



OPEN BANKING: HOW TO DESIGN FOR FINANCIAL INCLUSION

Consultative Group to Assist the Poor

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EXECUTIVE SUMMARY

OPEN BANKING IS TRANSFORMING THE FINANCIAL SERVICES industry in advanced economies. By breaking open the data silos of traditional banks, open banking regimes allow fintechs and other innovators to access customer data, including transaction data, and use these data to develop new products and services that are better suited to the needs of consumers. For emerging and developing economies (EMDEs), open banking holds out the promise to foster innovation and lower costs in ways that will make it more economical to serve the underserved and unbanked and offer products and services better suited to their needs.

However, open banking regimes as a means for furthering financial inclusion are largely untested in EMDEs. To better understand the opportunities and risks, CGAP has conducted a landscaping review of 12 open banking regimes, including deep dives into seven regimes and two case studies, to learn how they can be designed to enable products and business models that could be beneficial for financial inclusion, and how these may alleviate pain points of low-income individuals.

Based on this review, CGAP has identified 12 design components that policy makers need to consider when developing a framework for an open banking regime. Five of these components are critical to expanding financial services for poor people, or what we call “financial inclusion by design.” These five design components address:

1. Who is required to share data and who can access the data.
2. What types of data are shared.
3. Which industries are covered (e.g., banking only or utilities and telecoms).
4. Whether payment initiation is enabled in the regime.
5. Who bears the cost of the regime (including for each data exchange and the set-up of the relevant infrastructure).

How these questions are addressed will have a significant impact on a regime’s potential to achieve financial inclusion objectives. For example, the greater the number of participants required or permitted to share the data and access them, the greater the diversity of new services that can be enabled, and the more competition that could result. Similarly, the greater the breadth in the types of eligible data, the more likely that products relevant for low-income individuals can be developed.

Since it is still early days for open banking regimes, in particular in EMDEs, these early findings need to be tested further and substantiated through more in-depth research in a range of countries. In the meantime, this paper is intended to catalyze policy makers to consider how they can design open banking and other data-sharing frameworks from the perspective of financial inclusion.

SECTION 1

INTRODUCTION

OPEN BANKING IS TRANSFORMING FINANCIAL SERVICES FOR consumers, banks, [fintechs](#), regulators, and other financial sector stakeholders.¹ Traditionally, banks have held a monopoly on consumer transaction data but have made scant use of this treasure trove of proprietary information. Since its adoption in advanced economies in 2018, open banking has begun to create significant changes in the marketplace by breaking down data silos within the financial sector and opening up access to data to a wider range of users. The rise of fintechs and other innovative business models, such as platforms, has shown that new market players often are better positioned or have stronger incentives to leverage data and, based on that data, can offer consumers a range of new products and services at a lower cost. Middle- and low-income countries are now starting to explore the promise of open banking.

Open banking may offer many advantages for people with low incomes. If properly structured and with the right market conditions, the exchange of data that results from open banking can support financial resilience and financial inclusion in several ways. First, when fintechs and financial institutions are able to access customer financial data held by incumbent banks and other financial institutions, these new entrants can create new products. Compared to current products offered by existing institutions, these new savings, credit, and financial management products would provide improved value for those who are banked but underserved.

The unbanked may benefit if data held by nonfinancial institutions such as utility companies and telecommunications (telecoms) providers also can be accessed. Second, market entry by new types of entities facilitated by open banking—such as [account information service providers](#) (AISPs) and [payment initiation service providers](#) (PISPs)—can increase competition in financial services markets. This can lead to lower prices and increased product diversity, which would render financial services more affordable to low-income populations. Further, due to their lower cost structures, entities based on these new business models may now view as profitable previously unprofitable segments of the population such as the unbanked and the underbanked. This results in an increase in the size of the customer pie, with other financial sector stakeholders incentivized to innovate and reach low-income populations as well.

¹ We use the term “open banking” in this report because it is widely used in the industry. Although the term “data sharing” technically may be more suitable, in certain instances the data shared do not relate to banking but to other financial services. Also, the data are not “open,” per se, but rather shared only with certain authorized third parties.

Not all emerging and developing economies (EMDEs) are in a position to introduce an open banking regime, given capacity and resource constraints as well as legal and institutional requirements. [Open banking regimes](#), in particular, raise supervisory and enforcement challenges, especially on tech-intensive issues such as quality of service, denial of service, cybersecurity, and so forth. Further, with open banking schemes nascent worldwide, it is too soon to know whether the introduction of open banking regimes would benefit EMDEs in every context or whether certain market contexts would benefit more than others.

Open banking is just one of several initiatives that support financial inclusion and innovation, and policy makers may decide to prioritize policy changes such as opening basic accounts or creating innovation facilitators like regulatory sandboxes. However, for regulators in EMDEs that prioritize open banking implementation and want to ensure that it supports low-income populations, we submit that a sound open banking regime’s design should deliberately support financial inclusion as a central objective. We call the concept “financial inclusion by design.”

This paper is based on a landscape review of 12 open banking regimes. It provides our early findings on the types of open banking-enabled products and business models we believe would be beneficial to financial inclusion, and how they may alleviate relevant pain points for low-income individuals. We next examine the design implications the findings have on open banking regulatory frameworks. To conclude, we identify the 12 design components critical to any open banking regime and the five specific considerations EMDEs should contemplate if they want their regime to support financial inclusion as a policy objective (i.e., financial inclusion by design). As it is still early days for most countries, EMDEs in particular, that have introduced an open banking regime, our initial findings need to be further tested and substantiated through in-depth research in a range of countries. Finally, Appendix A provides a glossary of industry terms found in the paper, while Appendix B and Appendix C provide in-depth case studies on two front-runner open banking regimes in Latin America (Brazil and Mexico, respectively).

What is an open banking regime?

The term “open banking” is loosely used by the media and the financial services industry to designate a range of data-sharing practices—from bilateral data-sharing contracts and [financial services providers](#) (FSPs) individually opening [application programming interfaces \(APIs\)](#) (e.g., Paytm)² to voluntary private sector initiatives of collective data sharing (e.g., the open banking initiative in Nigeria³ and The Clearing House⁴ in the United States) and mandatory [data sharing regimes](#) (e.g., Open Banking in the United Kingdom and [PSD2](#) in the European Union). Open banking-enabled products include consumer products and services that use data obtained through open banking to inform product design, for example, personal financial management, budgeting applications, and credit score monitoring services, among others.

2 See the Paytm website: <https://paytm.com>

3 See the Open Banking Nigeria website: <https://openbanking.ng>

4 See The Clearing House website: <https://www.theclearinghouse.org>

BOX 1. Key definitions**Open banking**

The exchange of consumer data between banks and other FSPs (i.e., data holders), on the basis of customer consent, with other FSPs and/or TPPs such as fintechs (i.e., AISP and PISP—both known as data users). Although payment initiation is an important element of open banking from a financial inclusion perspective (as discussed in Section 3), it is not essential to the functioning of open banking, and therefore it is not included in its definition.

Open data

The exchange of consumer data between private sector institutions, including financial institutions and nonbank financial institutions such as mobile money issuers, utility providers, and telecoms, with other such institutions on the basis of customer consent.

Open APIs

Proprietary APIs that an FSP makes widely available for other companies to consume, allowing these other companies to seamlessly plug into the FSP's system.

Since the primary audience for this paper is financial services and competition regulators, we focus on open banking regimes. We define an “open banking regime” as a consent-based data-sharing scheme mandated or supported by regulators toward the goal of creating competition and fostering innovation in financial services. Although many regimes include payment initiation (a third-party service that facilitates payment initiation for the customer), it is not an open banking regime requirement, and therefore it is not included in our definition. Within an open banking regime, banks and FSPs (i.e., [data holders](#)) exchange consumer data with other FSPs and/or [third-party providers](#) (TPPs) (i.e., [data users](#)) on the basis of customer consent. Data sharing usually does not require a contractual relationship between data holders and data users. In addition, data users often are subject to a licensing/authorization framework or technical and security standards at the very least. Purely voluntary private sector

schemes and unilateral [open APIs](#), are excluded from our definition because these schemes and API initiatives do not include regulatory involvement. See Box 1 for key definitions used throughout this paper.

We also distinguish open banking regimes from “[data portability](#).” Often expressed as a consumer right, data portability is the ability of an individual to obtain, upon request, their own personal data from current data holders in a structured, commonly used, and machine-readable format. Consumers are entitled to use these data for their own purposes—across services and with a variety of data users. Where technically feasible, it may allow individuals to request that the data holder transmit data directly to a nominated data user. Data portability is often a right found in data protection laws (e.g., [GDPR](#) in the European Union) that applies to all personal data held by data holders. It differs from open banking not only in its much wider scope, covering all personal data (vs. financial data), but in the fact that it focuses on a right given to individuals. Open banking regimes usually create a data-sharing framework with rights and obligations imposed on legal entities (data holders and data users) upon individual consent.

On this basis CGAP has undertaken a landscape review of 12 open banking regimes,⁵ with a deep dive into seven of those regimes.⁶ In choosing which countries to study we aimed for diversity in geography and regime type (e.g., mandatory vs. voluntary, standardized vs. nonstandardized APIs).⁷ We reviewed only regimes that had sufficient public documentation available to determine, at a minimum, the regime's main elements and the rationale and objectives behind it. For deep dive jurisdictions, we looked for early lessons from implementation. Where possible, we supplemented desk-based research with interviews with the relevant regulators and other stakeholders.

5 The 12 regimes are Australia, Bahrain, Brazil, the European Union, Hong Kong, India, Indonesia, Japan, Malaysia, Mexico, Singapore, and the United Kingdom.

6 The seven deep-dive regimes are Australia, Brazil, the European Union, Hong Kong, Japan, Mexico, and the United Kingdom—the more advanced open banking regimes among the 12.

7 Regime distinctions are set out in Chaib (2018).

SECTION 2

WHY OPEN BANKING MATTERS FOR POOR PEOPLE

Open banking and financial inclusion

Open banking regimes premised on access to bank account data are not primary drivers of financial inclusion in terms of account openings. However, open banking can help increase the number of relevant services and improve the quality of those services for people who already have a bank account but are underbanked. Further, if the data in scope for these regimes go beyond bank accounts and accounts with other FSPs—such as mobile money accounts—and include data from sectors such as utilities and telecoms (what we call “open data”), then these regimes may even support access to accounts and other services for the financially excluded. It is therefore critical that regimes wishing to support financial inclusion and to go beyond improving the value of financial services for the underbanked must focus on open data and embrace a broad scope of data exchange. Aside from bank account data, they must encompass mobile money account data and data from the utilities and telecoms sectors, among others.

Our review found three countries—Brazil, Mexico, and Indonesia—with explicit financial inclusion objectives in their open banking regimes. Also, in certain first mover countries, including the United Kingdom and Australia, vulnerable populations have been identified as a specific subset of the population with needs that can be met with open banking-enabled products (HM Government 2019; Consumer Data Standards 2019). The United Kingdom’s experience with open banking is particularly encouraging from a financial inclusion standpoint.

A recent U.K. report found that those “on the margins” of financial inclusion (with no account or only a basic account) are likely to pay less in fees with open banking—saving the equivalent of 0.8 percent of their income. Open banking would save those who are “overstretched” (with account(s) and heavily indebted) the equivalent of 2.5 percent of their income (Reynolds and Chidley 2019). The report concludes that open banking could improve financial inclusion and resilience and drive value for these segments by helping them control their finances, obtain better deals, and manage debt.

The United Kingdom already has several open banking products on the market that target those who are financially underbanked or vulnerable. Mojo Mortgages combines open banking

data with more widely used scoring methods to accurately assess what a customer can afford.⁸ Canopy uses consumer rent payments to improve credit scores.⁹ Tully provides [debt rehabilitation](#) services based on open banking data.¹⁰ Touco and Kalgera help those with mental health issues and older individuals better manage their money by building features on top of the basic aggregation proposition, such as the ability to send a notification to a trusted person if daily spending falls outside of normal patterns.¹¹

How does this experience translate to EMDEs? We are starting to see fintechs in EMDEs provide services based on consumer data analysis that could improve the financial resilience of low-income populations. To reduce reliance on high interest overdrafts, for example, in Brazil, Rebel's Tapa Buraco service alerts customers of overdrafts so they can access a prequalified 30-day interest-free loan on the balance and benefit from a reduced interest rate thereafter.¹² In Argentina, Afluenta helps consumers find optimal interest rates and loan fees that fit their circumstances.¹³ Meerkat in South Africa provides a saving tracker/sweeper, as well as a debt rehabilitation service based on consumer data and robo-advice.¹⁴

However, as these services have been developed outside of open banking regimes,¹⁵ their ability to access customer data is limited. They often rely on sharing login details, combined with [screen scraping](#) (customers sharing online log-in details with third parties, a practice considered not secure because of the possibility of unauthorized account access), public databases, or customers directly providing data via interviews. For example, Meerkat is required to conduct interviews to identify areas where clients can save money by switching financial providers. It also is required to obtain customer consent for savings sweeping every month.¹⁶ An open banking scheme would give Meerkat access to customer transaction data, allowing it to create a personalized budget based on expenditures. This would facilitate repurposing expenditures toward savings and allow Meerkat to undertake real-time payment initiation for the purpose of savings sweeping. Box 2 offers an in-depth look at how Brazil's new open banking regime can help Guiabolso provide personal financial management services.

Product innovation

Low-income individuals face a variety of issues that may render them financially unstable and vulnerable to financial shocks, including volatile, irregular income; a lack of liquidity; and paying a disproportionate amount of income on essential household expenses. They also experience more difficulty in accessing financial services, which limits their ability to address vulnerability.

8 See the Mojo Mortgage website: <https://mojomortgages.com>

9 See the Canopy website: <https://www.canopy.rent>

10 See the Tully website: <https://www.tully.co.uk>

11 See the Touco website: <https://usetouco.com>, and the Kalgera website: <https://kalgera.com>

12 See the Rebel website: <https://www.rebel.com.br>

13 See the Afluenta website: <https://www.afluenta.com/monitor>

14 See the Meerkat website: <https://www.meerkat.co.za/savings>

15 Neither South Africa nor Argentina currently have an open banking regime. A resolution setting out Brazil's open banking regime was published on 4 May 2020 and will be implemented later in the year. See https://www.bcb.gov.br/content/config/Documents/Open_Banking_CMN_BCB_Joint_Resolution_1_2020.pdf

16 Interview with David O'Brian, founder of Meerkat, 28 May 2020.

BOX 2. The utility of open banking regimes: Spotlight on Brazil's Guiabolso

In Brazil, Guiabolso^a offers a personal financial management tool that allows customers to view all their accounts on one dashboard. The tool recommends suitable financial products based on the customer's profile and transaction history. Since Brazil's open banking regime is not yet operational, Guiabolso frequently must access customer data via screen scraping rather than open banking APIs. The process has raised a variety of issues. First, it is technically difficult, because each bank has different security layers and the technological infrastructure of banks is often suboptimal. This creates difficulties for consumers as they try to connect in real time (e.g., a change in web display format can lead to a login process that is unusable).^b Screen scraping is also not

secure. Because of the lack of regulation, login details captured by the process are not necessarily protected and could lead to unauthorized account access. The new Brazilian regime, which would require banks to provide Guiabolso access to this information through API connections, can alleviate these issues.

The lack of a fully operational open banking regime also means that Guiabolso is limited to using the information that appears on an internet banking site, which is often restricted to three months' prior history. Under the new Brazilian open banking regime, Guiabolso will have access to up to 12 months of transaction history, which would provide a better understanding of a customer's income stability and allow the company to more effectively underwrite loans.

a. See the Guiabolso website: <https://www.guiabolso.com.br>

b. Interview with Thiago Alvarez, founder and CEO of Guiabolso, 5 March 2020.

They may lack the necessary identification, address, or other documentation that would allow access to formal financial services. Additionally, especially for women, social norms may limit their control over their personal finances. Low-income individuals also may not have access to credit, and if they do, they may be susceptible to taking on inappropriate and/or excessively priced credit products.

The global evidence we reviewed suggests that, by responsibly using shared [customer transaction data](#), fintechs and other types of financial institutions in EMDEs may be able to do a better job than traditional banks have done with such data. Third parties can use data to create value for potentially excluded and lower-income customers in three main ways: (i) improving access to credit and/or conditions of access, (ii) improving financial management, and (iii) facilitating access to accounts if [collaborative customer due diligence](#) (CCDD) is allowed.¹⁷ The specific value propositions fintechs and third parties can offer to address these value creation opportunities follows.

17 CCDD approaches seek to address the shortcomings of current CDD processes. Examples include creation of a public utility that FSPs can use to identify clients and verify identities on an ongoing basis; access to know your customer (KYC) as a service, a centralized database where banks can share and access KYC information on corporate clients; and self-sovereign IDs—a new ID category that promises to work across borders, allows individuals to prove their identity based on alternative data sources. It also provides customers with more control over who accesses their data. See Lyman et al. (2018).

Improving access to credit and/or conditions of access

- **Responsibly expanding access to credit.** Low-income individuals often have difficulty accessing credit. High cost, short-term credit easily can lead to financial vulnerability. Properly designed open banking products—especially open data products—can expand access to credit that helps, rather than harms, consumers by using alternative financial data (e.g., Mojo Mortgages and Canopy in the United Kingdom).
- **Supporting debt rehabilitation services.** Providers such as Tully in the United Kingdom and Meerkat may use open banking data to build a customer’s budget, identify loans that can be refinanced or consolidated, and negotiate affordable repayment schedules on the customer’s behalf. When these services are coupled with payment initiation, “[smart loan repayment](#)” may be introduced. These debt repayment plans can account for fluctuations in customer income during repayment periods, which allows customers to pay based on available liquidity without triggering default provisions.
- **Reducing reliance on overdrafts and other excessively priced credit products.** Open banking services can alert customers before they go into overdraft and offer less pricey credit alternatives (e.g., Rebel’s Tapa Buraco service in Brazil). Consumers also can find optimal interest rates and loan fees that fit their circumstances by using apps such as Afluenta in Argentina or Credit Karma¹⁸ in the United States.

Improving financial management

- **Improving savings behavior.** Low-income individuals with volatile or irregular income may have difficulties weathering financial shocks. Open banking can enable products that advise customers on when and how much to save. They include savings trackers (like Meerkat’s, which repurposes expenditure on highly priced financial services toward savings) and automatic savings sweepers that calculate what a consumer can save, and when, based on their financial history, then automatically transfer funds to a dedicated savings account (a product provided by the U.S. fintech, Digit).¹⁹
- **Lowering tariffs on household bills.** Many families in emerging markets pay a “poverty premium” for essential goods and services, such as telephone communications, gas, electricity, and broadband (Davies, Finney, and Hartfree 2016). For certain strata of this population, open banking products that analyze spending patterns, identify opportunities for saving money, negotiate new contracts on a consumer’s behalf, and cancel their old subscriptions can tackle both demand- and supply-side factors that create a premium in the first place. Trim²⁰ is an example in the United States.
- **Encouraging healthy financial behaviors.** Low-income individuals often perceive a lack of control over their financial lives. Personal finance and budgeting applications can empower individuals with data insights generated from transaction data—for example, highlighting ways to save or sending reminders on due dates for a regular payment or bill. As long as the relevant consumer protections are in place, when applications are permitted to

18 See the Credit Karma website: <https://www.creditkarma.com>

19 See the Digit website: <https://digit.co>

20 See the Trim website: <https://www.asktrim.com>

initiate transactions on behalf of the customer, consumers can put insights into practice in a seamless and user-friendly manner. In the European Union, Yolt Pay²¹ allows Yolt budgeting app users to initiate money transfers through open banking APIs; in Brazil, Guiabolso allows customers to obtain a suitable loan directly from its application.

Facilitating access to account if CCDD is allowed

- **Overcoming a lack of documentation.** Onerous customer due diligence (CDD) procedures can result in high costs for low-income customers or prevent them from accessing financial services because they often lack official identity documentation. Brazil's open banking regime foresees a collaborative approach to CDD (CCDD) by allowing FSPs to share registration data, which would reduce the paperwork and hassle as consumers gain expanded access to a variety of financial services. If open banking regimes expand to include sharing of telecoms, social media, and other types of data (i.e., open data), SIM card registration or other CDD methods could help individuals overcome issues with formal identification—as long as a simplified CDD approach is permitted.

Many of these solutions are predicated on smartphone access, especially those that rely on data visualization. Although smartphone ownership is on the rise because of price decreases, smartphone users are still the exception rather than the rule among poor people in EMDEs. For example, only 45 percent of phone owners in Sub-Saharan Africa had adopted smartphones in 2018 (GSMA Intelligence 2020). However, owners of feature phones still can take advantage of some open banking-enabled services. Many products, such as automatic savings sweeping, smart loan repayment, and decentralized CDD, use data only on the back end and do not require smartphone technology. Other services, such as switching utilities or personal financial management, work on SMS or USSD menus (i.e., two-way flash messages integrated into a user menu on a feature phone) with modest loss of functionality. Fintechs that aim to target nonsmartphone users would have to adapt the user experience to such constraints, but most open banking-enabled services should be adaptable.

Yet there are limits to the applicability of open banking in EMDEs. Many low-income customers currently do not have a digital financial data trail to analyze. For this reason, it is important to consider how open data regimes ultimately could leverage other types of digital data—whether social media activity, airtime use, or location data—to extend their benefits to those not financially included via digital payments. Since the players that hold these types of digital data usually are not under the jurisdiction of the financial sector regulator, regulators should collaborate with their respective counterparts in other domains to determine how a cross-sector open data regime can be established. See Section 3 for additional details.

Emerging business models

Open banking regimes define who can or should participate in data sharing. Often, it is not only existing players such as banks and payment service providers (PSPs), but new types of entities as well. In addition, new activities that until recently were outside the regulatory perimeter

21 See the Yolt website: <https://www.yolt.com/faqs>

may be incorporated in order to avoid regulatory arbitrage and to level the playing field. These activities include the amalgamation and analysis of data to propose tailored financial products and the ability of customers to directly pay merchants without the intermediary of a credit card scheme—also known as payment initiation.²²

A good example is the European Union’s Revised Payment Services Directive.²³ This law created a proportional regulation to incorporate two types of TPPs that conducted previously unregulated activities under PSD1 and are now considered PSPs: AISPs and PISPs. AISPs (e.g., Yolt and Moneyhub), which provide customers with consolidated information about their financial accounts with other PSPs, have only a registration requirement and no capital requirements.²⁴ PISPs, which allow consumers to make payments from accounts that are initiated by a party other than their account issuer,²⁵ must be authorized but have a reduced initial capital requirement of 50,000 euros (vs. 125,000 euros for PSPs that offer other payment services, such as execution of payment transactions, issuance of payment instruments, and money remittance).²⁶ In return for being regulated and to permit them to effectively offer services, TPPs are an essential part of the European Union open banking regime—also known as [X2A](#) or access to account.

As part of its voluntary open banking regime, the Japanese Government similarly advanced a series of legislative amendments in June 2018. These included amendments to the Banking Act. The amendments provide a new regulatory framework for [electronic payment service providers](#) (EPSPs)—covering both PISPs and AISPs—along with a registry of EPSPs managed by the Financial Services Agency. Registration requirements for EPSPs are minimal; entities simply require a non-negative capital ratio.²⁷

Specifically, AISPs’ ability to regroup diverse sets of information and provide individual customers with real-time analytics also provides customers with new insights that can influence their behavior. It also permits AISPs to become the customer-facing provider of choice without actually providing financial services (thus avoiding certain onerous regulatory requirements, which are borne by the product underwriters). As trust increases between AISPs and customers, AISPs will be in a privileged position to curate distribution channels.

PISPs offer new business model opportunities for digital payments by allowing third parties to initiate transactions on the customer’s behalf from an account the customer holds with another institution. This allows the customer to separate the experience of performing a

22 When elaborating their open banking schemes, other jurisdictions have authorized alternative types of entities rather than AISPs and PISPs. In India, the Reserve Bank of India (RBI) created a new category of “[account aggregators](#)” whose sole role is to securely transfer financial data from data holders to data users, based on customer consent. These aggregators can exercise the business of managing consent only and must be registered with RBI. See Sections 4 and 5(f) of RBI’s Master Direction—Non-Banking Financial Company—Account Aggregator (Reserve Bank) Directions, 2016, https://www.rbi.org.in/Scripts/BS_ViewMasDirections.aspx?id=10598, and Datwani and Raman (2020). It remains to be seen whether these account aggregators can offer information services to customers, given that they are not currently allowed to see the data.

23 For more on PSD2, see <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015L2366&from=EN>

24 See Article 33 of PSD2 2016.

25 This typically occurs by establishing an electronic payment link between the payer and the online merchant via the payer’s online banking module (e.g., CashFlows, Trustly, Adyen, Transferwise).

26 See Article 7 of PSD2 2016.

27 Interview with Toshio Taki, co-founder of Money Forward, 11 December 2019.

payment (online or in-person) from the provider that holds their account. In India, payment initiation functionality has allowed fintech services such as Google Pay to quickly scale, absent a license to hold customer funds. In other markets, the service is providing new ways for nonbanks to introduce payments into customer products. In each of these cases, funds transfer (clearing and settlement) between accounts continues to be managed through existing payment systems with appropriate regulatory oversight (e.g., UPI in India and Faster Payments in the United Kingdom).

In many countries, B2B service providers also facilitate data sharing and payment initiation services as a product for licensed financial institutions and third parties. Service providers such as Plaid in the United States provide the “plumbing” where it is too complicated or costly for TPPs to negotiate individual contracts.²⁸ This model also can benefit data holders themselves (i.e., banks), allowing them to build new services leveraged on their own accounts.²⁹ That said, if overall costs to consumers do not increase, the added time and costs of transactions by these service providers (in comparison to transactions under an open banking regime) must be offset by gains in efficiency.

Some incumbents are adapting by acquiring or developing in-house solutions (e.g., 22seven, an AISP run on Yodlee rails bought by Old Mutual bank in South Africa³⁰ and Visa’s recent acquisition of Plaid), or by unilaterally exposing their APIs to allow third-party developers to create innovative products in partnership (e.g., South Africa’s Nedbank³¹ and the Co-operative Bank of Kenya³²). Credit card companies also are positioning themselves as value-add intermediaries in open banking. One example is Mastercard’s centralized enquiry and dispute resolution service for banks and TPPs.³³ However, incumbents still retain advantages with certain types of information and access to low-cost funding (see Box 3).

28 See the Plaid website: <https://plaid.com/company>

29 See, for example, Plaid Exchange, a new universal API that connects with thousands of financial institutions and allows banks to manage their own APIs: <https://blog.plaid.com/introducing-plaid-exchange>

30 See the 22seven website: <https://www.22seven.com>

31 See the Nedbank website: <https://apim.nedbank.co.za/static/opendata>

32 See the Co-operative Bank of Kenya website: <https://developer.co-opbank.co.ke:9443/store/apis/home>

33 See the Mastercard website: <https://www.mastercard.us/en-us/business/issuers/grow-your-business/open-banking-solutions/resolve.html>

BOX 3. Addressing informational asymmetry

The main benefits of open banking regimes stem from the increased competition generated by third-party data access in the financial services markets. Two types of financial information can help providers target offers and evaluate risk: (i) hard information, which includes an individual's credit history and default history, and (ii) soft information, such as consumer preferences, level of income, and behavior (Beaton-Wells 2019; Padilla and de la Mano 2018).

Traditional banks have significant advantages with soft information,^a which is one of the reasons fintech firms have found it difficult to compete with banks beyond initial successes.^b According to Padilla

and de la Mano (2018), although banking has been liberalized in recent years, the reason we have not seen positive consumer outcomes is mainly because of the informational advantages banks have. On the other hand, social media firms, utility providers, and telecoms also have a significant advantage with soft information, but they lack access to lender-specific hard financial information.^c An open banking scheme, which requires both hard and soft information sharing and includes data reciprocity, is one remedy that addresses informational asymmetry and may even swing the power balance toward BigTech and other new entrants.

- a. Banks have other advantages that are not related to data, but they fall outside the scope of this research. For example, they have a “too big to fail” advantage, which gives them access to funding at a lower cost than competitors. See Beaton-Wells (2019) and Padilla and de la Mano (2018).
- b. Other reasons include the absence of an installed and loyal customer base, lack of reputation and brand recognition, and a relatively high capital cost. See Padilla and de la Mano (2018).
- c. Certain TPPs, such as BigTech, have additional advantages, such as large installed customer bases; established reputations; powerful brands; considerable earnings; and unfettered access to capital markets. They require scheme reciprocity to maintain an even playing field. See Beaton-Wells (2019) and Section 3 of this paper.

SECTION 3

12 DESIGN COMPONENTS

FROM OUR LANDSCAPE RESEARCH OF 12 COUNTRIES, WE IDENTIFIED 12 design components of open banking regimes: four determine regime scope and eight affect implementation. First, we look at the implications of each design component for the EMDEs that may wish to support financial inclusion, given market conditions and potential resource and capacity constraints. Regulators that may be considering the design of an open banking regime should address these components, as each can have far-reaching implications.

Components that determine scope

TYPES OF SERVICES

Which financial products and services are included in an open banking regime varies across regimes. In cases where the scope is clear, there are two approaches:

1. Broad scope, covering many types of financial services, including credit and insurance (e.g., Australia, Brazil, India, Japan, Malaysia, Mexico, and Singapore).
2. Targeted scope, focused on banking and/or payments (e.g., Bahrain, Hong Kong, the European Union, and the United Kingdom).

In certain jurisdictions there is a clear correlation between the regime rationale and the types of products that are in scope. The open banking regime in the United Kingdom was a Competition and Markets Authority (CMA) remedy imposed on the nine largest banks accused of anti-competitive behavior and thus the United Kingdom's regime focuses only on banking products. X2A in the European Union is part of a payment regulatory framework and is thus focused on payments. We observed a trend toward broader scopes in the other regimes, especially in newer regimes such as those in Brazil and Mexico. This may be because the regulator, with its focus on innovation, has decided that there is no reason to restrict the scope to banking and/or payments—in contrast with the first open banking regimes in the European Union and the United Kingdom.

Two regimes go beyond financial services data and in subsequent phases plan to encompass other services from economic sectors such as energy, telecoms, and utilities (i.e., open data). This includes Australia, which is implementing a [consumer data right](#) (CDR) in the energy

and telecoms sectors after the banking sector, and the United Kingdom, which has followed Australia's lead with the recent introduction of a Smart Data regime that will extend data sharing to energy, pensions, telecoms, and other utilities (HM Government 2019). Australia is considering data sharing across sectors as part of CDR.³⁴ In addition, the account aggregator ecosystem led by Sahamati³⁵ in India expects to expand use cases to sectors such as health, telecoms, and education.³⁶

Implications for EMDEs

In order for individuals with thin digital financial data trails to benefit from open banking regimes, the regimes should include as many types of financial services as possible. The potential is greatest, however, in open data regimes where data from telecoms and utilities transactions are critical for bolstering thin trails. Including these sectors may expand an individual's access to services. Further, data from other digital services such as social media, messaging platforms, web searches, and e-commerce could help to bolster trails if they are included in the scope of open data regimes. Finally, cross-sectoral products can provide clear benefits, such as responsible credit and shared CDD, for all consumers.

Note that an increased number of covered services clearly requires greater resources for supervision and enforcement. A broader scope also implicates more than one regulator—financial (e.g., insurance, investments regulators) and, for open data regimes, nonfinancial (e.g., telecoms, energy regulators). This often makes orchestration more complex.

PARTICIPANTS

There are two main types of participants: (i) entities that share data, by mandate or voluntarily—data holders—and (ii) entities that either have a right to access data or are permitted to access data—data users.

There are three general approaches to defining data holders:

1. **Name specific institutions.** For example, the nine largest banks in the United Kingdom or the banks categorized as Segment 1 and Segment 2 institutions, as well as all authorized payment institutions in Brazil.
2. **Use entity categories.** For example, [account servicing payment service providers](#) (ASPSPs) in the European Union, financial institutions in Japan and Malaysia, banks in Australia and Hong Kong, and “providers” in Singapore.³⁷
3. **Cover a broad range of financial sector entities.** In Mexico, this includes fintech institutions, clearinghouses, traditional financial institutions, and credit bureaus. In India it includes banks, banking companies, NBFCs, asset management companies, depositories, depository participants, insurance companies, insurance repositories, and pension funds.

34 Interview with Caron Beaton-Wells, deputy dean at the Melbourne Business School and professorial fellow at the Melbourne Law School, 19 June 2019.

35 Sahamati is a nonprofit entity tasked with growing the account aggregator ecosystem and running an umbrella entity for account aggregators.

36 Account Aggregator workshop held by Sahamati on 30 August 2019. See the Sahamati website: <https://sahamati.org.in>.

37 Providers are defined in Singapore's “Finance-as-a-Service API Playbook” as organizations that expose data through APIs; this includes regulators, insurers, and banks.

Data users, which often are TPPs, generally are different from data holders. TPPs are either allowed access—as a right if licensed or authorized (as in Australia, the European Union, Hong Kong, Japan, the United Kingdom) or simply upon request (with no rights as in Bahrain, Malaysia, and Singapore). Data users are subject to a licensing or an authorization framework or, at the very least, some mandatory technical and security standards. The main rationale for differentiation between data users and data holders is that open banking regimes level the playing field by allowing parties that lack bargaining power, such as fintechs and other TPPs (but possibly not BigTech—see discussion that follows), data access they normally would not have.

In Mexico,³⁸ India,³⁹ and Brazil, most participants are, to a certain extent, considered both data holders and data users, and thus “data reciprocity” exists between participants—they can request access to data held by fellow participants but must then share their own data with those participants upon request.

Lack of data reciprocity has long-term repercussions on competition. Although open banking regimes effectively allow third parties access to customer data from traditional incumbents such as banks, solving one type of data asymmetry, they inadvertently may create a different type of data asymmetry. A lack of reciprocity in the open banking scheme may greatly increase the power of BigTech platforms (e.g., Amazon, Facebook, Google), that can tap into this data by becoming accredited TPPs in order to enter and strengthen their financial services offerings. However, they are not required to give others reciprocal access to their financial services databases under that regime (Beaton-Wells 2019).

Note that BigTech already has a data advantage, not only due to the sheer amount of data it has collected over time, but because of its superior information about consumer preferences, habits, and conduct, particular information at a certain point in time at a specific location in real time.⁴⁰ If BigTech combines its data advantage with the data it can obtain through open banking, it effectively would be in a position to create “super profiles” that other players cannot easily replicate (Beaton-Wells 2019; Padilla and de la Mano 2018). For example, a bank trying to achieve data parity with Google would need to successfully enter markets for online advertising, mobile operating systems, mobile app distribution, browsers, email, and online video distribution (Padilla and de la Mano 2018). Data sharing reciprocity, although not a silver bullet, is one mitigation strategy to consider for reducing data asymmetries.

Implications for EMDEs

As Section 2 states, the greater the number of participants in an open banking regime, the greater the scale and diversity of new services that could be enabled and the more competition would advance. Bringing fintechs, other TPPs, and other FSPs (e.g., e-money issuers [EMIs]) into a regime’s scope would ensure there are more actors in place that would have the ability to

38 In Mexico, reciprocity does not cover third parties specializing in IT, such as BigTech; they can obtain data but are not required to share their data.

39 It is unclear whether India’s regime allows reciprocity as there is no reciprocity in RBI’s Master Direction. However, members of the Sahamati cooperative are expected to abide by a rule of reciprocity, and certain data holders, such as tax authorities, are not expected to request access to data.

40 Other advantages include large installed customer bases, established reputations, powerful brands, considerable earnings, and unfettered access to capital markets. See Padilla and de la Mano (2018).

offer products and/or provide data that can assist poor people in EMDEs, which, in turn, would render financial services more affordable. For financial inclusion, EMIs may be one of the best sources of data for underbanked people, depending on the market—for example, in Africa, EMIs often are sole account issuers to low-income individuals.

Further, EMDEs can leapfrog by incorporating reciprocity from the start to avoid pitfalls with BigTech later on. Lastly, under an open data regime, reciprocity is even more important in ensuring that the entire regime is balanced, especially since entrants such as telecoms, utilities, and social media companies are an important source of alternative data (Waldron and Hacker 2020). It should be noted that in an open data regime, the relevant institutions in these sectors also must be designated as data holders.

TYPES OF DATA

Although customer transaction data sharing is at the heart of our definition of open banking schemes, the majority regulate access to three main types of data:

1. Generic services data—publicly available information on specific financial services, such as product pricing and locations of ATMs, agents, and branches.
2. Customer data—personally identifiable data of a customer required for account opening and administrative purposes, including registration/[know your customer](#) (KYC) data.
3. Transaction data.⁴¹

For regimes in our review that had a clear data scope, all but two explicitly require sharing customer account data and transaction data with customer consent.⁴² A majority of regimes also require generic services data sharing, but since it is market-level public data, sharing often is not related to a user request. Customer data sharing allows individual customers to obtain personalized offers and/or other assistance, while transparency is the main function of generic services data sharing.

Implications for EMDEs

Generic services data sharing would create greater transparency on pricing, terms, and conditions in financial service markets and other economic sectors, if included. In addition to inciting more competition because consumers are allowed to easily compare product and service offerings, ultimately these data may reduce unjustified price discrimination between segments of the population, a goal that is often important to EMDEs.

Sharing customer transaction data is key to ensuring that appropriate products are developed for low-income individuals and sharing KYC/customer registration data is necessary to enable CCDD for new entrants and incumbents alike. The latter is particularly useful for overcoming

⁴¹ Other data types not listed in the three categories include aggregated statistical data (e.g., Mexico) and customer acquisition data (e.g., Hong Kong).

⁴² As part of a staged implementation process, Malaysia expressly authorizes only generic services data sharing. It is highly likely this will be expanded to include customer data. Currently, Indonesia is solely considering the introduction of payment initiation in its open banking framework, see “Latest Info,” Bank of Indonesia, 4 January 2020, <https://www.bi.go.id/en/ruang-media/info-terbaru/Pages/BI-Dorong-Peran-Industri-dalam-Mengembangkan-Open-Banking-di-Indonesia.aspx>

identification issues if a regulatory framework permits digital copies of identification and/or alternative identification.

PAYMENT INITIATION⁴³

The open banking regimes of Bahrain, Brazil, the European Union, Japan, Singapore, and the United Kingdom go beyond data sharing to outline requirements for financial institutions to allow third-party payment initiation.⁴⁴ This allows third parties to initiate transactions on a customer's behalf from an account the customer holds with another institution.

Payment initiation gives consumers greater control over their finances by allowing them to perform payments from a wider variety of service providers. For example, when a customer receives a personalized mortgage offer from a third party that has collated their data, the customer can initiate payment without leaving the mortgage site. Payment initiation allows the customer to act on the data by initiating payment for a new transaction. The firm Plaid argues that access and acting are complementary and essential to encouraging innovation and solving consumer pain points. Taken together, they reduce the information and power asymmetries between consumers and data holders (Pitts 2019).

Including payment initiation in an open banking scheme is important for ensuring its successful adoption. Moving money within the financial sector is typically expensive, especially in markets that use card infrastructure. Adding payment initiation to data sharing can open up cheaper rails to move money. Beyond cost, payment initiation can democratize access to the payment system. A TPP may offer customers a highly useful application because of the data open banking provides, but it may not be able to provide basic payment features if it must contract with a sponsor bank to enable payments. Including payment initiation in the open banking scheme can remove this barrier.

Implications for EMDEs

Regulators in EMDEs should consider incorporating [payment initiation](#) into their open banking regimes because it provides the greatest benefit to inclusive finance. However, real-time transactions between accounts held with different providers still require a payment infrastructure that supports instant payments. Examples of this include Mexico's interbank electronic payment system (SPEI) and Brazil's PIX instant payment system.

43 Payment initiation is distinct from other types of automatic referral services, such as Hong Kong's [customer acquisition data](#) and Brazil's loan forwarding services. Referral services allow third parties to assist a principal in obtaining new clients through customer referrals and loyalty programs (e.g., Hong Kong) or allow customers to directly contract with TPPs for loans through a digital interface (e.g., Brazil).

44 Jurisdictions such as India, whose payment initiation infrastructure is separate from its open banking regime, are not included in this section, because in such situations the open banking regime is not driving this functionality.

Components related to implementation

MANDATORY VS. VOLUNTARY PARTICIPATION

One of the main distinctions between open banking regimes is whether participation is mandated by regulation/legislation or is voluntary. A voluntary regime implies that participation is voluntary, but its rules are usually mandatory once an entity has decided to join.

Of the 12 regimes reviewed, six are mandatory in some sense—for the entire industry (Australia, Bahrain, the European Union, and Mexico) or for specific actors in the industry (Brazil and the United Kingdom). When a scheme is mandatory, its details can be set out either through legislation (PSD2 for the European Union, amendments to the Australian Treasury Act, and Mexico’s fintech law); sector-specific regulation (the Resolution of the Central Bank of Brazil and Rulebook additions issued by the Central Bank of Bahrain); or as a remedy imposed by a competition authority (the CMA order in the United Kingdom). From a geographic perspective, all regimes reviewed in Europe, Latin America, and the Middle East were mandatory, while all the voluntary schemes introduced by regulators were found in regimes in Asia (India, Indonesia, Hong Kong, Japan, Malaysia, and Singapore).

Voluntary schemes entail various levels of public sector involvement. They can be introduced by the regulator to kick-start data sharing (as in India, Indonesia, Hong Kong, and Malaysia) or to give structure to current industry initiatives (as in Japan and Singapore). The level of specification the government sets out in voluntary regimes also varies—from highly detailed frameworks (in Hong Kong and Singapore) and a specific licensing regime (for account aggregators in India) to high-level guiding principles (in Indonesia, Japan, and Malaysia).

Although we differentiate between voluntary and mandatory regimes, some voluntary regimes are highly prescriptive—bordering on mandatory—in their manner of implementation. For example, although technically Hong Kong is a voluntary regime, as its policy documentation articulates, when read in conjunction with other policy statements and levels of specification for the framework, it appears to be mandatory. Equally, some voluntary regimes are not highly prescriptive but de facto mandatory because of expectations set by the regulator (e.g., Japan).

Implications for EMDEs

Each regulator must determine the amount of control that is right for its jurisdiction based on the dynamics of its market ecosystem and whether there is a need to sanction anticompetitive behavior. A mandatory regime may not be necessary if the market already is moving in that direction. Further, some of the burden on the regulator may be removed with upfront industry buy-in on the need for an open banking regime or by allowing industry participation in the regime’s design. This may permit a regulator to limit intervention to specific shortcomings that result from an industry-led approach, rather than to impose a mandatory regime.

If a regulator decides to impose open banking, it should have the ability to enforce it and sanction noncompliance. EMDEs with low enforcement capabilities and/or a lack of resources should keep in mind that a mandatory regime with little enforcement may be more counterproductive than a voluntary approach.

TECHNICAL SPECIFICATIONS FOR DATA SHARING (APIs)

A second major distinction is whether a regime requires data sharing through standardized APIs or whether it allows/requires the industry to set data sharing standards (Chaib 2018). Six of the reviewed regimes stipulate use of standardized APIs (Australia, Indonesia, Malaysia, Mexico, Singapore, and the United Kingdom) while the remaining six (Bahrain, Brazil, the European Union, Hong Kong, India, and Japan) allow (or require, as is the case for Brazil and India) the industry to determine data sharing standards.

There does not appear to be a correlation between the mandatory character of a regime and whether API standardization is required.⁴⁵ Similarly, for voluntary regimes, there is no correlation between level of specification and imposition of standardized APIs—a high degree of specification by the regime does not mean APIs would be standardized.⁴⁶ These observations support the conclusion that standardization of data sharing protocols is primarily a technical decision. It is not related to the amount of control a regulator wishes to exercise over the regime.

There is ongoing debate on whether standardized APIs are the best practice. This is based on anecdotal evidence from early implementations in the European Union, which does not stipulate API standards,⁴⁷ and the United Kingdom's Open Banking regime, which does.⁴⁸ The United Kingdom has seen, by far, the largest number of open banking services to date.⁴⁹ According to some industry stakeholders, the lack of standardized APIs has hampered progress in the European Union; yet industry alternatives being put in place, such as the Berlin Group,⁵⁰ cannot ensure a harmonized approach because they are piecemeal and voluntary.⁵¹ The lack of standardized APIs also has created challenges for TPPs in Japan because they need to consume APIs tailored for each financial institution. In addition, they must individually negotiate with each institution, which is a function of the regime framework that imposes contracts between TPPs and data holders.^{52,53}

On the other hand, arguments against API standardization center on (i) a legal framework's ability to adapt to technological change and (ii) the IT infrastructure of financial institutions

45 Of mandatory regimes, three require that specific standardized APIs be issued by the regulator (Australia, Mexico, and the United Kingdom) and three do not (Bahrain, Brazil, and the European Union), although Brazil requires that participants follow the standardized APIs that the industry stipulates through a convention.

46 Voluntary regimes may (Indonesia, Malaysia, and Singapore) or may not (Hong Kong, India, and Japan) require industry standardized open APIs of its voluntary participants.

47 According to an 18 May 2020 interview with Gavin Littlejohn, chairman of FDATA Global, the PSD2 did not specify API standards as PSD2 was drafted in 2013 when screen scraping was the norm.

48 Standard APIs in the United Kingdom were part of its open banking initiative since 2015, when it became clear that APIs would overtake screen scraping (interview with Gavin Littlejohn, 2020).

49 As of August 2020, the United Kingdom's Open Banking Implementation Entity (OBIE) reported 273 regulated providers, made up of 196 TPPs and 77 account providers, of which 88 regulated providers have at least one proposition "live" with customers. See the OBIE website: <https://www.openbanking.org.uk/wp-content/uploads/OBIE-Infographic-August-2020.pdf>.

50 See the Berlin Group website: <https://www.berlin-group.org/psd2-access-to-bank-accounts>.

51 Interview with Gavin Littlejohn, 2020.

52 The imposition of contracts in the Japanese regime is at odds with most open banking regimes. Most remove the requirement for a contractual relationship between data users and data holders because the rights and obligations of each are dictated by regime provisions.

53 Interview with Toshio Taki, co-founder of Money Forward, 11 December 2019.

located in rural or poor areas. As laws, and often implementing regulations, are difficult to quickly modify and given the rapid pace of technological change, regulators tend to avoid including technological standards within laws. Another argument against standard APIs is that they may be a disadvantage to data holders that may be technically unable to integrate. For example, credit unions in Canada, which are small and tend to serve rural, geographically isolated, and marginalized people, have voiced concerns with standardized API integration. They see it as complicated and prefer to implement data sharing through less sophisticated solutions like sanctioned screen scraping.⁵⁴

In light of these concerns, the industry may be best placed to agree to standards that can be quickly adapted as technology changes, even though standards may be subject to regulatory approval. APIs also can be standardized without technical specifications inserted. For example, they can include nontechnology-dependent API elements, such as standardized protocols to access data (messaging, sync or async, authentication); exchanged content (in which specific calls are valid); and data format.

An interesting development is the hybrid approach taken in Brazil, where API standard development has been delegated to scheme participants. However, the regulator oversees delegation and must approve the final standards. This is in contrast with the United Kingdom's Open Banking Implementation Entity (OBIE), a U.K. company set up and governed by CMA⁵⁵ that is tasked with implementing open banking, including the development of API standards. Brazil's open banking regime foresees a convention drafted by regime participants that sets out agreed-on API standards, among other implementation issues, with oversight from its central bank. (See the Brazil case study in Appendix B for details.)

Implications for EMDEs

Many regulators in EMDEs are unable to foster dialog on technical standards with market players. On the other hand, a lack of standardization or allowing data holders, who are often not interested in quality, to determine standards is unlikely to produce an optimal outcome. Standardization of open banking APIs should be a priority in all cases, even if it is not a launch requirement, and there are many ways to achieve standardization. Regulators in EMDEs, in particular, may wish to consider a layered API standardization approach that is similar to the Brazilian approach. This would include allowing the industry, as a body with equal representation for each type of stakeholder, to determine standards under the regulator's oversight. It is important for regulators in this scenario to outline processes in the event the industry is unable to agree on standards—whether it be giving the regulator the final decision or allowing a majority vote.

54 Interview with Matt Homer, former lead of Consumer Data Access, Control and Portability of Plaid, current executive deputy superintendent, Research & Innovation Division, New York State Department of Financial Services, 27 June 2019.

55 CMA determines OBIE's governance, composition, and budget. Funding is provided by the nine mandated banks under the CMA order.

STAGED IMPLEMENTATION

Six of the reviewed regimes are implementing open banking in stages.⁵⁶ The main criteria for staged implementation include the following:

1. Sensitivity of the data—public information is released first, then confidential customer data is shared (Brazil, Hong Kong, Malaysia, Mexico, and United Kingdom).
2. Types of services, with data related to simpler services, such as personal loans, credit and debit cards, deposit accounts, and transaction accounts, released first (Australia, Brazil, Hong Kong, and Malaysia).
3. Type of entity that must release, with larger entities releasing earlier (Australia and Brazil).

Staged implementation allows both stakeholders and regulators to take small steps and to learn about pitfalls and master best practices before committing to widespread data sharing. Open banking regimes are new, and staged implementation allows measured risk-taking with data that, if mishandled, could cause substantial consumer harm. The approach also is viable when a regulator transitions to open data, as is the case with Australia and the United Kingdom. The assumption is that larger entities with the biggest customer data sets would be the first to implement and so should bear the early burden and pave the way for the rest of the industry.

Implications for EMDEs

EMDEs may face technical and resource capacity issues or they may lack relevant legal frameworks, especially on data protection, competition regulation, and consumer protection. Certain categories of consumers, such as illiterate, rural, or disabled individuals, also may be perceived as facing high data protection risk. Staged implementation would help regulators increase technical capacity while they minimize customer risk. Regulators may consider staging based on data confidentiality (public vs. confidential customer data), service type (simple vs. complex financial products), and player size (large vs. small).

LEAD REGULATOR/POLICY MANDATE

Most of the open banking regimes reviewed have a designated “lead” regulator, which usually is the central bank or the financial sector regulator. Australia, India, Mexico, and the United Kingdom are exceptions, mainly because of the broad sectoral scope of regimes that go beyond banking and payments.

In Australia, the regime implicates several sectors, including banking, securities, and investments, and several regulators, including the Office of the Australian Information Commissioner, the Australian Securities and Investment Commission, the Australian Prudential Regulation Authority, the Reserve Bank of Australia, and other applicable sector-focused regulators. Given the regime’s competition rationale, the country’s competition regulator—the Australian Competition and Consumer Commission (ACCC)—acts as lead regulator.

Since fintechs and financial institutions in Mexico fall under the jurisdiction of the banking and payments supervisor, Comisión Nacional Bancaria y de Valores (CNBV), and clearinghouses

⁵⁶ Many open banking regimes do not foresee staged implementation, including Bahrain, the European Union, Japan, and Singapore.

and credit bureaus fall under the purview of the Central Bank, both regulators are mandated to supervise the open banking regime. Similarly, in India, because the regime is envisioned to cover banking, securities, insurance, and pensions, regulation is divided between RBI (as lead regulator), the Securities and Exchange Board of India (SEBI), the Insurance Regulatory and Development Authority (IRDA), and the Pension Fund Regulatory and Development Authority (PFRDA).

Although CMA in the United Kingdom imposed the open banking regime as a remedy and remains responsible for the regime, the Financial Conduct Authority (FCA) is responsible for X2A under PSD2. Further, with the possible expansion to sectors such as energy, pensions, and telecoms, regulators of these other sectors also would be implicated in the regulation of the data sharing regime.

Implications for EMDEs

As noted, the broader the sectoral and data scope of an open banking regime, the more potential benefits regimes have for financial inclusion. However, depending on the financial regulator's mandate, expanding a scheme's scope beyond banking and payments may require the main banking regulator to share jurisdiction with other financial regulators. Equally, extending to an open data regime in nonfinancial sectors requires bringing nonfinancial sector regulators into the mix.

Increasing the number of implicated regulators in a regime creates coordination challenges that may be difficult to surmount if resources are scarce or priorities diverge. It also may lead to delays in implementation, as is currently the case in Kenya where discussions are ongoing about which authority should be the open banking lead. An open data regime may present even greater challenges to collaboration because of the increased number of potential regulators and the need for cross-sectoral collaboration.

To avoid such drawbacks, EMDEs should identify a lead regulator early on. A variety of criteria need to be considered to determine which regulator should act as lead. These may include the following:

- The regulatory body with the greatest interest in achieving the rationale, such as competition, innovation, and inclusion, for open banking in their market.
- The regulatory body with the most power for enforcement.
- The regulator with the most suitable purview.
- The regulator with the most convening power.

Once a lead regulator is identified, staged implementation enables additional financial and nonfinancial regulators to be added as (and when) they are ready to participate. One example is Brazil, whose Central Bank-led open banking regime includes access to consumer transaction data from banks, but also to consumer transaction data concerning securities, insurance, and pensions. The country's securities and investment and pension and insurance regulators currently are not implementing open banking in their sectors because of other priorities. However, this does not preclude the issuance of supplementary resolutions by these authorities in the future, when they may be ready and willing to implement data sharing for institutions

within their purview. Importantly, current communication between Brazil's Central Bank and the other regulators is key to transmitting early learnings and coordinating approaches.

GOVERNANCE

The way an open banking regime is governed may include setting security and API standards, determining future changes in scope, provisions for liability and dispute settlement, and the cost of data calls (if any). All of these elements can be part and parcel of the implementing regulations (as is the case in Mexico and the European Union); decided by a separate entity or group set up or convened to make such decisions (e.g., the United Kingdom's OBIE, the regime participants' convention in Brazil, and India's Sahamati); or a hybrid of the two.

As noted, OBIE in the United Kingdom is tasked with implementing open banking, including the development of API standards. CMA determines OBIE's governance, composition, and budget, while funding is provided by the nine mandated banks under the CMA order. Under the Central Bank's oversight, Brazil's open banking regime foresees a convention drafted by regime participants that agrees to API standards, the cost of data calls, dispute resolution mechanisms, and the eventual future expansion of scope, among other implementation issues. In India, the nonprofit entity Sahamati currently is tasked with growing the account aggregator ecosystem and running an "umbrella" entity for account aggregators (Datwani and Raman 2020). In the latter role, Sahamati is undertaking part of the regime's governance, including developing certification guidelines on software and issuing technical standards.

Implications for EMDEs

Whether a separate governing body is required for the proper functioning of an open banking regime is a function of how the initial regime framework is set out, which is itself often dictated by a country's legal framework and law tradition. In all cases, if a regime's framework does not provide guidance on key elements such as technical standards for data sharing (if applicable), liability, dispute resolution, and the cost of data calls, it should be assumed that these elements are articulated elsewhere—either in secondary regulation or by a governance entity. If the governance entity is led by the regulator, resources would need to be allocated, which may be a challenge for some EMDEs.

COST DISTRIBUTION

Implementation of open banking regimes (i.e., putting in place sharing infrastructure such as APIs) and their ongoing maintenance (i.e., communication costs for individual requests for, and sharing of, data and continuous updates to the sharing infrastructure) entails significant costs. Who bears these costs varies greatly across the regimes reviewed, if this is even dealt with in the regime framework.⁵⁷

In Australia, the European Union, and the United Kingdom, the regulator placed most of the cost burden on the entities mandated to share data. In Australia and the United Kingdom, the burden was part of the "sanctions" imposed on incumbents for prior anti-competitive market

⁵⁷ So far, three regimes—Japan, Indonesia, and Malaysia—have not dealt with the issue of the cost burden of data sharing in their legislation and regulations.

practices. In all three jurisdictions, the cost burden reduces barriers to data sharing for TPPs and consumers. On the other hand, Brazil, Hong Kong, Mexico, and Singapore explicitly authorize data holders to charge data users fees for each individual data request, while TPPs in Bahrain are permitted to charge consumers. In Bahrain and Hong Kong, fees must be bilaterally agreed on, while in Mexico they must be approved by the regulator. In Brazil, beyond a certain number of free data API calls, fees must be agreed on by the regime participants' convention, which is overseen by the regulator.

Whether a regulator imposes the cost burden on a certain party or allows parties to bilaterally negotiate appears to depend on a variety of factors, including rationale for the regime and relative strength of the regulator compared with industry incumbents. It should be noted that in jurisdictions where the regulator imposed the cost burden on incumbents, incumbents expressed sharp criticism that the burden may render the open banking regime “commercially unsustainable” in the long term. It remains to be seen whether this is the case, or whether those bearing the costs can cross-subsidize from other parts of their businesses.

Implications for EMDEs

The inclusion of fees charged by data holders for individual data requests in an open banking regime increases costs for data users. It can result in increasing the price and affordability of some services, although data users need to absorb other cost elements as well, such as the cost of their IT infrastructure. A price increase could disincentivize adoption by the low-income population, act as a barrier to access, and help data holders retain competitive power. Depending on the level of fees, it also may undermine the ability of open banking-enabled service providers to use reduced costs and efficiencies gained from APIs to target low-income and unbanked individuals. These fees are separate from initial set-up costs, which are not directly passed on to data users and consumers, although data holders may try to recoup costs over time.

Not all services that assist low-income individuals require the same quantity of data calls (see Box 4). For example, savings trackers and sweepers require a large number of data calls, while utility switching services require only a limited number. Regulators can use this knowledge to design a tiered pricing regime that provides for certain free data API calls and certain premium calls. Tiered pricing would place the relevant services that assist low-income individuals and their corresponding number of average data calls into the “free data API bucket.” (See the Brazil case study in Appendix B for details on this approach.)

Regulators could go further and explicitly prohibit passing along data sharing fees to customers. It is not clear whether this would effectively support TPPs to offer more services to low-income customers because in each case, they would have to cover costs somewhere in their business model. In all cases, regulators should ensure that end-customer pricing is transparent—customers typically do not know that they are triggering a data API call. For example, it would be problematic if customers were not aware in advance that they are being charged for opening a personal financial management app, which then automatically updates by calling various third-party data APIs.

Regime set-up costs could be financed by a state subsidy, by incumbents as a “one off” penalty for existing data asymmetry (i.e., the United Kingdom model), or by a cross-section of

all industry players in proportion to their market presence (e.g., the Brazilian model). Regulators should consider the market structure and its resources when making such decisions.

DATA PRIVACY AND PORTABILITY

At least 10 of the reviewed regimes provide for some type of customer consent before customer data are shared.⁵⁸ Jurisdictions that allow the sharing of generic services data or other nonconfidential data such as [aggregated data](#) do not require customer consent for this type of data. This is logical because the data are usually public and, in all cases, not customer specific.

Since customer consent is a cornerstone of data sharing regimes, we would expect regimes to have comprehensive data protection regulatory frameworks as well. This assumption bears out in almost all jurisdictions except India and Indonesia. India and Indonesia regulate data only on a sectoral basis; however, both have a pending national data protection legislation and India has incorporated key data protection measures into the Master Direction governing its account aggregator ecosystem.⁵⁹

Most of the reviewed regimes do not have separate data portability provisions. Although data portability is not required for data sharing, it is the other side of the data sharing coin. It gives consumers the right to port whatever data they wish instead of solely agreeing to requests initiated by TPPs (albeit the customer usually takes the first step in initiating a TPP relationship). Data portability can help regulators expand data sharing into sectors beyond open banking, such as open data (e.g., Brazil).

Implications for EMDEs

EMDEs often have data provisions in sectoral legislation rather than a general data protection law. They also may have a large percentage of the population categorized as “vulnerable.”⁶⁰ It is legitimate to ask whether it is appropriate to implement such an open banking regime without a general data protection law or comprehensive data provisions in sectoral legislation. The answer revolves around how robust data protection is in the country in question. It is possible that sectoral legislation is sufficient or that the introduction of an open banking regime could concurrently introduce the necessary level of protection in the relevant sectoral legislation, as is arguably the case in India. An assessment of what makes a data protection regime sufficiently robust for data sharing is outside the scope of this paper, but it would be an important element in any analysis of the appropriateness of open banking regimes in EMDEs. Further research on this aspect is recommended.

58 Since the necessary documentation is not available in English we were unable to ascertain whether customer consent is required in Indonesia.

59 For banking data in Indonesia, data protection is covered by Law No. 7 of 1992 on Banking, as amended by Law No. 10 of 1998 and Bank of Indonesia Regulation No. 16/1/PBI/2014 on Protection of Consumers of Payment Systems. The Information Technology Act of 2000, as amended in India, contains provisions for the protection of electronic data. RBI issues periodic guidelines and circulars to maintain the confidentiality and privacy of client information. However, a draft national data protection bill is in the process of being adopted in both countries.

60 The Australia Data 61 survey reported that barriers to adoption of such regimes for “vulnerable” populations lie with the lack of understanding of data recipient value propositions and low consumer trust, highlighting the importance of data protection for this stratum of the population. See Consumer Data Standards (2019).

Even if the data protection regulatory framework is or can become sufficiently robust, the question remains whether vulnerable populations, such as those who are illiterate, can even “consent” to such a regime or if a different type of data protection framework that goes beyond consent would be more appropriate—for example, one that establishes a fiduciary relationship between providers and customers (Medine and Murthy 2019). This also is outside the scope of this paper but is worthy of further exploration as part of an analysis of the appropriate elements of a data protection framework that are required for EMDEs to adopt open banking regimes.

LIABILITY AND CONSUMER PROTECTION

The risk of fraud, scams, and customer error can be exacerbated in complex payment initiation processes and the enhanced data sharing fostered by open banking regimes. First, all types of data access conditioned on screen scraping increase the risk of a data breach. In many countries, data access via login details sharing happens even without an open banking regime set up. In fact, some open banking regimes, such as in the European Union, explicitly prohibit screen scraping and support the use of APIs to minimize these risks. Yet even APIs are not risk proof; security and data protection requirements are highly recommended.

Second, the provision of payment initiation services poses greater risk than data aggregation or account information services. PISPs not only retrieve customer data, but they also transmit payment orders. The addition of third parties such as PISPs in a payment order can increase the risk of an incorrectly transmitted or delayed order, which creates further issues if the customer wishes to reverse an initial transaction (Carr et al. 2018). Determining ultimate liability in fraudulent or erroneous transactions may be challenging in jurisdictions where national liability frameworks are not adjusted to account for open banking and data sharing between multiple parties (BIS 2019).

To mitigate the risks introduced by open banking, regimes should consider rules dealing with:

1. Liability for fraud, theft, and technical and customer error.
2. Consumer recourse, including dispute resolution.

Regimes could consider the implications of TPP licensing and accreditation and allow for a certain amount of reliance on it by data holders.

In terms of consumer recourse, many more jurisdictions have existing or planned mechanisms to cover open banking issues. OBIE in the United Kingdom has created a dispute management system (DMS) to handle requests, enquiries, complaints, and disputes between ASPSPs and TPPs on open banking (Carr et al. 2018).

DMS is a voluntary mechanism where participants adhere to a code of best practices, including how to handle cases at first instance and how such cases can be taken to mediation, adjudication, or arbitration. In Hong Kong, provisions addressing complaints-handling mechanisms are included in third-party contracts. Customers should not be responsible for direct loss resulting from unauthorized transactions unless the customer acted fraudulently or with gross negligence. In Japan, the Association for Electronic Payment Services, a private body, is responsible for handling customer complaints related to open banking. In Singapore,

the Personal Data Protection Commission facilitates complaints between customers and providers. India has an Ombudsman Scheme for Digital Transactions (BIS 2019).

Most of the open banking regimes reviewed, however, do not make specific provisions for liability rules. The main exception is the European Union. PSD2 sets out a strong customer authentication (SCA) requirement for most types of payment initiation as well as liability conditions. The requirement places the liability on banks to reimburse customers in the first place, even if unauthorized transactions originate from the relationship between the user and a third party.

There are issues with the provisions made under PSD2/SCA rules, which have been criticized as being inflexible and too prescriptive to accommodate future developments.⁶¹ Technical difficulties have resulted in delays in implementing SCA.⁶² Further, it seems disproportionate to place initial liability on ASPSPs, regardless of fault. Commentators have suggested that the responsibility should first lie with the bank or third party where the transaction originated (Carr et al. 2018). However, all open banking regimes should include rules on liability and security.

Implications for EMDEs

Given the risks at hand, EMDEs should determine the robustness of their current consumer protection framework. If the framework is not sufficient, introducing an open banking regime could bring the necessary level of protection for new entities entering into the process. An open banking regime should set out liability provisions in case of data transmission errors or data breach and, if the latter is in scope, the specific risks of payment initiation. Finally, cross-sectoral dispute resolution processes should be considered.

61 Various financial services trade associations based in the United Kingdom, such as Payments UK, Financial Fraud Action UK, and the UK Cards Association, have raised concerns that SCA does not cater to technologies such as wearable payments or internet of things-based devices. This could potentially “quash this sort of innovation and other moves toward ‘invisible’ payments.” See the joint response from Payments UK, Financial Fraud Action UK, and the UK Cards Association to the EBA Consultation on RTS: <https://eba.europa.eu/node/81948/submission/368>.

62 See the EBA’s opinion on the deadline for migration to SCA for card-based ecommerce payments: <https://eba.europa.eu/eba-publishes-opinion-on-the-deadline-and-process-for-completing-the-migration-to-strong-customer-authentication-sca-for-e-commerce-card-based-payment>.

SECTION 4

IMPLICATIONS FOR REGIME DESIGN

THE POLICY OR REGULATORY FRAMEWORK OF AN OPEN BANKING regime determines which types of services can be provided and which types of business models are feasible. A regulator in an EMDE may wish to ensure the possibility of offering open banking-enabled products and services—and corresponding business models—that alleviate friction for low-income populations. If open banking supports social goals such as financial inclusion, then those goals must be considered in the design of the open banking regime. Keeping these considerations in mind when designing a regime is what we call “financial inclusion by design.”

Earlier in the paper we identified 12 design components for regulators to consider in general when implementing an open banking regime (see Section 3). Of the 12 components, early evidence suggests that the four related to scope and the one related to cost would, to a large extent, determine whether a regime achieves financial inclusion by design. The choices specifically concern (i) regime participants and data reciprocity, (ii) which types of data are shared, (iii) which services fall within the regime’s ambit,⁶³ (iv) whether payment initiation is enabled, and (v) the cost of data exchange requests.

The wider an entity’s ambit, the greater the number and diversity of new services that could be enabled and the greater potential for competition. In this context, bringing fintechs and other licensed or accredited TPPs into the regime’s purview would go a long way toward ensuring that sufficient actors are in place to support the creation of inclusive open banking products. Similarly, the greater the breadth of eligible data types, the more likely that relevant products could be developed for low-income individuals. Customer transaction data would be key in all instances, and personally identifiable information/customer registration data are necessary in the case of CCDD functionality.

To ensure that even those without a digital financial data trail can benefit, regulators should consider going beyond open banking to open data. To that end, telecoms and utilities often

⁶³ This report focuses on open banking and financial services since only these types of regimes presently exist. If economic sectors extend beyond financial services, they also would become open data regimes. The possibility presents the greatest potential for financial inclusion.

are a top priority for financial inclusion in many EMDEs. However, they may add a layer of complexity given the need for cross-sectoral coordination and increased data security risks. If an appropriate payment infrastructure is in place, payment initiation should be enabled to ensure that customers can act on the analytics and recommendations their data generate. Finally, given the many barriers to adopting digital financial services and the lack of resources that low-income populations experience, open banking regimes are likely to have the biggest impact on these individuals—if they are not required to pay for the service. As discussed in Section 3, another policy question is: Who in the ecosystem picks up the bill?

Table 1 shows how design components can have a practical effect on a regime's design. It maps components to the open banking-enabled products and services we have identified for low-income individuals. These products and services include savings trackers and sweepers, utility switching, CCDD, budgeting applications with payment initiation, and responsible digital credit.

In EMDEs in particular, open banking regimes have been introduced fairly recently. Early findings need to be further tested and substantiated through in-depth research in a range of countries. Additional research is required particularly on the feasibility of implementing open data regimes and the effect regimes have on poor people. More work should be undertaken on the implementation staging of open banking and open data and their affect on various scheme participants (rural and remote entities, in particular). Customer segmentation work also should be considered—the types of data customers possess and how they match with the types of services they need. To better understand the role of industry, another area of further study is the current and potential governance structures of open banking regimes. Finally, more work on data protection is a prerequisite to understanding what makes a data protection regime sufficiently robust to ensure a safe data sharing regime—and how these elements can be introduced in countries that lack robust data protection regimes.

TABLE 1. **Open banking paves the way for inclusive financial services**

Regime architects should consider the following elements for specific inclusive services.

Product	Required Data Holder	Required Data Scope	Required Service Scope	Required Functionality	Required Data Request Frequency
Savings trackers/ automatic sweepers	Banks, EMIs, PSPs, other FSPs	Customer transaction data	Banking, payments	Recurring payment initiation	Requires real time, continuous data calls
Utility switching	Utilities, banks, EMIs, PSPs, other FSPs	Customer transaction data, customer utility data	Banking, payments, utilities	Payment initiation	Requires a limited number of real time data calls
Collaborative customer due diligence ^a	Banks, EMIs, PSPs, other FSPs (pensions, insurance, investments), mobile network operators, utilities, other alternative providers that can identify an individual	Customer registration data, including identification	Banking, utilities, telecoms, pensions, insurance, investment	Legal framework to allow digital copies of ID to be used for KYC	Requires a limited number of real time data calls
Budgeting apps with payment initiation	Banks, EMIs, PSPs, other FSPs (pensions, insurance, investments), utilities, credit providers	Customer transaction data, customer data concerning other financial services (credit, pensions, insurance, investments)	Banking, payments, credit, pensions, insurance, investment	Account information services, payment initiation, other types of transaction initiation/customer acquisition, e.g., ability to enter into credit agreements	Requires real time, continuous data calls
Credit	Banks, EMIs, PSPs, other FSPs, credit providers, other providers of alternative data (utilities, telecoms, etc.)	Customer transaction data, customer credit data, access to alternative data	Banking, payments, credit, further sectors that provide alternative data (utilities, telecoms, etc.)	Recurrent payment initiation, other types of transaction initiation/customer acquisition, e.g., ability to enter into credit agreements on behalf of customer, ability to undertake debt rehabilitation	Service dependent: for a one-time credit switch, limited data calls; for pre-approved credit to reduce reliance on overdraft, requires real-time continuous data calls

a. CCDD approaches seek to address the shortcomings of current CDD processes. Examples include creating a public utility that FSPs can use to identify clients and verify identities on an ongoing basis; access to KYC as a service; a private centralized database where banks can share and access KYC information on corporate clients; and self-sovereign IDs (a new category of ID that promises to work across borders, which allows individuals to prove their identity based on alternative sources of data and provides customers with more control over who accesses their data). See Lyman et al. (2018).

APPENDIX A

GLOSSARY OF TERMS

Term	Definition
Account aggregator	A category of nonbanking financial company, created by the Reserve Bank of India in 2016. Account aggregators securely transfer financial data from data holders to data users based on customer consent.
Account information service provider (AISP)	A third-party AISP provides customers with consolidated online information about their financial accounts with other payment service providers.
Account servicing payment service provider (ASPSP)	A financial institution that provides customers with accounts for payment services. ASPSPs include banks, payment institutions, and e-money institutions.
Aggregated data	Data concerning financial services, such as service quality and customer use, that are collected on an aggregate basis.
Application programming interface (API)	A set of routines, protocols, and tools for building software applications. In the context of this report, APIs are the conduit for data transmission between two parties.
BigTech	A large company whose primary role is to provide digital services rather than financial services. Examples include Amazon, Facebook, and Google.
Collaborative customer due diligence (CCDD)	Customer due diligence (CDD) on its own comprises customer information that enables an organization to assess the extent to which the customer exposes the organization to a range of risk. Collaborative CDD (CCDD) is a new approach to CDD that seeks to address the shortcomings of current CDD processes. Examples include creating a public utility that FSPs can use to identify clients and verify identities on an ongoing basis, access to KYC as a service (a centralized database where banks can share and access KYC information on corporate clients), and self-sovereign IDs.
Consumer data right (CDR)	Under Australian law, the right of a consumer to access his or her own data or to share it with an accredited data recipient to whom the consumer has given permission to access.
Customer acquisition services	Services, including customer referrals and loyalty programs, provided by third parties that help the principal obtain new clients.
Customer data	Personally identifiable customer information that can be used for data on account opening and use, including registration, KYC, and CDD data.
Customer transaction data	Data from a customer's bank or payment account(s) that show the customer's transaction history.
Data holders	Entities that hold or possess customer data.
Data portability	The ability of data subjects to download a full set of their data and "port" or share it with whomever they choose.

Term	Definition
Data sharing regime	Another term for open banking.
Data subject	An individual or company that creates data.
Data user	An entity that uses the data belonging to data subjects to propose a service.
Debt rehabilitation	A process whereby an individual's debt is restructured and reduced to a debt level that is compatible with the individual's capacity to repay creditors.
Electronic payment service provider (EPSP)	A term used by Japan's Financial Services Agency to identify which entities can access customer data under its open banking regime. EPSPs include payment initiation service providers (PISPs) and account information service providers (AISPs).
Financial services provider (FSP)	An entity that provides financial services to consumers and other businesses.
Fintech	A technologically enabled innovation in financial services that could result in new business models, applications, processes, or products, with an associated material effect on financial markets and institutions and the provision of financial services.
General Data Protection Regulation (GDPR)	The European Union's General Data Protection Regulation can be reviewed at https://eur-lex.europa.eu/eli/reg/2016/679/oj .
Know your customer (KYC)	The process banks and other FSPs undertake to verify the identity of clients, either before client account opening or before the start of doing business together. KYC often includes the provision and verification of client identification.
Open API	An open API (also referred to as a public API) is a publicly available application programming interface (API) that provides developers with programmatic access to a proprietary software application or web service.
Open banking regime	A public sector-driven framework in which certain financial sector players share financial product data and/or certain customer-specific data with other financial sector stakeholders. The sharing of customer-specific data is based on request by, and consent of, the consumer.
Open data regime	A public sector-driven framework for data sharing that goes beyond financial services to include the sharing of telecoms, utilities, health, social media, and/or other types of data.
Payment initiation	A third-party service that facilitates the initiation of customer payments.
Payment initiation service provider (PISP)	A third-party service provider that allows a consumer to make a payment from their bank account directly to the merchant, typically by establishing an electronic payment link between payer and online merchant via the payer's online banking module.
PSD2	The European Union's Second Payments Services Directive (PSD2) can be reviewed at https://ec.europa.eu/info/law/payment-services-psd-2-directive-eu-2015-2366_en
Screen scraping	The action of using a computer program to copy data from a website.
Services data	Data concerning specific financial services and products, including pricing and product description.
Smart loan repayment	A debt repayment plan that accounts for fluctuations in a customer's income during the repayment period, allowing the customer to pay more (or less) based on their available liquidity – without triggering default provisions.
Third-party provider (TPP)	A non-account-servicing payment service provider that is licensed or registered to provide a service to ASPSP customers, such as payment/ transaction initiation, account aggregation, and customer acquisition services.
X2A	Also known as "access to account," X2A is another term for the data-sharing component of PSD2.

APPENDIX B

BRAZILIAN OPEN BANKING—A CASE STUDY

IN APRIL 2019, THE CENTRAL BANK OF BRAZIL ISSUED A HIGH-LEVEL communiqué that set out the main elements of the country’s open banking regime.⁶⁴ The formal issuance of a Resolution to implement open banking followed on 4 May 2020,⁶⁵ after several months of public consultation with industry stakeholders. The regime’s rationale was to “increase efficiency in the credit and payment market in Brazil by promoting a more inclusive and competitive business environment while preserving the security of the financial system and the protection of consumers.”⁶⁶

Open banking in Brazil comes on the heels of recent regulatory reforms that promote competition in the financial services sector, including the following regulations:

- Regulation establishing peer-to-peer (P2P) and platform lending.
- Tiered prudential regulation imposing lighter requirements on smaller firms with a narrow range of products and low complexity (Cohen Freue 2019).
- Establishment of an instant payments scheme (the PIX instant payment system).
- Regulations to facilitate merchant credit based on merchants’ receivables (without being locked into a particular bank).

The open banking regime, which came into force on 1 June 2020 and will be implemented in stages between November 2020 and October 2021, has addressed the 12 design components previously laid out:

1. **Types of services.** As set out in the Resolution, the regime covers all services regulated by the Central Bank of Brazil, including banking, payments, credit, and foreign exchange operations. Note that data on products and services related to investment, insurance, and

64 Comunicado DC/BACEN No. 33455 of 4 April 2019: https://www.normasbrasil.com.br/norma/comunicado-33455-2019_376986.html.

65 Joint Resolution No. 1 of 4 May 2020, providing for the implementation of Open Banking: https://www.bcb.gov.br/content/config/Documents/Open_Banking_CMN_BCB_Joint_Resolution_1_2020.pdf.

66 Comunicado DC/BACEN No. 33455 of 24 April 2019: https://www.normasbrasil.com.br/norma/comunicado-33455-2019_376986.html.

open pensions are in scope, but institutions in these sectors technically are not under the jurisdiction of the Central Bank. There are, however, ongoing discussions on whether these sectors will participate in open banking in their own right.

2. **Participants.** The regime covers financial institutions, payment institutions, and other institutions authorized to operate by the Central Bank. There is data sharing reciprocity for all scheme participants.
3. **Types of data.** The regime requires the sharing of the following data: (i) public product/ services data, including location of service points, product characteristics, contractual terms and conditions, and financial costs; (ii) customer registration data, including name, affiliation, and address, that can be used for CCDD; (iii) transactional customer data, including data related to deposit accounts, credit operations, and other products and services contracted by customers; and (iv) data required for the implementation of payment services, including initiation of payments, transfers of funds, payments of products and services, among others, and the forwarding of loan proposals. Participants in the regime convention can extend the scope to other types of data and services. Prior customer consent is required for all data sharing except public product data sharing.
4. **Payment initiation.** In addition to data exchange, the regime supports payment initiation and loan proposal forwarding, which allows customers to directly contract with TPPs for loans through a digital interface.
5. **Mandatory vs. voluntary.** The regime is mandatory for banks categorized as Segment 1 and Segment 2 institutions (except those that do not provide any of the services in scope), as well as all authorized payment institutions in Brazil. Participation by all other financial institutions in scope is voluntary, as long as they meet the technical requirements for data transmission via an API and are register in the participant repository.
6. **Technical specifications for data sharing.** The regime foresees participants required to make APIs available for data transmission. A convention drafted by participants will decide on the development of technological standardization, operational procedures, safety standards, and API implementation. The convention also will decide other issues, such as a dispute settlement mechanism and fees participants must pay for premium data calls. The Central Bank will oversee the drafting of the convention.
7. **Staged implementation.** The regime foresees staged implementation by data sensitivity, data type, and data holder type. In the first phase, public data on service channels and basic bank products, such as deposit and savings accounts and credit, must be shared. In the second phase, customer registration data and customer transaction data on basic bank products must be shared. In the third phase, payment initiation and loan forwarding must be shared. In the fourth phase, public data and customer transaction data on more complex financial products, such as foreign exchange, investments, and insurance, require disclosure.
8. **Lead regulator/policy mandate.** Although the lead regulator is the Central Bank, the regime includes access to consumer transaction data on securities, open pensions, and insurance. The Central Bank does not have jurisdiction over these products, and currently,

insurance and pensions and securities and investment regulators are not implementing open banking in their sectors because they have other priorities. Thus, the open banking regime may trigger issuance of supplementary resolutions by these authorities in the future.

9. **Governance.** The Resolution envisages the drafting of a convention by regime participants, which will set out the agreed on rules on developing technological standardization, operational procedures, safety standards, implementation of APIs, a dispute settlement mechanism, and fees participants must pay for premium data calls. The Central Bank will oversee the drafting.
10. **Cost distribution.** The regime incorporates a tiered pricing regime that provides for certain free API calls per service/product. Specifically, the following API calls are free: all calls concerning all payment initiation; two calls per month per participating institution per customer (concerning registration data); and 120 calls per month, per participating institution and per customer, concerning customer transaction data. For remaining API calls, the data recipient may be required to reimburse the data holder at a cost to be determined by the convention.
11. **Data privacy and portability.** The regime requires participants to adhere to data privacy regulations, including the Brazilian General Data Protection Law (LGPD),⁶⁷ published in August 2018 and in effect as of August 2020. LGPD includes both data ownership and data portability provisions, which opens the door to expanding the data sharing regime beyond open banking to sectors such as telecoms and utilities.
12. **Liability and consumer protection.** The regime does not set out liability provisions or other consumer protection elements. However, the convention will develop them, including establishment of channels for consumer complaints and creation of procedures and mechanisms for handling and settling disputes among regime participants.

67 See LGPD: <https://www.lgpdbrasil.com.br/wp-content/uploads/2019/06/LGPD-english-version.pdf>.

APPENDIX C

MEXICAN OPEN BANKING— A CASE STUDY

MEXICO'S "FINTECH LAW, PASSED ON 9 MARCH 2018, INCLUDES high-level open banking provisions in Articles 76 and 77.⁶⁸ Details about the regime were set out by secondary regulation issued in March 2020 by CNBV, one of the country's financial sector regulators.⁶⁹ The secondary regulation sets technical and security standards for APIs, plus other open banking regime details on public data, for example, products and services offered and locations of ATMs and branches. After its summer 2020 pilot, CNBV expects to issue similar regulations on customer transaction data and aggregated data in 2021 (Deloitte 2020). The Bank of Mexico issued secondary regulation in March 2020 as well, setting technical and security standards for APIs plus other open banking regime details for clearinghouses and credit bureaus.⁷⁰ The Ministry of Finance, co-author of the Fintech Law, chose to develop the main details of open banking in secondary regulation to retain legislative flexibility.

Open banking provisions are a minor part of the Fintech Law. Its main provisions focus on regulating new players (crowdfunding and e-money institutions) and setting up a regulatory sandbox. One of the primary reasons for issuing the Fintech Law was to deal with the growing number of crowdfunding and P2P lending platforms in operation, as well as the e-wallet and cryptocurrency providers and exchanges that had, until recently, operated in a grey area. Another rationale was to support financial inclusion. In the context of financial inclusion, open banking is expected to render the marketplace more transparent and ensure that products best suited to the unbanked will be developed.

68 See Ley Para Regular Las Instituciones de Tecnología Financiera: <https://www.cnbv.gob.mx/Normatividad/Ley%20para%20Regular%20las%20Instituciones%20de%20Tecnolog%C3%ADa%20Financiera.pdf>.

69 See CNBV's secondary regulation: <https://www.cnbv.gob.mx/Normatividad/Disposiciones%20de%20car%C3%A1cter%20general%20aplicables%20a%20las%20instituciones%20de%20cr%C3%A9dito.pdf>.

70 See the Bank of Mexico's secondary regulations: https://www.dof.gob.mx/nota_detalle.php?codigo=5588824&fecha=10/03/2020.

The main contours of the open banking regime are as follows:

1. **Types of services.** The regime covers a broad range and numerous types of financial services, including investments and insurance. Pensions are part of a separate scheme.⁷¹
2. **Participants.** All financial institutions, fintechs, clearinghouses, and credit bureaus fall within scope. Reciprocity exists between most data sharers and receivers because a majority of the same institutions can receive—and must share—data. The sole exception is the third parties that specialize in IT, such as BigTech, that may access data but may not be required to share in return.⁷² Sectoral scope is broad; CNBV has jurisdiction over 21 different types of entities, including credit institutions, brokerage houses, stock exchanges, and investment fund operators, among others.
3. **Types of data.** Article 76 of the Fintech Law identifies three types of data: (i) nonconfidential financial data on financial products and services, plus location of access points, (ii) aggregated statistical data on transactions that cannot be disaggregated, and (iii) consumer transaction data for products or services. This last category requires explicit client consent.
4. **Payment initiation.** Payment initiation is not part of Mexico's open banking regime. However, this type of functionality is possible through the Cobros Digitales (CoDi) overlay service to Mexico's instant payment system (SPEI). Banks are required to adopt the CoDi solution, while nonbanks may choose to register through a process established by the Central Bank.
5. **Mandatory vs. voluntary.** The Fintech Law establishes a mandatory regime for all entities in scope.
6. **Technical specifications for data sharing.** The Fintech Law foresees API standardization, with secondary regulation setting out the technical details. Fintechs and financial institutions do not carry special obligations,⁷³ nor do they require accreditation to share or receive data over APIs—beyond compliance with API technical and security standards.
7. **Staged implementation.** The Fintech Law does not set out staged implementation but is *de facto* due to the issuing process of secondary legislation. Public data are released before customer transaction data are.
8. **Lead regulator/policy mandate.** CNBV oversees how the open banking regime is applied to fintechs and financial institutions; the Bank of Mexico has jurisdiction over clearinghouses and credit bureaus in this regard. The split follows specific mandates for

71 The pensions regulator, la Comisión Nacional del Sistema de Ahorro para el Retiro (CONSAR), issued voluntary API rules in November 2018, which are separate from the open banking scheme set out in the Fintech Law. See https://www.gob.mx/cms/uploads/attachment/file/527504/dispos_operaciones_compila_29_11_19.pdf.

72 This practice has been criticized by industry stakeholders because it allows BigTech to access data without requiring such entities to provide access to their databases—arguably creating an uneven playing field. See Section 1, for details.

73 Only clearinghouses and credit bureaus need to be authorized to access relevant data, as set out in the secondary regulations of the Bank of Mexico. See https://www.dof.gob.mx/nota_detalle.php?codigo=5588824&fecha=10/03/2020.

each regulator. The pensions regulator separately oversees voluntary API rules for pension fund administrators.

9. **Governance.** No separate entity determines governance issues. They are dealt with by the relevant regulator in secondary regulation.
10. **Cost distribution.** All institutions can charge fees for data exchange, but fees must be authorized in advance by the relevant regulator. To prevent barriers to access, fees must be fair, transparent, and nondiscriminatory.
11. **Data privacy and portability.** Mexico has a general data protection law, but no data portability provisions. Although data portability provisions are not required for open banking, they do allow for the potential extension of data sharing regimes to other sectors.
12. **Liability and consumer protection.** Neither the Fintech Law nor its implementing regulations have addressed liability and consumer protection.

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