greater attention on what role China's RMB might play in international financial markets in the future.

Notes

1 PBOC, *Notice on Strengthening Financial Services for COVID-19 Containment and Socio-Economic Development*, April 18, 2022.

2 China Ministry of Commerce, PBOC, et al, *Guidance from 6 departments including the Ministry of Commerce on high-quality implementation of the Regional Comprehensive Economic Partnership Agreement (RCEP)*, January 24, 2022.

3 Responding to the global financial crisis that started in September 2008, then-PBOC Governor Zhou Xiaochuan pointed out the inadequacies of the international monetary system that used a specific national currency as a global reserve currency (key currency) with the U.S. dollar in mind, in a paper titled "Reform the International Monetary System" published on March 23, 2009. In this paper, Zhou proposed the creation of a so-called "super-sovereign reserve currency" as "an international reserve currency that is disconnected from individual nations" and suggested that the IMF's SDR should be assigned a greater role as a reserve currency. This proposal became the driving force behind the IMF's inclusion of the RMB as an SDR basket currency and propelled the internationalization of the RMB to promote its inclusion in the basket.

4 IMF, "IMF Executive Board Concludes Quinquennial SDR Valuation Review and Determines New Currency Weights for SDR Valuation Basket," May 14, 2022.

5 PBOC, "IMF Executive Board concludes SDR valuation review," May 15, 2022.

6 The New Development Bank is an international development financial institution established in July 2015 by the five BRICS nations—Brazil, Russia, India, China and South Africa.

EIICHI SEKINE

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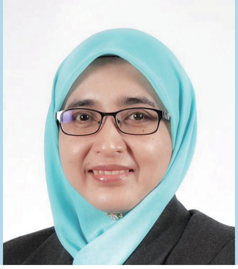
Eiichi Sekine is Managing Director and Chief Representative in the Beijing Representative Office of Nomura Institute of Capital Markets Research (NICMR). He has held his current position since July 2010. His area of research covers financial and capital markets in China. He joined NICMR in May 2006. Previously he worked for Japan Bank for International Cooperation for about fifteen years. During that time he studied Chinese in Beijing University and was posted in the bank's Beijing Office. Sekine graduated from the Law Faculty of Waseda University in 1991 and earned a Master of Arts from the Graduate School of Social Sciences at Waseda University in 2002.



MARJAN MUHAMMAD

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Islamic Fintech: Accelerating the Financial Inclusion Agenda in Malaysia

Introduction

Financial technology (fintech) refers to the application of technology—software, algorithms and even hardware—to traditional financial services to save time, optimise cost, and enhance efficiency and user experience. Fintech applications, which include digital payment, internet and mobile banking, peer-to-peer (P2P) financing, equity crowdfunding (ECF), robo-advisory, digital asset exchanges, insuretech, and e-services have provided innovative solutions to various stakeholders, either the surplus units (i.e., investors who have excess funds) or deficit units (i.e., parties who need funds). Islamic fintech, on the other hand, refers to the use of technology to deliver financial services and solutions that comply with the Shariah principles and requirements, promote the well-being of mankind, and integrate ethical elements to attain fairness and justice. Figure 1 presents a comprehensive picture of the Islamic fintech framework.

According to the *Global Islamic Fintech Report 2022*, Islamic fintech transactions in the Organisation of Islamic Cooperation's (OIC) member countries stood at about USD79 billion in 2021, representing 0.8% of global fintech transaction volume. The five largest markets in terms of transactions are Saudi Arabia, Iran, the United Arab Emirates, Malaysia, and Indonesia. The Islamic fintech market is forecasted to grow at a cumulative average growth rate (CAGR) of 17.9% to reach USD179 billion by 2026.

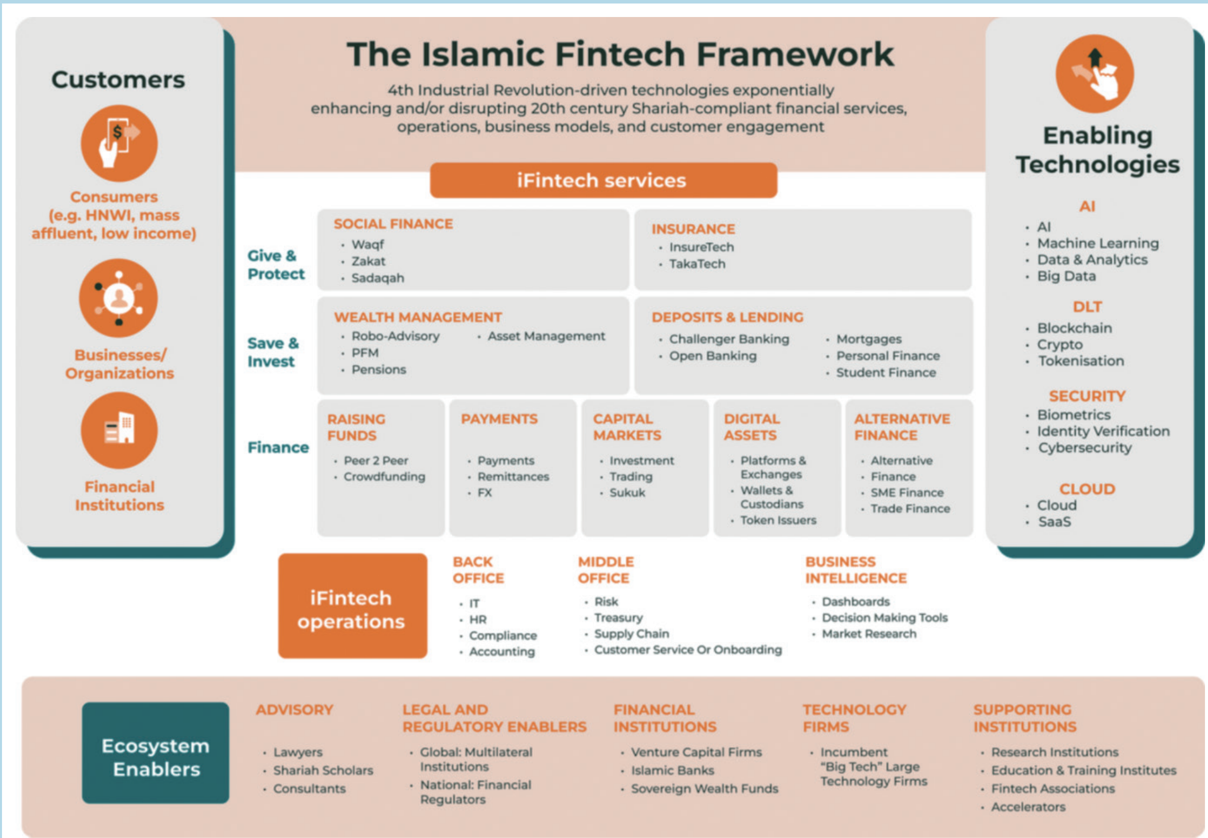
Malaysia is a global hub of Islamic finance with Islamic financing assets of RM974.1 billion (USD216.5 billion) and Islamic deposits and investment accounts of RM1,058.6 billion (USD235.2 billion) that accounted for 44.5% and 41.6%, respectively, of the market share in 2022—as reported by Bank Negara Malaysia (BNM, 2023a). As such, the country capitalises on fintech to accelerate and democratise the accessibility of Islamic financial products and services to less fortunate segments of society. The Global Islamic Fintech (GIFT) Index 2022 ranked Malaysia at the top of the five countries with the most conducive Islamic fintech ecosystems worldwide for two consecutive years (2020 and 2021). Accordingly, this article showcases how the Islamic fintech market in Malaysia has progressed to accelerate the national agenda of financial inclusivity and sustainability.

Government Policy and Blueprint on Digitalisation and Financial Inclusion

Malaysia has launched several policies, strategic plans, and frameworks to enhance financial inclusion and digitalisation efforts in the country, at both the government and regulatory levels, as captured in Figure 2.

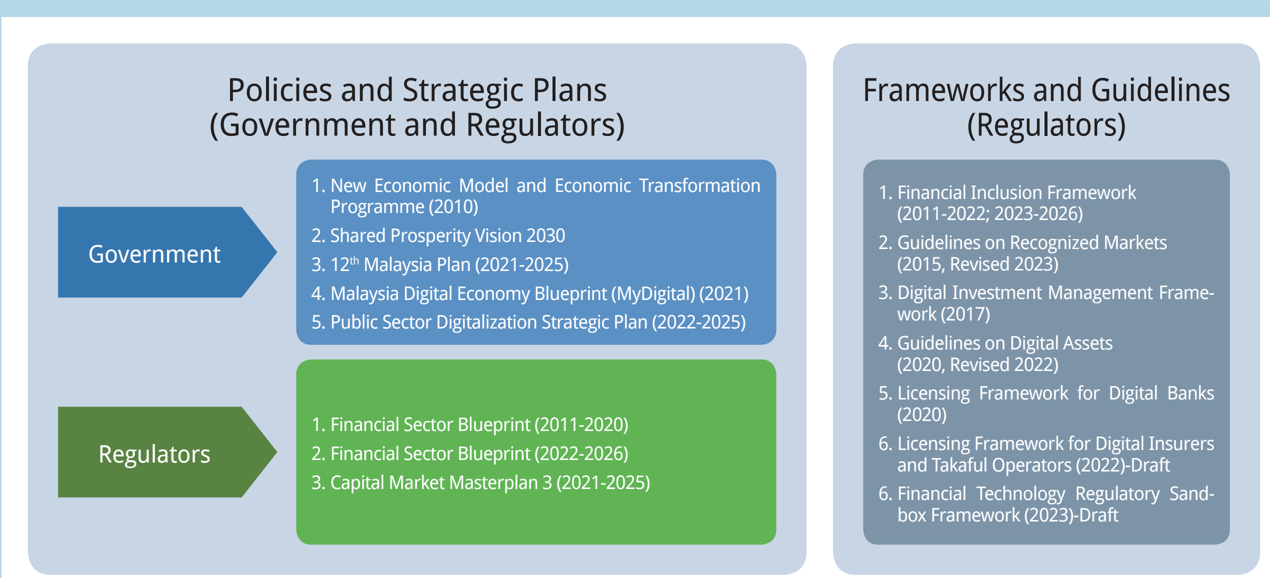
In line with the Financial Sector Blueprint (2011–2020), Bank Negara Malaysia (BNM) formulated the first Financial Inclusion Framework (2011–2020), which outlined four broad strategies (i.e., innovative channels, innovative products and services, effective financial institutions and infrastructure, and well informed and responsible consumers) along with four corresponding desired outcomes (i.e., convenient accessibility, high take-up, responsible usage, and high satisfaction), to achieve an inclusive financial system that serves all members of society including the underserved. In 2017, BNM revisited the strategies of the framework and hence introduced six game changers, focusing on establishing greater collaboration and consumer empowerment to accelerate the progress of financial inclusion.

Figure 1: The Islamic Fintech Framework



Source: DinarStandard & Elipses (2021, p. 8)

Figure 2: Malaysia's Key Policies, Strategic Plans, and Frameworks on Financial Inclusion and Digitalisation



Source: Compiled by the author based on various sources

After the release of the Financial Sector Blueprint (2022–2026), BNM issued the second Financial Inclusion Framework (2023–2026) which provided a more holistic approach to transition from focusing on accessibility and usage to attaining broader development outcomes, financial resilience, and well-being. The revised framework considers the new reality of economic conditions, financial capabilities, and lives of vulnerable, unserved, and underserved groups—households from the bottom 40% (B40) of income earners as well as micro-, small and medium-sized enterprises (MSMEs)—after the devastating impact of the COVID-19 pandemic. Figure 3 provides a snapshot of the revised framework.

It is apparent from the seven policy objectives and strategies envisaged in the revised framework that fintech and digitalisation are the key enablers in achieving an inclusive financial system. Nonetheless, more efforts are required to elevate digital financial literacy, especially among the unserved and the underserved segments, so that they can use digital financial services effectively, responsibly, and confidently.

This revised framework perfectly aligns with the Malaysia Digital Economy Blueprint 2021 (MyDigital), launched by the government of Malaysia in its continuous efforts 'to successfully transform Malaysia into a digitally driven, high income nation, and a regional leader in digital economy' (Economic Planning Unit, 2021, p. 10). The blueprint is intended to accelerate Malaysia's vision to achieve sustainable growth along with fair and equitable distribution across income groups, regions, ethnicities, and supply chains, aspired by the 12th Malaysia Plan (2021–2025) and Shared Prosperity Vision (SPV) 2030.

To proliferate the country's Islamic digital economy as part of the Key Economic Growth Activities underscored by the SPV 2030, the government has mandated the Malaysia Digital Economy Corporation (MDEC), a digital investment promotion industry under the Ministry of Communications and Digital, to spearhead the agenda. MDEC's focus areas for driving the Islamic digital economy include three main sectors:

- Islamic finance: Islamic fintech, social finance, and value-based intermediation
- Halal economy: food, pharmaceutical, and healthcare
- Lifestyle: travel, fashion, media and recreation, and cosmetics

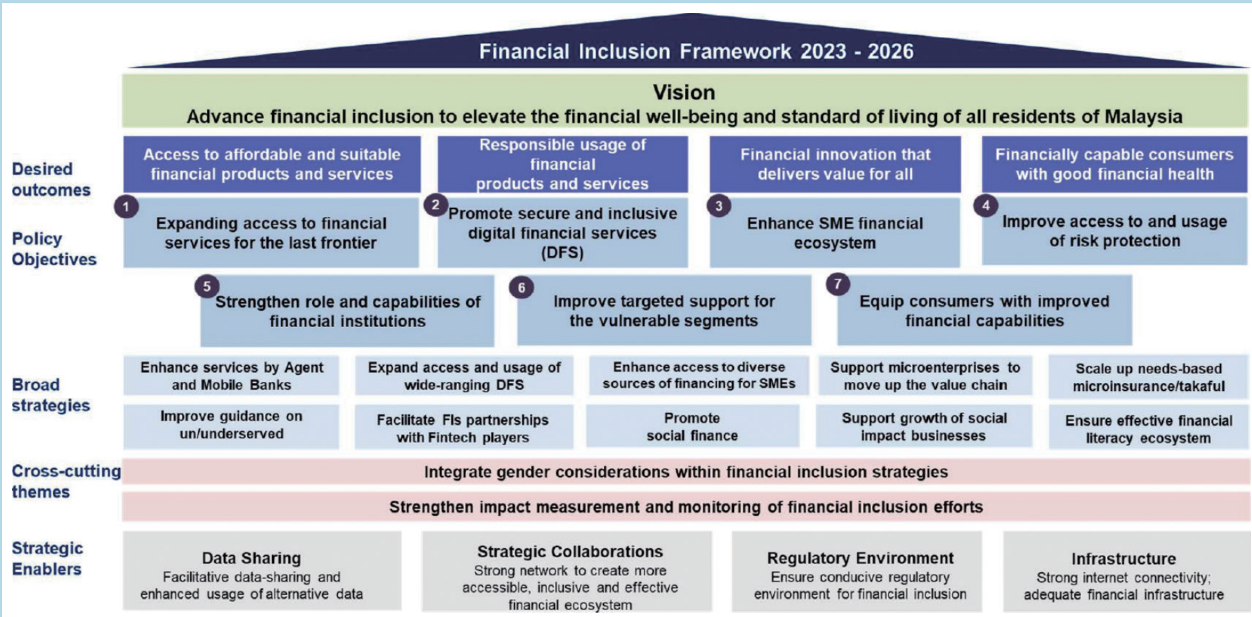
MDEC has facilitated proactive engagements among fintech incubators and accelerators, investors, innovation enablers, Islamic finance practitioners, Shariah advisers, and legal firms to uplift the Islamic fintech sector to the next level. This effort is discussed further next.

Islamic Fintech Landscape in Malaysia

Of the many disruptive fintech innovations introduced since the 1990s, digital payment gateways have had a significant imprint on the economic development of countries. In the case of Malaysia, e-payment transaction volume per capita stood at 291 units in 2022 (BNM, n.d.), having more than doubled within 5 years (2018: 124.6 units). Despite the COVID-19 pandemic's devastating impact to the socio-economic conditions, it has further accelerated digitalisation in Malaysia. E-payment transaction value per capita expanded by 28% from RM668,785.3 during the pre-pandemic year 2019 to RM928,146.9 in 2022. There was a significant jump of internet banking and mobile banking usage compared to the traditional ATM cash withdrawals post-pandemic. While the volume of internet banking increased 44% between the pre- and post-pandemic periods (2019: 1,173.5 and 2022: 2,089.8), the volume of mobile banking grew exponentially by 71% between the same periods (2019: 489.8 and 2022: 1,666.6) (BNM, n.d.).

The Malaysian Revised Budget 2023 comprises several initiatives that can enhance Malaysian fintech businesses and

Figure 3: BNM's Renewed Financial Inclusion Framework (2023–2026)



Source: BNM (2023b, p. 9)

sustainability efforts, including boosting digital adoption among MSMEs across industries, supporting fintech startups, providing oversight for Buy Now Pay Later business with the Consumer Credit Act, cracking down on fraud, and promoting sustainable finance.

The Malaysian Islamic fintech landscape is fairly distributed among most of the categories as shown in Figure 4. Nonetheless, there are more opportunities to be explored and developed, particularly in the deposits and lending and Islamic markets categories.

Figure 4: Malaysia's Islamic Fintech Industry Map (as at 2021)

Source: 1337 Ventures & Masryef (2022, p.15)

Islamic Fintech Initiatives for Financial Inclusion

Both regulators and industry players have leveraged Islamic fintech to accelerate financial inclusion to unserved and underserved segments. Notable initiatives at the regulatory level, by both BNM and Securities Commission Malaysia (SC), as well as the industry level are summarised in Table 1.

Table 1: Islamic Fintech Initiatives to Promote Financial Inclusion in Malaysia

Year	Initiative	Objective	Outcome
2015	SC released the Guidelines on Regulation of Markets in February, specifying the requirements for the registration of ECF platforms and obligations of their operators, followed by the approval of first six licences in June.	To facilitate the growth of Malaysia's crowdfunding industry that caters mainly to the needs of MSMEs	• Ethis Ventures was approved as the first Shariah-compliant ECF in 2019. • Other Shariah-compliant ECF is pitchIN.
2016	SC introduced the regulatory framework for P2P platforms via the Revised Guidelines on Recognized Markets in May.		• Nusa Kapital was approved as the first Shariah-compliant P2P in 2016. • As of June 2023, there are seven Shariah-compliant P2P firms (apart from Nusa Kapital), namely, Funding Societies, MicroLEAP, CapBay, MoneySave, CapSphere and CoFunds.
2017	SC launched Digital Investment Management (DIM) Framework.	To enhance investors' digital experience, to provide a more affordable and accessible channel to grow wealth, and to improve the industry's operational efficiency	Wahid Invest was licenced as the first Shariah-compliant DIM in 2019. DIM attracts and serves the digitally savvy younger generation. Over 70% of DIM investors in Malaysia younger than 35.
2018	BNM, in collaboration with United Nations Capital Development Fund (UNCDF) and MDEC, launched the Digital Finance Innovation Hub and Inclusive Fintech Accelerator Programme.	To enable service providers (i.e., financial institutions and fintech startups) using technology in their product offerings that meet the needs of unserved and underserved, hence promoting inclusive finance	• Malaysian Takaful Association signed an Memorandum of Understanding (MOU) with the IT service provider Infomina to enhance its capacity and strengthen its role as a commissioning body over the existing 18 takaful companies. • Takaful Malaysia teamed up with the tech giant Fusionex to develop its operational system and explore online marketing to tap into consumers who are not eligible for a takaful coverage. This has resulted in garnering over 40 million new subscribers within just three months from its launch.
2020	• SC issued Guidelines on Digital Assets in January. • The Shariah Advisory Council of SC issued a resolution allowing trading and investment of digital assets in May.	To provide alternative fundraising avenues for early-stage entrepreneurs	As of June 2023, there are four Digital Assets Exchange (DAX) operators and two Initial Exchange Offering (IEO) operators. Meanwhile, there are 11 digital assets that are traded on the regulated exchanges in Malaysia including Bitcoin, Ethereum, Avalanche, Polygon, Bitcoin Cash, Ripple, Litecoin, Solana, Chainlink, Uniswap, and Cardano.
2020	SC approved e-services platforms.	To provide additional investment channels for retail investors via the partnership formed between e-payment, e-wallet, e-commerce providers and Capital Markets Services License holders to distribute capital market products	As of June 2023, there are two registered e-services providers: • TNG Digital: launched GO+ Fund in partnership with Principal Asset Management, and AIA's insurance and takaful products via the Touch 'n Go e-wallet platform. • Versa Asia: introduced Versa Gold, a Shariah-compliant fund that tracks the performance of gold prices using Affin Hwang Shariah Gold tracker fund as the underlying.
2020	BNM issued the Licencing Framework for Digital Banks in December.	To enable digital banks offering banking products and services to unserved and underserved markets primarily via digital channels	• In April 2022, BNM announced five successful applicants, of which two were Islamic digital banks: (i) a consortium of AEON Financial Service, AEON Credit Service and MoneyLion; and (ii) a consortium led by KAF Investment Bank. • Traditional Islamic banks started offering Islamic digital banking services using their existing license: Bank Islam launched 'Be U' and Al Rajhi Bank introduced 'Rize'.
2021	SC, together with the UNCDF, initiated an Islamic Fintech Accelerator Programme (FIKRA) in May.	To identify and scale up innovative fintech solutions for Malaysia's Islamic capital market	7 participants from various background received structured support, regulatory guidance, and engagement opportunity with potential investors.
2022	BNM issued the Exposure Draft of Licencing Framework for Digital Insurers and Takaful Operators (DITO) in November.	To facilitate the entry of DITO to offer insurance and takaful services to the unserved and underserved market via digital means	BNM is expected to issue five DITO licences by end-2023.
2023	BNM released the Exposure Draft on Financial Technology Regulatory Sandbox Framework in March.	To simplify the eligibility criteria and provide a fast track for applicants with strong risk management, governance and compliance capabilities	More applicants from Islamic fintech startups to be onboard.

Note: Takaful (Islamic insurance) is an arrangement in which members or participants jointly contribute a sum of money into a common pool to assist each other against loss or damage.
Source: Compiled by the author based on various sources

Table 1 indicates that the concerted efforts undertaken by different stakeholders have one common goal, i.e., extending seamless access of financial products and services beyond the traditional market to include the unserved and underserved segment. This can be achieved by offering differentiated solutions via digital platforms including e-wallet, e-payment, e-commerce, internet banking, and mobile banking. Islamic fintech also seeks to provide alternative sources of funding to startups and MSMEs from diversified investors including retail. These developments demonstrate how Malaysia has capitalised on Islamic finance and Islamic fintech to mobilise capital more efficiently to different segments of the economy. Figure 5 illustrates the key statistics of the ECF and P2P industry, the main fintech-based fundraising platforms in Malaysia as of end-2022.

Apart from commercial propositions, Islamic fintech has also empowered the mushrooming of charitable digital-based fundraising platforms. Examples include charity crowdfunding platforms established by Islamic banks such as Bank Islam's Sadaqah House, Bank Muamalat's Jariah Fund and Alliance Islamic's Socio-Biz as well as zakat authorities like Lembaga Zakat Negeri Kedah's Asnaf Care. These platforms successfully provided financial assistance for community empowerment during the pandemic.

Issues and Challenges in Islamic Fintech Adoption

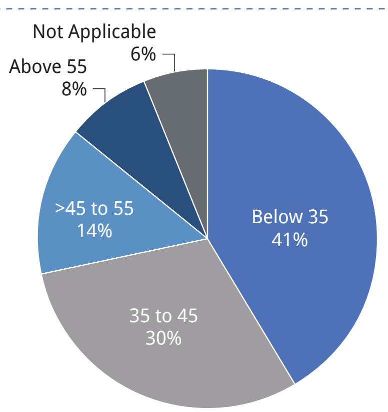
While the financial inclusion agenda in Malaysia is progressing on the right track with the help of digitalisation, it is not free from road bumps. In fact, the COVID-19 pandemic exposed major regulatory and cybersecurity inadequacies within the country's fintech operations. Mardhiah (2023) highlights that fraud, malware and intrusion were the top three cyber issues in Malaysia in the first half of 2022. Data misuse by agents is considered another pertinent obstacle impeding the penetration rate of digital financial services, particularly amongst the underserved. It is worth noting that the prevalence of cybercrimes in Malaysia is not due to the lack of adoption of fintech solutions; rather, it is a consequence of the relatively low levels of financial literacy, particularly amongst members of marginalised groups.

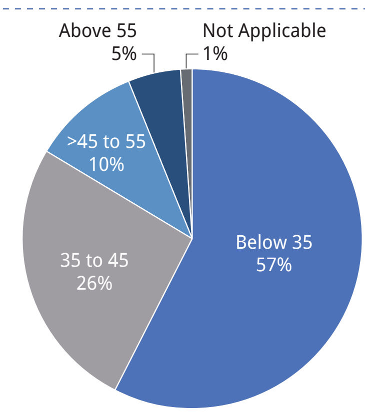
According to Dawood *et al.* (2022), inadequate funding to meet the needs of Islamic fintech startups has forced entrepreneurs to relocate to other jurisdictions where capital is abundant, hence exiting from Malaysia. This is mainly due to the immature venture capital industry in Malaysia coupled with economic and political uncertainties facing the country in recent years. In addition, competition from conventional counterparts poses some challenges to Islamic fintech players. They have to exert more efforts to persuade consumers to switch to digital solutions

Figure 5: ECF and P2P Financing Performance Indicators (2022)

	ECF	P2P
Campaigns launched	330	54,791
Capital raised	RM560.3 mil	RM3.873 bil*
Successful issuers	141	6,188
Retail investors	55%	87%
Malaysian investors	95%	98%

Investors by age group





Note: The 'RM3.873 bil*' is based on September 2022 data, the rests are based on end-2022 data.
Source: Compiled by the author based on data from SC (n.d.)

that offer value creation and Shariah compliance.

The Way Forward

Moving forward, key stakeholders of the Islamic fintech industry in Malaysia need to collaborate to promote inclusive finance. Greater synergies between Islamic fintech players and government entities and regulators are pivotal in establishing the necessary infrastructure, developing the much-needed regulatory framework, innovating new business models, and increasing consumer literacy. Capacity building is also key in molding a better future of the Islamic fintech industry in this country.

References

1337 Ventures & Masryef (2022), 'Malaysia Fintech Opportunity Report 2022: The Rise of Islamic Fintech', available at: https://1337.ventures/wp-content/uploads/2022/12/FWD-islamic-fintech-report.pdf (accessed 30 April 2023).

BNM (n.d.), 'Malaysia's Payment Statistics', available at: https://www.bnm.gov.my/payment-statistics (accessed 15 May 2023).

BNM (2023a), 'Annual Report 2022', available at: https://www.bnm.gov.my/documents/20124/10150308/ar2022_en_book.pdf (accessed 15 May 2023).

BNM (2023b), 'Financial Inclusion Framework 2023–2026: Discussion Paper', available at: https://www.bnm.gov.my/documents/20124/938039/FINC_Framework_DP.pdf (accessed 30 April 2023).

Dawood, H., Al Zadjali, D. F., Al Rawahi, M., Karim, D. S., & Hazik, D. M. (2022), 'Business Trends & Challenges in Islamic FinTech: A Systematic Literature Review', *F1000Research*, 11: 329.

DinarStandard & Elipses (2021), 'Global Islamic Fintech Report', available at https://www.salaamgateway.com/specialcoverage/islamic-fintech-2021 (accessed 15 May 2023).

DinarStandard & Elipses (2022), 'Global Islamic Fintech Report', available at https://www.dinarstandard.com/post/global-islamic-fintech-report-2022 (accessed 15 May 2023).

Economic Planning Unit, Prime Minister's Department (2021), 'Malaysia Digital Economy Blueprint', available at: https://www.ekonomi.gov.my/sites/default/files/2021-02/malaysia-digital-economy-blueprint.pdf (accessed 1 May 2023).

Gulf Business (2023), 'MDEC: $2.8tn Ripe For Digitalisation in Global Islamic Economy', available at: https://gulfbusiness.com/how-malaysias-mdec-is-spearheading-the-countrys-digital-agenda/ (accessed 20 June 2023).

Mardhiah, A. (2023), 'Ramp up Security Amid Rise of Financial Fraud', *The Malaysian Reserve*, available at: https://themalaysianreserve.com/2023/01/11/ramp-up-security-amid-rise-of-financial-fraud/ (accessed 15 June 2023).

SC (n.d.), 'Digital: ECF and P2P Financing Dashboards', available at: https://www.sc.com.my/analytics/digital (accessed 25 June 2023).

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WOO JUN JIE

Institute of Policy Studies

Unicorns and Dragons: Risk and Opportunity in Singapore's Digital Assets Space

Introduction

In August 2021, the Monetary Authority of Singapore (MAS) granted its first 'in-principle' approval for a cryptocurrency firm – the Australian cryptocurrency exchange Independent Reserve – to offer digital payment token services.[1] Independent Reserve would subsequently obtain a formal license to offer digital payment token services two months later, alongside DBS Vickers and following Singaporean FinTech FOMO Pay.

These license approvals reflect Singapore's strong interest in becoming a leading digital assets hub, part of the city-state's ambition of becoming a top FinTech hub, a strategic intent that was first articulated in 2017[2] and which by some measures has already been achieved. In 2022, FinTech investments in Singapore reached a three-year high of USD4.1 billion.[3] These efforts also rode on a global wave of interest in digital assets that began with the popularization of cryptocurrencies such as BitCoin in the 2010s.

In order to achieve its ambition of becoming a top FinTech and digital assets hub, Singapore had to establish new mechanisms through which it could govern and regulate these emerging sectors. On 7 July 2015, the MAS set up its FinTech and Innovation Group (FTIG) to guide regulatory policies and developmental strategies for the use of technology and innovation in the financial sector. Led by MAS's Chief FinTech Officer Sopnendu Mohanty, the FTIG comprises a Payments and Technology Solutions Office, Technology Infrastructure Office and Technology Innovation Lab.

While Singapore has yet to formulate a comprehensive regulatory framework for cryptocurrencies and other digital assets, there are several pieces of legislation that regulate the use of digital assets for payments and other financial transactions. These regulations have also been adapted over time in response to changes in the digital assets space.

Payment Services Act

Passed in 2019 and having taken effect in January 2020, the Payment Services Act replaced the Money-Changing and Remittance Businesses Act and Payment Systems (Oversight) Act to provide the MAS with wider ranging oversight of payment services in Singapore. The Act includes a Designation Framework that allows the MAS to designate significant payment systems and regulate payment systems providers accordingly as well as a Licensing Framework that requires providers to obtain a license for the type of payment services that they intend to provide.

Under the Payment Services Act, there are seven regulated payment services. These include:

- Account Issuance Service
- Domestic Money Transfer Service
- Cross-Border Money Transfer Service
- Merchant Acquisition Service
- E-Money Issuance Service
- Digital Payment Token Service
- Money Changing Service

In order to address the risks associated with the emerging digital payment tokens space, the Payment Services Amendment Act was passed on 4 January 2021, imposing additional measures on Digital Payments Token (DPT) service providers to mitigate money laundering and terrorism financing risks. This act requires providers to conduct regular account reviews as well as to monitor and report any suspicious transactions.[4]

More significantly, the new act broadened the scope of cross-border money transaction services to include transfers of money between persons in different jurisdictions, even when money is not accepted or received by the service provider in Singapore. This brought service providers outside Singapore under the regulatory ambit of MAS. Given that digital token transactions tend to take place across international borders, this new provision provides the MAS with greater regulatory powers over digital asset transactions, regardless of where the recipients of digital assets and payments are located.

Financial Services and Markets Bill

Passed in April 2022, the Financial Services and Markets Bill provides the MAS with greater regulatory powers and supervisory oversight of virtual asset service providers (VASPs) for anti-money laundering and countering of financing of terrorism (AML/CFT) activities. This bill was passed in response to the increasingly digitalised nature of financial services by consolidating the MAS's regulatory powers into a single bill. This includes consolidating the MAS's various technology risk management requirements, enhancing the MAS's ability to mandate adequate technology risk control measures in a financial institution.

Amendments to the Financial Services and Markets bill would subsequently be introduced in April 2023, providing the groundwork for Singapore's first centralised digital platform for financial institutions to request and share targeted information on individuals and companies confidentially. Known as COSMIC, or Collaborative Sharing of Money Laundering/Terrorism Financing Information and Cases, this platform aims to help flag, detect and prevent money laundering, terrorism financing and proliferation financing.[5]

Taken together, the Financial Services and Markets Bill aims to address the AML/CFT risks that tend to pervade the cryptocurrency and digital assets space by providing the MAS with greater regulatory powers as well as establishing the necessary platforms and infrastructure for better information sharing and reporting.

'Digital Assets. Not Cryptocurrency'

However, such efforts to clarify and standardize Singapore's cryptocurrency regulations overlapped with the occurrence of market failure both in the Singaporean and global cryptocurrency markets. Globally, a rapid decline in cryptocurrency value and the failure of major stablecoins such as TerraUSD and Luna as well as the cryptocurrency platform FTX would give rise to what has come to be known as the 'crypto winter'. In Singapore, the collapse of Singapore-based crypto hedge fund Three Arrows Capital further highlighted the risks involved in cryptocurrency trade. This was exacerbated by revelations that Singapore's sovereign wealth fund Temasek Holdings had invested SGD372 million (USD275 million) in FTX, all of which were written off with the collapse of FTX.[6]

As a consequence of these events, there was a shift in both public sentiment and regulatory approach towards cryptocurrency. On 29 August 2022, MAS managing director Ravi Menon described cryptocurrencies as "highly hazardous" for retail investors during a speech that was entitled "Yes to Digital Asset Innovation, No to Cryptocurrency Speculation".[7] At the same time, Menon emphasized Singapore's ambitions to develop a strong digital asset ecosystem as well as explore the use of distributed ledger technology in financial services.

These sentiments had already been made tangible in guidelines that were published by the MAS in January 2022, prohibiting cryptocurrency trading service providers from taking up public advertisements, engaging third parties like social media influencers and operating physical automated teller machines (ATMs) in public areas.[8] While these moves were seen by some observers as a setback to Singapore's crypto ambitions,[9] in reality they reflected a shift in Singapore's approach to the digital assets space towards more stable forms of digital assets and tokens.[10]

Purpose Bound Money

On 21 June 2023, the MAS launched a White Paper that proposed standards for the use of digital assets that include central bank digital currencies (CBDCs), tokenized bank deposits and some stablecoins.[11] The White Paper defines these assets as 'purpose bound money' (PBM), digital currencies that are limited in how they can be used and which are pegged to a real-world currency, commodity or financial institution. Unlike cryptocurrencies, PBMs are considered more stable and hence suitable as a medium of exchange. Importantly, the White Paper specifies the processes that users and institutions must follow, as well as the lifecycle of PBMs.

According to the MAS, the standardisation of processes and regulations pertaining to the use of PBMs can help unlock economic value and facilitate efficient and inclusive digital transactions while at the same time ensure protection for consumers.[12] This suggests that certain digital assets such as PMBs will play a growing role in both the financial sector and the real economy by serving as a medium of exchange and creating new sources of economic value.

Cautious Optimism

Despite the MAS's efforts to clarify its regulatory framework as well as its public messaging on retail cryptocurrency investments, the future trajectory of Singapore's cryptocurrency and digital assets space remains far from clear. On the one hand, the tightening of regulations has no doubt caused some level of shrinkage in Singapore's cryptocurrency market. On the other hand, both the Singapore government and general public maintain strong interest in the digital assets space.

A good indication of this is a 2023 poll by Independent Reserve Cryptocurrency Index, which found that while public confidence in cryptocurrencies had fallen from 61% in 2022 to 55% in 2023, more than 4 in 10 respondents who were polled continued to invest in cryptocurrencies.[13] This suggests that public interest in cryptocurrencies has not declined, reflecting strong investor interest in cryptocurrencies and digital assets. This corresponds with a KPMG survey, which found that more than 90% of family offices and high net worth individuals in Hong Kong and Singapore are interested in digital assets, with 58% already investing in digital assets.[14]

An additional indication of Singapore's cautious optimism towards cryptocurrency is the MAS's issuance of licenses to specific DPT providers. For instance, Crypto.com was recently granted a major payment institution license, allowing it to provide DPT services such as e-money issuance and account issuance as well as cross-border and domestic money transfers to customers in Singapore.[15] This brings the total number of cryptocurrency-related firms that have been issued either a major payment institution license or standard payment institution license to 13.

Conclusion

Hence, while Singapore has sought to curb, or at least minimize, retail trade of cryptocurrencies, it nonetheless retains its ambition to be a leading hub for digital assets. Digital assets of interest include PBMs and other stable digital assets with use cases that could potentially benefit Singapore's real economy and financial services sector. It is therefore likely for PMBs, in particular CBDCs and stablecoins, to grow in the short- and medium-term future.

It is also important to note that Singapore has not ruled out all crypto activity. As MAS Managing Director Ravi Menon articulated during his speech at the Singapore FinTech Festival 2022, "(i)f it is about tokenising real and financial assets to increase efficiency and reduce risks in financial transactions, yes we want to be a crypto hub. But if it is about trading and speculating in cryptocurrencies, that is not the kind of crypto hub we want to be".[16]

In short, Singapore will become a digital assets hub but only on its own terms. These terms include a robust, adaptive and transparent regulatory approach that facilitates financial innovation but minimizes risk to the public.

Notes

1 Mercedes Ruehl, "Singapore to Grant First Crypto Licence in Bid to Lure Digital Asset Groups," *Financial Times*, 3 August, 2021, sec. Cryptocurrencies, https://www.ft.com/content/4b8aba07-6035-4bdb-a6bb-cb64624d0ac6.

2 The Economist, "Singapore Tries to Become a Fintech Hub," *The Economist*,14 January, 2017, http://www.economist.com/news/finance-and-economics/21714384-city-state-wants-fintech-bolsters-not-disrupts-mainstream.

3 Antony Ruddenklau, "Singapore Achieves Its Highest Fintech Funding in Three Years - KPMG Singapore," KPMG, 16 February, 2023, https://kpmg.com/sg/en/home/media/press-releases/2023/02/kpmg-pulse-of-fintech-h2-22.html.

4 Monetary Authority of Singapore, "Notice PSN02 Prevention of Money Laundering and Countering the Financing of Terrorism – Digital Payment Token Service," 1 March, 2023, https://www.mas.gov.sg/regulation/notices/psn02-aml-cft-notice---digital-payment-token-service.

5 Claire Huang, "MAS to Build Platform for Banks to Share Customer Info in Fight against Financial Crime," *The Straits Times*, 9 May, 2023, https://www.straitstimes.com/business/mas-to-build-platform-for-banks-to-share-customer-info-in-fight-against-financial-crime.

6 CNA, "Temasek Cuts Compensation of Senior Management, Investment Team over Failed Investment in FTX," CNA, 29 May, 2023, https://www.channelnewsasia.com/singapore/temasek-cuts-compensation-senior-management-investment-team-over-failed-investment-ftx-3522291.

7 Ravi Menon, "Yes to Digital Asset Innovation, No to Cryptocurrency Speculation" (Opening Address, Green Shoots Seminar, Singapore, 29 August, 2022), https://www.mas.gov.sg/news/speeches/2022/yes-to-digital-asset-innovation-no-to-cryptocurrency-speculation.

8 See Kit Tang, "Crypto Curbs: Industry Players Say Ad Ban Not the Only Way to Protect Retail Investors in Singapore," CNA, 20 January, 2022, https://www.channelnewsasia.com/singapore/mas-no-cryptocurrency-advertisement-marketing-protect-retail-investors-2447321.

9 Suranjana Tewari, "Singapore's Crypto Ambitions Shaken by FTX Collapse," *BBC News*, 18 December, 2022, sec. Business, https://www.bbc.com/news/business-63898729.

10 Danny Chong, "How Singapore's Crypto Ambitions Are Taking Shape and What Other Nations Can Learn," Yahoo Finance, 9 March, 2023, https://finance.yahoo.com/news/singapore-crypto-ambitions-taking-shape-030400298.html.

11 Sue-Ann Cheow, "MAS Proposes Framework for Use of Digital Money in Singapore | The Straits Times," 21 June, 2023, https://www.straitstimes.com/business/mas-proposes-framework-for-use-of-digital-money-in-singapore.

12 Cheow.

13 Claire HuangBusiness Correspondent, "Confidence in Crypto Slides in Singapore, but 4 in 10 Polled in Survey Still Invested in It," *The Straits Times*, March 29, 2023, https://www.straitstimes.com/business/singapore-s-interest-in-crypto-still-high-even-as-confidence-slides.

14 KPMG, "Investing in Digital Assets - KPMG Singapore," KPMG, 21 November, 2022, https://kpmg.com/sg/en/home/insights/2022/11/investing-in-digital-assets.html.

15 Claire Huang, "Crypto.Com Gets Major Payment Institution Licence from MAS," *The Straits Times*, June 1, 2023, https://www.straitstimes.com/business/cryptocom-gets-major-payment-institution-licence-from-mas.

16 Ravi Menon, "Ravi Menon: FinTech in Its Element - Water, Metal, Fire, Wood, Earth" (Singapore FinTech Festival 2022, Singapore, 3 November, 2022), https://www.bis.org/review/r221104b.htm.

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Singapore to Promote Carbon Credit Trading as Part of Sustainability Initiatives

Singapore's Aim to Be a Hub for Carbon Services

Singapore, one of Asia's leading international financial centers, has recently been putting more importance on carbon credit trading as part of its sustainability initiatives. Carbon credits are certificates awarded for the reduction or removal of a certain quantity of emissions of carbon dioxide (CO2) or other greenhouse gases (GHG) generated by GHG reduction and absorption projects. Singapore, having already established itself as a hub for commodity trading in Asia, is now aiming to become a regional hub for carbon services by 2030 through implementation of the Singapore Green Plan 2030, a comprehensive environmental action plan announced in February 2021.

Carbon credit trading is a type of carbon pricing that assigns a value to GHG emissions with the objective of transforming the behavior of GHG emitters. There are two types of carbon credit trading: compliance markets operated by the United Nations and certain national and regional governments, and voluntary markets operated by private sector entities.[1] In Singapore, AirCarbon Exchange (ACX) was established as the country's first international carbon credit exchange in 2019. ACX is operating a voluntary carbon market. In 2021, Climate Impact X (CIX) was established under the cooperation between the public and private sectors as the new international carbon credit exchange, bringing carbon credit trading in Singapore into greater focus.

This article introduces Singapore's two international carbon credit exchanges—ACX and CIX—starting with overviews of the background to and reasons for their establishment, their key features, and business activities to date and concluding with a presentation of key points for the future advancement of carbon trading in Singapore.

ACX—Singapore's First International Carbon Credit Exchange

ACX establishment background and business overview

ACX was established as Singapore's first international carbon credit exchange in 2019, with support from Enterprise Singapore, a government agency that promotes the growth of domestic companies, and the Singapore Sustainable Energy Association, a non-government and non-profit business association in the sustainable energy sector.

ACX began operations by offering trading opportunities focused on carbon credits established by the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). CORSIA was established by a resolution at the general assembly of the International Civil Aviation Organization in 2016 as a mechanism to promote carbon-neutral growth in the aviation industry by reducing GHG emissions and purchasing carbon credits. ACX initially provided carbon credit trading for airlines, but its clients now include financial institutions and companies in a wide range of industries. Buyers of carbon credits include companies that have a real demand for carbon credits as well as those that buy and sell carbon credits as a trading activity. Carbon credits traded on ACX have been issued in accordance with international certification standards.

ACX key features and recent business development

One of ACX's key features is its use of blockchain to make transactions more efficient. ACX trades tokenized carbon credits (hereinafter referred to as carbon credit tokens) on the Ethereum[2] blockchain. Tokenization refers to the transformation of physical assets into digital units that can be easily bought and sold. Using automated smart contracts on the blockchain streamlines transactions and enables T+0 settlements, with transaction fees as low as USD3 for the equivalent of 1,000 CO2 tonnes (hereinafter, t-CO2e). Conducting trades on blockchain prevents double counting, where a single carbon credit is associated with multiple emission activities. One carbon credit token, like general non-tokenized carbon credits, is equivalent to 1t-CO2e.

Carbon credit tokens traded on ACX include the CORSIA Eligible Token, two types of nature-based project tokens, the Renewable Energy Token, Sustainable Development Goal (SDG) Token, and the Household Offset Token (Table 1). All of these carbon credit tokens have a minimum trading unit of 1,000 t-CO2e.

The nature-based project-related Global Nature Token and Global Nature+ Token have rather wide price ranges, with older-dated carbon credits at the low end of the range and newer carbon credits at the higher end. In addition, Global Nature+ Token prices are generally higher than those for Global Nature Tokens, mainly because Global Nature+ Tokens are generated by projects that meet the Climate, Community and Biodiversity (CCB) Standards for having additional benefits other than GHG reduction, such as contributing to the local community and biodiversity conservation.

In March 2022, ACX entered into a partnership with Carbon X, an Indonesian carbon project developer, with the aim of developing the Indonesian carbon credit market. ACX also formed a partnership with Deutsche Börse, the parent company of European Energy Exchange AG, an operator of energy and commodity exchanges. Through this tie-up, which includes a capital investment in ACX by Deutsche Börse, the two companies are collaborating on the development of a global voluntary carbon market. ACX currently offers only spot trading, but it is now preparing to offer futures trading, with assistance from Deutsche Börse. In April 2023, ACX signed a Memorandum of Understanding (MOU) with the Natural Capital Credit Consortium, which seeks to realize a decarbonized society by revitalizing the carbon credit market in Japan. Based on the MOU, the two parties plan to accelerate Japanese companies' decarbonization strategies and expand the carbon ecosystem in Japan. As these examples show, ACX is proactively internationalizing its operations.

Table 1: Carbon Credit Tokens Traded on ACX

Token name	Description	Price per 1t-CO2e
CORSIA Eligible Token (CET)	Carbon credits eligible under CORSIA	USD0.88
Global Nature Token (GNT)	Carbon credits generated by nature-based projects, such as agriculture and forestry projects	USD0.70~8.50
Global Nature+ Token (GNT+)	Carbon credits generated by nature-based projects that have obtained certification under the Climate, Community & Biodiversity (CCB) Standards	USD2.00~15.00
Renewable Energy Token (RET)	Carbon credits generated by renewable energy projects	USD1.75
Sustainable Development Goal Token (SDGT)	Carbon credits generated by projects certified as contributing to the Sustainable Development Goals (SDGs)	USD11.00
Household Offset Token (HOT)	Carbon credits generated by improved cooking solution projects certified as having at least three SDGs	USD4.50

Note: As of June 6, 2023.
Source: ACX

CIX—International Carbon Credit Exchange Established under Public-Private Cooperation

Background of CIX establishment

CIX was established under public-private cooperation with the goal of re-energizing the Singapore economy, which stagnated during the COVID-19 pandemic. In May 2020, Singapore launched the Emerging Stronger Taskforce, with members from the public and private sectors, under the Future Economy Council, which is tasked with driving the future growth and transformation of Singapore's economy. The taskforce launched nine action alliances in response to the pandemic. One of them is the Alliance for Action on Sustainability.[3] Representative members of this alliance include DBS Group Holdings, Singapore's largest bank; Olam International, an agricultural commodities trading company; Singapore Exchange (SGX); Temasek, a Singaporean state-owned investment company; and the Monetary Authority of Singapore.

Aiming to make Singapore a hub for carbon services and trading, the Alliance for Action on Sustainability recommended (1) establishing an exchange offering high-quality carbon credits, and (2) introducing a green standard and a one-stop solution for companies to measure, mitigate, and offset their carbon footprint. The proposal to establish a carbon credit exchange took into consideration the prospects for the growth of the voluntary carbon market. According to a report by the Taskforce on Scaling Voluntary Carbon Markets (TSVCM), efforts to achieve the goals of the Paris Agreement will boost the demand for carbon credits in the voluntary market, with demand projected to be 15 times greater in 2030 than the 151.6 million t-CO2e per year recorded in 2020 and continuing to expand up to 100 times the 2020 figure by 2050.[4]

When considering establishing a carbon credit exchange, the Alliance for Action on Sustainability held talks with more than 70 organizations about issues with existing voluntary carbon markets. These discussions highlighted the insufficient credibility of carbon credits as one of the major challenges facing existing voluntary carbon markets.[5] In voluntary carbon markets, carbon credits that meet certification standards set by non-profit and/or non-governmental organizations are traded. Major certification standards include US-based Verra's Verified Carbon Standard and Gold Standard. However, it has been pointed out that the wide variety of certification standards and certification processes has created wide divergences in carbon credit quality. For this reason, particular emphasis was placed on carbon credit quality when establishing CIX.

CIX's emphasis on carbon credit quality and price transparency

DBS Bank, SGX, Standard Chartered, and Temasek announced their joint establishment of CIX in May 2021. DBS Bank, SGX, and Temasek are members of the previously mentioned Alliance for Action on Sustainability. CIX initially is focusing on carbon credits generated from Natural Climate Solutions (NCS)-related projects. NCS refers to the protection, management, and restoration of natural ecosystems, such as forests, wetlands, and mangroves. NCS-related projects have the potential to reduce GHG emissions by about 11 billion t-CO2e per year, which is estimated to amount to more than one-third of the reduction in GHG emissions needed to achieve the goals set by the Paris Agreement for 2050.[6] In addition to being cost-effective, NCS-related projects can generate such additional benefits as the preservation of biodiversity and contributions to the local community.

CIX emphasizes the quality of its carbon credits and price transparency. Toward that end, CIX utilizes such technologies as satellite monitoring of NCS projects and machine learning. The process for selecting carbon credits to be traded on CIX is as follows. First, eligible carbon credits must meet internationally recognized certification standards. Second, a scoring assessment is then conducted that examines the related project's carbon credit attributes, its impact on biodiversity and local society, and project risk management. Third, third-party analysis and ratings are then used to evaluate and monitor the carbon credit-generating projects. Fourth, projects that are difficult to evaluate will be judged on the basis of advice from an international advisory council comprising experts from research institutes, non-governmental organizations, and international certification bodies.

For third-party ratings, CIX has partnered with Sylvera, a UK-based carbon credit rating agency. Sylvera is one of the companies selected by the Alliance for Action on Sustainability for its accelerator program launched in December 2020 in collaboration with Google, the World Bank, and others. Sylvera ratings are based on analysis using machine learning and satellite data. Evaluated carbon credits are assigned one of four ratings, ranging from AAA (highest) to D (lowest) based on their scores for four indicators: 1) a carbon score that evaluates the adequacy of the project's reporting on GHG emission reductions and removals, 2) the project's "additionality" characteristic, which indicates that it contributed to the reduction or removal of GHG emissions that would not have been achieved without the revenue generated by carbon credits, 3) the permanence of the project's GHG emission reduction and removal, and 4) the realization of co-benefits, such as biodiversity preservation.

In addition, to ensure that the quality of its carbon credits meets international standards, CIX is collaborating with such environmental organizations as Conservation International, which makes policy recommendations on climate change and biodiversity, and the Natural Climate Solutions Alliance, which promotes knowledge-sharing of nature-related projects.

CIX's three carbon credit trading platforms

CIX has established three carbon credit trading platforms: CIX Auctions, CIX Project Marketplace, and CIX Exchange. Following is a brief introduction of each platform.

- **CIX Auctions**
  The Auction platform efficiently provides users with carbon credit supply and demand data that enables them to discover appropriate pricing. In November 2021, CIX announced that it had completed a pilot auction of high-quality carbon credits. The tendered carbon credits were from eight registered NCS projects in Asia, Africa and Latin America. A total of 170,000 t-CO2e carbon credits were successfully cleared at a price of USD8 per 1t-CO2e. The auction was said to be the world's first ever auction of a portfolio of carbon credits in a voluntary market. A total of 19 companies, including global energy and commodity trading companies, participated in the auction.
  A second large-scale auction was held in November 2022. The auction successfully sold 250,000 t-CO2e of vintage 2021 credits from a mangrove restoration project in Pakistan at a price of USD27.80 per 1t-CO2e. That price represents a premium of about 40% on the average spot price for nature-based solutions of the same credit vintage.

- **CIX Project Marketplace**
  Launched in March 2022, the Project Marketplace is a platform for trading carbon credits generated from specific projects. An example is the carbon credits generated from a biodiversity preservation project in Peru. In addition to reducing GHG emissions, the project will protect natural forests that are home to 30 endangered species.
  Project Marketplace participation is open to businesses of all sizes. For example, early participants range from such Singapore-based small and medium-sized enterprises as information technology (IT) solutions company Rentalworks and shipping company Singfar International to corporations active on the global stage, such as resources major BHP, South Korea-based Mirae Asset Securities, and Singapore Technologies Telemedia, a company that invests in the communications, media, and technology sectors.

- **CIX Exchange**
  Launched in June 2023, the CIX Exchange platform specializes in carbon credits traded under standardized contracts, primarily targeting multinational companies and institutional investors. The platform's first standardized contract, CIX Nature X, comprises 11 large, globally accepted carbon credit projects that support reducing emissions from deforestation and forest degradation (REDD), the conservation of tropical forests, and biodiversity reserves in such developing countries as Brazil, Cambodia, Congo, Guatemala, Indonesia, Kenya, and Peru.
  Transactions on the CIX Exchange will be settled by Carbonplace[7], a carbon credit settlement platform established by global financial institutions.
  By providing multiple platforms as described above, CIX is responding to the diverse needs of its participants.

Key Points for the Future of Carbon Credit Trading in Singapore

The following three factors are considered key points for the future of carbon credit trading in Singapore: (1) the use of carbon credits to offset Singapore's carbon tax, (2) expansion of the carbon credit ecosystem, and (3) the possibility of competition with Hong Kong's carbon credit market.

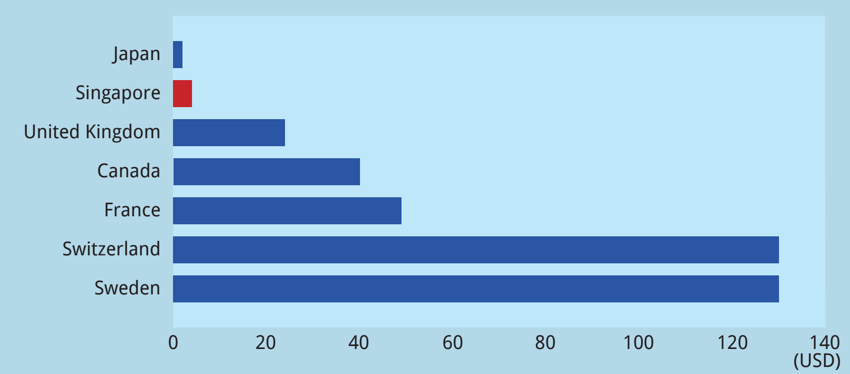
Use of carbon credits to offset carbon tax partially

GHG emissions in Singapore have been on an upward trend for some time. Hoping to curb this trend, in January 2019 the Singapore government introduced a carbon tax, a type of carbon pricing and the first such tax in the ASEAN region. Industrial facilities that emit more than 25,000 t-CO2e of GHGs per year are subject to the carbon tax. About 50 industrial facilities responsible for about 80% of Singapore's GHG emissions currently are subject to the carbon tax, which is set at SGD5 per 1t-CO2e until 2023, well below the carbon taxes of Western countries (Figure 1).

In February 2022, the Singapore government announced plans to significantly increase the carbon tax from the current level, starting in 2024. Specifically, it plans to raise the carbon tax to SGD25 per 1t-CO2e in 2024 and 2025, to SGD45 in 2026 and 2027, and to SGD 50-80 by 2030.

The Singapore government also announced a policy that will allow GHG emitters to use high-quality international carbon credits to partially offset their carbon tax payments from 2024 onwards. Initially, carbon credits could replace up to 5% of GHG emissions subject to carbon tax. Details are expected to be released in 2023. The Singapore government hopes that this measure will reduce the burden on companies that can cost-effectively purchase high-quality carbon credits and contribute to the development of Singapore's carbon credit market by increasing demand for carbon credits.

Figure 1: International Comparison of Carbon Tax (per 1t-CO2e)



Notes: 1. As of April 2022.
2. The Japan tax is officially called the Tax for Climate Change Mitigation.
Source: World Bank

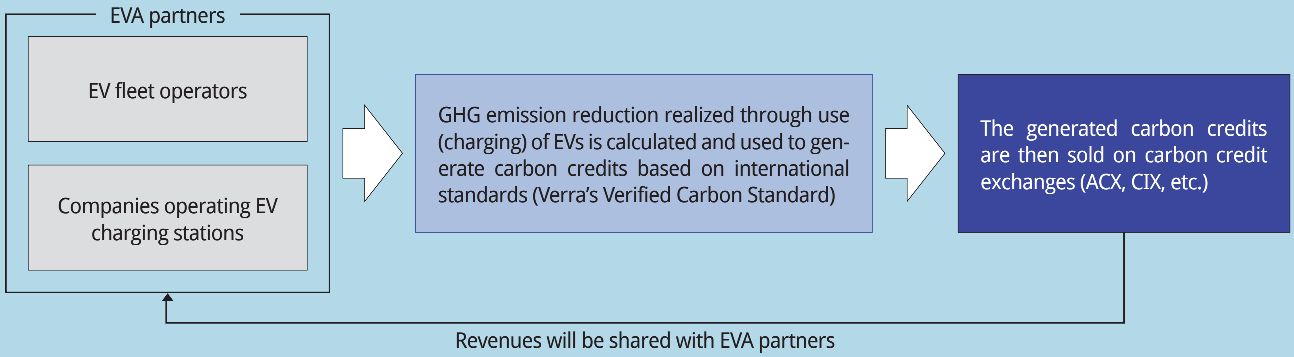
Expansion of the carbon credit ecosystem

Expansion of the carbon credit ecosystem will be crucial to increasing carbon credit trading in Singapore. One significant development related to this theme is an initiative to create carbon credits through the use of electric vehicles (EVs).

CRX CarbonBank, a carbon services company based in Singapore, launched its Electric Vehicle Accelerator (EVA) Programme in April 2022. The EVA Programme is designed to generate carbon credits through EV charging. It targets companies that own EV fleets and operators of EV charging stations in Singapore. Carbon credits are issued based on international certification standards, and a portion of the sale proceeds is paid to companies registered in the EVA Programme (Figure 2). Gojek, the provider of a leading ride-hailing app based in Indonesia and also operating in Singapore, is the first company to register for the EVA Programme.

Although the penetration rate of EVs is still low in Singapore, the government plans to promote the spread of EVs and increase the number of EV charging stations in the country to 60,000 by 2030. The EVA

Figure 2: EVA Programme Schematic Diagram



Source: NICMR, based on CRX CarbonBank materials

Programme has the potential to contribute not only to the expansion of the carbon credit ecosystem but also to the promotion of EVs in Singapore.

Possibility of competition with Hong Kong's carbon credit market

Several initiatives to create voluntary carbon credit markets in Asia have emerged in recent years. Of these, the initiative launched in Hong Kong, Asia's other leading international financial center, is perhaps the most relevant for a comparison with Singapore. In October 2022, the Hong Kong Exchange (HKEX) established an international carbon credit market called Core Climate. The carbon credit markets in Singapore and Hong Kong have several similarities, such as the trading of carbon credits based on international certification standards managed by Verra and Gold Standard, and an emphasis on transaction efficiency and price transparency. It may therefore be said that the carbon credit markets of Singapore and Hong Kong are, to some extent, competitors.

On the other hand, a key difference between these two carbon credit markets is their market participants. As a regional hub for commodity trading, Singapore aims to expand its carbon credit market by attracting multinational companies, including energy and commodity trading companies, from around the world. In contrast, participants in Hong Kong's carbon credit market are mainly Chinese companies and HKEX-listed companies. HKEX intends to develop its carbon credit market in the Greater Bay Area (an economic zone comprising Guangdong Province and Macau, as well as Hong Kong) by strengthening ties with mainland China. Considering this difference in market participants, the carbon credit markets of Singapore and Hong Kong may develop in different paths.

It is worthwhile monitoring closely Singapore's efforts to establish itself as a major hub for carbon services and trading in Asia and to contribute to the reduction of GHG emissions in the region over the medium to long-term.

Notes

1 Other major types of carbon pricing include 1) carbon taxes, which essentially set a price for greenhouse gases by taxing the use of fuel and electricity in proportion to the amount of GHG emitted, and 2) domestic emissions trading, a carbon pricing scheme that sets upper limits on company emissions and then promotes emissions allowance trading between companies whose emissions exceed their upper limit and companies whose emissions are below the limit.

2 Ethereum refers to a platform for creating decentralized applications and automated smart contracts.

3 Other alliances, such as AgriTech, EdTech, and MedTech, promote initiatives in their respective domains.

4 Taskforce on Scaling Voluntary Carbon Markets (2021). "Final Report."

5 Global Financial Markets Association and Boston Consulting Group (2021). "Unlocking the Potential of Carbon Markets to Achieve Global Net Zero."

6 Conservation International, DBS Bank, National University of Singapore, and Temasek (2020). "The Business Case for Climate Solutions: Insights and Opportunities for Southeast Asia."

7 Carbonplace was established in 2021 by BNP Paribas, CIBC, Itau Unibanco, National Australia Bank, NatWest Group, Standard Chartered and UBS.

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2023 Asian Capital Markets Roundtable (ACMR) Event Summary

On February 2, 2023, Nomura Foundation, in conjunction with Nomura Institute of Capital Markets Research, convened the Asian Capital Markets Roundtable (ACMR) on the theme of Capital Market Development for Sustainable and Inclusive Growth in Asia. Together with its publication of the *Nomura Journal of Asian Capital Markets* the Roundtable was part of Nomura Foundation's effort to support intellectual interactions among experts at think tanks, universities and government agencies in Asia.

The event, held at The Okura Prestige Tower in Tokyo, brought together experts from, Indonesia, Japan, Malaysia, the Philippines, Singapore, and Thailand to address the common challenges and policies for capital market development in Asia as well as to share their knowledge and perspectives on the unique aspects of each country. The program consisted of opening remarks by Koji Nagai, President of Nomura Foundation, a keynote address, and three sessions in which panelists made presentations followed by general discussion.

This article summarizes the presentations and discussions based on the understanding of participants from Nomura Institute of Capital Markets Research. It covers the points that impressed Japanese researchers but is not necessarily a thorough or accurate summary of the event. The complete documents from the roundtable are posted on Nomura Foundation's website, https://www.nomurafoundation.or.jp/en/capital/acmr20230202.html.

Keynote Speech: Infrastructure Finance, Green Portfolio Allocation and Digital Data Analysis in Asia

Naoyuki Yoshino, Professor Emeritus, Keio University and Former Dean and CEO, Asian Development Bank Institute

Professor Yoshino's speech addressed four issues related to financing infrastructure development as summarized below.

Spillover Effects of Infrastructure Investment and Sustainable Growth in Asia

An enormous amount of funds will be needed to develop infrastructure in Asia. It is currently financed mainly through fiscal spending by each government, but this is insufficient, and mobilizing private-sector money is indispensable. Private investor participation is limited, however, due to the gap between revenues from users of infrastructure and the return that investors seek.

This, then, brings the focus to the spillover effects of infrastructure. When infrastructure is developed, it will lead to new business opportunities or job creation and boost tax revenues. Governments can distribute part of the increased tax revenue to private investors.

The Way to Induce Private Financing into Green Investments and Green Bonds

Green energy projects are classified into large-scale ones such as hydro power and community level ones. The former raises funds from insurance companies and pension funds. The latter can lure investors through Hometown Investment Trust Funds.

Investors in environmental, social and governance (ESG) projects take into consideration ESG scores not just risk and return. Evaluation methods and criteria for determining ESG scores vary by institution. If greenhouse gasses were taxed, investors could just focus on after-tax return and risk to build an optimal portfolio.

SME Credit Data Analysis

Small and medium-sized enterprises (SMEs) account for a high proportion of employment in Asian nations and play an important role in each economy. SMEs generally have difficulty raising money from capital markets through issuing shares or corporate bonds. Also borrowing from financial institutions presents them with such hurdles as providing collateral, paying high interest on loans and a long assessment process.

There is asymmetry between the information on creditworthiness available on financial institutions and on SMEs. Credit guarantee institutions can collect data and construct credit risk databases for SMEs, which would allow them to borrow from financial institutions.

Financial Sustainability after Covid-19: Rethinking of Domar Condition

Covid-19 has raised the significance of fiscal sustainability in Asia. Japan's government debt-to-GDP ratio is above that of Greece and is the highest in the world, but fiscal sustainability is maintained. What makes Japan different from Greece?

The Domar condition points to stabilization of national debt if the economic growth rate exceeds sovereign yields and to rising government debt if the growth rate is below the yield on government bonds. However, the Domar condition focuses on the supply-side of government bonds and does not take into account the demand side. It is important to consider the demand factor of who owns government bonds when evaluating fiscal sustainability.

Panel Discussion Session 1: The Role of Infrastructure Financing and ESG Activities by Capital Markets to Promote Sustainable Growth

Moderated by *Kahlil Rowter*, Senior Advisor, Finance Thematic Area, PROSPERA (Indonesia)

De-Risking Infrastructure Projects: Challenges for Attracting Global Financial Resources, Learning from Indonesia Toll Road Development

Danang Parikesit, Head, Indonesia Toll Road Authority, Ministry of Public Works and Housing & Professor of Transportation, Universitas Gadjah Mada (Indonesia)

Indonesia's toll road development has been underway since the late 1970s. Measures to reduce risk in order to attract private capital are key to toll road development projects. Indonesia Toll Road Authority, Ministry of Public Works and Housing, is a model case for other Public Private Partnership (PPP) projects.

Infrastructure is a resilient sector. The pandemic wasn't necessarily the cause for declining demand for toll roads and revenues. The main reason was government policies restricting activities.

Innovation is important to make toll roads sustainable. The pandemic helped accelerate innovation in terms of financial, technological, value creation and governance perspectives.

Financing Sustainable Infrastructure through Private Participation and the Capital Market –Malaysia's 40-year Journey

Hee Kong Yong, Senior Advisor, ASEAN Advisory (Malaysia)

Malaysia has promoted infrastructure development since the early 1980s, building high-quality and sustainable infrastructure across the country. Toll roads in Malaysia cover some 2,000km.

Utilizing private capital is key to infrastructure development. Malaysia implemented measures to utilize PPPs in its five-year plans for economic development.

For domestic PPP projects, funds are raised through equity, loans, project bonds and other means while domestic capital markets are being developed.

Sharpening and Fine Tuning Our Fiscal Tools for Sustainable and Resilient Growth

Zeno Ronald R. Abenoja, Undersecretary, Department of Finance (The Philippines)

In the Philippines, infrastructure investment is continuing while restraining government debt. The country's fiscal deficit expanded in 2022 as revenues shrank due mainly to the impact of Covid-19.

The government is supporting the development of infrastructure to build back better from the pandemic. For that, it is vital to strengthen innovative funding tools such as sustainable finance.

The government is constructing a framework to issue green, social, and sustainability bonds and plans to take relevant measures in the future.

Sustainability Issues in Japan and Prospects for Sustainable Finance

Akane Enatsu, Head, Nomura Research Center of Sustainability, Nomura Institute of Capital Markets Research (Japan)

Financial markets play an important role in realizing sustainable society. For instance, ESG investment is expanding around the world and in Japan. Sustainability-related financial products are also growing such as green bonds, social bonds, sustainability bonds, green loans, sustainability linked loans/bonds and transition bonds/loans.

Issues related to sustainable finance that need to be addressed by Japan include the environment, gender equality, reducing inequality, and responsibility in production and consumption. It is important for all stakeholders from governments, corporations, investors, and financial institutions to citizens to face sustainability challenges as their own issues and address them.

Discussion Points

This session revealed that challenges each country faces in infrastructure development vary according to domestic

financial and capital markets as well as local fiscal conditions.

In Indonesia, the significance of reconciling interests among stakeholders such as users of infrastructure and domestic and foreign investors was raised as key for fund procurement.

In Malaysia, the panelist expressed the view that development of capital markets denominated in the domestic currency to avoid the risk of currency mismatch is vital for fund-raising for infrastructure development.

In the Philippines, use of sustainable finance to raise money was introduced to manage both fiscal sustainability and infrastructure investment.

While the need for infrastructure development remains in Indonesia, Malaysia and the Philippines, Japan, which had developed many infrastructure projects during its high growth period, is now focusing mainly on addressing renewing or optimizing existing infrastructure. PPP is sometimes used for these efforts, such as in the successful case of Shiwacho in Iwate Prefecture. However, as the panelist pointed out, public-private cooperation doesn't guarantee a positive result depending on the business content.

Panel Discussion Session 2: The Potential of Fintech and Financial Innovation in Capital Markets for Asian Economies and Society

Moderated by *Tetsuya Kamiyama*, Senior Analyst, Nomura Institute of Capital Markets Research (Japan)

Fintech Development in Indonesia's Capital Market

Fithri Hadi, Former Director, Indonesia Stock Exchange and Former Director, Digital Finance Innovation Group, Indonesia Financial Services Authority (IFSA) (Indonesia)

Digital technology innovation has brought many benefits to capital market participants. For instance, the introduction of equity crowdfunding (ECF), which connects equity issuers and investors via an internet platform, has enabled SMEs to raise capital more flexibly than through traditional means.

The introduction of fund supermarkets, which offer a wide range of mutual funds from different asset management companies, has provided one-stop service for digital-savvy investors.

Other digitalization efforts include online account opening (electronic Know Your Customer or e-KYC) and electronic initial public offering (e-IPO) systems that digitalize the IPO process for companies.

Digital Agenda for the Capital Market in Malaysia

Chin Wei Min, Former Executive Director, Securities Commission (Malaysia)

Securities Commission Malaysia set four objectives to promote digitalization for the capital market: 1) enhance access to financing; 2) increase investor participation; 3) augment institutional market; and 4) develop synergistic ecosystems.

To enhance access to financing, regulatory frameworks related to ECF, peer-to-peer (P2P) financing and Initial Exchange Offering (IEO) have been launched since 2015. To increase investor participation, a framework to allow services by robo-advisors, Digital Investment Management, was launched.

A degree of achievement has been observed in each area. However, there are still some issues, such as who will be accountable when problems arise from the use of artificial intelligence (AI).

Financial Innovation in the Philippine Capital Market

Ramon S. Monzon, President and CEO, The Philippine Stock Exchange, Inc. (The Philippines)

The popularity of Fintech is growing in the Philippines. Electronic payment service is a leading sector. As Bangko Sentral ng Pilipinas (BSP) lays out regulations to support digital banks, electronic money (e-money) issuers and virtual asset service providers (VASPs), the number of Fintech companies registered at the BSP is rising.

The Philippine Stock Exchange (PSE) has created a platform, in cooperation with leading electronic payment service providers and securities companies, to offer a one-stop service for retail investors to conduct e-payments or stock trading. The PSE is also developing a platform for retail investors to enable them to access comprehensive information about the domestic stock market as well as an IPO subscription application for local small investors.

Digitalization initiatives are also being undertaken in the fixed income market. For example, digital bonds utilizing blockchain technology were issued, and the government is aiming to offer government bonds to retail investors more efficiently through a blockchain-based mobile application.

Financial Service Innovations and Initiatives in Thai Capital Market

Pakorn Peetathawatchai, President, Stock Exchange of Thailand (Thailand)

The Stock Exchange of Thailand (SET) provides not only traditional assets but also digital assets that utilize blockchain technology. Diversification and decentralization are benefits of digital assets, while concerns such as high volatility, regulatory uncertainty and cyber risk remain.

The SET is engaged in promoting sustainability, such as by collecting ESG data and offering ESG index in order to promote ESG investment. It is also building infrastructure for carbon credit trading.

The SET is aiming to introduce a one-stop online trading platform connecting investors and listed companies. The platform is expected to provide investors access to comprehensive services from issuing traditional and digital assets, trading, settling, and depositing.

Discussion Points

Japan and the four countries represented in the panel all seek to use Fintech and financial innovation to promote participation in capital markets and enhance convenience for consumers. From the perspective of financial inclusion, Indonesia, Malaysia, The Philippines, and Thailand differ from Japan as they see Fintech and financial innovation as an important means to provide financial services to the underserved citizens.

Digital assets are still in their infancy in each country as is also the case in Japan. Issues remain in subjecting digital assets to regulation and inspection. On the business front, while there are some cases of financing for micro entities, it remains a challenge to increase such cases and develop micro-financing as a market.

On whether Fintech is a disrupter or can co-exist and prosper together with traditional finance, every country sees it as supplementary to traditional finance that adds value for consumers through sound competition. At the same time, some participants noted the need for appropriate regulatory oversight for risk.

Panel Discussion Session 3: The Importance of Pension Systems and Asset Management in Preparing for Population Aging in the Region

Moderated by Joseph Cherian, Practice Professor of Finance, Asia School of Business and Cornell University (Visiting) (Malaysia)

The Implications of Rapid Population Ageing on the Economic and Financial Sustainability of Singapore's Pension System

Christopher Gee, Senior Research Fellow, Institute of Policy Study, National University of Singapore (Singapore)

Singapore is facing a rapidly ageing population with those aged over 65 years expected to account for more than 25% of the population in 10 years. Singapore's Central Provident Fund (CPF) is the top-ranked pension system in Asia. But it cannot be compared simply with pension systems in other countries.

CPF works on the Escalating Plan whereby pension benefit payouts increase as CPF members age. While this plan can hedge pension benefits against inflation, it does not offer full protection. Longevity protection is also a challenge. There may be room for improvement here.

CPF generally is working well for Singaporean nationals. CPF members can use their CPF savings not only for retirement but also for home purchase or healthcare. However, it may be difficult for the self-employed or freelance workers to secure sufficient savings to meet retirement or other needs just from CPF.

Capital Markets and the Asset Management Industry in Malaysia: An Understanding of Structural and Individual Barriers to Long-term Savings

Azleen Osman Rani, Director, Institute for Capital Market Research Malaysia (Malaysia)

Labor market problems such as low wages and high youth underemployment and gaps in social protection such as low social insurance coverage are cited as factors affecting individuals' long-term savings. Capital markets play an important role in structurally upgrading the economy and augmenting the retirement savings system.

Malaysia offers Employees Provident Fund (EPF) for workers. The majority of EPF members aged over 40 have not achieved the savings target needed to secure funds after retirement. The shortfall could be aggravated as the pandemic led to early withdrawals from EPF.

According to a survey on individual investment behavior by the Institute for Capital Market Research, gender, household income levels and source of income affect people's attitude toward investments and the actions they take.

Philippine Social Security System: Solvent, Stable and Dynamic

Edwin Shea Pineda, Former Senior Economist, School of Economics, University of Asia and the Pacific (The Philippines)

The Philippines has pension schemes for private-sector workers and for government employees. The former is managed by Social Security System (SSS) and the latter by Government Service Insurance System (GSIS).

The Social Security Fund posted a net loss in 2021. One reason for the rise in expenditure was an increase in death benefits as Covid-19 related deaths exceeded forecast.

It is worrying that the country's total

fertility rate is falling. The rate fell from 4.1 in 2013 to 1.9 in 2022, below the global average. If this trend continues, the current pension system may not be sustainable.

Progress and Key Challenges in Thailand Pension System: What Can Be Done to Create Sustainable and Adequate Pension Provisions for All

Roongkiat Ratanabanchuen, Assistant Professor, Department of Banking and Finance, Chulalongkorn Business School (Thailand)

Thailand's pension system could be one of the most complex in the world. Workers are classified into formal and informal sectors. In the formal sector, there are pension schemes for government employees while the majority of private-sector employees are members of the Social Security Fund (SSF). The coverage rate of the voluntary Provident Fund is rising but is still at a low level.

The public pension coverage rate is low among workers in the informal sector. A National Savings Fund (NSF) has been introduced but there still are many workers who do not participate in either SSF or NSF.

Asset allocation by Thailand's pension schemes is still largely concentrated in relatively low-risk, low-return government bonds. Investment in foreign assets, however, is expanding.

Japanese Pension System: Current Status and Need for Further Reform

Akiko Nomura, Managing Director, Nomura Institute of Capital Markets Research (Japan)

In Japan, enhancing sustainability of the pay-as-you-go public pension system has become a priority amid the country's ageing population. Private pension plans will play a larger role in enhancing pension adequacy and supplementing the public pension system.

Private pension plans are voluntary, and coverage has not grown sufficiently over the past two decades. Boosting their coverage is a challenge.

The prevalence of defined-contribution (DC) plans is increasing in private pension schemes. Participants direct investment of their DC account assets. By doing so they may gain experience in diversifying investment over the long term and improve their financial literacy.

Discussion Points

In the context of population ageing, a major theme of this session, it was striking to learn that the total fertility rate has already fallen below 2 in the Philippines, whose general image is of a young country in Asia with a high birth rate. The lesson from Japan which faces the highest ratio of aged population is to introduce measures as early as possible to support building assets and deal with longevity risk. Boosting financial literacy for individuals should also be addressed along the way.

A participant from the floor pointed out that raising the retirement age could be a way to ease the impact of a declining birth rate and ageing population. The retirement age in Singapore is being raised and Thailand is also considering an increase. Japan is pursuing a gradual increase toward age 65. Each country is addressing this issue based on its social and economic circumstances.

Various challenges each country faces were shared. Even in Singapore which has the top-ranked pension system in Asia, measures for filling the gap are needed as the system cannot provide sufficient pension benefits for everybody. Malaysia's EPF is faced with the issue of early withdrawals and strengthening efforts to improve public understanding. Thailand's important task is to enhance pension coverage, and several proposals such as a mandatory occupational pension fund are on the table.

Introducing Nomura Foundation

Nomura Foundation (the Foundation) is a public interest incorporated foundation formed in 2010 from the combined resources of three existing foundations established by Nomura Group, a financial services group comprising Nomura Holdings and its subsidiaries in Japan and overseas. The Foundation aims to support a dynamic and sustainable economy and society by promoting the social science disciplines, enhancing international understanding, and fostering young academic and artistic talent. It focuses on four program areas: Social Sciences, Foreign Student Scholarships, Arts and Culture, and the World Economy.

The World Economy program supports research, conferences, and publications related to the macro economy and capital markets.

In the macro economy area, the Foundation has organized conferences together with experts from the Brookings Institution (US), Chatham House (UK), the Development Research Center of the State Council (China), and Bruegel (Belgium) as well as Nomura Securities and Nomura Institute of Capital Markets Research to share research on such topics as monetary and financial institutions, fiscal stability, and demographic change and sustainability.

Panel Discussion at the 2015 Forum

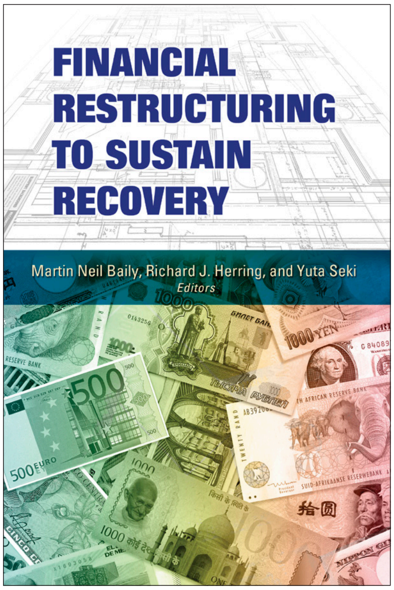
In the area of capital markets, the Foundation has organized conferences and roundtable discussions in conjunction with the Brookings Institution, the Wharton School, the Development Research Center of the State Council (China), China's Center for International Knowledge on Development and Nomura Institute of Capital Markets Research. It has also provided financial backing for several conference volumes published by the Brookings Institution, *Capital Markets in India* published by Sage, Inc., and the quarterly Japanese-language journal *Chinese Capital Markets Research*.

Research papers and presentations prepared for conferences and the content of print publications are available on the Foundation's website http://nomurafoundation.or.jp/en.

With the expanding importance of Asia in the 21st century global economy, the Foundation has been increasing its support of intellectual interactions among experts at think tanks, universities and government agencies in the region. As part of this effort and recognizing the importance of capital market development in promoting economic growth and prosperity in Asian countries, the Foundation started publishing *Nomura Journal of Asian Capital Markets* in 2016.

Cover of *Chinese Capital Markets Research*


Lord Mervyn King at the 2015 Forum



Cover of *Financial Restructuring to Sustain Recovery*

Introducing Nomura Institute of Capital Markets Research

Cover of *Nomura Capital Markets Quarterly*

Cover of *Nomura Sustainability Quarterly*

Nomura Institute of Capital Markets Research (NICMR) was established in April 2004 as a subsidiary of Nomura Holdings to build on a tradition begun in 1965 of studying financial and capital markets as well as financial systems, structure, and trends. NICMR develops original research and policy proposals by specialists based upon knowledge of actual business practice.

NICMR publishes some of its research output in Japanese in *Nomura Capital Markets Quarterly* as well as *Nomura Sustainability Quarterly*, and posts some items in Japanese, English, and Chinese on its website.

NICMR's core mission is to contribute to reform of Japan's financial system and securities market in order to foster establishment of a market-structured financial system. Structural changes, particularly population aging, are having a major impact on Japan's economy and society. Addressing the challenges created by these changes calls for reforming social security, tax, and public finance systems. One of Japan's most valuable resources is the JPY2,000 trillion in financial assets held by households. Establishing a market mechanism-driven money-flow that makes efficient, effective use of these assets is critical to the country's future.

NICMR's research focus extends well beyond Japan to encompass current issues in capital markets around the world. In addition to research offices in New York, London and Beijing, NICMR established a research office in Singapore in 2015 to strengthen its Asian research platform.

The continued growth of Asian economies including China is generating huge funding needs for infrastructure and creating an urgent need for indirect financing systems and robust capital markets in the region. Promoting the development of Asian capital markets is a key for the future of Asian financial systems and economies. Moreover, it is important that Asian perspectives and regional differences are recognized in the post-global financial crisis environment of closer cooperation among financial regulators making rules and global standards.

NICMR's recommendations for developing financial and capital markets in Asia are based on analyses of past experience in developed economies. In particular, Japan offers useful lessons on the importance of direct finance for supporting new businesses and of investment services to cater to the needs of a growing middle class.

NICMR has also been working to strengthen its sustainability initiatives. To this end, it established the Nomura Research Center of Sustainability in December 2019. This research center focuses on objective and practical research into areas of sustainability closely related to the financial and capital markets in major regions including Asia.

As a member of the Nomura Group, a global financial group based in Asia, NICMR strives to contribute to the development of financial and capital markets in Japan and the rest of Asia through fundamental research and experience-based policy recommendations.

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