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Open Finance: the Korean Experience & Opportunities and Challenges for the East Asia and Pacific Region



Ministry of Economy
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Open Finance: the Korean Experience & Opportunities and Challenges for the East Asia and Pacific Region

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Abbreviations

AI	artificial intelligence
AML	anti-money laundering
API	application programming interface
BCBS	Basel Committee on Banking Supervision
BI	Bank Indonesia
BPS	Badan Pusat Statistik (Statistics Indonesia), Indonesia
BSP	Bangko Sentral Ng Pilipinas
BSPI	Blueprint Sistem Pembayaran Indonesia (Indonesia Payment System Blueprint)
CIC	Credit Information Corporation, Philippines
CISA	Credit Information System Act, Philippines
DBM	Department of Budget and Management, Philippines
DICT	Department of Information and Communications Technology, Philippines
DTI	Department of Trade and Industry, Philippines
e-KTP	Kartu Tanda Penduduk Elektronik (Electronic National ID Card), Indonesia
EU	European Union
FCI	Finance, Competitiveness and Innovation Global Practice
FICO	Fair Isaac Corporation
FISC	Financial Inclusion Steering Committee, Philippines
FSC	Financial Services Commission, Republic of Korea
FSEC	Financial Security Institute, Republic of Korea
FSI	financial services institution
FSS	Financial Supervisory Service, Republic of Korea
GDP	gross domestic product
GDPR	General Data Protection Regulation
IFC	International Finance Corporation
IMF	International Monetary Fund
IP	Internet Protocol
KAIT	Korea Association for ICT Promotion
KCIS	Korea Credit Information Services
KFTC	Korea Financial Telecommunications & Clearings Institute
KTP	Kartu Tanda Penduduk (National ID Card), Indonesia
KYC	Know Your Customer
MOIS	Ministry of the Interior and Safety
MSMEs	micro, small and medium enterprises
NEDA	National Economic and Development Authority, Philippines
NPC	National Privacy Commission, Philippines
NSFI	National Strategy for Financial Inclusion, Philippines
OECD	Organisation for Economic Co-operation and Development

OJK	Otoritas Jasa Keuangan (Financial Services Authority), Indonesia
₱	Philippines peso
P2P	peer-to-peer
PFM	personal financial management
PhilSys	Philippine Identification System
PSP	payment service provider
Rp	Indonesian rupiah
SEC	Securities and Exchange Commission, Philippines
SID	Sistem Informasi Debitur (Debtor Information System), Indonesia
SLIK	Sistem Layanan Informasi Keuangan (Financial Information Services System), Indonesia
SMEs	small and medium enterprises
SNAP	Standar Nasional Open API Pembayaran (National Open API Payment Standard), Indonesia
SNLKI	Strategi Nasional Literasi Keuangan Indonesia (National Strategy on Indonesian Financial Literacy), Indonesia
US\$	US dollar
₩	Korean won

Executive Summary

Data's economic importance is rapidly increasing, with recent surges in data generation and technological advancements in analysis significantly outpacing previous growth rates. By examining Korea's approach, this paper aims to derive actionable insights that could guide the adoption of open banking and open finance in other countries, particularly within the East Asia and Pacific region.

The policy objectives for open finance vary by country. The Republic of Korea has set innovation in financial services, especially in payments and settlements, as the policy objective of open banking. The United Kingdom has set competition as the goal of open banking. Strengthening consumers' data-related rights has been a policy objective in many countries. Finally, in some cases, enhancing consumer benefits, achievable through financial innovation and the promotion of competition, has been set as a policy objective.

Using Korea's experience, the authors have described and analyzed key policy implications in order of importance, outlining essential considerations for policy makers and financial sector leaders, along with steps and measures.

CLEAR POLICY OBJECTIVES: Setting clear policy objectives and designing practical implementation plans that fully utilize the existing institutions are critical. In Korea, the implementation plans for open banking and open finance have been practical with full utilization of existing institutions. For open banking, the objective is to foster financial innovation by establishing an open application programming interface (API) system that fintech companies can conveniently use to develop retail payment services. For open finance, the objective—fostering the use of big data at first and introducing the right to data portability—is broad, but the implementation is practical with a hub-and-spoke structure for efficient data sharing.

REGULATORY AND LEGISLATIVE EFFORTS: Strong regulatory and legislative efforts are necessary to implement open banking and open finance. Implementing open banking and open finance in Korea has required tremendous, continuous regulatory and legislative efforts. During the legislative process, it is important to fully consider the activities that fintechs can do with open finance. Implementing open banking and open finance alone may not result in huge changes if users have little interaction with it. For users to see the expected benefits, interested authorities should carefully design what fintechs or open finance applications can do in relation to providing financial services.

CENTRALIZED VERSUS DECENTRALIZED APPROACH: Interested authorities should carefully evaluate the current institutions and explore both centralized and decentralized approaches.

In Korea, the centralized approach for open banking and the hub-and-spoke approach for open finance contributes to a faster and more efficient adoption of open finance. A centralized approach streamlines development for financial and fintech firms by avoiding the complexity of multiple individual APIs. Conversely, a decentralized model, promoting competition among API intermediaries, can improve API usability and security, and foster innovation through the development of advanced APIs by leveraging the distinct capabilities of fintech and financial institutions' APIs.

INTEROPERABILITY: Interested authorities should seek roles to ensure the interoperability of data sharing. In Korea, interoperability in the financial sector was not a problem. The Korea Financial Telecommunications & Clearings Institute runs retail payment systems as well as the open banking system, resulting in the interoperability of open banking APIs. The hub-and-spoke structure of open finance data sharing and the thorough discussion of API specifications with the Data API Standardization Working Group resulted in the interoperability of open finance APIs. Such “centralized” discussion of API standards may preclude the private sector’s efforts to invent multiple API standards and compete with each other. However, if the natural emergence of API specifications is not foreseen, government to establish API standards may help make faster the adoption and implementation of open banking and open finance.

PHASE-IN APPROACH: Interested authorities should actively consider phase-in approaches. Open banking and open finance potentially reduce the incumbent financial companies’ informational advantages. Therefore, a one-step approach to implementing data sharing will face fierce opposition and require more regulatory and legislative efforts. Interested authorities should consider small steps such as Korea has done in introducing Account Information Management Service to promote competition in the banking industry and Insurance Damoa to promote competition in the insurance industry.

INNOVATION AND COMPETITION: Developed fintech ecosystem and pro-competitive policies help the adoption of open banking and open finance. The existence of influential fintech applications is one of the major rationales for financial companies to participate in open banking or agree with open finance. In Korea, popular fintech applications like Toss were providing payment or money transfer services between multiple banks or information inquiry services with web scraping. In addition, the presence of fintech applications in providing some financial products (such as soliciting credit card customers) was becoming more evident. Without adopting open banking and finance, traditional financial firms would have lagged in innovation. Therefore, policies to promote innovation and competition from outside the financial sector might induce financial companies to feel the need to disrupt themselves and accept the open finance framework.

COLLABORATION: Active collaboration with financial companies, fintech players, public institutions, and governments is necessary to implement well-functioning open banking and open finance systems with wide and granular data sharing. Korea’s open finance has been relatively successful because of active collaboration among all relevant stakeholders. Even before the legislative changes, the Financial Services Commission initiated the Data API Standardization Working Group with members from the financial sector and fintech. The deployment of API systems by smaller firms relied on active participation from public entities like the Korea Credit Information Services as open finance intermediaries, underscoring the importance of collaborative standardization in regions without strong private sector API development.

01

Introduction



1. Introduction

The importance of data in the economy is exponentially growing. Although the amount of data generated and analyzed in the economy has always grown, the recent growth in data generation and the advancements of analytic technology are much faster than in the past. According to the World Bank (2021) and Cisco (2018), monthly global Internet Protocol (IP) traffic increased more than 20 times from 2007 to 2017, reaching an estimated 122 exabytes (=1,000,000,000 gigabytes) in 2017, and was projected to increase by 26 percent annually from 2017 to 2022. The advancements in software and hardware technologies for data storage and analysis, such as cloud computing and machine learning, enable big data analysis, improving productivity and creating information.

“Open data,” which grants the right to data portability to data subjects, is becoming a popular policy option to enhance the efficient use of data in society and reduce privacy costs. Jones and Tonetti (2020) argue that the nonrivalry of data may lead to the inefficient underutilization of data in society and that allocating property rights from firms to consumers who can sell data improves welfare.² A prime example of open data policy is the European Union General Data Protection Regulation (EU GDPR) with its language on data portability rights.³

The financial industry is one of the leading sectors implementing the right to data portability through open banking and open finance initiatives. The Basel Committee on Banking Supervision (BCBS) (2019) defines open banking as “the sharing and leveraging of customer-permissioned data by banks with third party developers and firms to build applications and services.” Open finance is a natural extension of open banking to sharing customer-permissioned data by financial institutions with third parties. According to the Organisation for Economic Co-operation and Development (OECD), 25 countries have established a data-sharing framework for open banking, while eight countries have done so for open finance in 2022 (OECD 2023).

- 2 The gains from more efficient use of information are highly dependent on the context. For instance, if the sharing of “my” data could expose “someone else’s” information (Acemoglu et al. 2022) or if there is an unfair playground in the market for data sharing (He, Huang, and Zhou 2023), giving property rights to consumers might not lead to an improvement in welfare.
- 3 The GDPR has a threefold objective as stated in the preamble to the regulation; 1. This Regulation lays down rules relating to the protection of natural persons with regard to the processing of personal data and rules relating to the free movement of personal data. 2. This Regulation protects fundamental rights and freedoms of natural persons and in particular their right to the protection of personal data. 3. The free movement of personal data within the Union shall be neither restricted nor prohibited for reasons connected with the protection of natural persons with regard to the processing of personal data.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3Ao2016Ro679-2016o5o4&qid=1532348683434>


The policy objectives for open finance vary by country. Financial innovation is among the first policy objectives. The Republic of Korea set innovation in financial services, especially in payments and settlements, as the policy objective of open banking. Another objective is competition through financial innovation and the emergence of neo financial institutions such as fintechs and the big techs. The United Kingdom has set competition as the goal of open banking. Strengthening consumers' data-related rights has been a policy objective in many countries. Open finance in the Republic of Korea and GDPR in the EU are notable examples. Finally, in some cases, enhancing consumer benefits, through financial innovation and the promotion of competition, has been set as a policy objective.

Open banking and open finance will provide more opportunities and challenges to achieve those policy objectives than financial innovation in the past. First, open banking and open finance allow the consent-based sharing of a complete footprint of data rather than specific ones like delinquencies. This sharing results in a significant improvement in the quality and entirety of data sharing. Second, open banking and open finance enable third parties, often not financial companies, to build business models as marketing platforms, advisers, intermediaries, or agents for financial services. Access to the customer's financial information may enable more personalized, efficient use of financial services.

The Republic of Korea is one of the leading countries that has successfully implemented open banking, open finance, and open data policy initiatives, with a critical role played by the Korean government in establishing the framework for data sharing. In Korea, the policy initiatives—open banking, open finance, and open data—are called open banking, Financial Sector MyData, and (in general) MyData, respectively.

Open banking—introduced in 2019—provides standardized open application programming interfaces (APIs) that enable data sharing and account-to-account payments.⁴ On the data-sharing side, open banking began with APIs to access account balances and transaction histories from banks, and then the scope of financial companies that share data under open banking gradually expanded to nonbank depository institutions, securities companies, insurance companies, and even fintech and big tech companies. On the payment services side, open banking provides APIs for debit and credit transfers. The companies that use debit and credit transfer APIs can combine both to develop bank transfers or account-to-account payments. Or, companies may use only debit transfer APIs that can be used to charge electronic prepayment means.

Financial Sector MyData—implemented in 2022—focuses on sharing broader and more granular data. The 2020 amendment to the Credit Information Use and Protection Act codifies individual credit data subjects' right to data portability for credit information and requires credit information providers or users to accept the request to transmit personal credit information to the requesting subjects or third parties in a form that information processing devices can process. According to the act, "credit information" is broadly defined as the information necessary to determine the

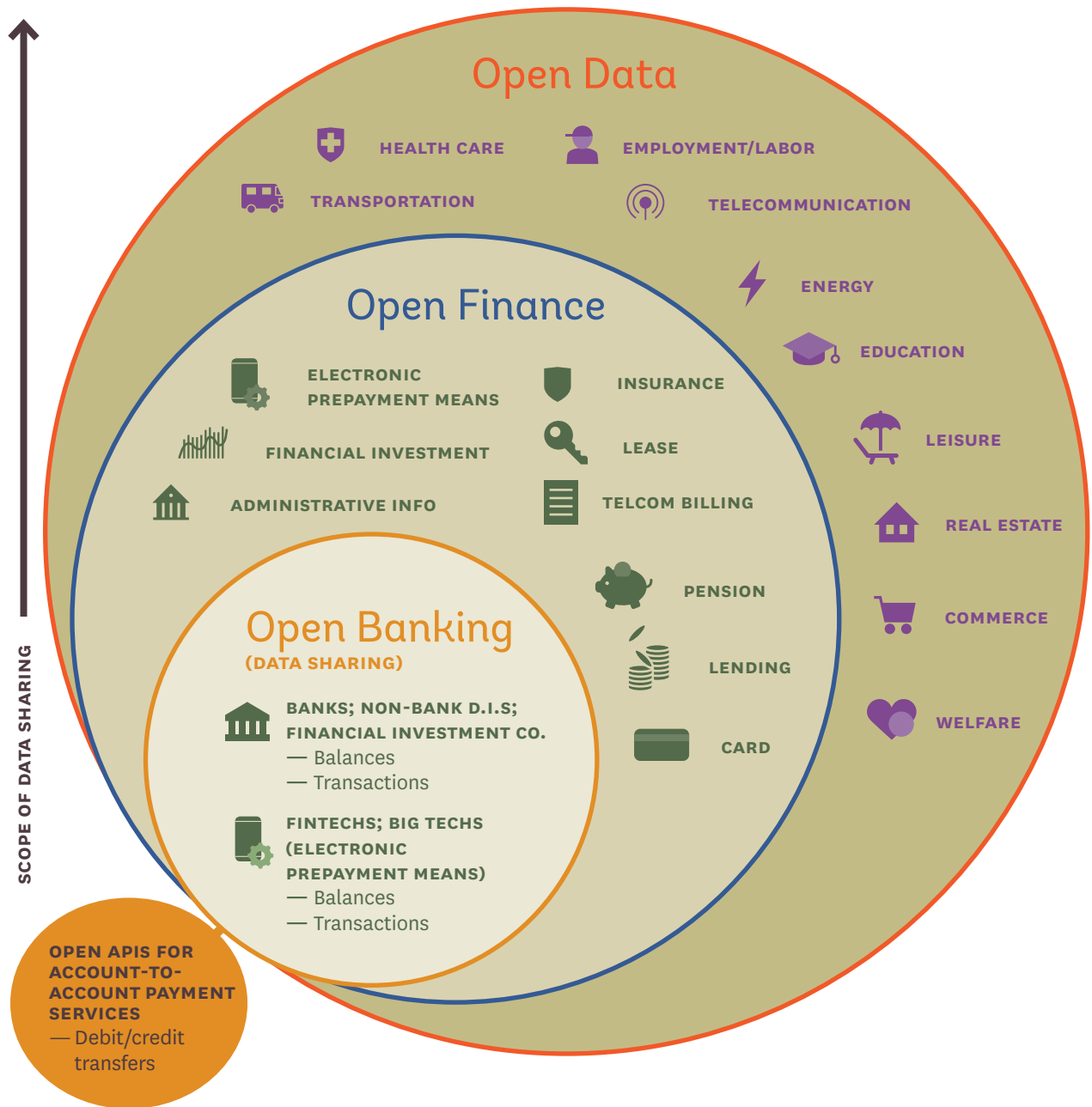
 4 Application programming interface (API) is a set of rules and protocols that allows different software applications to communicate and interact with each other. It defines the methods and data formats that developers can use to access and manipulate the functionality or data of a particular software service or system.

counterparty’s creditworthiness in financial and other commercial transactions. Therefore, such “credit information” includes all the information that is shared under open banking and other broader and more granular information—loans from financial companies, lease contracts, insurances, public and private pensions, financial investment, credit and debit cards, telecommunication billing, electronic prepayment means, and administrative information from governments and public entities—that is necessary to determine the counterparty’s creditworthiness in financial and other commercial transactions.

In addition to two initiatives for open finance, the 2023 amendment to the Personal Information Protection Act establishes the legal basis for data subjects’ right to data portability for personal information by requiring personal information controllers to accept the request to transmit personal information. According to the National MyData Innovation Promotion Strategy announced in Related Ministries (2023), the Korean government will initially focus on 10 areas to implement general MyData—health care, telecommunication, energy, transportation, education, employment/labor, real estate, welfare, commerce, and leisure.

Figure 1.1 and table 1.1 provide a summary of Korea’s open banking, open finance, and MyData ecosystem and the terminology used in these activities. They also give the range of data sharing and sectors covered under this ecosystem.

FIGURE 1.1 DATA-SHARING SCOPE OF OPEN BANKING, OPEN FINANCE, AND OPEN DATA IN KOREA



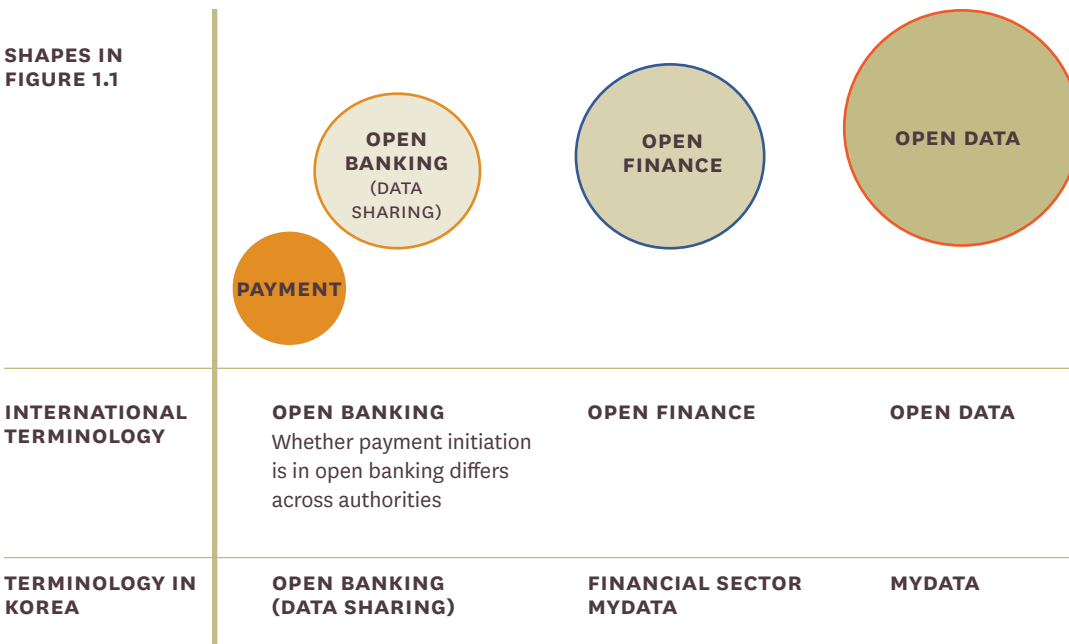
IMPLEMENTATION STATUS IN KOREA

- **Implemented**
 - Open Banking: 2020
 - Financial Sector MyData: 2022

- **Legal Basis Established**
 - Personal Information Protection Act amendment in March 2023

SOURCE: Original figure for this publication.
 NOTE: D.I. = depository institution.

TABLE 1.1 TERMINOLOGY FOR OPEN BANKING, OPEN FINANCE, AND OPEN DATA IN KOREA



SOURCE: Original table for this publication.

Against this backdrop, this paper analyzes the accomplishments and challenges of Korea’s journey into open banking and Financial Sector MyData and scrutinizes how the lessons learned from Korea can be applied to the adoption of open banking or open finance in other countries, specifically in the East Asia and Pacific region. This paper focuses on that region because the effects of open banking and open finance on improving the depth of financial development could be high, given that the region’s basic access to financial services is at a high level compared with other regions in the world. Particularly, this paper analyzes what Korea’s environment contributed to the efficient implementation and rapid expansion of open banking and open finance and shares lessons to maximize the positive impact of the two initiatives.

Because Korea’s open banking and open finance were implemented and gradually expanded since 2019 and 2022, respectively, it is still too early to make a rigorous assessment of policy impact. However, the rapid expansion and the high use of open banking and open finance APIs would make it worthwhile to have a close examination of the Korean experience for policy implications that would help inform countries considering open finance.⁵

⁵ By September 2022, 64 MyData operators were authorized to receive customer-permissioned data from financial companies. MyData services recorded about 54.8 million subscribers, marking an approximate four-fold increase from January of the same year. The average daily API data transmission also spiked, highlighting increased user engagement. The number of variables available for data sharing has expanded further, encompassing public pensions, health insurance contributions, and more, up to 720 items from the initial 492.

When conducting the research for this paper, the team recognized that it would be necessary to gather information about open banking and open finance development in the developing economies of the East Asia and Pacific. Every effort was made to reach out to and engage with financial regulators in some selected jurisdictions in the region. However, many countries did not feel comfortable with participating or did not believe that they had enough value-added information to share with the team. Because of this, only two countries chose to share their information, and these are the ones that have been covered in this paper in Chapter 4. Moreover, the team emphasizes that the analysis of the information gathered via a survey was done **to understand the status quo in the East Asia and Pacific region with no judgment or assessment of the respective open banking and open finance country environment**. Therefore, important gaps remain, and further research is necessary to have a holistic picture of these initiatives in countries in the region.

The paper is organized as follows. Chapter 2 reviews the literature on financial innovation and its impact in expanding financial access to the underserved and draws potential implications from open banking and open finance initiatives. Chapter 3 looks at Korea's open banking and open finance experiences and the success achieved so far. Chapter 4 considers the opportunities that open banking and open finance offer to countries in the region. Chapter 5 describes several implications for policy makers to consider as they seek to establish or enhance their open banking and open finance enabling environments.

02

Literature Review: Setting the Context

2. Literature Review: Setting the Context

This chapter reviews the literature that explains what open banking and open finance are all about, their benefits, and the challenges that can be faced if not implemented correctly. The goal of this literature review is to provide an understanding of the mechanisms through which open banking and open finance affect financial intermediation in a society, contributing to understanding the potential benefits and risks. In doing so, the team did not constrain the literature review to papers specifically on open banking and open finance; rather, it reviewed relevant research from the vast theoretical and empirical literature on data allocation, privacy, better data's impact on financial services, trade-offs between competition and stability, financial consumers' behavioral aspects, financial innovation and inclusion, and early evidence of open banking and open finance.

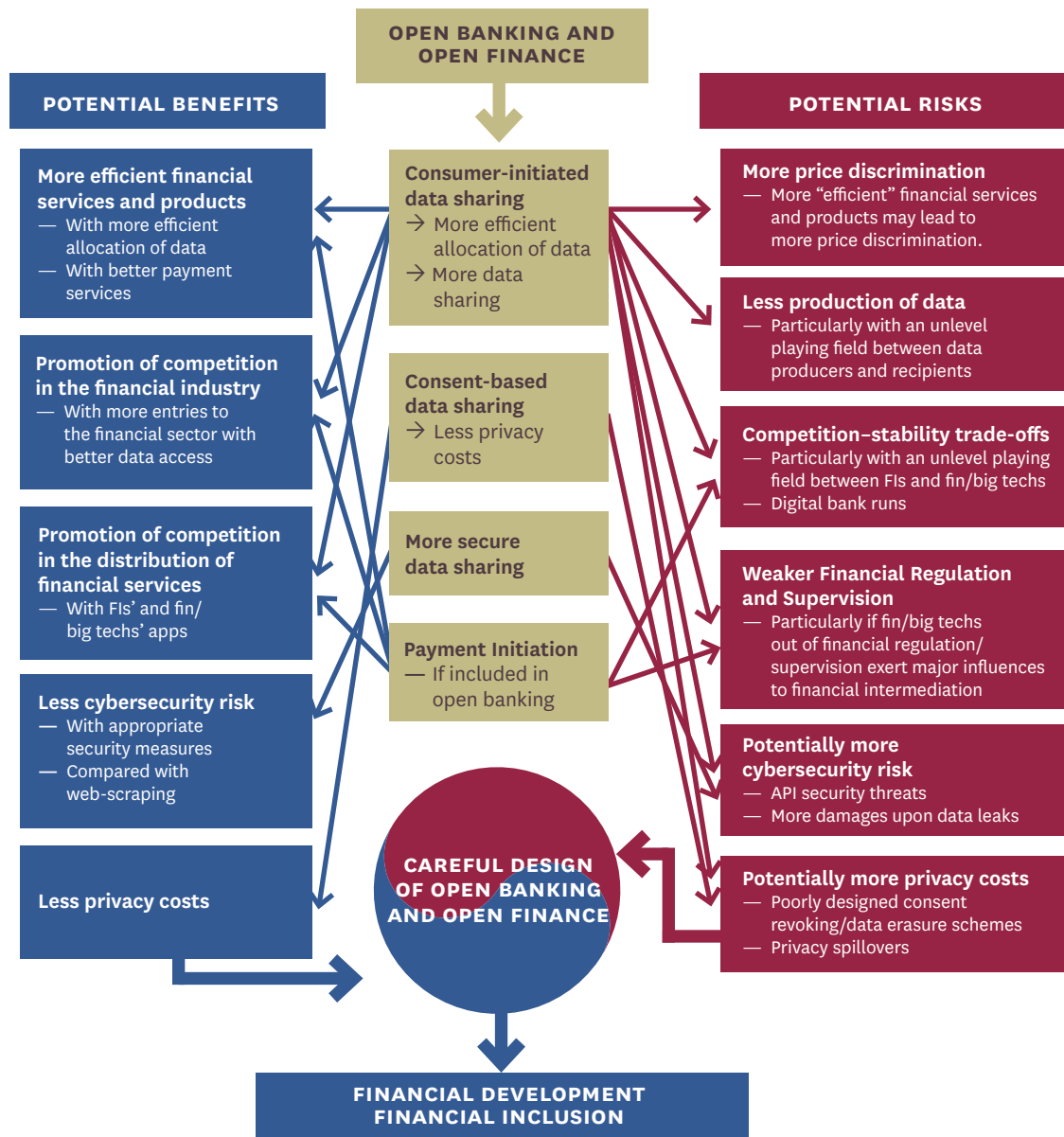
The primary function of open banking and open finance initiatives (hereafter, *open finance* in this chapter) is to establish the legal and technological basis for consumer-initiated data sharing with customers' consent via secure technology such as open API. Payments are often included as functions of open banking and open finance. Consumer-initiated data sharing may alleviate the underutilization of data owing to the nonrivalry of data as discussed by Jones and Tonetti (2020), leading to more efficient financial services and more heightened competition in the field. Consent-based data sharing may reduce potential privacy costs because data sharing is initiated by customers' voluntary sign-up and consent rather than being done in an opaque data market between data collecting companies. Secure APIs are mandatory for data sharing in open finance, reducing cybersecurity risks compared with screen scraping, which mostly requires storing customers' credentials in third parties. Payment-related APIs can contribute to better payment services and more competition in payment markets.

However, customer-permissioned data sharing and more use of data pose potential risks. More "efficient" financial services may lead to more price discrimination, potentially deteriorating financing conditions of some consumers (He, Huang, and Zhou 2023). Data sharing may lead to reduced efforts to produce, maintain, and analyze financial data. Too much competition may risk financial stability through lower profitability of financial institutions and higher risks of bank runs via digital devices and applications.⁶ Data sharing about "me" may have negative consequences by exposing others' information (Acemoglu et al. 2022). With more data shared, there will be more security threats, such as API security threats, and the damages from security events will be more

⁶ The collapse of Silicon Valley Bank demonstrates how the widespread use of mobile banking applications may lead to faster bank runs.

significant. Financial regulation and supervision may weaken, if fintech and big tech companies without licenses exert excessive influence on how financial services are designed and delivered without proper supervision.⁷ See figure 2.1 for potential pros and cons.

FIGURE 2.1 SUMMARY OF OPEN FINANCE’S POTENTIAL BENEFITS AND RISKS



SOURCE: Original figure for this publication.

NOTE: API = application programming interface. FI = financial institution.

⁷ Levitin (2021) argues that as lending processes—designing, marketing, underwriting, servicing, and holding risks—become disaggregated, nonbanks (particularly, fintech lenders) provide banking-type services without bank regulation.

PROMOTING DATA ALLOCATION

Data are used as a production factor and a driver for innovation; the analysis of data generates information that is useful for decision-making, and the existence of data is important as a medium for shifting the information between economic agents.⁸ Therefore, establishing a well-functioning framework for data allocation in society is important for optimal use of data. Because the nonrivalry of data may lead to inefficient underutilization of data in society, introducing the right to data portability may improve the allocation of data (Jones and Tonetti 2020).

Despite the general appeal that data may be underused in society because of nonrivalry, the reciprocity for data sharing between participants in a data-sharing initiative can be critical to whether data sharing is welfare enhancing. He, Huang, and Zhou (2023) study a theoretical environment in which banks and fintech companies compete in the lending market, and fintech companies obtain better borrower screening from open banking. In their model, open banking may hinder competition and make all borrowers worse off—even if the sign-up for open banking is voluntary—if open banking over-empowers fintech companies.

LOWER PRIVACY COSTS

Nowadays, consumers knowingly or unknowingly provide their personal data in exchange for services. If service providers do not take the data subjects' privacy concerns into the use of data—processing, analyzing, selling, and so on—the use of personal data may exceed the socially optimal level.

Open finance can help reduce privacy concerns. Defining and codifying various rights of data subjects, including the right to data portability, help consumers to make informed decisions about sharing their financial data with third parties. Although open finance does not eliminate all sources of privacy costs—in particular, privacy spillovers as discussed in Acemoglu et al. (2022)—granting the choice of porting their own data can be the initial step to alleviating consumers' privacy concerns.

BETTER FINANCIAL SERVICES

Open finance enables the sharing of a complete footprint of customers' financial data, potentially improving financial services by lessening information asymmetry. The availability of the complete footprint may improve financial intermediaries' functions as information producers and delegated monitors, leading to more efficient financial intermediation. Indeed, Rishabh (2022) empirically shows that variables built from payment data can have higher predictive power than variables traditionally collected in the credit bureau.

The benefit of alleviated information asymmetry can be offset by the possibility that more information may lead to more price discrimination or that the benefit of alleviated information asymmetry may exist only in countries where the use of credit information is not at a high level. He, Huang, and Zhou (2023) show that price discrimination with more data can make all borrowers worse off. Also, data may have diminishing returns to scale as discussed in Farboodi and Veldkamp (2021) and shown

⁸ See Carrière-Swallow and Haksar (2019) for a review on the economic characteristics of data and implications.

in Cornelli et al. (2022) and Jagtiani and Lemieux (2019), who find that the extent to which fintech credit scoring is better than traditional scoring systems, such as Fair Isaac Corporation (FICO), is not economically significant.

Improved payment services enabled by open finance can also enhance welfare. Fintech and big tech companies benefiting from open finance often provide payment services. The entry of new players, as well as the introduction of innovative ideas, may disrupt traditional financial companies' payment services, which contributes to development, as shown in the positive relationship between the improved payment services and growth in Hasan, De Renzis, and Schmiedel (2012) or Beck et al. (2018).

PROMOTING COMPETITION

Data sharing may promote competition in two dimensions: between financial companies and between channels to deliver financial services. Financial companies may have private information about their customers, and the informational advantages give them market power over the customers (Padilla and Pagano 1997). With the possibility of receiving other financial companies' data, there could be more entrants to the financial industry or more competition between financial companies to attract customers from each other. In addition, the adoption of open banking directly increases the investment in fintech companies, opening the possibility of heightened competition from fintech and big tech companies (Babina et al. 2024). For example, in Brazil, the main reason for introducing open finance by the Banco Central do Brasil (Central Bank of Brazil) was to reduce bureaucracy and promote competition in delivering financial services to consumers (Vidal, Jenik, and Salman 2023). Indeed, one of motivations for Korea's open banking has been the promotion of competition.

However, there may be trade-offs between competition and financial stability. Open finance may be detrimental to financial stability by overly intensifying competition. In the traditional view, competition in the banking industry can be detrimental to financial stability because increased competition leads to the erosion of bank franchise value, eventually leading to excessive risk taking (Matutes and Vives 2000). On the other hand, competition may improve financial stability because banks may use market power to shift to riskier projects (Boyd and De Nicoló 2005). Reconciling both groups, more recent strands of literature such as Martinez-Miera and Repullo (2010) argue that the relationship between competition and financial stability can be U-shaped and highly context-specific. The introduction of open finance can be so competition inducing that the competition can move to the increasing part of the U-shaped curve because it fundamentally changes the market for financial data that creates information and may introduce new players from outside the financial industry in the delivery of financial services.

IMPROVING FINANCIAL DECISION-MAKING

Thaler and Sunstein (2008) discuss the importance of behavioral economics in understanding financial decision-making and argue that interventions that “nudge” individuals toward better financial behavior can have significant long-term impacts on their financial well-being. Open finance can facilitate such behavioral interventions by leveraging data and technology to provide personalized insights and recommendations that encourage better financial habits.

Personal financial management (PFM) tools enabled by open finance can help consumers make better decisions. Through PFM, consumers can set spending limits, track expenses, and receive notifications when they approach or exceed their budget goals. This real-time feedback can promote greater awareness of spending habits and encourage more responsible financial behavior. Lee (2020) shows that overspending messages from fintech applications lead to a reduction in consumption by the recipients, thus potentially optimizing consumption spending. Fernandes, Lynch, and Netemeyer (2014) support the notion that interventions aimed at improving financial literacy and promoting better financial habits can lead to improved financial outcomes for individuals. Open finance can help consumers save more and optimize consumption through commitment devices.

In Korea, many applications enabled by open finance are PFM tools, which may improve consumers' financial decision-making by increasing their access to holistic views on their financial status and notifying them about aspects of their finances. Such notifications include alarms for unusual spending, spending over budgets, and insufficient funds for credit card payments, as well as reminders to check their financial status, among other features. Toss and Banksalad—already popular applications with PFM features before the introduction of open finance—experienced a huge improvement in their applications' qualities; according to Banksalad, adopting open finance APIs reduced the onboarding time by more than 90 percent compared with screen scraping (Banksalad 2021). Traditional financial companies rolled out PFM tools on their applications in which customers can browse their information in other financial companies. According to Jung (2022), financial companies released open finance services on their mobile applications, which gives customers opportunities to holistically analyze financial status and consumption spending, get personalized suggestions on financial products or investments, and receive notifications about financial status. See table 2.1.

TABLE 2.1 OPEN FINANCE SERVICES BY MAJOR KOREAN FINANCIAL COMPANIES IN 2022

FINANCIAL COMPANIES	SERVICES ON MOBILE APPLICATIONS ENABLED BY OPEN FINANCE
SHINHAN BANK	Personal asset and financial analysis, spending management, and personalized product recommendations by analyzing personal financial data scattered in multiple financial companies
HANA BANK	Customized content for customers such as investment know-how, retirement planning, and so on
KB KOOKMIN BANK	Personal financial advice and financial analysis, as well as spending management, particularly through a “Goal Challenge” that proposes financial goals to customers
SHINHAN CARD	AI-powered asset curation services and notification feeds based on AI-driven customer analysis

SOURCE: Jung 2022.

NOTE: AI = artificial intelligence.

FINANCIAL INNOVATION AND FINANCIAL INCLUSION

As argued earlier, open finance may offer the benefits of more efficient financial intermediation, reduced privacy costs, and heightened competition. In addition, innovation through open finance may lead to financial development, fostering growth as suggested in the literature at the nexus of finance and growth. A more interesting result is the potential for improvement in financial inclusion.

The literature on fintech lending provides evidence that financial innovation may contribute to financial inclusion by providing credit to the underserved, either with fintech firms' technological advantages or with different credit strategies. Cornelli et al. (2022) show that fintech companies in the United States expand more credit in regions with high unemployment rates than banks, suggesting that fintech credit may improve financial inclusion. Beaumont, Tang, and Vansteenberghe (2022) show that fintech companies are more proactive than banks in providing credits to companies with less tangible assets.

The growing literature on open finance suggests that it may contribute to financial inclusion through the fintech lending channel. The empirical results in Rishabh (2022) suggest that open finance may expand access to credit by expanding the scope and granularity of data for credit scoring. Nam (2022) analyzes the largest German fintech lender's loan application data and shows that open banking may enhance financial inclusion because riskier borrowers share their data more actively, which leads to an increase in the probability of loan approval and a decrease in interest rates. Despite the positive results about how open finance may improve the access to credit, it is too early to conclude if open banking or open finance can enhance financial inclusion other than the access to credit. In Brazil, where open finance has been successfully implemented, financial inclusion was already at high levels (Vidal, Jenik, and Salman 2023). Implementation of open finance in the Philippines is at a very early stage, so an assessment of whether it will have an impact is not yet possible. Meanwhile, in Nigeria, where open banking is being planned with one of the primary objectives being "enhanced access to financial services," the framework is still in the drafting and consultative stage (Bungay 2022).

It is still plausible that the potential impact of open finance may not be confined to the fintech lending channel. The data sharing enabled by open finance might have other benefits such as more accurate insurance underwriting, which may increase use of insurance, or more personalized financial advice, which may lead to more efficient life-cycle savings. Also, it should be noted that the current evidence on open finance and financial inclusion may be confined to consumers with some accounts in financial companies, because those consumers have data to be shared and analyzed. Theoretically, the advancement of open finance may foster more entries of financial companies and fintech/big tech companies, which may lower the overall costs of basic financial services such as having bank accounts. However, the dynamic nature of the effects makes it difficult to empirically assess whether open finance improves very basic financial inclusion.

The analysis in this literature review has focused on what factors are critical in establishing a viable open banking and open finance ecosystem. Chapter 3 will describe examples from the Korean experience, and Chapter 4 will present opportunities and challenges in the East Asia and Pacific region, including discussions of Indonesia and the Philippines.

03

Korean Experience: Lessons to Be Learned



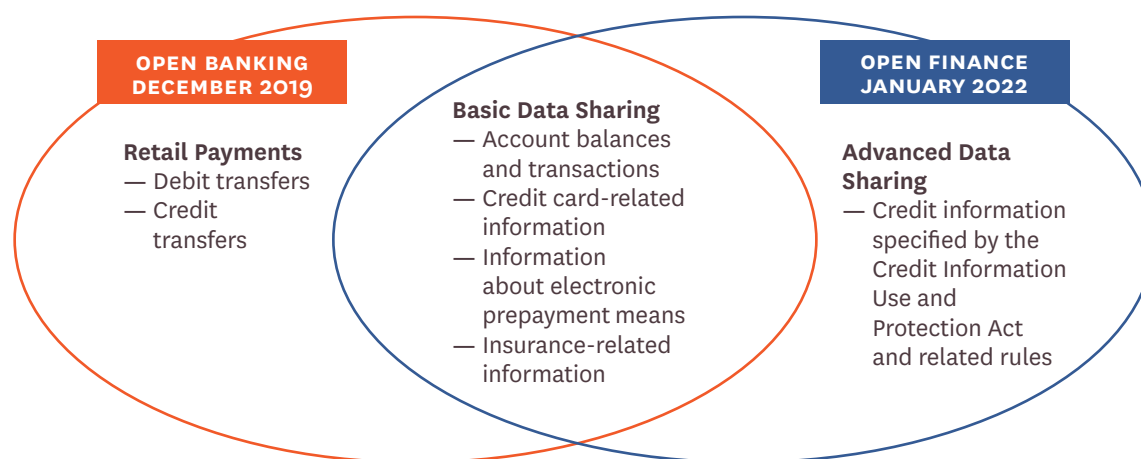
3. Korean Experience: Lessons to Be Learned

The Korean government is implementing open finance through two policies, open banking and Financial Sector MyData. This chapter will use international terminology of “open banking” and “open finance” to refer to these two policies.

Open banking, introduced in December 2019, operates through a centralized system of application programming interfaces (APIs) managed by Korea Financial Telecommunications & Clearings Institute (KFTC).⁹ Through the open banking system, third parties in Korea have access to APIs for data sharing on account balances and transaction histories as well as for payment services.

Open finance, introduced in January 2022, is based on the 2020 amendment to Credit Information Use and Protection Act and operates through the hub-and-spoke API framework in which large financial companies run their own API systems for data sharing, and small financial companies can use API intermediaries. Through APIs for open finance, wider and more granular personal credit data can be shared, compared with data that can be shared under open banking. Figure 3.1 provides an overview of the coverage of Korean open banking and open finance.

FIGURE 3.1. SUMMARY OF OPEN BANKING AND OPEN FINANCE IN KOREA



SOURCE: Original figure for this publication.

⁹ KFTC runs retail payment systems in Korea.

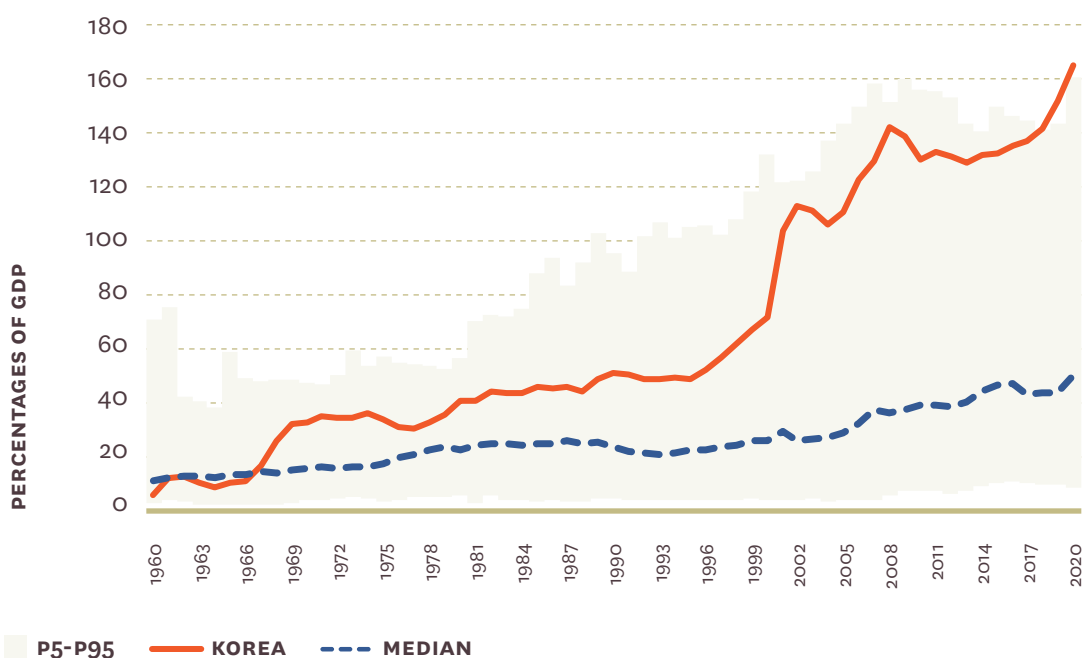
This chapter looks back at Korea’s experience with open banking and open finance and draws insights for countries considering similar policies in the future. Open banking and open finance exhibit significant differences in their objectives, implementation methods, and operational entities, so this chapter will distinguish and explain them in separate sections.

3.1 Open Banking

PRECURSOR

Before the introduction of open banking, Korea already had a significantly high level of financial development. Korea’s financial development measured by domestic credit to GDP has been continuously enhanced since the 1960s, and just before the introduction of open banking, it reached the top 95 percent of countries surveyed by the World Bank (figure 3.2). Financial inclusion is also high; according to the World Bank Global Findex Database, the proportion of the population age 15 and above who reported having an account at a financial institution was 98.7 percent, and the proportion of the population age 15 and above who reported borrowing from a financial institution or having a credit card was 68.6 percent in 2021.

FIGURE 3.2. DOMESTIC CREDIT TO GDP OF KOREA AND THE REST OF THE WORLD

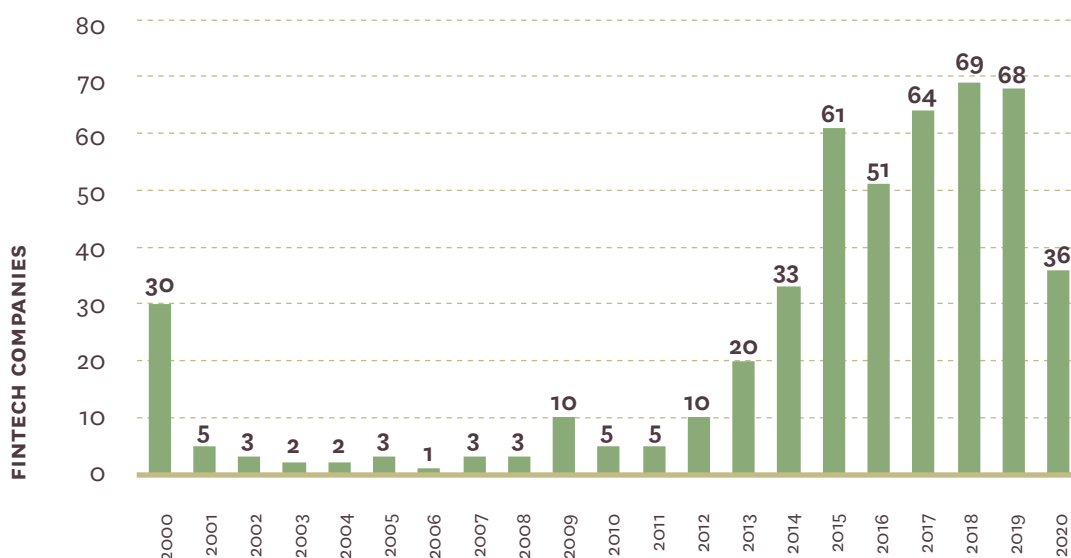


SOURCE: Global Financial Development Database 2022 (World Bank); original calculations for this publication.
 NOTE: p5-p95 represents the range from the 5th to the 95th percentile of the “Domestic Credit to GDP” in the Global Financial Development Database 2022, calculated for each year. Median represents the median value of the same variable for each year.

New players outside the financial sector have emerged, particularly with convenient account-to-account payment services. Before Toss released the convenient account-to-account payment services in February 2014, consumers had to use banks' websites or mobile applications as well as accredited certificates to make payments between bank accounts. Therefore, Toss's easy and convenient account-to-account payment services benchmarking Venmo soon gained popularity.

Not only Toss, but also other companies in the fintech industry in Korea have burgeoned. Since Viva Republica, which runs Toss, was established in 2013, the number of fintech company establishments in Korea has rapidly increased (figure 3.3). According to Fintech Center Korea in 2020, 25.5 percent of fintech companies have payment services as their business models.

FIGURE 3.3. NUMBER OF FINTECH COMPANY ESTABLISHMENTS BY YEAR, 2000–20



SOURCE: Data from Fintech Center Korea.

NOTE: 2000 corresponds to the number of fintech companies established before or in 2000. 2020 corresponds to the number of fintech companies established before or in 2020 Q2.

Despite the increase in the number of fintech company establishments and the favorable consumer response to easy and convenient payments, most fintech companies' business models faced various limitations. First, to implement the service, fintech companies needed agreements with individual banks allowing the companies to develop debit transfers. If a bank refused to sign the agreement, it was impossible to do debit transfers from that bank, and new players found it difficult to sign agreements with enough banks to achieve broad coverage. In addition, the fees for debit transfers were prohibitively high, which tended to make the business model unsustainable.

With consumers' favorable response to fintech services and the lack of sustainability of their business models, demand for policy intervention quickly grew in the fintech industry and among the public. Particularly, the idea that retail payment systems are essential for providing payment services has emerged. Park (2019) argues that payment systems have network externalities, potentially resulting

in a natural monopoly. If the access to payment systems is not given, retail payment services at a reasonable cost are impossible. In that sense, Park (2019) argues that payment systems should be deemed as essential facilities for payment services. Contemplating the discussion as well as the public support for fintech services, financial authorities started to consider ways to make fintech payment services more sustainable.

This experience is in line with Babina et al. (2024), who empirically analyze the factors leading to the adoption of open banking policies in 49 countries. They demonstrate that consumer trust in fintech was a primary reason for policy adoption. The situation in Korea exactly coincides with the analysis by Babina et al.; consumers' preferences for fintech services are a prerequisite for strong policy interventions for open banking and open finance.

OVERVIEW

In Korea, open banking is defined as the system that enables open banking system users¹⁰ to provide account balances/transactions inquiry and account-to-account transfers with standardized APIs without establishing partnerships with individual banks (FSC et al. 2019; Related Ministries 2019). The open banking policy initiative includes establishing the API system in KFTC, setting related rules, and expanding participants to the system. With the implementation of open banking, open banking system users can develop services that allow customers to view and transfer funds from accounts at multiple financial institutions through their applications by registering only with KFTC's open banking system.

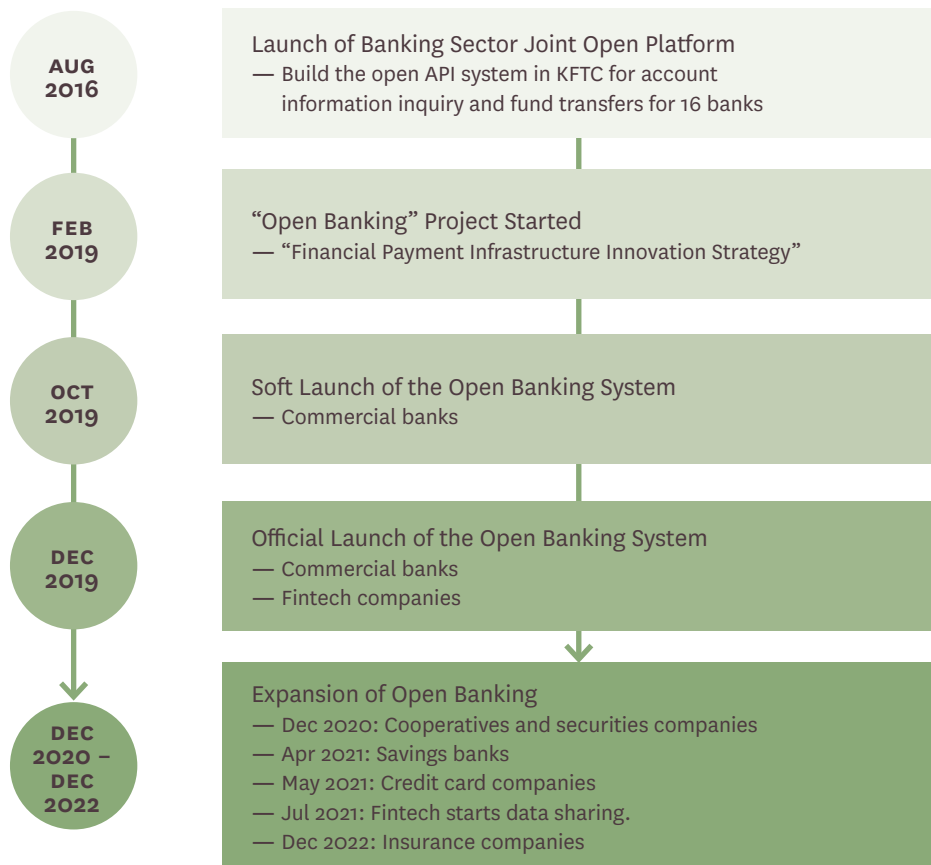
The main objective of open banking policy is to promote financial innovation by enabling fintech companies to develop payment services through more convenient and secure APIs with more affordable costs. Before the introduction of open banking, fintech companies had to arrange with each bank to develop payment services. The need to make contracts with each bank slowed the development of payment applications as well as constrained the expandability of fintech applications, making it difficult for fintech companies to develop innovative solutions and compete with traditional financial companies in the payment services market.

Several policy initiatives shaped KFTC's open banking system into its current status. In 2015, the Financial Services Commission (FSC) and Financial Supervisory Service (FSS) (2015) announced the establishment of the "fintech open platform," which provides financial companies' services such as information inquiry or transfers in standardized open APIs. The announcement led to the establishment of a Banking Sector Joint Open Platform in 2016. The platform was similar to the current open banking system, featuring open APIs for data sharing and account-to-account payments. However, it had limitations: only small and medium-sized fintech companies could use the system, accounts at internet-only banks were excluded from the system, and the system's fees were at a similar level to individual agreements with banks. The introduction of the open banking system in 2019 improved the Banking Sector Joint Open Platform by including large fintech companies as users, and encompassing accounts at internet-only banks, and reducing API fees significantly. Moreover, in

¹⁰ The term "open banking system users" refers to financial companies and fintech/big tech companies that use the system's APIs to build their services.

October 2020, the open banking system further evolved by implementing the “reciprocity principle,” which mandated data sharing by the open banking system’s users, including fintech companies. As the open banking system matured, more institutions joined the initiative. Initially, it included commercial banks and fintech companies. Then, cooperatives, securities companies, credit card companies, and insurance companies subsequently joined the system. This expansion broadened the range of participants and introduced new financial products and services, such as insurance and loan lease information. Figure 3.4 provides the milestones for the open banking rollout in Korea.

FIGURE 3.4. TIMELINE FOR OPEN BANKING



SOURCE: Original figure for this publication.

REGULATORY ENVIRONMENT FOR OPEN BANKING

Open banking system users are classified as “participating institutions” and “nonparticipating user institutions.” A “participating institution” refers to a member, an associate member, or a special participating institution of KFTC that can be deemed as an account servicing payment service provider.¹¹ The eligibility to apply as a nonparticipating user institution varies depending on whether the intended service includes transfers or is limited to information inquiries. If the firm’s service includes transfers, the firm must be an Electronic Financial Business under the Electronic Financial Transactions Act, a Small-Amount Overseas Remittance Business under the Foreign Exchange Transactions Act, or a business with low risks of consumer damages, such as one that has consumer protection systems per relevant laws or offers transfers between consumers’ own accounts. For services limited to inquiry operations, the eligibility expands to the firms in the industries in which fintech companies are mostly classified.¹²

The application process for the open banking system involves (1) suitability approval, (2) service development and testing, (3) security inspection, and (4) use approval. In the suitability approval phase, KFTC verifies the applicant’s eligibility, business model appropriateness, legal qualifications, financial status, cybersecurity, and expected transaction volume. Approved entities can then develop and test their applications according to the API specifications on the open banking system’s testbed, and KFTC checks the successful completion of tests, including the normal functioning of implemented features. Security inspections are conducted by institutions recognized by KFTC (such as the Financial Security Institute) and include both corporate security checks and service vulnerability inspections, with a preliminary check required at the time of application.¹³ Use approval involves selecting a main institution for open banking-related transactions among the participating institutions and getting guarantees and balance management certificates and other necessary documents. The main transaction institution sets up accounts to use for debit and credit transfers.

Open banking system users have obligations regarding cybersecurity, consumer protection, and the prohibition of using information for purposes other than those intended. From a cybersecurity perspective, firms must manage their passwords, identification codes, and access tokens to prevent

- 11** The KFTC has 10 members, 13 associate members, and 122 special participating institutions. Members are the central bank, commercial banks, and specialized banks; associate members are regional banks, internet-only banks, specialized banks, and quasi-governmental organizations managing funds; special participating institutions are nonbank depository institutions, foreign banks, public entities, financial investment companies, insurance companies, specialized credit finance companies, and other financial institutions.
- 12** The industries include 58221 (System software publishing), 58222 (Application software publishing), 62010 (Computer programming services), 62021 (Computer system consultancy activities), 62090 (Other information technology and computer service activities), 63111 (Data processing), 63120 (Portals and other internet information media service activities), 63991 (Database activities and online information provision services), 66199 (Other activities auxiliary to financial service activities n.e.c.), according to Korean Standard Industrial Classification. Despite the application criteria, businesses involved in speculative activities, manufacturing or selling gambling devices, insolvent firms, businesses dealing with game money/item brokerage or cryptocurrencies, multilevel marketing, funeral services, lenders (including peer-to-peer lenders) and loan brokerage, suspected money launderers, or other business models that KFTC deems unfit for the use of the open banking system are excluded.
- 13** After use approval, regular postapproval cybersecurity inspections are done at one- to two-year intervals. There are irregular inspections triggered by significant changes such as relocations of data centers, comprehensive system overhauls, additions of service platforms (Web, Android, iOS, and so on), or changes in user authentication methods.

leakage or theft, and must not lend, delegate, transfer, or disclose them to third parties. They must also cooperate in consumer protection measures, comply with the Open Banking Consumer Protection Guide in the API specifications, reimburse damages in case of complaints or accidents before the inspection, and notify the outcome of complainants within 15 business days, and may be subject to complaint resolution mediation by KFTC. Information acquired through open banking must not be used for other purposes without consent from the data subject. If events happen because open banking system users violated these obligations, participating institutions (banks) are exempt from liability unless there is intent or gross negligence. If participating institutions pay the reimbursement of damages or return withdrawn funds to end customers in cases of violation of obligations, computer errors, or unauthorized withdrawals without user consent, open banking system users must reimburse the participating institutions.

The obligation to compensate for damages is supplemented with the mandatory guarantee bonds. The obligation to compensate may become ineffective if damages exceed the institution's capacity. To minimize potential damages, KFTC has set per-transaction and daily limits for debit transfers and per-transaction limits for credit transfers. KFTC also requires guarantee bonds ranging from 100 percent to 300 percent of the daily debit transfer limit based on the open banking system users' credit rating, capital, sales, age, service duration, transaction volume, customer complaints, financial accident response system, operation of Fraud Detection Systems (FDS), security monitoring, anti-money laundering (AML) compliance, and application of multiauthentication for withdrawal account registration.

Customers who use applications enabled by open banking can report complaints or financial accidents to open banking system users or banks where debit transfers are executed. After implementing initial remedies such as reimbursing damages, KFTC collects necessary data from open banking system users, consumers, and participating institutions to resolve disputes among them. The current situation, where financial accidents are mainly reported through individual institutions, could increase the potential for consumer harm because of inadequate financial accident response systems of each open banking system user. However, the financial accident response system is a part of the quality of service. Reporting financial accidents quickly, regardless of the channel, and resolving responsibility through dispute mediation between open banking system users and participating institutions may reduce the time for complaints resolution and consumer damages.

KEY CHARACTERISTICS OF KOREA'S OPEN BANKING

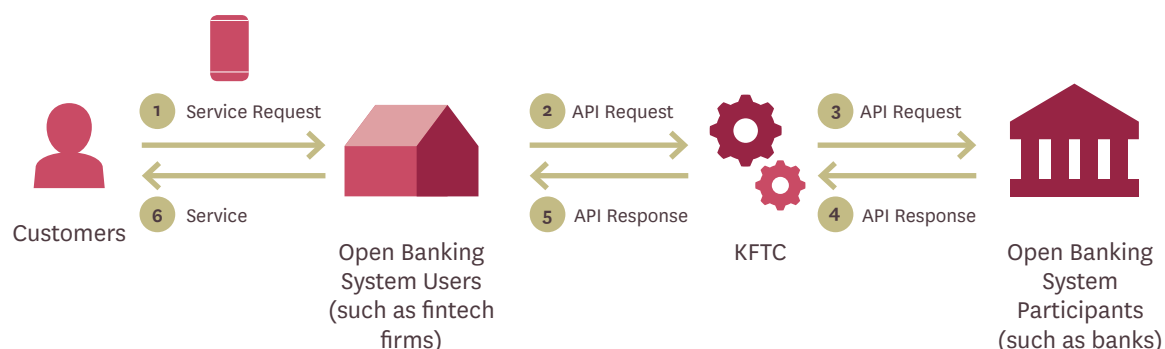
Open banking in Korea has the following distinct characteristics:

First, open banking is enabled by clear policy initiatives to foster financial innovation by “opening up” payment services to fintech companies and a practical implementation to expand already existing system (“fintech open platform”). Currently, no legal basis exists that mandates banks or nonbank financial companies to participate in the open banking system. Therefore, without clear policy initiatives and active persuasion that open banking would be an opportunity for financial companies as well, the open banking system could not have been initiated or maintained.

Second, Korea's open banking takes a central hub approach operated by KFTC, an organization responsible for retail payment systems in Korea (see figure 3.5). With the central hub approach,

fintech and big tech companies can build their applications with a single contract with KFTC to use the open banking system. This approach offers advantages by eliminating the need for separate agreements with individual banks and ensures stability through public oversight and support provided by KFTC. In addition, having KFTC run the open banking system is synergetic with KFTC’s role to run retail payment systems in Korea.

FIGURE 3.5. API FLOWS UNDER CENTRAL HUB APPROACH



SOURCE: FSC et al. 2019

Third, the open banking system provides both inquiry and transfer APIs, making it easier to develop innovative services that use both APIs. That system contrasts with open finance, which focuses on data inquiry function. Because open banking provides both inquiry and transfer APIs, developing innovative payment services is easy.

Fourth, open banking is open to both fintech companies and traditional financial companies, creating a level playing field in the market for payment services. In addition, it incentivizes financial companies to participate in the system because financial companies cannot develop payment services that initiate transfers from other financial companies without participation.

Fifth, open banking is based on reciprocity. As various sectors such as mutual savings banks, credit card companies, insurance companies, and more join the open banking system, they share their information through the platform, creating mutual benefits and encouraging data sharing among participants. Notably, fintech and big tech companies have also taken steps toward data sharing by disclosing the balances and transaction histories of their electronic prepayment means.

CURRENT STATUS OF OPEN BANKING IN KOREA

Since the introduction of open banking, the number of service providers has steadily increased, reaching 131 by the end of 2022 as shown in table 3.1, with fintech companies making up 76 providers. The number of open banking subscribers and registered accounts has consistently grown since its inception.

TABLE 3.1. NUMBER OF OPEN BANKING SYSTEM USERS BY INDUSTRY

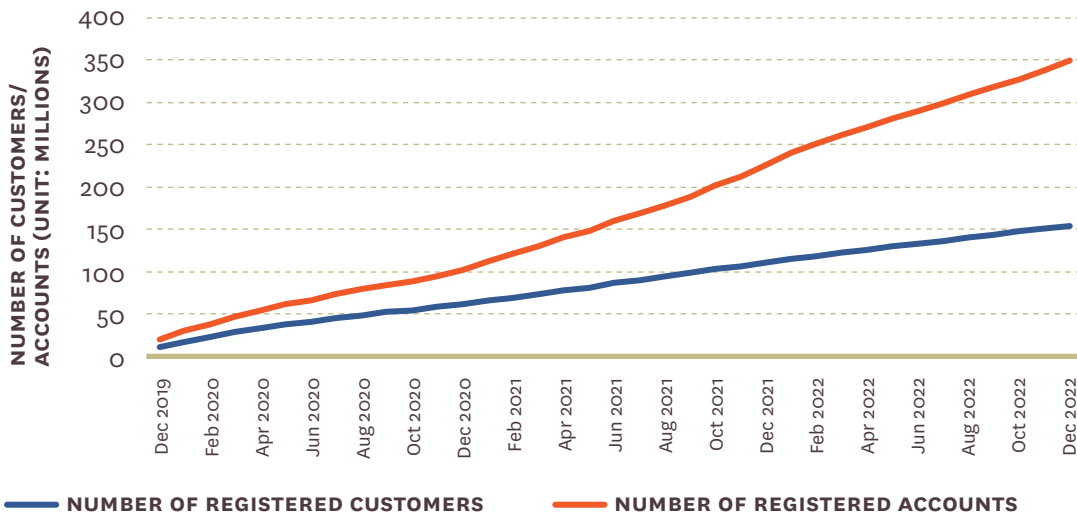
	BANKS	COOPERATIVES	SECURITIES COMPANIES	CREDIT CARD COMPANIES	INSURANCE COMPANIES	CREDIT FINANCE COMPANIES, EXCLUDING CREDIT CARD COMPANIES	FINTECH COMPANIES	TOTAL
2019	16	—	—	—	—	—	31	47
2020	18	6	13	—	—	—	55	92
2021	19	7	18	8	—	—	71	123
2022	19	7	20	8	1	0	76	131

SOURCE: Data from KFTC.

NOTE: Cooperatives and securities companies were allowed to participate in the system in December 2020. Credit card companies were allowed to participate in the system in May 2021. Insurance companies and non-credit-card credit finance companies were allowed to participate in the system in December 2022. Currently, no non-credit-card credit finance company is participating in the system as a user.

Figure 3.6 shows that, as of the end of 2022, 155 million customers were registering 350 million accounts for open banking.¹⁴ At the end of 2022, the adult (19 years old and above) population in Korea was 43.7 million. Therefore, Korean adults, on average, registered a total of 8.0 accounts to 3.5 applications that use open banking.

FIGURE 3.6: NUMBER OF REGISTERED CUSTOMERS AND ACCOUNTS FOR OPEN BANKING

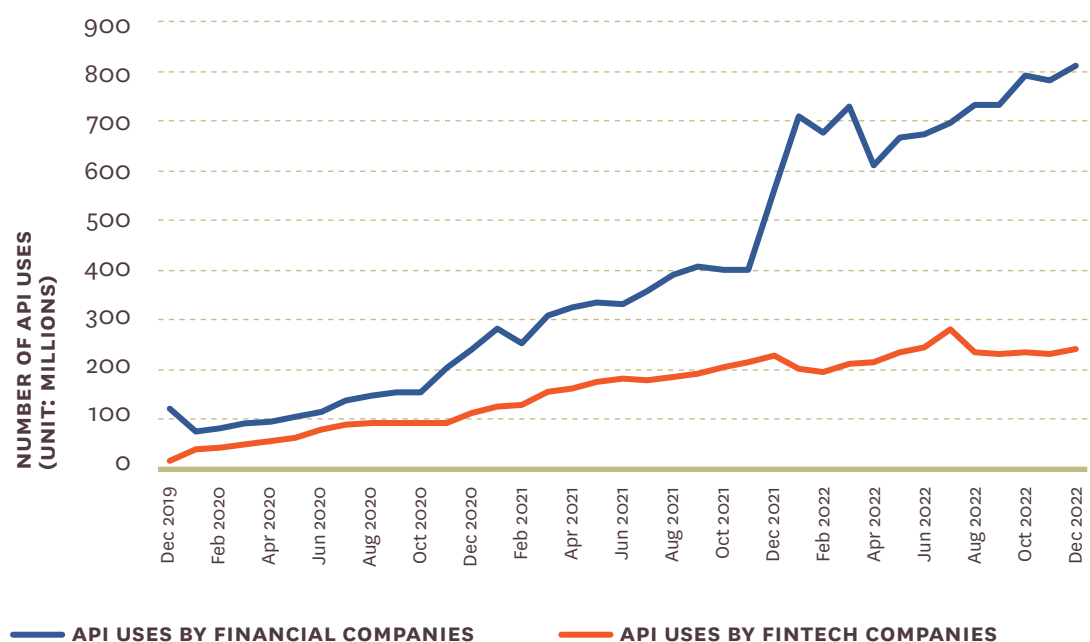


SOURCE: Data from KFTC.

¹⁴ The number of customers registered for open banking counts consumers who have registered for multiple open banking-related mobile applications multiple times.

The monthly usage of open banking APIs has gradually increased. As shown in figure 3.7, in December 2022 financial companies and fintech companies made 810 million and 242 million API requests, respectively. From December 2019 to December 2022, financial companies and fintech companies made 14.7 billion and 5.8 billion API requests, implying that the open banking system is widely used by both financial companies and fintech companies.

FIGURE 3.7. NUMBER OF API USES BY FINANCIAL COMPANIES AND FINTECH



SOURCE: Data from KFTC.

Although open banking was introduced in 2019, there is still a dearth of research that estimates the effects of open banking, because of a lack of microdata on consumer choices and data on fintech companies. Despite the lack of data, open banking is considered to have significantly reduced fintech companies' costs to provide payment services, thereby enhancing the sustainability of the fintech business model. For example, in the case of Viva Republica, which operates Toss, one of the most popular mobile payment applications in Korea, the fee costs were substantial at ₩103.3 billion (US\$77.8 million) compared with the fee revenue of ₩118.7 billion (US\$89.4 million) in 2019. However, in 2020, the fee revenue increased to ₩176.6 billion (US\$133.1 million) as the scale of payment services grew, but the fee costs were only ₩87.1 billion (US\$65.6 million), resulting in the fee costs as a percentage of fee revenue dropping from 87 percent to 49 percent in just one year. The fact that fintech companies are seeing significant benefits from open banking can also be indirectly understood from the rapid increase in the number of fintech companies participating in open banking, from 31 in 2019 to 76 in 2022, despite significant costs for cybersecurity infrastructure often incurred by small fintech companies by participating in the open banking system.

The fintech firms whose businesses become more sustainable from open banking have contributed to improving the competition in retail payment services and potentially in other financial industries by expanding into other financial industries. For example, Viva Republica subsequently participated in the establishment of Toss Bank as a major shareholder. In addition, the introduction of open banking enables incumbent financial companies to develop payment services that initiate payment from other financial companies like fintech applications, further fostering competition in retail payment services.

The reduction in the cost to provide payment services for fintech companies has led to a decrease in the cost of payment services for consumers. Suh et al. (2020) attempted an early assessment of open banking's impact on consumers through a survey of 1,000 people. In this survey, 71.3 percent of respondents were satisfied or very satisfied with open banking services, and the greatest advantage of open banking services, as indicated by 86.6 percent of respondents, was identified as the absence of transfer fees.

The discussion about open banking's benefits focuses on the sustainability of the fintech industry and the affordability of payment services for consumers. More discussion about open banking's benefits from data sharing will follow in the next section as open banking's data-sharing scope is included in that of open finance.

3.2. Open Finance

PRECURSOR

Before the introduction of open finance, stringent personal data regulations stifled the use of data, leading to slow growth in data markets and industrial use of data in Korea. Recognizing the limitation, the newly appointed president's commission, the Presidential Fourth Industrial Revolution Commission, announced the "Data Industry Activation Strategy" in 2018. The strategy identified that Korea was lagging in the use of data and the development of data-related industries because of overly strict regulations regarding personal information. To address this, the strategy has set the vision of becoming "the country that uses data most safely and effectively," and includes three detailed strategies: (1) paradigm shift in the data-use system, (2) innovation throughout the entire data value chain, and (3) establishment of a foundation for fostering the data industry at the global level. Among these, the paradigm shift in the data-use system focuses on data subjects' informational self-determination—the right to decide oneself about whether, how much, and to whom information about one's private life is communicated. The Financial Sector MyData is the implementation of informational self-determination regarding one's credit information. Therefore, Korea's open finance originates from two fundamental motivations: to activate data use and to strengthen the data subjects' rights to personal credit information. With the strong support of the governmentwide strategy, the legislation to introduce the Financial Sector MyData has progressed relatively smoothly.

OVERVIEW

In Korea, open finance has crystallized a series of policy initiatives to codify and implement the right to data portability by amending the Credit Information Use and Protection Act and creating an API ecosystem to facilitate the exercise of the right.

If open finance is ideally implemented, it can (1) provide integrated management of one's credit information, (2) analyze financial status, (3) offer customized financial management consulting, and (4) recommend optimal financial services from a list of financial services and products. The Financial Services Commission (2018) stated that those services could result in enhanced consumer protection, the promotion of competition and innovation in the financial industry, and the nurturing of fintech and data industries. The improvement in the information about financial services to consumers, along with the expansion of advisory services, is expected to strengthen consumer protection. The comparison and recommendation of financial products will stimulate competition and innovation in the financial industry. Fintech companies will ultimately become intermediaries for data, which stimulates the growth of both fintech and data industries. Like open banking, open finance is also a result of various policy initiatives to make it convenient and efficient for customers to browse their credit information. The Korean government has pursued policy initiatives to enhance competition in the financial sector. In the banking industry, Pay Info, introduced in 2015, and Account Info, introduced in 2016, are the main examples of such policy initiatives. Pay Info is a platform where consumers can browse current automatic transfers and billings and seamlessly move payments to other banks. Account Info is a platform that allows consumers to easily check which financial institutions they have accounts with and their account balances. In the insurance sector, the Korea Life Insurance Association and Korea Insurance Association jointly launched Insurance Damoa in 2015, an online platform allowing price comparisons for various types of insurance, including medical, auto, travel, pension, and guaranteed and savings-type insurance.

From an industry perspective, numerous companies have begun offering services like those under open finance using screen scraping or contracts with individual financial companies. Major examples are Toss, released in February 2015, and Banksalad, launched in June 2017.

As for legislative efforts, the 2020 amendment to the Credit Information Use and Protection Act codifies the right to data portability for personal credit information and defines "MyData business" as providing credit information to individual credit data subjects by integrating data from credit data providers or users and assisting credit management. Specifically, individual credit data subjects may ask credit data providers or users to transmit their credit data to third parties including MyData companies that are permitted by the Financial Services Commission to carry out MyData business. As of February 2023, 64 companies had received a license for MyData business, with 13 of them in the financial industry, including banks, savings banks, and cooperative financial institutions (such as the National Agricultural Cooperative Federation). Fintech companies accounted for 23 of the license holders, and many of them also play the role of information providers.

REGULATORY ENVIRONMENT FOR OPEN FINANCE

MyData business in Korea is designed to receive customer-permissioned credit data and to integrate individual credit data subjects' credit information to assist credit management. For this purpose,

MyData companies have many individual credit data subjects' data. Considering the sensitivity of credit data, MyData business is designed to be carried out with a permit by the Financial Services Commission and supervision and inspection by the Financial Supervisory Service.

A MyData company can freely conduct nonfinancial business as long as conducting it does not conflict with other laws. Allowed finance-related businesses are investment advice, discretionary investment through robo-advisers, financial product advisory services, loan brokerages and arrangements, electronic financial business, and credit information business. In addition, a MyData company can conduct data analysis and consulting, provide accounts for managing and using personal credit information, represent rights related to personal credit information, advertise and promote financial products, and undertake identity verification and identification.

MyData business is permitted after evaluating capital (minimum capital of ₩500 million [US\$377,500]), physical requirements, business plan, fit and proper tests of shareholders and executives, and expertise. Physical requirements include a system configuration such as servers; backup and recovery systems; communication systems; and a material, human, and systematic cybersecurity system. A business plan is assessed on the basis of competitiveness and innovation of the business plan and services; the rationality of financial forecasts; the appropriateness of plans for collecting, using, and providing credit information; the compliance with laws; and the establishment of an internal control system for compliance and financial consumer protection. For fit and proper tests, major shareholders (the largest shareholder or blockholders with more than 10 percent of shares) are required to have enough investment capacity, sound financial status, and sound social credit; executives must not fall under the disqualification conditions stipulated in the Act on Corporate Governance of Financial Companies. Expertise is reviewed on the basis of the experience of the company or its executives or employees.

Strict permit-based entry of MyData companies preemptively addresses risks like cybersecurity and unethical practices that could adversely affect the open finance ecosystem. Nevertheless, personal credit information leaks can lead to significant damage, which cannot easily be recovered. Therefore, MyData companies are required to undergo vulnerability checks at least once a year from cybersecurity experts like the Financial Security Institute. Moreover, MyData companies are supervised and inspected by the Financial Services Commission and Financial Supervisory Service for compliance with relevant laws including the Credit Information Use and Protection Act.

The transmission of individual credit data starts with individual credit data subjects' request for transmission. When requesting for transmission, individual credit data subjects should specify the credit information provider or user that sends the data, data for transmission, the receiver, whether regular (weekly) transmission is requested, the expiration date of the request, the purpose of the transmission, and the retention period of data for transmission. The request should be sent in an electronic document or a manner that ensures safety and reliability. For identity verification, individual credit data subjects perform it through certificates, non-face-to-face real-name verification methods (submission of a copy of an ID card, video calls, existing account verification, and so on), or more than two authentication methods (ID/PW, PIN number, OTP, biometric authentication, and so on) to the credit information provider or user. When using the services of a MyData company, identity verification is primarily done through the MyData company's application. After the request for transmission and identity verification are complete, the credit information provider or user

immediately (within five minutes) transmits a token to access the credit data to the MyData company. The MyData company uses this token to receive credit data and provide information to the individual credit data subjects. The Credit Information Use and Protection Act requires credit information providers or users to maintain accurate, up-to-date credit information, so the transmitted information also has these characteristics.

MyData companies that hold individual credit transmitted from individuals' requests must immediately and completely delete it after the individual credit data subjects quit services or request for deletion. Individual credit data subjects can withdraw the transmission request, and MyData companies must convey this withdrawal to the credit information provider or user, who then discards the MyData company's token to revoke the request. At this point, MyData companies must inform individual credit data subjects that the withdrawal of the transmission request is not a deletion of individual credit information and provide an interface that allows the choice of information deletion along with the withdrawal. The process for withdrawing a transmission request should not be designed to be more difficult than the initial request.

KEY CHARACTERISTICS OF KOREA'S OPEN FINANCE

Open finance in Korea starts with clear policy objectives, to activate data use and to strengthen the data subjects' rights to personal credit information. The objectives are quite broad, but the financial authorities have focused on practical implementation of the policy. In particular, they have focused on introducing MyData business, specifying the coverage of data sharing, standardizing data sharing (in particular, APIs), and building hub-and-spoke structures for more efficient data sharing especially from small financial institutions.

Open finance in Korea encompasses a wide range of "credit information" covering many pieces of data over which data subjects can exercise the right to portability. The Credit Information Use and Protection Act broadly defines credit information as information related to commercial transactions and other data that can be used to assess the creditworthiness of counterparties. Therefore, credit information includes the data from not only traditional financial companies such as banks, insurance companies, and financial investment companies but also other entities such as electronic financial businesses¹⁵, governments or public entities, and telecommunication companies. Also, the scope of data to share under open finance includes that under open banking. Table 3.2 outlines the types of data.

¹⁵ Fintech and big tech companies in Korea often register as electronic financial businesses to provide payment services with electronic prepayment means.

TABLE 3.2. DATA TO SHARE IN KOREA'S OPEN FINANCE

CATEGORY	APPLICABLE INDUSTRIES	DATA TO SHARE
Deposits and loans	Banks, foreign bank branches, credit finance companies, comprehensive financial investment business companies, savings banks, mutuals, and community credit cooperatives	Savings (deposit amount, interest rate, maturity, and so on), loans (balance, interest rate, maturity, and so on), investment products (securities deposit amount, purchased securities or investment products, transaction price, quantity, current valuation, and so on)
Insurance	Life and general insurance	Insurance products (contracts, special agreements, payment history, and so on), loans (balance, repayment history)
Credit cards	Credit card companies	Monthly information (balances, total payment due), per transaction information (approved amount, time, currency, the name of store), card loans, points, and so on
Financial investment	Financial investment companies	Investment products (securities deposit amount, purchased securities or investment products, transaction price, quantity, current valuation, and so on), pensions (balance, valuation, maturity amount, and so on)
Electronic finance	Electronic finance business companies	Electronic prepayment means issuance information (balance, recharge account), transaction history (date, amount), order history (organized into 12 categories: appliances/electronics, books/stationery, fashion/clothing, sports, cosmetics, children/babies, food, home/furniture, travel/transportation, culture/leisure, food deliveries, e-coupons, and others), and so on
Other	Telecommunications and public sectors	Telecommunications billing, payment information, national and local tax payments, confirmation of public insurance types including employment insurance

SOURCE: Original table for this publication.

Open finance in Korea recognizes the importance of interoperability, scalability, and security in data sharing. A key to achieving interoperability, scalability, and security is the use of standardized APIs. Compared with screen scraping that was used to develop PFM applications before open finance, the use of API may widen the scope of data sharing, make it easier to scale open finance applications, and improve security by not having to provide or store authentication information in fintech applications.

TABLE 3.3. SCREEN SCRAPING VERSUS API

	SCREEN SCRAPING	API	ADVANTAGES OF API
Customer authentication	Authentication information should be provided or stored in fintech applications.	Users directly authenticate for the required service.	Users do not have to give or store the authentication information to third parties.
Scope of data sharing	Limited to data on screen	Scope can be determined by the design of APIs.	Potentially wider data sharing in more controlled environments
Standardization	Impossible	Standardized	Enables new fintech companies to easily enter the market by using standardized APIs, reducing maintenance costs related to screen scraping, and so on

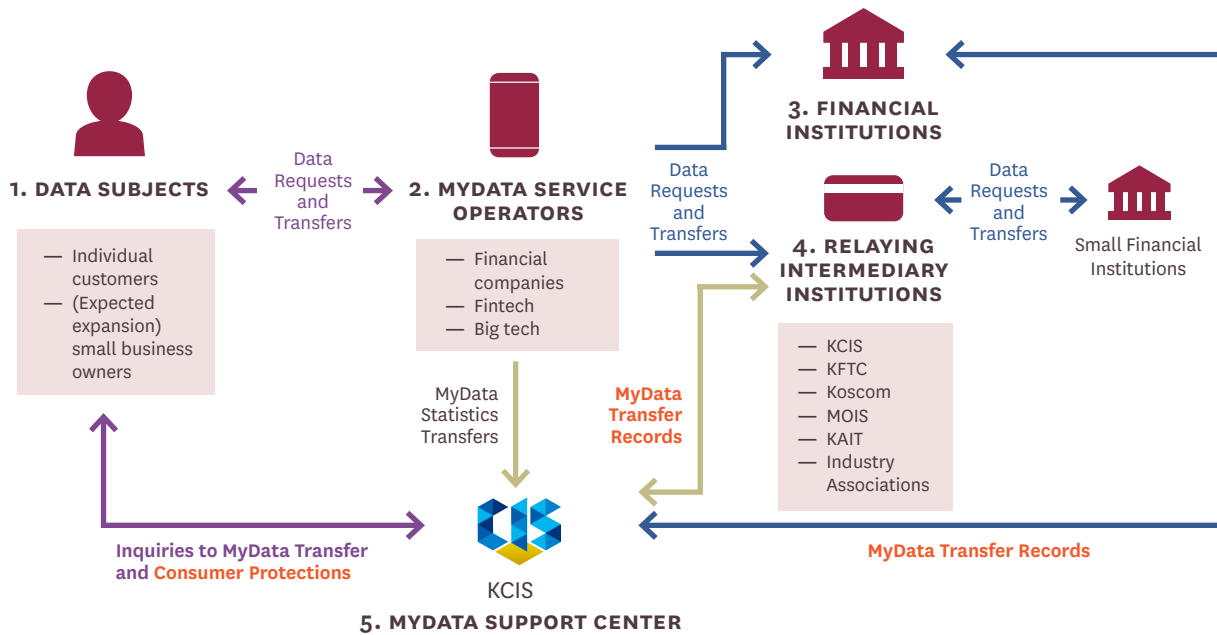
SOURCE: Original table for this publication.

NOTE: API = application programming interface. Screen scraping = technique to extract data from websites or application user interfaces by automating the process of reading and interpreting the displayed information.

The design of well-functioning API systems requires active discussion between data providers, receivers, and other related entities. In Korea, the setup for the open finance framework leverages a public-private partnership called the Data API Standardization Working Group to define the scope of data sharing that balances the demand from prospective MyData companies and the burden of financial companies and to standardize APIs. The working group has been operating since 2019, even before the amendment to the Credit Information Use and Protection Act was completed. The working group consisted of the government (the FSC), financial companies, industry associations for financial industries, and fintech and big tech companies. Specifically, the Data API Standardization Working Group consists of two subgroups: the Service Subcommittee, which discusses data scope and costs, and the Technology Subcommittee, which develops standards for API specifications and security measures. In the Service Subcommittee, a major topic of discussion was the scope of data to be shared. In the Technology Subcommittee, standardized APIs, including API request methods, message formats, URL structures, and customer authentication methods for information providers such as financial companies, were reviewed and specified. See figure 3.8.

Korea’s open finance API ecosystem is designed to be a hub-and-spoke system. Large financial companies are required to build their own API systems; small and medium financial companies and telecommunication companies are allowed to contract with relaying API intermediaries such as the Korea Credit Information Services (KCIS, the public credit registry), KFTC, the Ministry of the Interior and Safety, and Korea Association for ICT Promotion to build API systems that relay API requests to them. Further, there is a MyData support center established in the KCIS in which consumers can inquire about the transfer histories of their data, which improves their recognition of the use of their data and may alleviate their protection concerns. See table 3.3.

FIGURE 3.8. THE FLOW OF OPEN FINANCE API REQUESTS AND DATA TRANSFERS



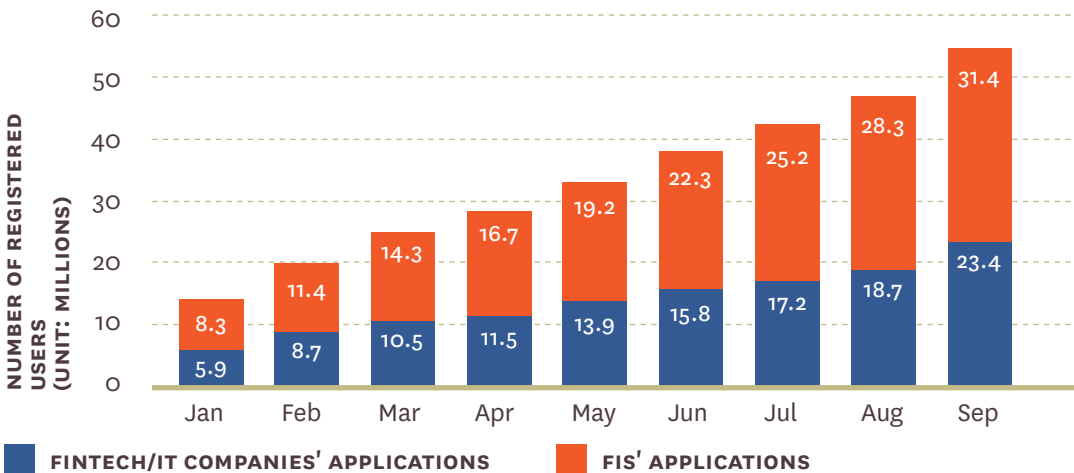
SOURCE: KCIS

NOTE: API = application programming interface; KAIT = Korea Association for ICT Promotion; KCIS = Korea Credit Information Services; KFTC = Korea Financial Telecommunications and Clearings Institute; MOIS = Ministry of the Interior and Safety.

CURRENT STATUS OF OPEN FINANCE IN KOREA

Open finance in Korea is rapidly growing. As of September 2022, the number of registered users had reached a total of 54.8 million (see figure 3.9). The daily API use was 384 million by the end of September 2022.

FIGURE 3.9: REGISTERED USERS FOR OPEN FINANCE, 2022



SOURCE: FSC 2022; modified for this publication.

NOTE: FIS = financial institutions.

The scope of data sharing expanded from the initial 492 items to 720 items at the end of 2022. Now, data types that can be shared include national pension, individual and retirement pension, tax, standing orders, insurance where the contractor and the insured are different, insurance for general objects, small short-term insurance, company identifiers associated with order histories from electronic finance business companies, detailed information about credit/debit card payments, real-time information about cancellations of credit/debit card use, trust held at banks, and so on.

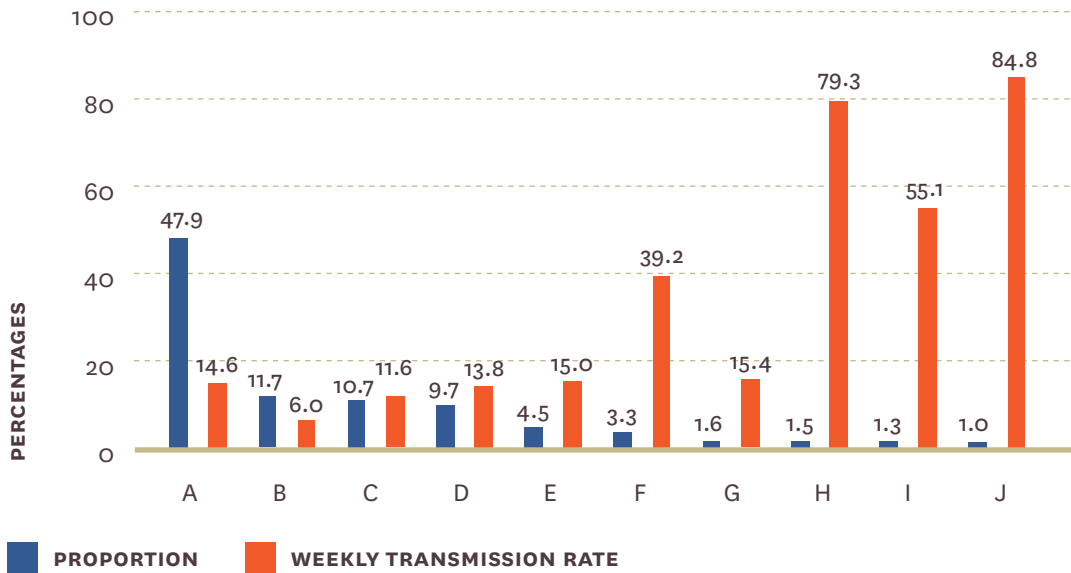
As mentioned earlier, it is still too early to make a policy assessment, particularly for open finance, because it was implemented in 2022. However, immediate benefits of open finance come from the use of APIs. Using APIs enables faster and more reliable data sharing, resulting in the improved qualities of applications that previously had to rely on screen scraping. According to Banksalad, adopting open finance APIs reduced the onboarding time by more than 90 percent (Banksalad 2021). In addition, using APIs precludes the need to store customers' credentials to application developers, resulting in lower likelihood of security events.

So far, many open finance applications are providing PFM services, which were available via screen scraping before the implementation of open finance (Baik 2023; Kim 2022). Specifically, most open finance applications provide account aggregation services, and enable easy comparison between financial products, and post advertisements for financial products. With faster and more convenient PFM services, customers may make better financial decisions.

Although welfare gains from faster and more convenient PFM services may be limited at the current stage, the impact of data sharing by open finance on credit ratings is becoming visible. In 2023, KB Kookmin Bank began building a new retail credit scoring model that uses granular data about credit card uses and payments for telecommunication bills outside the bank, which were obtained from open finance (Electronic Times 2023). Other banks, including Korea's largest internet-only bank Kakaobank, are also pursuing alternative credit scoring using data from open finance (Green Economy Newspaper 2023). Alternative credit scoring from open finance also comes from nonbanks. Naver Financial, one of the major MyData companies, and NICE Information Service, one of the credit information companies, developed "Naver Pay Score," which is the result of alternative credit scoring systems that combine credit data from NICE Information Service and data from Naver Financial's open finance applications (Korea Economic Daily 2023).

The literature on open finance in Korea points out several limitations. Baik (2023) suggests four concerns. First, because the API ecosystem in Korea is designed to be a hub-and-spoke system, there can be more operational risks. Second, fintech applications using open finance often offer comparisons between financial services and products, so the comparison service may heighten banks' liquidity risks. Third, data sharing may result in more price discrimination. Fourth, the API fees are not yet determined, with the Credit Information Use and Protection Act stating that credit information providers may charge minimum costs for "regular" requests for data sharing and defining "regular" could be difficult in practice. Last, the business models that use open finance are not differentiated, causing doubt about what kinds of business models would be possible with open finance instead of only information inquiry and comparison of financial services. In addition, concerns are growing about concentration in open finance applications. As shown in figure 3.10, the leading application was using 47.9 percent of open finance APIs in May 2023, while applications following it had low API usage shares.

FIGURE 3.10: API USAGE OF MAJOR APPLICATIONS BY ANONYMOUS COMPANIES, MAY 2023



SOURCE: Data from KCIS

The Korean experience serves as one example, showcasing the transformative potential of open finance and open banking initiatives for the East Asia and Pacific region. By fostering collaboration between traditional financial institutions, fintech start-ups, and other private sector players, Korea has laid the groundwork for a more inclusive and dynamic financial ecosystem. The next chapter will consider the opportunities and challenges facing the broader East Asian landscape. It highlights the need for a holistic understanding of regional dynamics in any assessment of the opportunities and challenges for open finance and open banking in countries in the region.

04

Opportunities
and Challenges in
the East Asia and
Pacific



4. Opportunities and Challenges in the East Asia and Pacific

Drawing on the experience and lessons learned from Korea's pioneering advancements in open banking and open finance, the authors have explored how pivotal these innovations were in fostering financial innovation in Korea. As the discussion moves from the Korean experience to the broader financial landscape of the East Asia and Pacific region, it will become apparent that the region's financial development is characterized by a diverse mix of challenges and opportunities. Although the Korean case study offers valuable insights into the dynamic evolution of financial innovation and open finance, a more extensive examination of the region is expected to reveal nuanced patterns across various income groups. Notably, the assessment underscores the gradual progress in financial inclusion and innovation alongside persistent gaps that hinder comprehensive development. Understanding the overarching trends in the region will allow for a more holistic approach to addressing the challenges and leveraging the opportunities presented by open finance initiatives.

This chapter examines the state of financial sector development and financial inclusion in the East Asia and Pacific region, with a particular focus on the potential contributions of open banking and open finance. The consideration of financial development arises from the understanding that the establishment of open banking and open finance hinges on the presence of a mature financial system, solid infrastructure, and clear policies. Therefore, this chapter aims to explore the readiness of countries in the region to adopt open banking and open finance. Acknowledging the crucial significance of financial inclusion in the developmental priorities of many economies, this chapter will evaluate the status of financial inclusion in the region. This assessment aims to understand how the adoption of open banking and open finance can contribute to enhancing financial inclusion in the region. This analysis encompasses 21 countries in the East Asia and Pacific region, excluding high-income countries and China.¹⁶ After conducting an overview of the overall financial development in the region, the team analyzed in depth open banking and open finance in Indonesia and the Philippines. The intention was to conduct comprehensive country-level analyses, and the team engaged with the respective authorities in each country. However, it is worth noting that

¹⁶ East Asia and Pacific economies classified by income level (2022–23):

High-income: American Samoa; Australia; Brunei Darussalam; French Polynesia; Guam; Hong Kong SAR, China; Japan; Korea, Rep.; Macao SAR, China; Nauru; New Caledonia; New Zealand; Northern Mariana Islands; Singapore; and Taiwan, China.

Upper-middle income: China, Fiji, Indonesia, Malaysia, Marshall Islands, Palau, Thailand, Tonga, and Tuvalu.

Lower-middle income: Cambodia; Kiribati; Lao People's Democratic Republic; Micronesia, Federated States of; Mongolia; Myanmar; Papua New Guinea; the Philippines; Samoa; Solomon Islands; Timor-Leste; Vanuatu; and Viet Nam.

authorities in selected East Asia and Pacific countries¹⁷ indicated that they were not yet prepared to integrate open finance into their policies, citing the need to address prerequisite issues and urgent matters first. Indonesia and the Philippines, however, responded to the team’s survey, and the responses are included in the latter section of this chapter. Those insights provide valuable information on the status of open banking and open finance in those two countries. The team did not judge the quality or success of the two initiatives.

4.1 Overview

FINANCIAL DEVELOPMENT IN THE EAST ASIA AND PACIFIC REGION

This paper uses the framework proposed by Čihák et al. (2013) to assess the functioning of financial systems on the basis of four key characteristics: financial depth, access, efficiency, and stability. The comprehensive set of indicators used to assess financial development is presented in Annex 4A.

- Financial depth: This dimension explores the size and activity of a country’s financial sector. It considers indicators such as the ratio of financial assets to GDP, the depth of stock markets, and the level of credit provided by financial institutions.
- Access to finance: The degree of access to financial services within an economy is examined in this aspect. Indicators such as the proportion of the population with bank accounts, the availability of credit for small and medium-sized enterprises, and the extent of financial inclusion are relevant in assessing access to finance.
- Financial efficiency: This dimension focuses on the effectiveness and productivity of financial intermediaries and markets. Indicators such as interest rate spreads, the efficiency of resource allocation, and the effectiveness of financial institutions in mobilizing savings for investment are considered to measure financial efficiency.
- Financial stability: The stability of financial systems is a crucial aspect addressed in this framework. It examines indicators such as nonperforming loans, occurrences of banking crises, and measures of systemic risk. One commonly used measure of financial stability is the “z-score,” which compares buffers (capitalization and returns) with risk (volatility of returns) to assess a bank’s solvency risk.

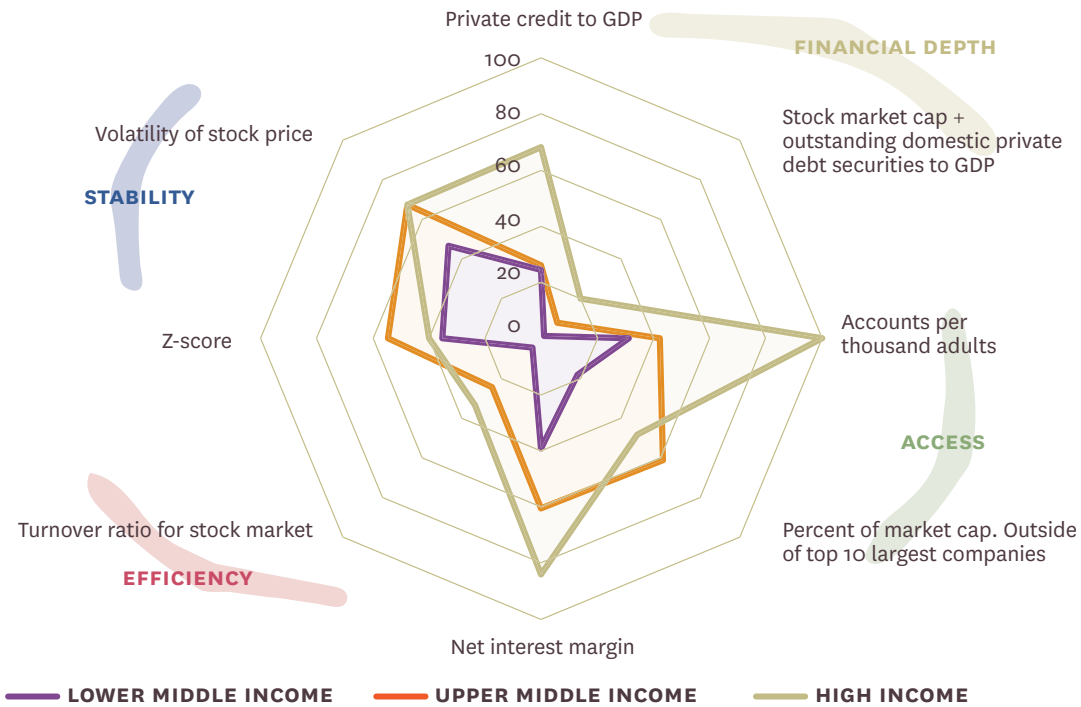
¹⁷ Cambodia, Malaysia, Thailand, Viet Nam, and some Pacific Island countries.

Certainly, it is important to acknowledge that each indicator used in assessing a financial system has its own strengths and limitations, and no single indicator can fully capture the entire dimension. Therefore, when indicators and dimensions are compared, it is essential to exercise caution and conduct a careful interpretation of the results. Furthermore, the data used in this study could not cover all countries, because of unavailable or unreliable statistics. As a result, the analysis may not provide a complete picture of financial development across all economies. In line with this understanding, this paper has selected the eight most used indicators for evaluating a financial system, encompassing four indicators from the perspective of financial institutions and four indicators from the viewpoint of financial markets. A more comprehensive assessment of a financial system can be achieved when such a diverse range of indicators is analyzed.

On the basis of the four key characteristics, a within-region comparison analysis¹⁸ shows that there may be potential benefits of open finance by expanding the use of credit and other financial services; more data sharing would enable more efficient provision of credit and other financial services, and more open finance-enabled mobile applications would back up the supply with more consumer demand. In the region, high-income countries perform better than upper-middle- or lower-middle-income countries in most criteria of financial development except for z-score in stability and market capitalization. However, the notable financial development gap in private credit to GDP among the income categories of targeted countries is shown, indicating that alleviating the information asymmetry with more accurate and granular data sharing by open finance and providing convenient PFM applications may contribute to narrowing the gap. See figure 4.1.

18 The comparison specifically targeted countries classified into three levels: lower-middle, upper-middle, and high-income levels. Data for each dimension were collected, standardized, and rescaled on a scale of 0 to 100. In each dimension, the lowest score was set as 0, while the highest score was set as 100. Consequently, a higher score indicates a greater level of functionality within the respective dimension.

FIGURE 4.1. FINANCIAL DEVELOPMENT STATUS IN THE EAST ASIA AND PACIFIC REGION



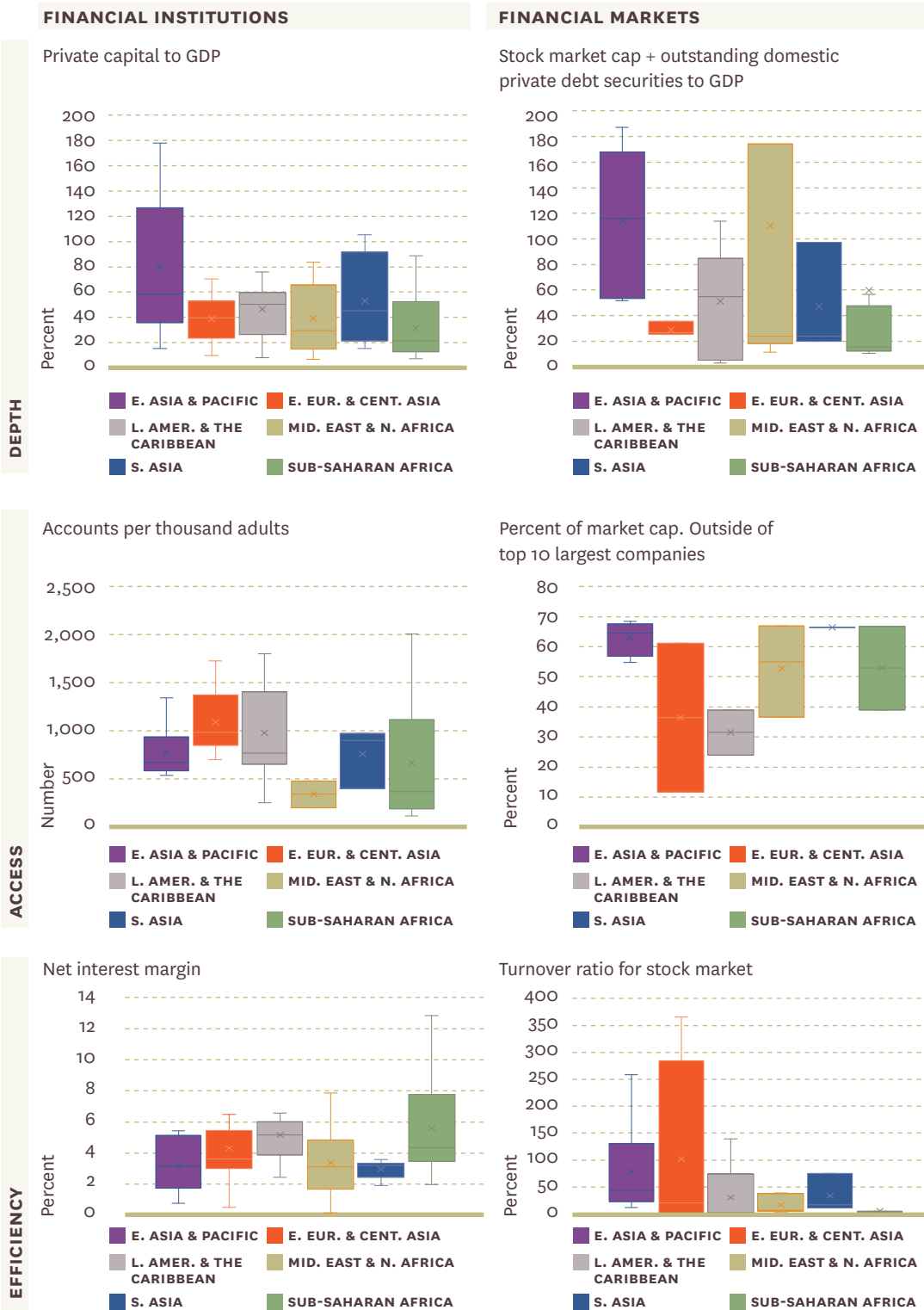
SOURCE: Global Financial Development Database 2022, World Bank; Global Findex Database 2022, World Bank; original calculations for this publication. The latest data were used for the analysis (2021 or 2020).

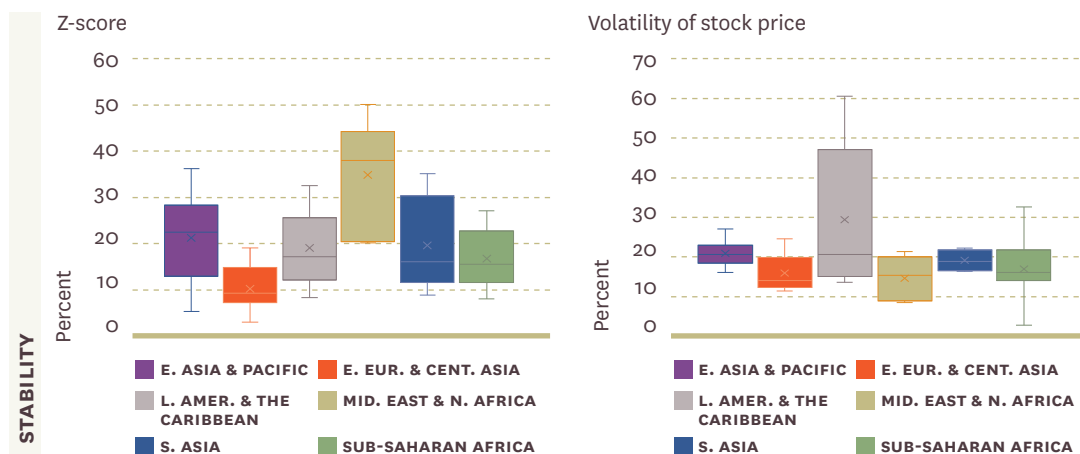
A between-region comparison analysis¹⁹ of middle-income countries shows that though the East Asia and Pacific region is not significantly lagging behind other regions in financial development, severe disparities exist within the East Asia and Pacific region itself. Specifically, figure 4.2 illustrates that the region exhibits strong performance in the financial depth characteristic but does not surpass other regions in the remaining characteristics. Annex 4B Middle-Income Countries’ Financial Sector Development by Region (2016–21) shows the changes over time from 2016 to 2021, revealing improvements in the East Asia and Pacific financial market’s financial depth, access, and efficiency dimensions, while the stability dimension shows little progress. Despite advancements in the region, the current disparities within the East Asia and Pacific region signify that a rigorous country-level analysis is necessary to assess whether in a specific region, the environment is ripe for the widespread adoption of open banking and open finance.

As mentioned earlier in the literature review, open banking and open finance have the potential to boost financial inclusion and foster innovation. Therefore, this chapter will delve into a detailed examination of the current state of financial inclusion and innovation within the East Asia and Pacific region.

¹⁹ A comparative analysis between middle-income countries in the East Asia and Pacific region and five other regions—Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa, South Asia, and Sub-Saharan Africa—was conducted.

FIGURE 4.2. DISTRIBUTION OF MIDDLE-INCOME COUNTRIES' FINANCIAL SECTOR DEVELOPMENT BY REGION





SOURCE: Global Financial Development Database 2022, World Bank; Global Findex Database 2022, World Bank; original calculations for this publication. The latest data were used for the analysis (2021 or 2020).

FINANCIAL INCLUSION IN THE EAST ASIA AND PACIFIC REGION

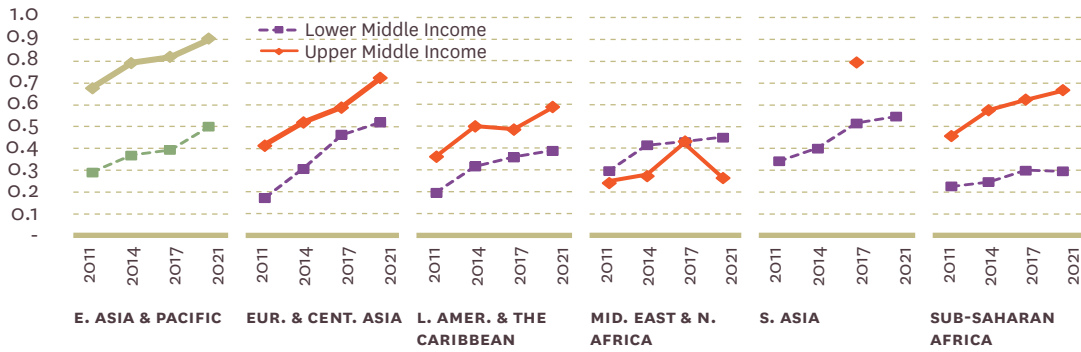
As seen in figure 4.3, in middle-income countries of the East Asia and Pacific region, significant progress has been observed in account ownership in the past decade, with an increase from 55 percent in 2011 to 81 percent in 2021. The use of e-money has also seen a notable rise, from 0 percent in 2014 to 6 percent in 2021, along with an increased reliance on financial institutions for transactions, growing from 55 percent in 2011 to 80 percent in 2021.

Although savings and borrowing from financial institutions remain at lower levels compared to account ownership, there has been steady growth over the years. The rate of savings at financial institutions is higher compared with other regions, with an increase from 28 percent in 2011 to 39 percent in 2021, and borrowing from financial institutions has seen a significant rise from 9 percent in 2011 to 33 percent in 2021. The ratio of insurance premium to GDP, although still lower compared with high-income countries at 10 percent in 2021, is gradually increasing, indicating a growing adoption of insurance policies. Outstanding loans to small and medium enterprises (SMEs) from commercial banks have also shown an upward trend, although they remain low compared with the high-income group, reaching 48 percent in 2021. However, as shown in figure 4.3, even among middle-income countries, there are clear differences between upper-middle-income countries and lower-middle-income countries in financial inclusion.

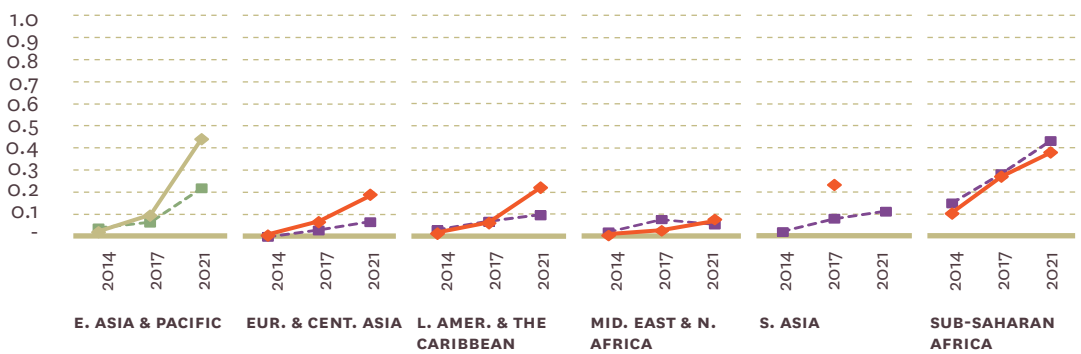
The increase in the account ownership and the use of e-money in the East Asia and Pacific could imply that the prerequisite for open finance is getting more mature as more data exist to share and consumer preferences are growing for fintech applications that can benefit from open finance. As account ownership increases, the quality of data that can be shared through open finance is improving, and the rise in e-money use strengthens consumer preference for nonfinancial companies' services, thereby bolstering support for policy initiatives. Additionally, the fact that savings/borrowings remain low despite the rise in account ownership suggests that open finance could significantly improve welfare through personal financial management (PFM) and nudging behavioral biases, indicating the need to explore the potential for open finance initiatives in the Region on a country-by-country basis (figure 4.4).

FIGURE 4.3. FINANCIAL INCLUSION INDICATORS BY REGION (2011–21)

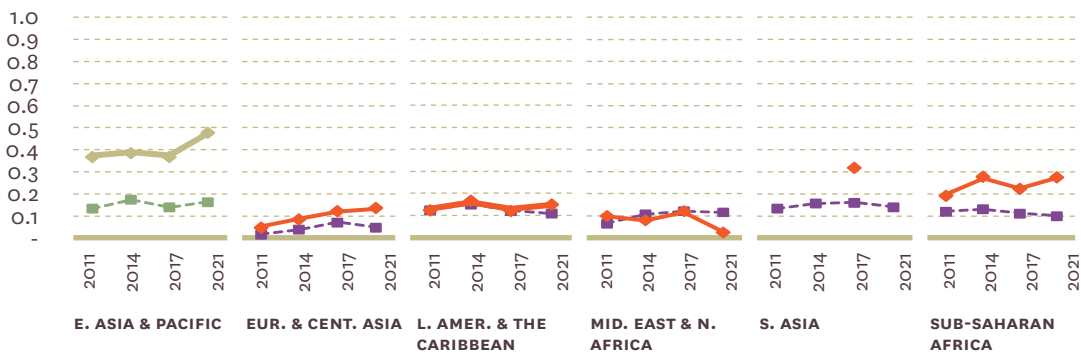
ACCOUNT OWNERSHIP (% OF POPULATION ABOVE 15) – FINANCIAL INSTITUTIONS



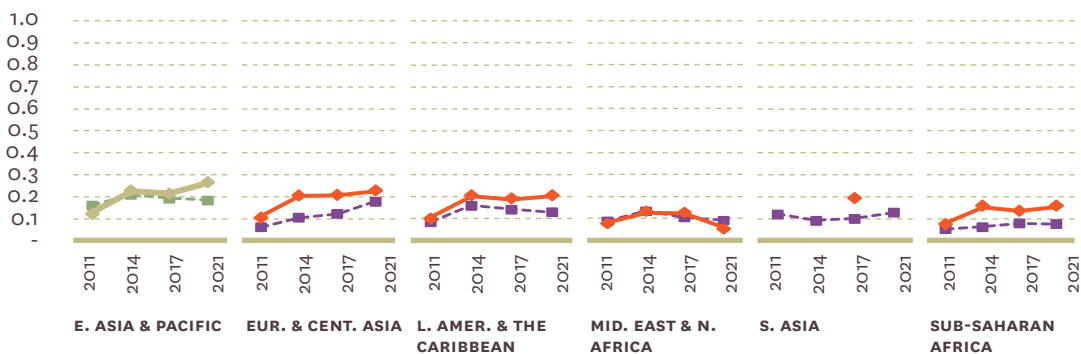
ACCOUNT OWNERSHIP (% OF POPULATION ABOVE 15) – E-MONEY



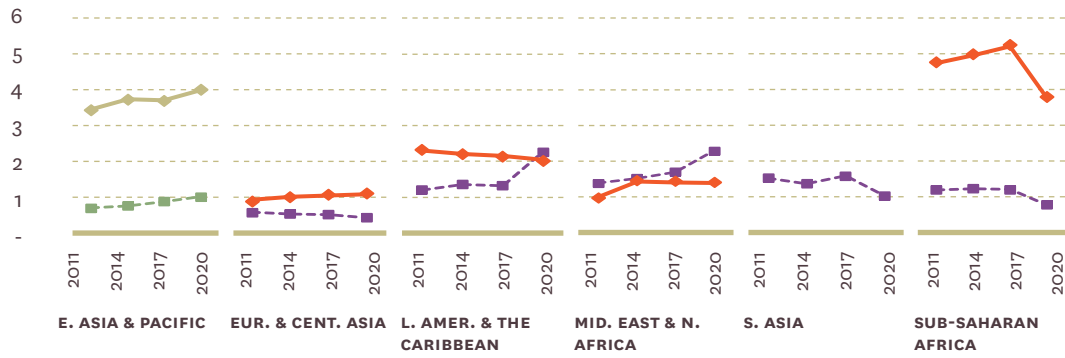
SAVED AT FINANCIAL INSTITUTIONS (% OF POPULATION ABOVE 15)



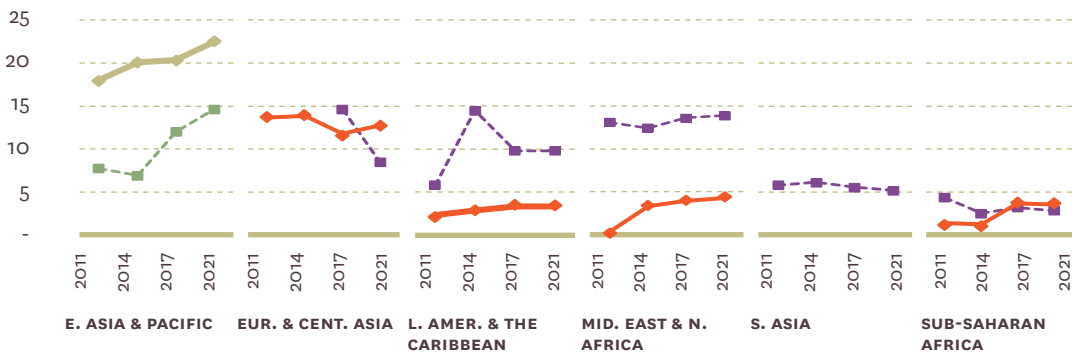
BORROWED FROM FINANCIAL INSTITUTIONS (% OF POPULATION ABOVE 15)



LIFE AND NON-LIFE INSURANCE PREMIUM (% OF GDP)

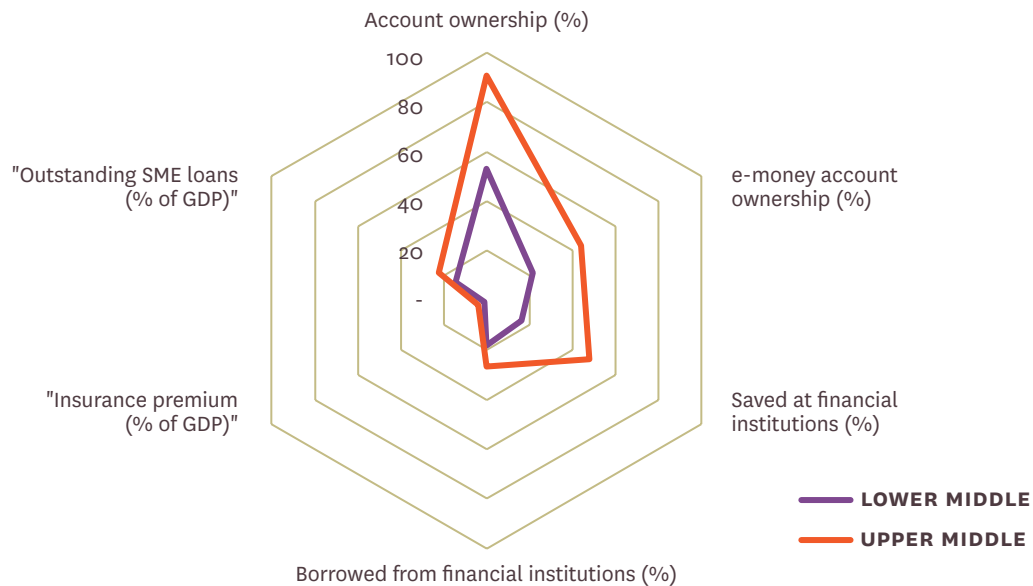


OUTSTANDING SME LOANS FROM COMMERCIAL BANKS (% OF GDP)



SOURCES: Global Financial Development Database 2022 (World Bank); Global Findex Database 2022 (World Bank); Financial Access Survey 2022 (IMF); original calculations for this publication (average of each region).

FIGURE 4.4. FINANCIAL INCLUSION INDICATORS IN THE EAST ASIA AND PACIFIC BY INCOME, 2021



SOURCE: Global Financial Development Database 2022, World Bank; Global Findex Database 2022, World Bank; Financial Access Survey 2022, IMF; original calculation for this publication.

FINANCIAL INNOVATION IN EAST ASIA AND PACIFIC

The East Asia and Pacific region has witnessed remarkable progress in financial innovation, driven by its dynamic economies, technological advancements, and supportive regulatory environments. The emergence of fintech ecosystems has been a notable trend, with numerous start-ups and innovation hubs sprouting across countries. The region has experienced significant growth in the number of fintech companies, and venture capital investments have been on the rise. Although China and high-income countries have been leading the fintech landscape, as seen in table 4.1 and figure 4.5, lower- and middle-income countries, such as Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam have also demonstrated notable advancements.

Indonesia, as seen in table 4.1, has experienced a substantial increase in the number of fintech companies, from just three in 2010 to 80 in 2022. According to Pitchbook, venture capital investment in Indonesia’s fintech sector has surged, reaching a record high of US\$24 billion in 2021. This influx of capital reflects the growing confidence in Indonesia’s fintech industry and its potential for disruption and growth. The significant investment highlights the attractiveness of the market and the opportunities presented by the country’s large population of 275.5 million,²⁰ rising digital adoption, and expanding middle class.

TABLE 4.1. NUMBER OF FINTECH COMPANIES IN THE EAST ASIA AND PACIFIC REGION (EXCLUDING CHINA)

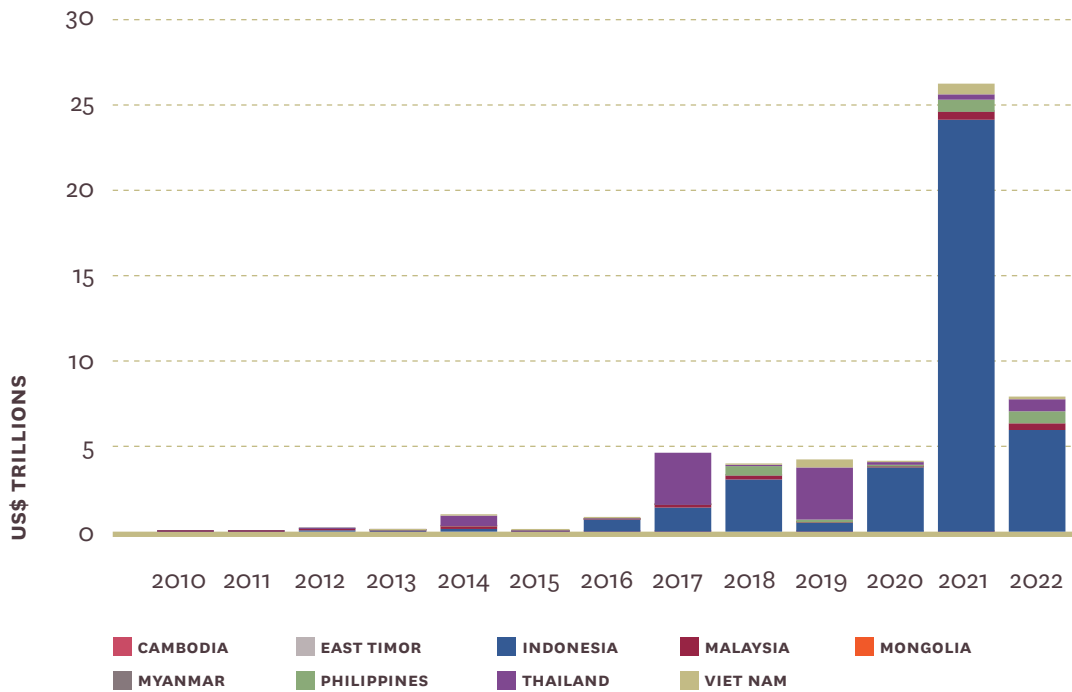
	2010	2015	2020	2021	2022
SINGAPORE	4	65	226	344	366
REPUBLIC OF KOREA	4	31	90	132	145
INDONESIA	3	19	58	76	80
VIETNAM	0	2	9	48	31
MALAYSIA	2	10	20	44	27
PHILIPPINES	0	12	18	23	24
THAILAND	0	7	13	19	18
MYANMAR	0	0	3	2	2
CAMBODIA	0	0	3	3	1
MONGOLIA	0	0	1	1	0

SOURCE: Pitchbook Data

NOTE: Companies where headquarters are in that country only. Fintech as an industry refers to companies that employ the internet, blockchain, software, and algorithms to offer or facilitate financial services traditionally offered by banks. These data vary from the official data published by regulatory authorities.

²⁰ As of 2022. World Bank Group, “Population total – Indonesia,” <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=ID>.

FIGURE 4.5. VENTURE CAPITAL INVESTMENT IN THE EAST ASIA AND PACIFIC (EXCLUDING CHINA AND HIGH-INCOME COUNTRIES)



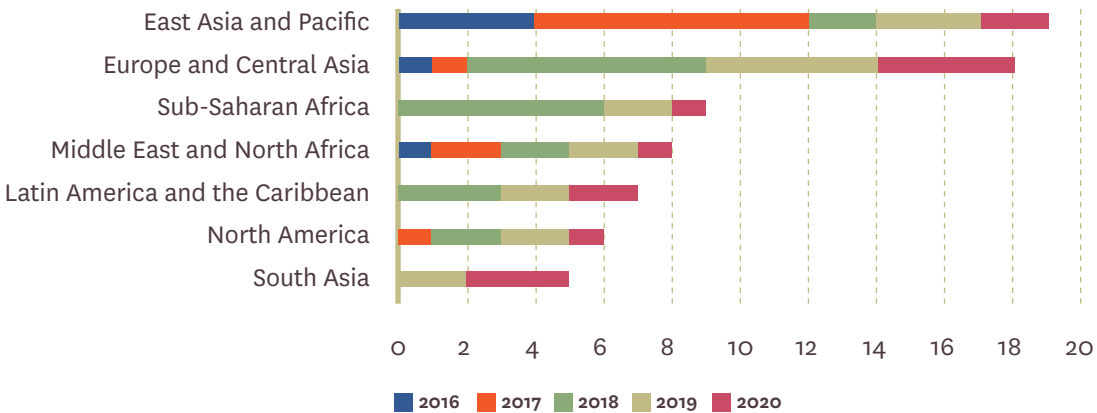
SOURCE: Pitchbook Data

NOTE: Companies where headquarters are in that country only. Fintech as an industry vertical refers to companies that employ the internet, blockchain, software and/or algorithms to offer or facilitate financial services traditionally offered by banks.

The East Asia and Pacific region boasts a substantial presence of regulatory sandboxes for fintech innovation. Countries such as Australia, Brunei Darussalam, China, Fiji, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore, and Thailand have established regulatory sandboxes to facilitate and regulate the testing of fintech solutions. As seen in figure 4.6, this region leads globally in terms of the number of fintech-related sandboxes, closely followed by Europe and Central Asia. The prevalence of regulatory sandboxes in the East Asia and Pacific highlights the proactive approach taken by governments and regulatory authorities to foster innovation in the fintech sector. By providing a controlled environment for testing new financial technologies, these sandboxes encourage experimentation and collaboration between regulators, financial institutions, and fintech start-ups. They also facilitate the development of regulatory frameworks that promote consumer protection, risk management, and compliance.

Overall, the East Asia and Pacific region has emerged as a powerhouse of financial innovation, with flourishing fintech ecosystems, increased investment, and a strong commitment to regulatory experimentation. These developments bode well for the region’s future as a hub for fintech innovation, promoting economic growth, financial inclusion, and technological advancement.

FIGURE 4.6. NUMBER OF SANDBOXES BY REGION



SOURCE: World Bank, “Key Data from Regulatory Sandboxes across the Globe, November 2020, <https://www.worldbank.org/en/topic/fintech/brief/key-data-from-regulatory-sandboxes-across-the-globe>.

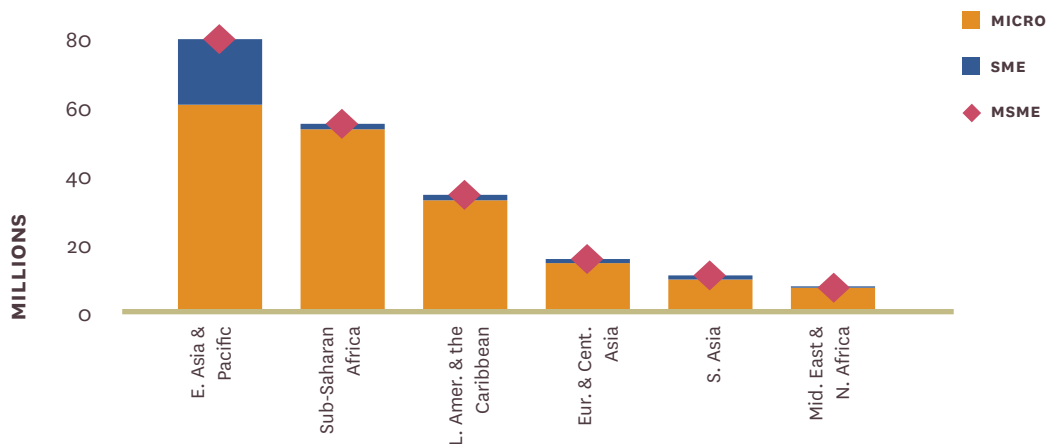
IMPLICATIONS: HOW OPEN FINANCE CAN CONTRIBUTE TO FINANCIAL DEVELOPMENT IN THE EAST ASIA AND PACIFIC REGION

As discussed in the previous chapters, open finance offers numerous advantages for financial development. According to a recent survey (OECD 2023), 19 of 32 countries responded that open finance frameworks have had positive effects on their fintech industry. In the case of developing economies such as those in the region, adopting open finance can lead to improved access to financial services for underserved populations. By leveraging open APIs, fintech companies and third-party providers can develop innovative solutions tailored to the specific needs of unbanked and underserved individuals. Although the East Asia and Pacific region has witnessed a gradual increase in account ownership, a significant gap remains between upper-middle-income and lower-middle-income countries. This gap is particularly pronounced in sectors such as insurance and small and medium enterprises (SMEs) loans. However, the adoption of open finance presents various opportunities for the region to narrow this divide.

One key challenge faced by SMEs in accessing finance is information asymmetry. Approximately 64 million micro, small, and medium enterprises (MSMEs) exist in the East Asia and Pacific region, which is the largest concentration among all regions (see figure 4.7). However, a significant 44 percent of these MSMEs encounter financial constraints, with 33 percent facing full constraints and 11 percent experiencing partial limitations on accessing finance (see figure 4.8) (IFC 2017). Open finance allows SMEs to securely share their financial data, including transaction history and cash flow, with lenders and financial institutions. In the context of SMEs, increased transparency and access to real-time data enable lenders to make more accurate assessments of an SME’s creditworthiness. Consequently, SMEs may find it easier to obtain credit and secure loans. Economic literature highlights that SME financing is marked by market failures and frictions that hinder greater engagement of financial institutions with this segment. These market failures stem

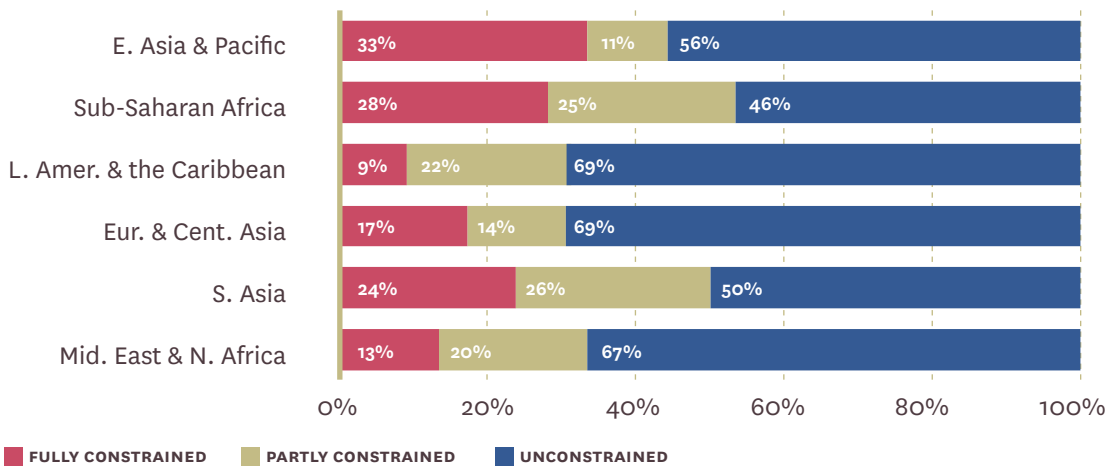
from characteristics of SMEs themselves, including their opacity, higher risk profile, and lack of suitable assets for collateral. Open finance has the potential to address some of these challenges, thereby alleviating financial constraints for SMEs.

FIGURE 4.7. MSMEs BY REGION



SOURCE: IFC 2017.

FIGURE 4.8. DISTRIBUTION OF SMES BY FINANCIAL CONSTRAINT LEVEL



SOURCE: IFC 2017.

Open finance creates opportunities for underserved populations in the East Asia and Pacific region to access financing, improve financial management, and benefit from innovative financial solutions. By harnessing open finance principles and technologies, individuals and businesses can overcome traditional barriers to finance, enhance growth prospects, and contribute to economic development. However, it is important to caution that open finance solutions do not address all constraints related to financial access for the underserved, and they may introduce new obstacles that need to be carefully addressed and mitigated.

Indeed, as mentioned in chapter 2, the jury is still out on whether open finance or open banking can make a difference. As argued by Bungay (2022) in the case of Nigeria, a few factors need to be considered if the objective of enhancing financial inclusion is to be met. He notes that “it is a worthy goal, but a challenging and complex proposition. Ultimately, its success will be based on the extent to which the initiative is explicitly designed to tackle current barriers to financial inclusion.” For example, in Nigeria, one of the key barriers to financial inclusion is the perception that no actual benefits exist for people using formal financial services, which can be expensive, concentrated in urban areas, and tailored to the needs of higher-income individuals and corporations. He goes on to posit that one solution that open banking potentially offers is to ensure expansion of the ecosystem to “include telcos, mobile money providers, e-commerce platforms and utility companies—including those rich sources of data for low-income customers— would open space for innovation. A great example of this could be around credit and savings, where enlarging the addressable market with new segments recruited from among those customers would provide incentives for regulated providers to increase their distribution network and incentivize customer acquisition (including through agents).”

4.2

Country-Level Analysis: Indonesia

OVERVIEW

Indonesian fintech policies aim to increase financial inclusion.²¹ Despite being the fourth-largest country in the world, about 51 percent of the population remain unbanked.²² With enhanced openness between financial products, consumers can more easily evaluate the costs and features of similar financial goods such as insurance premiums and credit loans. Through open finance APIs, fintech businesses can assess a consumer’s credit and income data more accurately, providing highly customized solutions to customers’ financial demands. Open finance could also give Indonesia’s unbanked population access to financial goods they would not previously have had.

As of May 2023, there were 102 registered/licensed fintech players in Indonesia.²³ Fintech offerings have witnessed a high level of customer engagement, with more than 63 million active users in the payment segment alone as of 2020. Transaction values have also experienced a positive trend, with digital banking transactions exceeding Rp52,549 trillion (about US\$3.3 billion) in 2022, resulting in

²¹ For more information, see the “Digital Finance Innovation Road Map and Action Plan 2020–2024” by the Indonesia Financial Services Authority, <https://www.ojk.go.id/id/berita-dan-kegiatan/publikasi/Documents/Pages/Publikasi-Materi-Digital-Finance-Innovation-Road-Map-dan-Action-Plan-2020-2024-serta-Digital-Financial-Literacy/Digital%20Finance%20Innovation%20Road%20Map%20dan%20Action%20Plan.pdf>.

²² See the World Bank Findex Database 2021, <https://www.worldbank.org/en/publication/globalfindex>.

²³ For more information, see the OJK statistical report for 2023, <https://ojk.go.id/id/kanal/iknb/data-dan-statistik/fintech/default.aspx>.

a remarkable 23 percent compound annual growth rate from 2015.²⁴ Although the fintech industry continues to grow, Bank Indonesia and Financial Services Authority (OJK) are collaborating to promote open APIs and open finance to achieve financial inclusion. To cater to public demand for quick, simple, and affordable payment methods, Bank Indonesia developed BI FAST, a real-time retail payment infrastructure. Furthermore, OJK regulates firms dealing with digital payments, ensures that user-shared data is protected, and examines all systems accepting digital payments.

NATIONAL STRATEGIES

Bank Indonesia's "Indonesia Payment System Blueprint (BSPI) 2025" outlines five key initiatives, including open banking, retail payment systems, financial market infrastructure, data, and regulation, licensing, and supervision (Bank Indonesia 2019). The aim is to develop open banking in Indonesia by interconnecting banks and fintechs through standardized APIs for financial information sharing. To facilitate this, Bank Indonesia launched the National Open API Payment Standard (SNAP) in August 2021. SNAP simplifies API integration, promotes interlinking between payment service providers (PSPs) and non-PSPs, reduces industry fragmentation, and accelerates digitalization. Currently, more than 78 PSPs act as service providers, and more than 400 entities act as service users, implementing SNAP.

In addition to open banking initiatives, the Indonesian government has implemented various programs and initiatives to promote financial inclusion, leveraging fintech solutions. In December 2021, the OJK introduced the National Strategy on Indonesian Financial Literacy (SNLKI) 2021–2025. The SNLKI aims to increase the financial literacy index of Indonesians to 75 percent by 2025. It is a comprehensive strategy supported by government agencies such as OJK, the Ministry of Finance, and the Ministry of Education and Culture. See box 4.1.

These financial initiatives encompass facilitating digital banking services, expanding access to microfinance, and promoting the use of digital payments in underserved areas. They aim to enhance access to financial services, empower individuals and businesses, and accelerate the adoption of digital financial solutions in Indonesia.

²⁴ The statistics are from "Payment System and Financial Market Infrastructure Statistics (PSFMI)" by Bank Indonesia, <https://www.bi.go.id/en/statistik/ekonomi-keuangan/spip/default.aspx>.

Box 4.1

Open Banking Regulatory and Implementing Bodies in Indonesia

In Indonesia, the National Planning Agency (Bappenas) is responsible for making national development plans and policies, and it plays a key role in coordinating the implementation of these plans and policies. Bappenas has a number of initiatives under way to promote the use of data in government. These initiatives include development of a national data strategy, establishment of a national data center, promotion of data sharing, and development of data literacy. Bappenas is committed to promoting the use of data in government. By implementing these initiatives, Bappenas can help ensure that the government is using data to make better decisions and improve public services.



In addition to Bappenas, a number of other government bodies are involved in the coordination of data strategies. These bodies and their tasks include the following:

- Ministry of Communication and Information Technology: Developing and implementing the government's information and communications technology (ICT) policies
- Statistics Indonesia (BPS): Collecting and compiling data on the Indonesian economy and society
- Ministry of Finance: Managing the government's finances and overseeing the implementation of the government's budget
- Bank Indonesia (BI): Promoting the use of data in the financial sector
- Financial Services Authority (OJK): Supervising and regulating financial institutions
- Indonesian Banking Association (Perbanas): The industry association for banks in Indonesia. It works to promote the interests of the banking industry and to develop the banking sector.
- Indonesian Securities Association (IndoSec): The industry association for securities companies in Indonesia. It works to promote the interests of the securities industry and to develop the securities market.

These bodies work together to ensure that the government is using data effectively and efficiently. They also work to promote data sharing and collaboration between government agencies.

SOURCE: Original description based on survey responses.

FINTECH SUPPORT POLICIES

Indonesia has implemented various fintech support policies to foster the growth and development of the fintech sector. These policies aim to promote innovation, financial inclusion, and regulatory clarity. One key fintech support policy is the regulatory sandbox. The OJK established a regulatory

sandbox framework²⁵ that allows fintech start-ups to test their innovative products and services in a controlled environment. The sandbox provides flexibility in regulatory requirements while ensuring consumer protection and financial system stability. As of June 2023, there were 43 companies that had participated in the regulatory sandbox.²⁶ Another key fintech support policy is peer-to-peer (P2P) lending regulation.²⁷ In 2016, OJK issued regulations specifically for P2P lending platforms, which set operational and prudential requirements to safeguard the interests of lenders and borrowers. This regulatory framework helps promote responsible lending practices and consumer protection.

NATIONAL ID SYSTEM

The Indonesian identity card, also known as Kartu Tanda Penduduk Elektronik (e-KTP), or Electronic National ID Card, is a crucial identification document in Indonesia, serving as official proof of identity and citizenship for Indonesian citizens ages 17 years and older. Introduced as an advanced version of the traditional national identification card, the e-KTP incorporates enhanced security features and biometric data. As of 2022, the Ministry of Home Affairs reported that there are approximately 205 million e-KTP holders in Indonesia, representing about 99 percent of the country's population over 17.²⁸ The e-KTP functions as a digital alternative to the traditional ID card (KTP), containing the same information while also including a chip that stores additional details such as the holder's fingerprints and photograph. Offering increased security measures, the e-KTP can be used for a wide range of purposes.

The issuance of e-KTPs in Indonesia began in 2009, initially at a slower pace, but it has since gained momentum. The government has prioritized the distribution of the e-KTP to all citizens, with the goal of making it the sole accepted form of identification nationwide. By implementing the e-KTP system, Indonesia aims to enhance identification processes, streamline administrative procedures, and establish a more secure and reliable system for verifying individual identities.

CREDIT INFORMATION SYSTEM

Under OJK Regulation No. 18/POJK.03/2017, the Financial Information Services System (SLIK) is the platform managed by the OJK to collect and record credit or loan facility data. The SLIK is an upgrade of the Bank Indonesia's Debtor Information System (SID) and was built as a tool for exchanging financing or credit information among institutions in the financial field. The SLIK was launched in April 2017²⁹, and fully replaced SID on January 1, 2018, with the primary purpose of generating credit information status for individuals. The reporting obligations outlined in the

²⁵ The regulation is OJK Regulation No. 13/POJK.02/2018 on Digital Financial Innovation Experimentation.

²⁶ More information is available at <https://www.ojk.go.id/gesit>.

²⁷ The regulations are OJK Regulation No. 77/POJK.01/2016 on Information Technology-Based Lending Services and POJK No. 10/POJK.05/2022.

²⁸ The statistics are from the Population Data website by the Indonesian Ministry of Home Affairs, <https://dukcapil.kemendagri.go.id/page/read/data-kependudukan>.

²⁹ [https://ojk.go.id/en/berita-dan-kegiatan/siaran-pers/Pages/Press-Release-OJK-Launches-Financial-Information-Services-System-\(SLIK\)-to-Enhance-Debtor-Information-System.aspx](https://ojk.go.id/en/berita-dan-kegiatan/siaran-pers/Pages/Press-Release-OJK-Launches-Financial-Information-Services-System-(SLIK)-to-Enhance-Debtor-Information-System.aspx). The Financial Services Authority (OJK) launched the Financial Information Services System (SLIK) on April 27 in Jakarta. The system is an upgrade of the Debtor Information System (SID) and it was built as a tool for exchanging financing or credit information among institutions in the financial field. From January 1, 2018, onwards, the SLIK fully replaced the role of the SID, which is managed by Bank Indonesia.

regulation extend beyond banks and other financial services institutions (FSIs). Non-FSIs can also be reporting companies, subject to approval from the OJK. Therefore, entities operating in the fintech sector, such as P2P lending companies, can potentially become reporting companies if they obtain approval from the OJK. By becoming reporting companies, these fintech companies are required to submit credit or loan facility data to the SLIK. By expanding the scope of reporting companies to include non-FSIs, including fintech companies, the OJK aims to gather a broader range of credit data and enhance the accuracy and completeness of credit information within the SLIK system.

FINTECH ENVIRONMENTS

Major fintech companies' services in Indonesia such as ShopeePay, GoPay, OVO, DANA, and LinkAja offer account information and payment services through APIs. Under the regulatory sandbox established by Bank Indonesia and OJK, Indonesian fintech companies are authorized to offer various services, as outlined in table 4.2.

TABLE 4.2. ALLOWED SERVICES BY TYPE OF FINANCIAL FIRMS

	OWN ^A	INTERMEDIARY ^B	MARKETING ^C	FINANCIAL ADVISER AND COMPARISON ANALYSIS OF FINANCIAL PRODUCTS ^D
DEPOSIT ACCOUNT	n.a.	Digital financial innovator-Funding Agent, under OJK Regulatory Sandbox	Digital financial innovator-Funding Agent, under OJK Regulatory Sandbox	Digital financial innovator-Aggregator, under OJK Regulatory Sandbox
E-MONEY ACCOUNT	Licensed payment system provider	n.a.	n.a.	n.a.
LENDING	Licensed fintech lending	Digital financial innovator-Financing Agent, under OJK Regulatory Sandbox	Digital financial innovator-Financing Agent, under OJK Regulatory Sandbox (POJK No 13 /POJK 02 2018)	Digital financial innovator-Aggregator, under OJK Regulatory Sandbox
INSURANCE	n.a.	Digital financial innovator-InsurTech, under OJK Regulatory Sandbox	Digital financial innovator-InsurTech, under OJK Regulatory Sandbox	Digital financial innovator-Aggregator, under OJK Regulatory Sandbox

	OWN ^A	INTERMEDIARY ^B	MARKETING ^C	FINANCIAL ADVISER AND COMPARISON ANALYSIS OF FINANCIAL PRODUCTS ^D
SECURITIES	n.a.	Digital financial innovator-WealthTech, under OJK Regulatory Sandbox	Digital financial innovator-WealthTech, under OJK Regulatory Sandbox	Digital financial innovator-Aggregator, under OJK Regulatory Sandbox
CREDIT/ DEBIT CARDS	Licensed card payment provider	n.a.	n.a.	n.a.
OTHER FINANCIAL PRODUCTS	Digital financial innovator under OJK Regulatory Sandbox (such as Financial Planner, e-KYC, Innovative Credit Scoring, Online Distress Solution, RegTech-AML, RegTech-eSign, Property Investment Management, Transaction Authentication, and Tax & Accounting).			

SOURCE: Original table for this publication.

NOTE: n.a. = Not applicable.

a. It includes the delivery of the financial products by subsidiaries.

b. It includes targeted advertisements whose main purpose is to directly increase sales of the financial products.

c. Marketing is confined to a simple, untargeted advertisement whose main purpose is to convey information about the financial company or the financial products. Marketing fees cannot be related to the sales volume.

d. Financial adviser services are the services that assess customers' financial conditions and recommend suitable financial services in customers' best interests upon their requests. Comparison analysis is a system that compares financial products with respect to certain criteria or customers' specific conditions.

4.3

Country-Level Analysis: The Philippines

OVERVIEW

The Philippines faces a significant challenge of high unbanked populations, with approximately 46 percent of adults unbanked as of 2021.³⁰ Thus, almost half of the adults in the country are excluded from basic financial services, hindering their ability to save, borrow, and secure their financial future. Recognizing this issue, the government has prioritized financial inclusion efforts. In response to the financial inclusion challenge, the government launched the National Strategy for Financial Inclusion (NSFI) in 2016. This strategy encompasses a comprehensive approach that involves partnerships between government agencies, financial institutions, and fintech companies to promote innovative solutions and expand financial access.

Digital finance in the Philippines has played a crucial role in driving financial inclusion and transforming the financial landscape. The combination of rapid digitalization and a supportive regulatory environment has led to significant growth in the fintech sector. Notably, the adoption of digital payments has experienced remarkable progress. According to the Bangko Sentral ng Pilipinas (BSP), the share of digital payments by volume has increased significantly, rising from 1 percent in 2013 to 42.1 percent in 2022.³¹ Alongside the growth of digital payments, there has been an expansion of other digital finance-related firms in recent years. As of July 2023, there were 257 operators of payment systems operating in the Philippines, providing a diverse range of payment services. In addition, as of March 2024, there were 275 e-money issuers offering digital wallet services, facilitating convenient and secure digital transactions.³² The emergence of 19 virtual asset service providers in April 2023 highlights the increasing interest in cryptocurrencies and blockchain-based financial solutions.³³

These developments demonstrate the dynamic nature of the digital finance sector in the Philippines. The adoption of digital payments, coupled with the presence of numerous payment system operators, e-money issuers, and virtual asset service providers, signifies the increasing importance of fintech in reshaping the financial landscape. The government's supportive regulatory framework has fostered an environment conducive to innovation and financial inclusion, paving the way for further growth and development in digital finance.

³⁰ See the World Bank Global Findex Database 2021, <https://www.worldbank.org/en/publication/globalfindex>.

³¹ See BSP's 2022 Status of Digital payments, https://www.bsp.gov.ph/PaymentAndSettlement/2022_Report_on_E-payments_Measurement.pdf.

³² See the BSP's List of BSP Registered Operator of Payment System (OPS), <https://www.bsp.gov.ph/PaymentAndSettlement/COR.pdf>.

³³ See the BSP's Financial Stability Directories and Lists, <https://www.bsp.gov.ph/SitePages/financialstability/Directories.aspx>.

NATIONAL STRATEGIES

The development of open finance in the Philippines has gained significant momentum in recent years, with several key initiatives and frameworks driving its progress. These strategies include the following:

- *Open Finance Framework (June 2021)*: The Open Finance Framework, enacted by the BSP, aims to create an environment that promotes transparency, competition, and innovation in the financial sector. This framework establishes guidelines and standards for open APIs and secure data sharing, enabling collaboration between financial institutions and third-party providers. It is based on the principle of “consent-based data sharing,” which means that consumers must give their consent before their data can be shared with third-party providers.
- *BSP Digital Payments Transformation Roadmap (DPTR) 2020–2023 (2015)*: The BSP Digital Payments Transformation Roadmap is a strategic plan designed to drive the digital transformation of the payment system in the Philippines. It outlines a roadmap for the adoption and expansion of digital payment solutions, including mobile banking, e-wallets, and other electronic payment platforms. The roadmap focuses on enhancing efficiency, security, and accessibility in digital payment services.
- *Updated National Strategy for Financial Inclusion (NSFI) 2022–2028 (January 2022)*: The Updated National Strategy for Financial Inclusion is a comprehensive plan formulated by the Financial Inclusion Steering Committee (FISC) to promote financial inclusion across the Philippines. It outlines priority actions, policies, and initiatives aimed at expanding access to financial services for SMEs, improving financial literacy, and ensuring the availability of affordable and suitable financial products and services for all segments of the population.
- *Proposed e-Governance Bill (July 2022)*:³⁴ The proposed e-Governance Bill is a legislative initiative that aims to enhance digital governance and streamline government processes in the Philippines. If enacted, this bill would establish a legal framework for the digital transformation of government services, promoting the use of digital technologies to improve efficiency, transparency, and citizen engagement in government transactions.

These four nationwide strategies highlight the commitment by the Philippines to embrace digital transformation and foster an inclusive financial ecosystem. By leveraging open finance principles, promoting digital payments, expanding financial inclusion, and enhancing e-governance, the country aims to unlock the benefits of technology and innovation for the benefit of its citizens and businesses. Box 4.2 describes the governmental bodies that implement the open finance policies and regulations.

³⁴ The bill passed the House of Representatives in March 2023, <https://www.congress.gov.ph/press/details.php?pressid=12406>.

Box 4.2

Open Banking and Open Finance Regulatory and Implementing Bodies in the Philippines

Several government bodies are involved in implementing policies related to open finance, mainly through the Financial Sector Forum, and others deal with some aspects of open finance policies:

- **Bangko Sentral ng Pilipinas (BSP):** Regulates institutions engaged in activities such as electronic money issuance, virtual asset services, payment system operation, and remittance platform provision.
- **Securities and Exchange Commission (SEC):** Serves as the main regulatory body for lending and financing companies. It also regulates securities offerings, sales, and investment activities.
- **Insurance Commission:** Oversees and regulates insurance firms, health maintenance organizations (HMOs), and pre-need companies.
- **Department of Information and Communications Technology (DICT):** Formulates, recommends, and implements policy and program frameworks to promote the rapid development and improved global competitiveness of the ICT industry. It also ensures the efficient and effective management of ICT infrastructure and information systems.
- **National Privacy Commission (NPC):** Deals with matters involving data privacy and ensures compliance with data protection regulations.
- **National Telecommunications Commission:** Regulates value-added services, including mobile applications and online platforms used for the delivery of financial services.
- **Financial Inclusion Steering Committee (FISC):** An interagency governing body that leads a coordinated and collaborative approach in implementing the National Strategy for Financial Inclusion (NSFI). It provides guidance in the development of policies, regulations, supervisory frameworks, programs, and initiatives. Promoting inclusive digital finance is a priority initiative of the NSFI.

These government bodies work together to create a cohesive regulatory environment and ensure the effective implementation of policies and regulations that govern the open finance framework in the Philippines.

SOURCE: Original description based on survey responses.



FINTECH SUPPORT POLICIES

The Philippines has implemented a range of policies to support the growth of the fintech industry. These policies encompass regulatory sandbox initiatives, financial support, fiscal support, and intangible support measures. Notably, the country has established the Philippine Start-up Venture Fund (DTI) with a budget of ₱250 million (approximately US\$4,402,609) dedicated to supporting start-ups in the seed to series B stage. This fund aims to provide financial assistance to promising start-ups and fuel their growth.

In addition, the Philippines has enacted the Philippine Innovation Act, also known as Republic Act no. 11293, which recognizes the significance of innovation in national development and sustainable economic growth. This legislation empowers the National Economic and Development Authority (NEDA) to grant funds for innovation programs, activities, and projects. The guidelines for these grants are issued by NEDA in collaboration with the Department of Budget and Management (DBM). These grants serve as a mechanism to encourage and support innovative initiatives throughout the country.

NATIONAL ID SYSTEM

The Philippine government implemented the Philippine Identification System (PhilSys) as its national ID system in August 2018. The PhilSys ID is a unique 12-digit number that is assigned to every Filipino citizen and resident alien. The ID is intended to serve as a single, valid proof of identity for all government and private transactions. As of May 2023, 78.4 percent of citizens had acquired their PhilSys ID, which is a significant portion of the population. This high penetration rate is a positive sign for the government's efforts to promote financial inclusion in the Philippines. The ID can help make it easier for people to open bank accounts and access other financial services. However, only 9.4 percent of bank accounts had been linked to the PhilSys ID. This is a challenge that the government needs to address. The government can encourage banks to link their accounts to the PhilSys ID by providing financial incentives or by making it mandatory for banks to do so. Overall, the PhilSys ID is a promising initiative that has the potential to improve financial inclusion in the Philippines. However, the government needs to address the challenge of linking bank accounts to the ID to fully realize the benefits of the system.

CREDIT INFORMATION SYSTEM

As discussed in chapter 3, if open finance is ideally implemented, it can (1) provide integrated management of one's credit information, (2) analyze financial status, (3) offer customized financial management consulting, and (4) recommend optimal financial services from a list of financial services and products. In this respect, it is good to observe that in the Philippines, the Credit Information Corporation (CIC)³⁵ was established under Republic Act no. 9510, also known as the Credit Information System Act (CISA), to oversee and regulate the collection, consolidation, and dissemination of credit information in the country. The CIC is responsible for maintaining a comprehensive and centralized credit information system that collects and stores credit data from various financial institutions and lenders. Under the CISA, financial institutions, including banks, nonbank financial institutions, and credit-granting entities, are required to submit credit data to the CIC. This includes information on borrowers' credit history, loan repayment behavior, and other relevant credit-related data. The CIC ensures the accuracy, security, and confidentiality of the collected credit information. Although the collection of credit information is mandatory, individuals have rights under the CISA to access and correct their credit information. They can also request a copy of their credit report from the CIC to monitor their credit standing.

³⁵ For more information, see the CIC website, <https://www.creditinfo.gov.ph/>.

Annexes

Annex 4A.

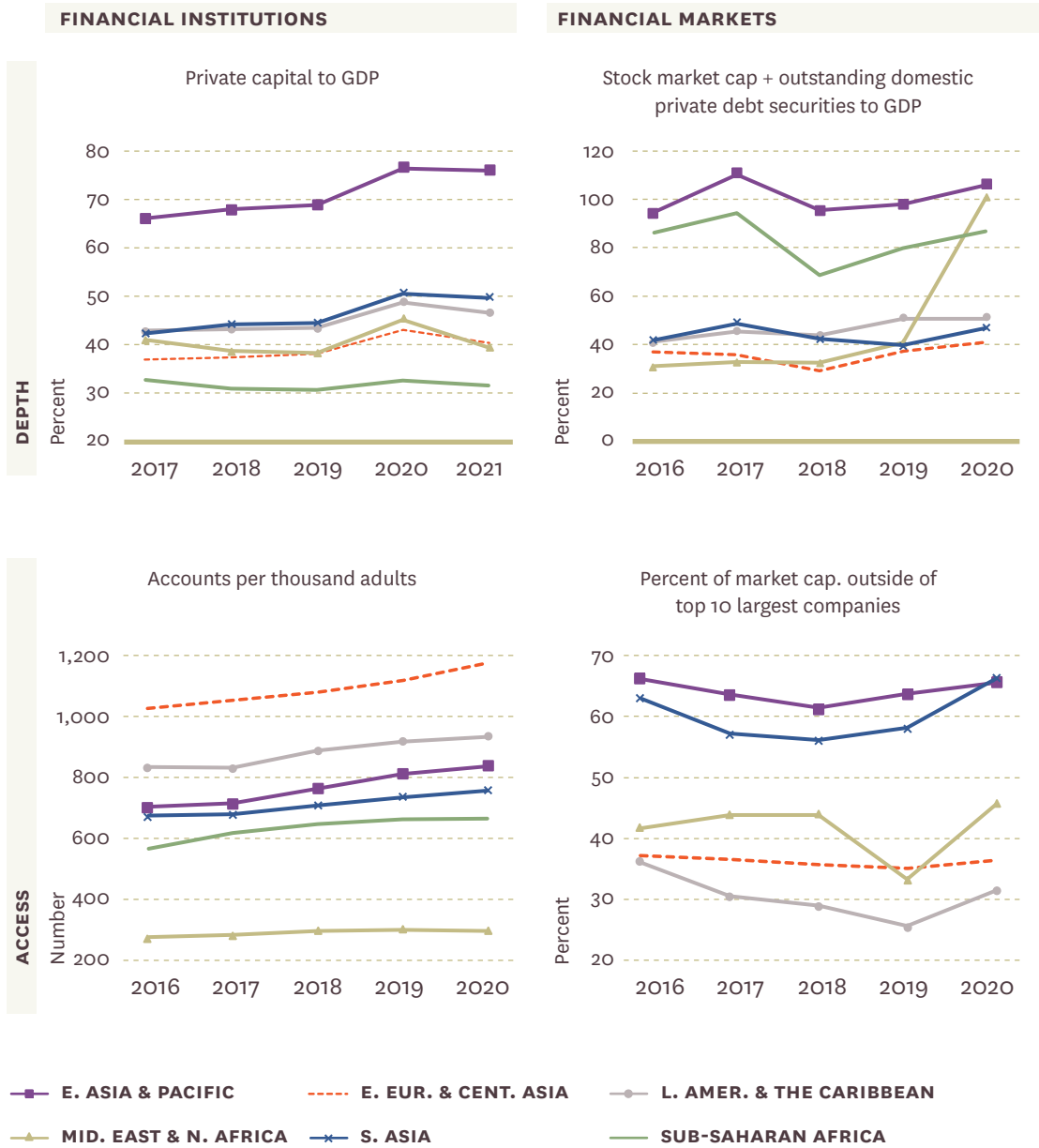
Indicators for Assessing Financial Development

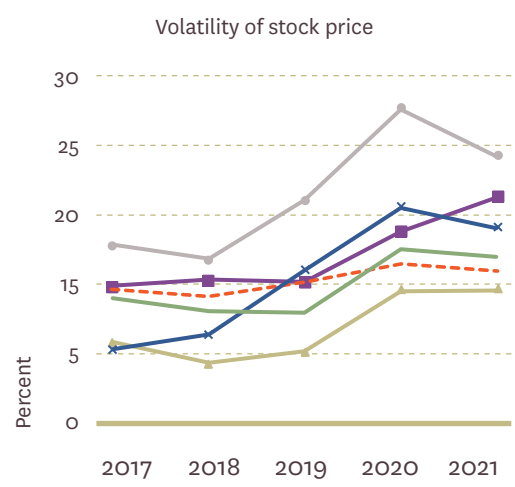
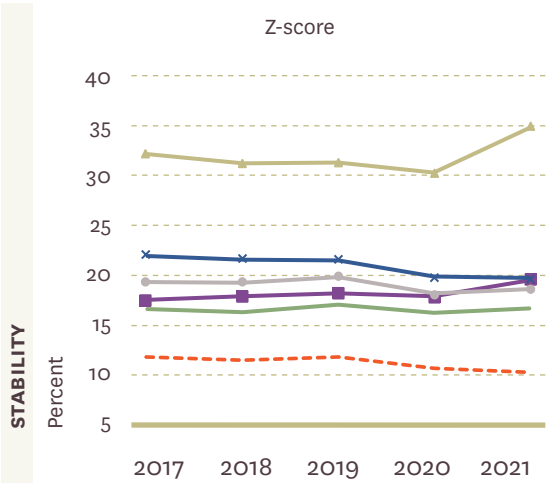
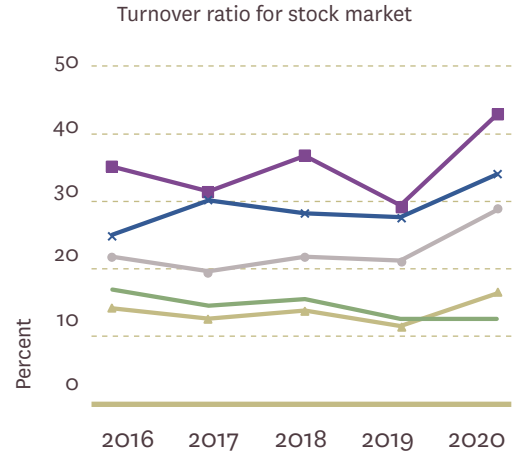
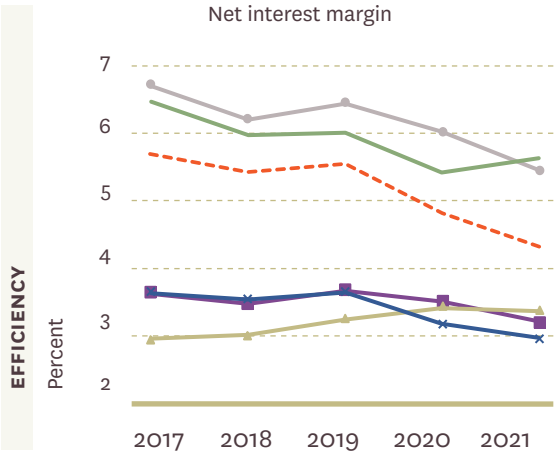
	FINANCIAL INSTITUTION	FINANCIAL MARKETS
DEPTH	Private credit to GDP Financial institutions' assets to GDP M2 ^a to GDP Deposits to GDP Gross value-added of the financial sector to GDP	Stock market capitalization plus outstanding domestic private debt securities to GDP Private debt securities to GDP Public debt securities to GDP International debt securities to GDP Stock market capitalization to GDP Stocks traded to GDP
ACCESS	Accounts per thousand adults (commercial banks) Branches per 100,000 adults (commercial banks) % of people with a bank account % of firms with line of credit (all firms) % of firms with line of credit (small firms)	Percent of market capitalization outside of top 10 largest companies Percent of value traded outside of top 10 traded companies Government bond yields (3 months and 10 years) Ratio of domestic to total debt securities Ratio of private to total debt securities (domestic) Ratio of new corporate bond issues to GDP
EFFICIENCY	Net interest margin Lending-deposits spread Non-interest income to total income Overhead costs (% of total assets) Profitability (return on assets, return on equity) Boone indicator (or Herfindahl or H-statistics)	Turnover ratio (turnover/capitalization) for stock market Price synchronicity (co-movement) Private information trading Price impact Liquidity/transaction costs Quoted bid-ask spread for government bonds Turnover of bonds (private, public) on securities exchange Settlement efficiency
STABILITY	Z-score (or distance to default) Capital adequacy ratios Asset quality ratios Liquidity ratios Other (net foreign exchange position to capital and so on)	Volatility (standard deviation / average) of stock price index, sovereign bond index Skewness of the index (stock price, sovereign bond) Vulnerability to earnings manipulation Price/earnings ratio Duration Ratio of short-term to total bonds (domestic, int'l) Correlation with major bond returns (German, US)

SOURCE: Čihák et al, [Financial Development in 205 Economies, 1960 to 2020](#), NBER Working Paper Series (April 2013).

NOTE: a. M2 is a monetary term that refers to a broad measure of the money supply in an economy. It includes all elements of M1 (which is the most liquid form of money, including physical currency and checking accounts) and adds other near-money elements that are less liquid but can still be quickly converted to cash or used as a medium of exchange. M2 typically includes savings accounts, time deposits (such as certificates of deposit or CDs), and other relatively liquid assets.

Annex 4B. Middle-Income Countries' Financial Sector Development by Region (2016–21)





SOURCE: Global Financial Development Database 2022, World Bank; Global Findex Database 2022, World Bank; original calculations for this publication.

05

Policy Implications for the East Asia and Pacific and Beyond



5. Policy Implications for the East Asia and Pacific and Beyond

Because Korea's journey to open banking and open finance began in 2019 and 2022, respectively, it is still too early to make a rigorous policy assessment. However, the relatively timely introduction, implementation, and expansion of open banking and open finance in Korea may offer some lessons to countries that are considering policy options to design their own open finance initiatives.

No single legislative effort or policy initiative can encapsulate Korea's journey to open banking and open finance; rather, it is a result of a series of policy initiatives, implemented over many years, involving different stakeholders, including the government, financial companies, and fintech players. Korea's experience offers lessons to the East Asia and Pacific countries and countries in other regions that are considering open banking and open finance as policy options. Moreover, financial income disparity, as discussed in the previous chapter, exists across different income groups in the East Asia and Pacific region. To bridge this gap, several policy initiatives have been introduced, including Indonesia's Payment System Blueprint 2025 and the Philippines' National Strategy for Financial Inclusion. These initiatives aim to leverage innovative finance as a means to address the issue. It is crucial to carefully consider and efficiently implement these policy initiatives, drawing inspiration from successful examples such as those seen in Korea. In the following sections, the authors suggest several specific policy implications drawn from Korea's experience, highlighting in order of importance key considerations for policy makers and key players in the financial sector, while shedding light on the critical steps and measures involved.

5.1. Clear Policy Objectives

Setting clear policy objectives and designing practical implementation plans that fully utilize the existing institutions are critical. In Korea, open banking and open finance have been pursued as practical solutions to clear policy objectives. For open banking, the objective is to foster financial innovation by establishing an open API system that fintech companies can conveniently use to develop retail payment services. For open finance, the objective—fostering the use of big data at first and introducing the right to data portability—is broad, but the implementation—the introduction of MyData business, the decision on the coverage of data sharing, the standardization of APIs, and the use of hub-and-spoke structures for efficient data sharing—fully takes practical considerations into account. Interested authorities should set clear policy objectives first and gauge

practical implementation plans for the objectives. If the primary policy objective is to expand basic financial inclusion, such as increasing the proportion of account ownership, interested authorities should first explore the options of electronic identities so that the Know Your Customer (KYC) and onboarding of the underserved become easier.

5.2. Regulatory and Legislative Efforts

Strong regulatory and legislative efforts are necessary to implement open banking and open finance. Implementing open banking and open finance in Korea has required tremendous, continuous regulatory and legislative efforts. The introduction of open banking has required a strong government initiative, about which the IMF (2020) said a “prescriptive approach to open banking is being adopted.” In the absence of strong government initiatives, it would not have been possible to establish the Banking Sector Joint Open Platform in the first place, which is the predecessor of the open banking system. Without strong legislative efforts to build open data environments, it would not be easy to amend the Credit Information Use and Protection Act to codify the right to data portability.

During the legislative process, it is important to fully consider the activities that fintech companies can do with open finance. Implementing open banking and open finance alone may not result in huge changes if users have only little things to do with it. For the initiatives to bring the expected benefits, interested authorities should carefully design what fintech companies or open finance applications can do in relation to the provision of financial services. There can be many candidate roles: marketing, advisory, intermediaries, and agents for different types of financial services or direct provision. With more functions that fintech companies can provide without invoking consumer protection concerns, the benefits from better decision-making and provision of financial services will be realized with a greater degree.

5.3. Centralized versus Decentralized Approach

Interested authorities should carefully evaluate the existing institutions and explore both centralized and decentralized approaches. In Korea, the fact that open banking takes a centralized approach, and open finance takes a semi-centralized approach (hub-and-spoke), contributes to a faster and more efficient adoption of open finance. The open banking system in Korea is managed by KFTC, which serves as the sole intermediary for open banking-related APIs. This centralized approach offers three main advantages. First, it simplifies the development process for financial companies and fintech companies by eliminating the need to navigate through individual financial institutions’ APIs or to compare the pros and cons of various API intermediaries. Second, it harmonizes the specifications (such as operating hours) of payment functions implemented through open banking, addressing the issue of differing availability times for deposits or withdrawals caused by varied IT maintenance schedules among individual financial companies and the presence of multiple API intermediaries with differing specifications. Third, cybersecurity risks may be mitigated when a

limited number of intermediaries provide APIs and have direct connections to financial companies with dedicated lines.

However, there are also relative advantages to using a decentralized approach—using individual financial companies’ APIs or having multiple API intermediaries in competition with each other as opposed to a centralized approach. First, competition among multiple API intermediaries could enhance the usability and security of APIs. Second, it could encourage the development of premium APIs for innovative functions when fintech companies and financial institutions use individual APIs.

The choice between centralized and decentralized approaches should consider several factors: the existence of institutions capable of applying a centralized approach, the presence of entities or the private sector capable of acting as API intermediaries in a decentralized approach, the compliance burden associated with operating individual financial institutions’ API facilities, and the potential for individual financial institutions to block access through their API accessibility or pricing. In Korea, institutions like KFTC, which operates a retail payment settlement system, especially for clearing, naturally emerge as a candidate for implementing a centralized approach to payment-related APIs. Also, a careful analysis of whether the decentralized approach may pose excessive burdens on small and medium-sized financial companies because of the operational demands of their API facilities, and potentially enable individual financial institutions to block access through their API accessibility or pricing, would be necessary.

5.4. Interoperability

Interested authorities should seek roles to ensure the interoperability of data sharing. In Korea, interoperability of data sharing in the financial sector was not a problem. KFTC runs retail payment systems as well as the open banking system, resulting in the interoperability of open banking APIs. The API specifications for open finance have been thoroughly discussed by the Data API Standardization Working Group, resulting in the interoperability of open finance APIs. Such “centralized” discussion of API standards may preclude the private sector’s efforts to invent multiple API standards and compete with each other. However, if the natural emergence of API specifications is not foreseen, government suasion to establish API standards may help to make faster adoption and implementation of open banking and open finance.

Of course, some countries have multiple operators for retail payment systems or multiple public or private initiatives for data sharing. Even so, authorities should consider stepping in to organize working groups to establish the very basic API standards for a minimum level of interoperability. If the open data regime is considered not only in the financial sector but also in other areas such as government data, interoperability between different sectors should also be considered.

5.5.

Phase-in Approach

Interested authorities should actively consider phase-in approaches. Open banking and open finance potentially reduce the incumbent financial companies' informational advantages. Also, financial institutions have different readiness for data sharing, in terms of IT infrastructure, cybersecurity, or internal control to ensure safe data sharing. Therefore, a one-step approach to implementing data sharing will face fierce opposition and require more regulatory and legislative efforts. Therefore, interested authorities should consider small steps such as introducing Pay Info or Account Info, as in Korea, to promote competition in the banking industry or introducing Insurance Damoa to promote competition in the insurance industry. In addition, interested authorities should also consider initiating open banking first and expanding to open finance because the banking industry may be more digitized than other financial industries or compliant to regulatory efforts. Also, even within open banking and open finance, there could be a variety of policy choices: for example, mandating the major financial companies to share data first as with the United Kingdom's open banking or mandating the sharing of payment-related account data first as with the EU's Revised Payment Services Directive (PSD2)³⁶, and so forth. Korea has also taken phase-in approaches in both open banking and open finance; open banking started from commercial banks and has expanded to other industries. The scope of data sharing in open finance has gradually expanded. Phase-in approaches that prioritize data sharing of large financial companies and consider the practical burdens of small or medium-sized financial companies or the sharing of detailed data would support the adoption of open banking and open finance.

5.6.

Innovation and Competition

Developed fintech ecosystem and pro-competitive policies help the adoption of open banking and open finance. The existence of influential fintech applications is one of the major rationales for financial companies to participate in open banking or agree with open finance. In Korea, popular fintech applications like Toss were providing payment or money transfer services between multiple banks or information inquiry services with web scraping. In addition, the presence of fintech applications in the provision of some financial products (such as soliciting credit card customers) was becoming more evident. If traditional financial companies could not participate in open banking and open finance, it would have been impossible for them to build their applications as competitive as fintech applications. Therefore, policies to promote innovation and competition from outside the financial sector might induce financial companies to feel the need to disrupt themselves and accept the open finance framework.

³⁶ The Revised Payment Services Directive (PSD2) is a set of laws and regulations for payment services in the European Union and the European Economic Area. It was passed in 2015 - but the most important aspects for online payments come into effect in stages from 2019 all the way through to 2022.

5.7. Collaboration

Active collaboration with financial companies, fintech players, public institutions, and governments is necessary to implement well-functioning open banking and open finance systems with wide and granular data sharing. Korea's open finance has been successful because of active collaboration among relevant stakeholders. Even before the amendment of the Credit and Information Use Act, the FSC led the Data API Standardization Working Group, which consists of itself, financial companies, industry associations, and fintech companies. For example, after API specifications were determined, the establishment of API systems by small and medium financial companies could be delayed without public entities such as KCIS actively finding their roles as open finance intermediaries. Bringing stakeholders for standardization and interested public entities for API intermediaries could be helpful, particularly in countries where reliable private companies for building API systems are absent. Essentially, this collaborative model ensures that all necessary parties are involved in the creation and successful implementation of open finance systems.

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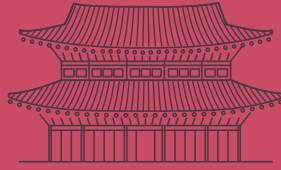
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