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Centre
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UNIVERSITY OF
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THE GLOBAL STATE OF OPEN BANKING AND OPEN FINANCE REPORT

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The data and information contained in this report was accurate at the time of the research, for more updated evidence base on the state of open banking and open finance, please visit www.ccaf.io

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As the global financial services ecosystem continues to evolve, institutions are exploring new ways to enable the sharing of the most critical asset – data. Open Banking and Open Finance stand as unique frameworks that can reshape how financial institutions are sharing and utilising customer data with consent, creating opportunities for innovation while demanding robust approaches to privacy and security. As this evolution unfolds, we are witnessing the emergence of new business models and services that promise to enhance financial inclusion and customer experience.

However, a significant knowledge gap exists in truly understanding the implementation of these frameworks and their effectiveness. These are complex, multi-dimensional issues, covering many fields, including technology, infrastructure, regulation, supervision, law and governance. Financial regulatory authorities and central banks are faced with a critical, urgent policy priority: how to determine the right strategy, while ensuring a holistic approach at a time of great technological change? The lack of empirical evidence makes it progressively difficult for policymakers, regulators, and market participants to ensure policy and regulatory decisions are beneficial, value-adding, and aligned with the interests of customers.

The Cambridge Centre for Alternative Finance (CCAF) with the support of the UK Foreign, Commonwealth and Development Office (FCDO) have responded to this need through a landmark study examining Open Banking and Open Finance developments across 95 jurisdictions. This precedential and comprehensive analysis offers novel insights into global market trends, governance approaches and implementation strategies that are shaping the future of data sharing in financial services.

The research reveals both encouraging progress and important challenges. Regulation-led frameworks are successfully driving innovation and creating regional clusters of adoption, particularly where neighbouring jurisdictions align their approaches. However, the transition from Open Banking to comprehensive Open Finance still remains limited, with many jurisdictions still working to bridge the gap between policy objectives and practical implementation.

This report marks an important milestone, but it is only the beginning. As Open Banking and Open Finance continue to evolve, further research will be essential to understand their long-term impact on financial inclusion, competition, innovation, and market stability. How will this impact other infrastructural developments in markets? What are the steps needed to align with the broader open data movement and generate value across sectors? How can we further collaborate to create interoperable ecosystems and reap the benefits of Open Banking and Open Finance across borders? We invite policymakers, financial institutions, academia and industry stakeholders to build upon these findings and help design and develop a financial system that is more open, inclusive and beneficial for all.

We express our sincere gratitude to all contributors who have made this research possible. Their insights and expertise have been instrumental in developing this important resource for the global financial community.

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Open Banking and Open Finance is reshaping financial systems worldwide, creating new avenues for innovation, financial inclusion and economic growth. Secure data-sharing between banks and licensed third parties enables a broader range of financial products that are tailored to clients' needs, fostering greater competition and efficiency in financial systems. EMDEs in particular stand to benefit as Open Finance improves access to products such as insurance and credit, as well as better reaching underserved communities.

This report sets out and explores a variety of approaches to Open Banking implementation, emphasizing the need for tailored frameworks that are responsive to local regulatory, economic and technological requirements. CCAF analysis finds that taking a regulation-led approach can be around 22% faster than market-driven approaches. While this finding currently favours less resource constrained regulators in advanced economies, early insights from the report highlight that Emerging Markets and Developing Economiec (EMDEs) are leading the way on Open Finance implementation.

As the UK renews its focus on fostering sustainable economic growth both domestically and globally, partnerships with emerging markets are a powerful way to leverage Open Finance to support resilient, inclusive financial ecosystems that underpin long-term economic growth. By promoting robust digital infrastructure and consistent regulation, Open Banking frameworks can empower countries, particularly EMDEs, to reach underserved populations, unlock economic potential and promote sustainable development.

We are proud to work with CCAF to advance Open Banking and Open Finance, including through the launch of the Cambridge Open Banking and Open Finance for Regulators course and various research projects, including this important new report. We are particularly pleased to support CCAF's provision of technical assistance to EMDE regulators and policymakers, which offers expertise and guidance to help drive financial innovation and is aligned with the UK's mission to support economic transformation in line with Sustainable Development Goals (SDG).

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Research Team

The research presented in this report was conducted by the Cambridge Centre for Alternative Finance (CCAF) at the University of Cambridge Judge Business School, with the support of the UK Foreign, Commonwealth & Development Office. The CCAF research team includes the following individuals:

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Glossary

ASPSP: Account Servicing Payment Service Provider: any financial institution that offers a payment account with online access. This includes banks and building societies (mutuals).

API: Application Programming Interface: code that enables software programs to interact by exchanging data, for actions such as making a payment transaction. This includes payment APIs, data APIs, 'ecosystem expansion' APIs, and 'consent and identity' APIs.

Bigtech: Large technology companies that leverage digital platforms, data, and technology-driven innovations to offer a range of services, often including financial services.

Customer Protection: A framework of laws, regulations and institutional arrangements that safeguard customers by ensuring they are treated fairly and responsibly in the financial marketplace.

Cybersecurity: Human and machine actions that seek to preserve the security of software and computer systems, data confidentiality, data integrity, and availability of digital information and/or information systems, including measures to ensure information authenticity, accountability, non-repudiation, and reliability.

Digital Infrastructure: Collectively, the digital technologies that provide the foundation for an organisation's information technology and business operations.

Financial Inclusion: The uptake and use of financial products and services by individuals and MSMEs (micro, small, and medium enterprises), with assurances from the service provider about their accessibility, sustainability and safety of customers' data.

Fintech: An abbreviated form of 'financial technology', used in reference to a digital financial services company; and collectively, to the advances in technology that have the potential to transform financial services, stimulating the development of new business models, applications, processes, and products.

Jurisdiction: Authority or power of a judicature (a system of courts) typically within a nation state, to determine a dispute between parties; defines the territory over which the judicature has legal authority.

KYC: 'Know Your Customer' refers to practices and processes adopted by private and public sector organisations to identify their customer or contractual third party and ensure that client records are maintained, typically according to industry best-practice and in many cases, as required by law.

Mobile Money: The uptake and use of financial products and services by individuals and MSMEs typically using a smartphone or other personal communication device, provided in ways that are accessible and safe to the customer and sustainable to the provider.[1]

Regulatory Innovation Initiatives: Activities by regulators to revise and improve regulatory and supervisory functions, processes, organisations and applications, which often, but do not necessarily, involve the use of technology. Activities are typically managed by an innovation office and may feature a regulatory sandbox and suptech solutions.

Regulatory Sandbox: A formal regulatory programme that allows market participants to test new financial services or models with real customers, subject to certain safeguards and oversight.

Suptech: An abbreviated form of 'supervisory technology' that refers to the use of innovative technology by financial authorities to support their work.

TPPs: Third-Party Providers are entities that offer additional financial services by accessing customer' bank accounts with their consent, typically through APIs. TPPs facilitate services such as account information aggregation and payment initiation, enabling users to manage multiple accounts or initiate transactions directly.

TSPs: Technical Service Providers are entities that work alongside regulated providers to support the secure access, management and delivery of financial data.

VRP: Variable Recurring Payments is a mechanism to make one or may payments over a period of time using Open Banking. The Payments must fall within the VRP Consent Parameters which must be authorised by the Payment Service User ("PSU") via Strong Customer Authentication ("SCA") at their ASPSP.

Executive Summary

Open Banking and Open Finance have gained global traction, with 95 jurisdictions making their benefits available for customers and businesses. However, the design and technical architecture of these frameworks vary significantly based on each jurisdiction's policy objectives, distinct financial market dynamics, digital preparedness and regulatory landscape.

Equally, jurisdictions vary in their approach to implementation. Two broad categories of governance approach can be identified: regulation-led, adopted by 54 jurisdictions; and market-driven, adopted by 28 jurisdictions. Furthermore, this report has developed a governance framework that further distinguishes these approaches—a contribution not previously made in existing studies—highlighting a spectrum of implementation strategies rather than a binary choice. Lastly, 18 jurisdictions on the market-driven end of the spectrum are also developing or planning regulatory frameworks.

Regional variations exist, with jurisdictions frequently adopting strategies that are similar to those of their neighbouring nations. For example, across Europe, Central Asia, the Middle East and North Africa, most jurisdictions have embraced a regulation-led approach. In Sub-Saharan Africa and Asia Pacific, jurisdictions primarily favour a market-driven approach. However, there is some evidence that while these trends are prevalent, there are also significant exceptions that challenge these general patterns, including those arising from changes in governance models as an initiative progresses through the design, build and maturity phases.

While 60 jurisdictions have already implemented legislation or regulations related to Open Banking, only 16 jurisdictions have passed relevant laws or regulations implementing Open Finance. Notably, 41 jurisdictions with Open Banking or plans for Open Banking are not planning to extend the scope of their framework to include a wider range of financial products.

The most common aim of these initiatives, as identified in 44 jurisdictions, is to enhance competition within the financial services industry. Additionally, fostering innovation and promoting digital and financial inclusion serve as secondary objectives across most jurisdictions.

In jurisdictions where regulatory frameworks drive Open Banking and Open Finance, various types of authority take the lead in implementation. Among the 54 regulation-led jurisdictions, it is noteworthy that 32 are led by central banks, while 19 are guided by financial services authorities. Furthermore, of the 44 jurisdictions identified with a competition-enhancing objective, 23 are led by central banks-demonstrating diverse combinations of policy objectives and lead authorities.

In the jurisdictions where both Open Banking and Open Finance legislation or regulations have been enacted, they were typically enacted within the same year. These jurisdictions have broader data type coverage from the outset. For most jurisdictions that have either passed legislation or issued regulations, it takes approximately two years from the passing of legislation or issuance of regulations for products to go live in the market.

Regulation-led frameworks tend to cover a broader range of live data types compared to those with market-driven frameworks. This research shows a correlation between regulation-led approaches and broader data type coverage, with regulation-led jurisdictions scoring an average of 2.69 out of 6 on a scale measuring live data types, compared to 1.75 for market-driven jurisdictions. This indicates a positive relationship between regulation-led approaches and broader data type coverage.

In expanding Open Finance to sectors such as Open Insurance, both regulation-led and market-driven approaches show notable, yet limited, success. Out of 54 regulation-led jurisdictions, six have successfully integrated these layers, while three out of 28 market-driven jurisdictions have done the same. These figures suggest that although regulation-led jurisdictions may have more structured frameworks, both approaches encounter significant challenges in fully realising the potential for Open Finance.

Looking ahead, both regulation-led and market-driven frameworks are expected to adapt in response to emerging technologies, shifting customer needs, and evolving regulatory environments. The next phase of development will likely see more jurisdictions expanding into Open Finance, integrating new financial sectors, which will further drive competition, innovation, customer protection and financial inclusion. Some jurisdictions have taken a further leap into Open Data, broadening the scope beyond financial services to unlock wider economic benefits and cross-sector collaboration.

Introduction

This report provides empirical insights for a deeper understanding of Open Banking and Open Finance implementation across diverse regulatory landscapes.

| Research Objectives and Rationale

The landscape of financial services is rapidly evolving, driven by the development of technology, evolving governance approaches, competition and shifting customer expectations. Over the past decade, regulators and policymakers around the world have witnessed the emergence of technology-enabled digital financial services, offered by both existing and new providers. They have had to decide whether and how to intervene to bring potential benefits for customer and small businesses. In parallel, their objective of mitigating any realised or potential harms and ensuring market integrity and financial stability all remain. From digital payments to online banking, from insurtech to wealthtech, financial innovation poses both opportunities and challenges for policymaking and regulation.

Among these innovations, Open Banking and Open Finance have emerged as among the most challenging regulatory and policy areas, requiring attention not only to their technical design but also to broader policy objectives, legal mandates, governance approaches, implementation strategies, ecosystem development and underlying digital infrastructure—as well as their governance and supervision. As policymakers navigate these complexities, understanding the comparative landscape of Open Banking and Open Finance and learning from their peers' experiences, becomes essential. However, a significant gap remains in the literature exploring the diverse governance approaches. This report seeks to fill that gap by providing empirical data through desktop research on the global development of Open Banking and Open Finance, alongside a high-level analysis of various governance and policy approaches and their market impact. Additionally, the report identifies the drivers of success and potential failures within each approach, offering insights on how regulators and policymakers can leverage existing strengths to devise more informed strategies. Ultimately, the goal is not just to design better frameworks but to achieve successful outcomes—ensuring that Open Banking and Open Finance initiatives fulfil their intended policy objectives.

| Methodology and Report Structure

The primary dataset for this report was gathered through a comprehensive desk-based analysis of global developments in Open Banking and Open Finance. This report identified 95 jurisdictions that have adopted some form of Open Banking or Open Finance, encompassing frameworks that are planned, in development, legislated, or already live. The methodology included reviewing official legal documents issued by regulators, press releases and services offered by fintech players, particularly in market-driven jurisdictions.

Across these 95 jurisdictions, a governance approach and sub-approach were successfully assigned to 82 jurisdictions using a governance framework. The aim was to reflect the direction of travel of each jurisdiction's governance approach, rather than offering a fixed perspective, while acknowledging that the constantly evolving landscape may influence these trajectories over time. For each of these jurisdictions, a detailed analysis was conducted, examining various aspects of their Open Banking and Open Finance initiatives. This included examining the timelines of regulatory and market developments—specifically, when regulations were passed, when they went live, and the time gap between these milestones. This report also explored the policy objectives behind the implementation of Open Banking and Open Finance. Additionally, it reviewed the lead authority in each regulation-led jurisdiction and determined the scope of the mandate—for instance, whether it applied to all banks, financial institutions, or broader entities.

The analysis extended to data-sharing practices, assessing the types of data permitted for sharing, the data that are currently live, and the presence of Open Finance sectors. It compared how regulation-led jurisdictions fare against market-driven counterparts in these categories. Also, it investigated the availability of action initiation services, such as payment initiation and other transactional functionalities, across these jurisdictions. Finally, it explored the jurisdictions that were able to expand Open Finance to sectors such as Open Insurance and Open Customer Lending. Throughout this analysis, the report pointed out previous research to explain the reasoning behind the observations, as well as to highlight any anomalies or concerns in implementation.

This report is divided into three parts: **Part I** provides background on Open Banking and Open Finance, covering key policy objectives, actors and essential components; **Part II** explores the various governance approaches, contrasting regulation-led and market-driven frameworks, along with other considerations in regulation-led models; and **Part III** presents the research findings, detailing insights gained from the global review, including timelines, data-sharing practices and policy trends. This structured approach allows for an exploration of the contexts behind different strategies, highlighting both successes and failures while examining nuances in implementation through Case Studies.

PART I

Understanding **Open Banking and Open Finance**

Part I

Understanding Open Banking and Open Finance

The interpretation and use of the terms 'Open Banking' and 'Open Finance' varies significantly across different markets and governance frameworks, therefore, this section of the report begins with definitions of both concepts, based on the ecosystems and practices analysed in the report.

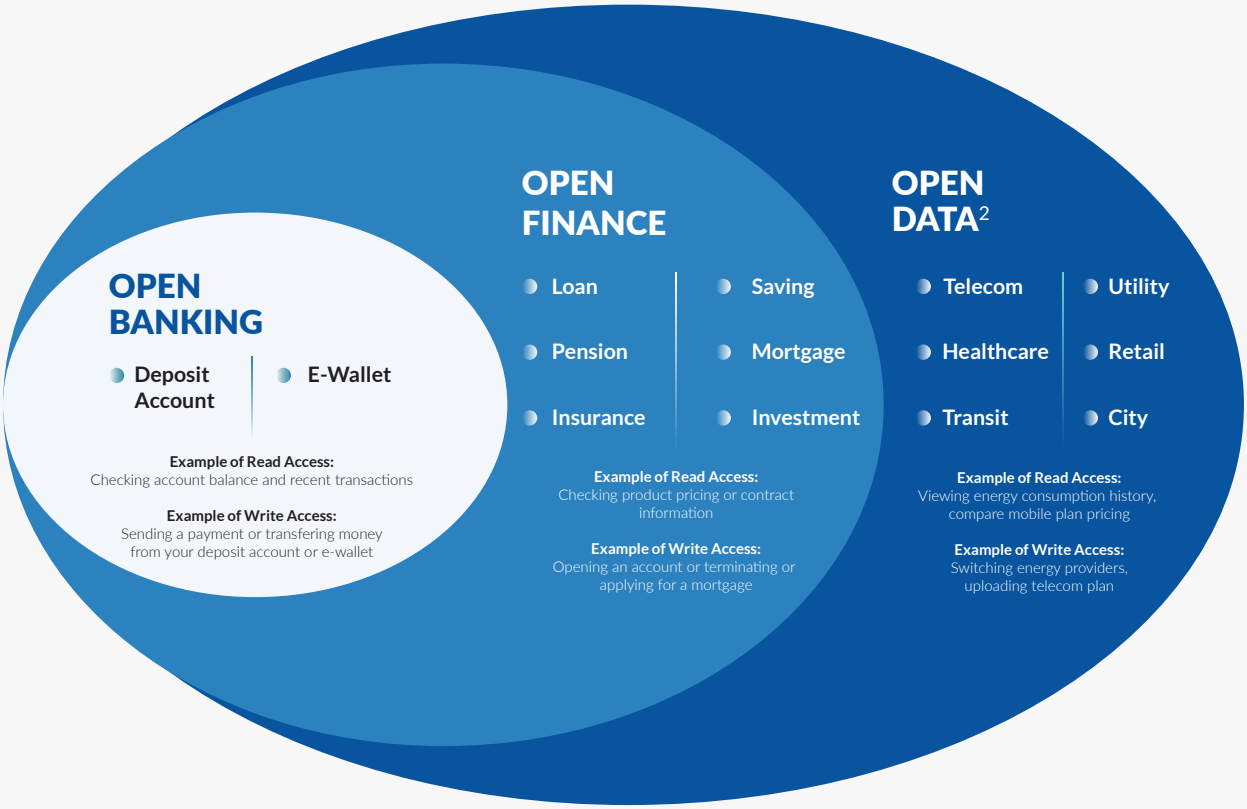
What is Open Banking?

The Open Banking ecosystems examined in this report enable people to share their payment account transaction data with trusted TPPs In some cases, they can also instruct TPPs to initiate payments from those accounts, to help them manage their finances better by, for example, accessing credit, or doing so more cheaply, or by enabling more flexible and cheaper payment services.

What is Open Finance?

The concept of Open Finance extends the data-sharing and action initiation principles of Open Banking to include a wider range of financial products and product providers. A customer or MSME could, for example, instruct a TPP to view data relating to their loans, savings, investments, pensions, or insurance, to facilitate product comparisons and initiate switching if a better deal was identified.

Figure 1: Product scope in Open Banking and Open Finance



Source: CCAF

In technical terms, Open Banking encompasses both access to data ("read access") and the provision of financial services which entail moving money into or out of their payment accounts ("write access"). While some regulations address only read access, others extend to action initiation, whereby a customer can initiate a payment, instruct the purchase of an investment instrument, or even open a new bank account, offering greater flexibility and control compared to traditional financial systems. Open Finance could be characterised as the next logical step after the

adoption of Open Banking, for example, making it easier for customers to switch home insurance or mortgage providers if a better deal becomes available. The broader scope of Open Finance could thus allow customers and small businesses to better manage and access a wider range of financial products.

In tangible terms, Open Banking initiatives have expanded access to financial services across 95 jurisdictions, offering significant opportunities for enhanced competition, financial inclusion, customer protection, and innovation. **However, this progress is not uniform:** jurisdictions are at various stages of implementation, each navigating its journey with different policy priorities. Among the 95 jurisdictions that have adopted Open Banking or Open Finance in some form, no single model has emerged, illustrating that there is no single universal definition. Initially, jurisdictions and regions such as the United Kingdom (UK), the European Union (EU), Australia and Hong Kong exhibited notable similarities in their implementations; however, considerable variation now exists in their models. The policy objective of the regulator, the size of the jurisdiction, its level of economic and technical development and its legislative framework contribute to these differences, creating unique starting points and foundations upon which jurisdictions can build their Open Banking and Open Finance ecosystems.

Nevertheless, many countries share similar, specific challenges within their financial ecosystems. For example, in India, the focus has been on financial inclusion, where the establishment of a national digital ID scheme was a crucial first step. This initiative was vital because banks were hesitant to open accounts without verified identities, which were previously lacking among India's population. In contrast, with bank account adoption at approximately 95% of the UK population, the primary motivation for implementing Open Banking in the UK was to address the market power held by a few dominant banks. A diverse range of implementation approaches have been identified by this report, yet irrespective of the policy objectives regulators have, they would still need to provide the basic functionality of a data-sharing ecosystem, i.e.: mechanisms for customer authentication, provider accreditation and ensuring data security. However, the scope of implementation (in terms of sectors, entities and products, or its sequencing) would certainly be influenced by their policy priorities.

As Open Banking continues to evolve into Open Finance, and, potentially, into "Open Data"[2] ecosystems, encompassing data from various sectors beyond finance such as energy, telecommunications and health, its innovation potential and impact on the global economy becomes significantly higher. This evolution enhances the private sector's capacity to develop innovative and tailored services, catering to diverse customer groups, including those without a documented financial history. While it is essential to recognise that both Open Banking and Open Finance lie on the Open Data Continuum,[3] this report specifically concentrates on the former two domains.

Tracing the Emergence of Open Banking

As highlighted by Scott Farrell[4] there is no commonly accepted legal definition of Open Banking. In the UK, the term 'Open Banking' first emerged in a report commissioned by His Majesty's Treasury (HMT) from the Open Data Institute (ODI) and business advisory firm Fingleton Associates, in 2014. Their report reflected continuing concerns about competition in the retail banking market and followed the poor performance and reception of the Midata scheme, which aimed to provide customers with digital access to their bank data through downloadable CSV files.[5]

While the term 'Open Banking' gained prominence relatively recently, the basic concept of sharing bank transaction data with a TPP, has been practiced in the United States of America (US) for decades. However, in the US, data-sharing practices primarily relied on 'screen scraping,' which requires the customer to share their online credentials with a TPP, rather than the use of Application Programming Interfaces (APIs), which is the technology specified in modern Open Banking frameworks. Part I later delves deeper into the distinctions between screen scraping and APIs.

The next section examines the policy objectives behind Open Banking and Open Finance initiatives. These objectives not only inform the strategic decisions made by regulators and policymakers around the world, but also represent the ultimate goals for achieving successful outcomes.

Policy Objectives of Open Banking and Open Finance

Regulators adopting Open Banking and Open Finance have sought a variety of policy objectives. These include promoting domestic competition, including in the payments space by: encouraging the entry and expansion of innovative non-bank financial service providers; protecting customer

rights; maintaining their financial sector's international competitiveness; and fostering financial inclusion. Below, the four primary policy objectives driving the adoption of Open Banking and Open Finance are outlined and examined in greater detail: improving competition, fostering financial and digital inclusion, encouraging innovation and enhancing customer protection.[6]

Improving Competition

As Bill Gates put it, "Banking is necessary. Banks are not".[7] This remark underscores how technological advancements are reshaping financial services and enabling entities which are not deposit-takers or, legally, banks to provide banking services. Open Banking capitalises on this shift by fostering competition through technology-driven solutions. These initiatives aim to create new categories of competitors that offer customers and businesses better value, enhanced services and simpler ways to compare financial products. By lowering barriers to entry—especially for firms that don't handle or move money—Open Banking enables new entrants to challenge traditional banks more effectively without facing the same regulatory hurdles as established financial institutions.

To illustrate, the UK implemented Open Banking to foster competition and innovation in the retail banking market. This initiative, mandated by the Competition and Markets Authority (CMA), required nine major banks, if instructed to do so by a customer, to provide trusted TPPs access to their data using common and open API standards. The CMA Order[8] specified that access could be either "read-only," allowing TPPs just to read the data, or "read/write", effectively allowing the TPPs to make payments on the customer's behalf or make deposits into their account. This move facilitated the development of innovative fintech solutions and increased competition among financial institutions, intending to benefit customers and MSMEs.

> *"Open Banking is a key step towards **unlocking competition** in retail banking and the evolution of the UK's fast-growing innovative financial technology (fintech) sector – changing the face of retail banking for the benefit of millions of consumers and small businesses"* - The Competition & Markets Authority[9]

In the EU, one of the objectives of the Payment Services Directive 2 (PSD2) was to increase competition in the financial services sector. PSD2 required banks to provide TPPs with access to payment services and customer data through APIs, with customer consent. Another goal was to bring specific firms within a regulatory framework, due to concerns about their screen scraping practices. Together, these objectives have fuelled innovation, particularly in fintech, by encouraging the development of new services and increasing customer choice.[10]

Fostering Financial and Digital Inclusion

The combined potential of Open Banking and Open Finance presents significant opportunities for communities who are historically underserved or excluded from the formal financial system, particularly in EMDEs. By enabling seamless data transfer between unconventional financial sources, such as mobile money accounts, and traditional financial institutions, Open Finance promotes greater inclusivity and diversity within the financial ecosystem. Beyond simply providing access to accounts, it enhances the breadth, depth and utility of financial services. This greater information flow improves access to a wider range of products and more valuable services, offering users of mobile money accounts new financial options while providing traditional institutions with a broader range of data inputs. By breaking down barriers and allowing for a more inclusive financial ecosystem, jurisdictions can address gaps in service provision, empowering individuals and businesses in previously excluded segments.

> *"The Central Bank of Nigeria [.....], hereby issues the Regulatory Framework for Open Banking in Nigeria. The framework establishes the principles for data sharing across the banking and payments ecosystem, which will promote innovation, broaden the range of financial products and services, and **deepen financial inclusion**"* - The Central Bank of Nigeria[11]

A widely cited example is that of India, which implemented Open Banking and Open Finance through a series of measures initially referred to as the "India Stack", more commonly now characterised as a digital public infrastructure (DPI) to promote financial inclusion, broader digital transformation and economic growth and development. This comprised a national digital ID scheme (Aadhaar), the Unified Payments Interface (UPI), a digital locker where customer documents could be stored, and a consent layer managed by "Account Aggregators". By allowing interoperability between banks and fintech platforms, DPI has empowered individuals in both urban and rural areas to access a variety of financial services, breaking down traditional barriers and bringing marginalised populations into the formal financial system.

Encouraging Innovation

Open Banking and Open Finance initiatives are often designed to stimulate innovation within the financial sector by establishing a framework that enables the development of new products, services and technologies, thereby fostering creativity among both traditional financial institutions and fintech startups. Access to banking data and systems enables the exploration of novel solutions that cater to evolving customer needs and preferences. Additionally, a jurisdiction aspiring to enhance its position as a leading financial services hub might acknowledge the importance of APIs for its banks and fintechs. Embracing this technology could be seen as essential for staying competitive in the evolving financial landscape.

> *"The Saudi Central Bank (SAMA) is devoting diligent efforts to support the Kingdom's economic growth and safeguard financial and monetary stability. In line with these efforts, SAMA has launched the Open Banking Program. The Program is one of the most important initiatives of the Fintech Strategy, one of the pillars of the Financial Sector Development Program (FSDP) under Saudi Vision 2030. The Fintech Strategy seeks to make Saudi Arabia a global fintech hub* ***where technology-based innovation*** *in financial services is the foundation to enhance the economic empowerment of individuals and society."* – The Saudi Central Bank[12]

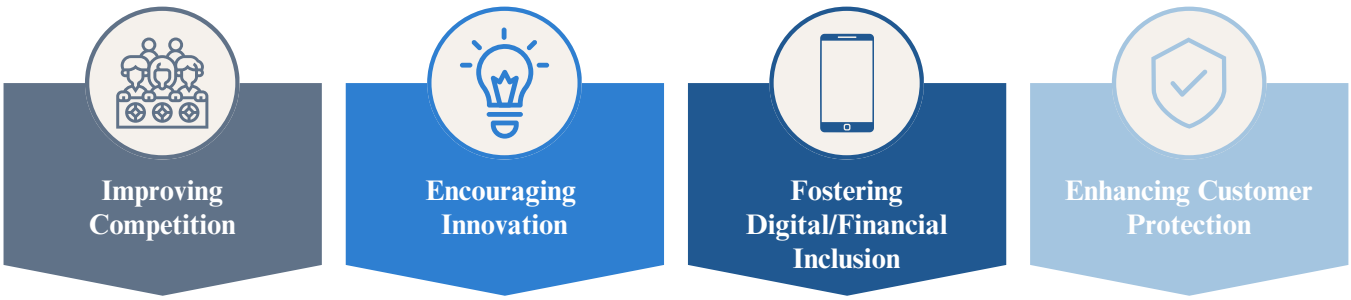
Interestingly, in the EU, PSD2, which was initially intended to increase competition with existing forms of payment such as cards, has resulted particularly in payment innovation across the EU, with fintech companies leveraging both payment initiation and their access to bank data to meet customer needs.

Enhancing Customer Protection

Open Banking and Open Finance are aimed at empowering customers by enabling the secure sharing of their financial data with authorised TPPs. Jurisdictions generally agree that data cannot be shared without the explicit consent of the customer, who retains control over when and how their information is shared. This fosters greater transparency and accountability within financial services. With robust data-sharing pipelines and adherence to strict data protection principles—including data minimisation, which restricts access to only the information necessary, and express consent, which mandates unequivocal authorisation for data sharing—customers can be confident that their data is handled securely.

The accreditation of Open Banking and Open Finance participants seeks to ensure that they meet high standards of cybersecurity and risk management, reinforcing customer protection. In Australia, for example, Open Banking and Open Finance serves as the initial phase of a broader Consumer Data Right[13] (CDR) programme, which extends to other sectors, such as energy. The CDR allows individuals to securely share their banking data with accredited service providers, empowering them to make informed decisions and fostering competition among financial service providers. A significant milestone was reached in August 2024 when the bill to enable action initiation, or "write access," was passed. This development (discussed in depth in Part III of this report) allows customers to initiate transactions and automate payments, further enhancing personalised financial management.

Figure 2: Primary policy objectives in Open Banking and Open Finance



Source: CCAF

| Additional Policy Objectives

In addition to the primary policy objectives set out above, various other objectives are driving Open Banking and Open Finance implementation. These initiatives aim to **stimulate economic growth**[14] by facilitating the flow of capital and enabling businesses, particularly MSMEs, to access a wider range of financial services, fostering connections that can drive growth both nationally and regionally. An additional benefit to business and government is improved reconciliation (as payments go to the right place) and reduced costs of accepting payment.[15] Additionally, these initiatives contribute to formalising the informal or '**shadow economy'**[16] by promoting transparency and accountability in financial transactions, thereby reducing illicit or otherwise unrecorded activities.[17] Another notable aspect is **sovereignty**, as certain jurisdictions strive to reduce reliance on international card schemes and foster their greater independence. In this context, the forthcoming PSD3 aims to further bolster competition and promote Europe's financial sovereignty by advancing the development of a European cross-border payment scheme, thereby reducing dependence on non-European payment systems. Lastly, special emphasis must be placed on **market integrity**[18] as a primary statutory objective. Market integrity ensures fair and efficient markets by promoting equal access, transparent pricing and high standards of corporate governance.

While policy objectives are crucial, the starting conditions in each jurisdiction play an equally significant role in shaping Open Banking and Open Finance frameworks. As these initiatives begin to take shape, various players emerge, each with distinct roles and responsibilities that contribute to the overall success of these frameworks. The following section focuses on identifying the key actors within this ecosystem.

Key Actors in Open Banking and Open Finance

To illustrate the key institutional actors,[19] consider a scenario in which a **Customer** with an account at a traditional bank (the **Data Holder**) decides to enhance their financial management by using a fintech app (the **Data User**) that provides personalised insights. To enable this, the customer may grant permission for their transaction data to be securely shared through a trusted technology intermediary[20] (the **Connectivity Provider**), which ensures seamless and compliant data flow. Alternatively, they may connect directly with the Data User. Throughout this process, a **Regulatory Authority** oversees the interactions, ensuring that all parties adhere to established guidelines and protect customers' rights. This collaboration among the five actors exemplifies how Open Banking and Open Finance enhances customer experiences and helps to drive innovation in financial services. The roles of each actor in this ecosystem include:

1. Customers: They grant consent to data holders to share their transaction data with data users, who can then utilise the data based on the customer's instructions. In addition, they may initiate actions, such as payment instructions or loan applications, to data holders. Customers may include both individual customers (or citizens) and businesses and are typically referred to by software designers and regulators as "end-users".

2. Data Holders: These institutions, typically banks and credit card providers, also known as ASPSPs in the EU and UK context, originally store the data and may send it to a connectivity provider and/or data user upon the customer's request.

3. Data Users: With the customer's consent, these entities receive the customer data from the data holder. They leverage this data to develop and enhance new products and services, generating value for customers and revenue for themselves. Data users, also known as data receivers or TPPs, encompass fintech startups, technology companies, payment service providers and other non-bank entities. The following are typical types of data users:[21]

Account Information Service Providers (AISPs): A TPP which is authorised to retrieve data regarding a payment service user's payment account, including details such as balances and transaction histories within a specified timeframe. Their services may include ways to aggregate information from multiple institutions, presenting it to users in a unified and user-friendly format. This empowers customers with a comprehensive view of their financial health across various banks.

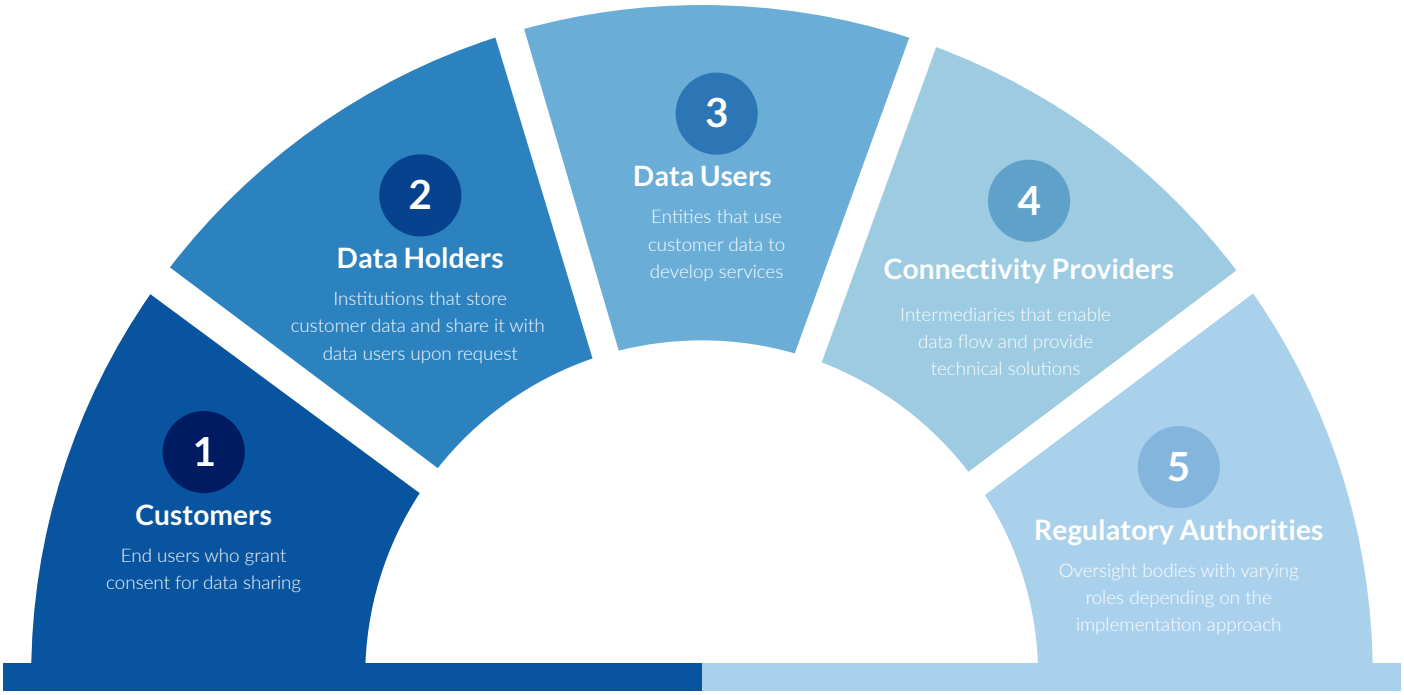
Payment Initiation Service Providers (PISPs): A TPP that is permitted to provide payment initiation services on behalf of a customer. PISPs facilitate direct account-to-account (A2A) payments from the user's bank account to the merchant, usually by establishing an electronic payment link between the payer and the online merchant through the payer's online banking module.

4. Connectivity Providers: These entities act as trusted and impartial intermediaries, serving as conduits for the flow of data. They play a crucial role in creating the technical solutions that underpin the functionality of Open

Banking and Open Finance products, essentially serving as the infrastructure or foundational building blocks for the market. This enables data users to concentrate on selling downstream to customers and/or businesses. While these intermediaries are often invisible to end-users, they are increasingly consolidated due to the challenges associated with managing banks' APIs. Known by various names such as technology vendors, developers, or data intermediaries, they are referred to as TSPs in the EU and UK and as Account Aggregators in India.

5. Regulatory Authorities: In market-driven regimes, the role of the regulator may be more limited, focusing primarily on oversight rather than direct intervention. However, in regulation-led regimes, lead authorities typically assume responsibility for key functions such as oversight or standard setting, while other bodies may be tasked with specific implementation objectives distinct from regulatory functions. These entities, which may be termed special purpose vehicles, development bodies, implementation bodies, or stewardship bodies, are established to work alongside existing regulatory frameworks, as outlined in Table 4 in Part III of this report.

Figure 3: Key actors in Open Banking and Open Finance



Source: CCAF

In addition to these five actors, the starting conditions are also shaped by factors such as the existing legal landscape, regulatory authority and foundational infrastructure, which can either accelerate or hinder progress. For instance, jurisdictions with established data protection laws, such as the General Data Protection Regulation (GDPR), benefit from a head start in building user trust, while others may need to develop tailored regulatory frameworks. The next section examines how these foundational blocks influence the design and pace of rollouts across different markets.

Key Enablers of Open Banking and Open Finance

The five key actors—Customers, Data Holders, Data Users, Connectivity Providers, and Regulatory Authorities—each play vital roles within the Open Banking and Open Finance ecosystem. However, to unlock the full potential of these roles, jurisdictions must lay down essential foundational blocks upon which they can build and continually scale their Open Banking and Open Finance ecosystems. In the

past, the first wave of narrowly focused Open Banking implementations emerged in developed, common law and (ex)-Commonwealth jurisdictions.[22] Early adopters such as the UK, Australia, and Hong Kong share common foundational blocks—developed economies with robust legal frameworks and well-established financial infrastructures. However, this movement has since expanded to a broader spectrum of jurisdictions, including developing nations in Latin America, Sub-Saharan Africa and Asia Pacific region such as Brazil, Nigeria and Thailand, each with distinct economic conditions, regulatory environments and levels of digital readiness. This shift indicates that Open Banking and Open Finance is no longer solely a concept for jurisdictions with advanced economic foundations: it is now gaining traction in diverse contexts, worldwide.

Notably, jurisdictions such as Brazil and Saudi Arabia have already passed Open Banking and/or Open Finance regulations, demonstrating how emerging economies are adapting these frameworks to meet their unique needs, often focusing on financial inclusion or enhancing competition in markets traditionally dominated by a few major players. In contrast, jurisdictions still in the planning phase—such as Ghana and Kenya—must first address foundational challenges, such as the availability of digital infrastructure and the regulatory authority needed to enforce such frameworks. This diversity in key enablers - or the lack of it – illustrated in examples ranging from India's well-established digital identity systems to the regulatory hurdles faced by jurisdictions such as Uganda and Sri Lanka—reinforces the impracticality of a one-size-fits-all approach. Legal frameworks, internet penetration, smartphone availability, and customer trust in financial institutions all play crucial roles in shaping the distinct Open Banking and Open Finance ecosystems of each jurisdiction. Below, the key enablers are discussed in greater detail.

Role of Technology

Technology is a basic element of Open Banking and Open Finance systems, providing the infrastructure and tools necessary for secure and efficient data sharing and payment initiation. Data sharing may be enabled in different ways, historically through 'screen scraping', whereby the end-user provides a third party with their user ID and password allowing them to, in effect, impersonate them while accessing their bank transaction data. According to the OECD, 18 jurisdictions still allow screen scraping, but the industry is moving away from this practice.[23] The current ecosystems are API-based. APIs serve as the conduit for data exchange between financial institutions and TPPs. They are a set of protocols which enable communication between computer applications, by setting out what data are available for retrieval and how data can be retrieved.[24] API-based Open Banking and Open Finance initiatives solve some of the problems and risks associated with screen scraping. One significant advantage of this approach is its facilitation of data minimisation and granting customers control over consent, allowing users to remove or revoke consent and request data deletion, thereby enhancing privacy and security measures. In some cases, TPPs may even use reverse engineering to replicate the functionality of APIs without access to the source code. This practice involves deconstructing systems to understand how they operate and imitate the data exchange process. However, this approach can raise legal and ethical concerns, as well as reliability issues. APIs can thus be thought of as the "pipes" through which data flows but, like pipes, APIs can vary in specification. Table 1, below, illustrates the differences between APIs, screen scraping, and reverse engineering when accessing financial data. Appendix I elaborates on the significance of understanding these varied technical pathways.

Table 1: Differences between APIs, screen scraping and reverse engineering

	APIs	Screen Scraping	Reverse Engineering
Data Source	APIs are provided by financial institutions or data providers. APIs offer a structured and standardised way to access financial data.	Screen scraping involves extracting data from the user interface of the bank website or mobile application. It does not have a direct connection to the data source and may be subject to changes in the website's design or structure, leading to potential compatibility issues.	Reverse engineering involves deconstructing a system to replicate API functionality without access to the original source code.
Data Access	APIs provide developers with a documented set of endpoints and methods to access specific financial data.	Screen scraping involves simulating user interactions with the bank website or mobile application, such as submitting forms or clicking buttons, to retrieve the desired financial data.	Reverse engineering attempts to imitate API behaviour by analysing the system's communication patterns or behaviour.
Data Quality and Reliability	Financial institutions and data providers ensure data consistency and integrity through APIs, reducing the risk of errors or outdated information.	Changes in the website's design or structure can break the screen scraping process, leading to data extraction failures.	It may result in unreliable data, as the recreated APIs may not perfectly replicate the original system's data handling mechanisms.
Legal and Ethical Considerations	APIs often have clear terms of service and usage policies, ensuring proper data usage and respecting data privacy regulations.	Screen scraping is considered unsecured as it involves sharing sensitive user login credentials.	Reverse engineering can raise legal and ethical issues, especially if done without permission or if it violates intellectual property or privacy rules.

Role of Digital Public Infrastructure

While APIs function as the technological conduits or "pipes" for transferring data in Open Banking and Open Finance, the effectiveness and security of these transfers are significantly shaped by the other elements of what can be characterised as Digital Public Infrastructure (DPI).[25] The DPI encompasses critical components such as secure digital identity systems for authentication, high-speed internet access, and mobile connectivity - all of which facilitate participation in the financial system.

Digital identity solutions, for instance, can enable seamless customer onboarding and authentication processes, ensuring that customers can securely access financial services while maintaining control over their personal data. The UK does not have a national digital identity system to build upon in developing its Open Banking end-user authentication process, the absence of which increased the scope of the implementation work that was required to implement Open Banking. Kenya, despite having advanced mobile money solutions, still faces challenges in digital identity verification. Regulators in jurisdictions which have a functioning, proven digital identity scheme will, putting it simply, have less to do. Jurisdictions such as India have made huge strides with initiatives such as Aadhaar, a robust national digital identity system that, amongst other things, facilitates KYC processes and Anti Money Laundering (AML) checks, helping to improve customers' access to financial services.

Internet access, quality, affordability and smartphone adoption are among the many factors that play an important role in enabling access to financial services, particularly in underserved, remote, or rural regions. By enhancing connectivity, individuals and businesses can engage with a variety of financial products, promoting financial inclusion and encouraging competition among service providers. Public policies that prioritise the development and expansion of digital infrastructure are essential to bridging the digital divide and ensuring that all stakeholders can benefit from the advantages of Open Banking and Open Finance. For example, while connectivity is already well-established in urban areas of Brazil, its investment in DPI

has significantly supported financial inclusion in areas where connectivity is available, helping to bridge the gap for more remote regions. In India, the government has implemented innovative solutions such as equipping postal workers with handheld devices,[26] allowing them to provide access to banking services in villages where digital connectivity may be limited. Regions with poor infrastructure and distributed populations, such as Sub-Saharan Africa, face hurdles due to inconsistent internet access and mobile penetration, highlighting the varying starting points across jurisdictions.

In the context of efforts to enhance access to digital services including finance, the interoperability of digital services is widely believed to enhance user experience and build trust among customers. By enabling different platforms and services to work seamlessly together, a well-structured DPI lays the foundation for innovation and collaboration within the financial sector.

| Role of Standards

In addition to technology, standards are a critical component to ensure shared understanding among participants. Standards refer to a set of guidelines, specifications, and protocols that govern how participants connect to each other. In nearly all cases, they refer to technical API specifications, meaning the data holder's API is aligned with certain standards (a standardised API uses common technical language and protocols to facilitate smooth connections between different software systems, discussed in detail in Appendix I), making it easier for the data user to connect to multiple data holders. In some jurisdictions, regulators stipulate a specific common standard that all participants must use, ensuring consistency across the sector. In others, regulators may "standardise" by allowing adherence to one of several standards, provided they meet predefined compliance criteria. For example, in the UK and Australia, regulators have mandated specific API standards that must be followed, promoting interoperability and consistency across the ecosystem.

Why are standards so important in Open Banking and Open Finance?

Interoperability: Standards facilitate interoperability by providing a common language and set of protocols for data exchange, allowing different entities to communicate, share information seamlessly and collaborate effectively. This also simplifies connections between financial institutions and third-party providers, supporting policy objectives such as promoting competition and encouraging innovation. By reducing the need for custom integrations and fostering consistency in data formats, security protocols, and API structures, standards reduce complexity, enhance user experience and provide a strong foundation for scalability.

Security: Standards play a significant role in ensuring data security, by establishing guidelines and best practices for data protection, encryption, access controls, authentication and authorisation. Adhering to these security standards mitigates the risks associated with unauthorised access, data breaches and fraud.

Customer Protection: Standards in Open Banking and Open Finance often include provisions for customer protection, such as informed consent, data privacy and liability frameworks. These standards help safeguard customers' interests by ensuring that their data is handled securely and transparently, in compliance with applicable regulations.

Regulatory Compliance: Standards often align with regulatory requirements and guidelines set by regulatory bodies. Adhering to these standards helps participants demonstrate compliance with applicable regulations, making it easier to obtain licenses, approvals and authorisations. Established standards also ease the burden on regulators as they can rely on pre-defined protocols instead of individually assessing each participant, allowing for more efficient oversight and enforcement. Standards help to provide regulatory certainty for new entrants and participants by offering clear guidelines, streamlining approval processes and ensuring consistency across jurisdictions.

The mere establishment of standards is not enough to prevent issues within the Open Banking and Open Finance ecosystem: inconsistency across these standards can still lead to confusion and friction. Without common or at least interoperable standards, even well-intentioned guidelines can result in conflicting practices among participants, hindering collaboration and stifling innovation. In some jurisdictions such as the UK, data holders (mainly banks) were required to adopt a common and open standard specification for their Open Banking APIs as approved by the CMA. In other jurisdictions, however, such as the EU, banks were required to make account data accessible to TPPs but were not specifically mandated to use APIs. Regulators in the UK reasoned that the use of common API standards would make it easier for TPPs to connect with banks. Being license-free, it would make it cheaper for banks not mandated to adopt the common standard to enter the ecosystem and easier to connect with TPPs. Similarly, in the Republic of Korea, the adoption of a standardised API framework has enhanced interoperability and data sharing among financial institutions and fintechs, fostering a more competitive market. On the other hand, jurisdictions with less precise or fragmented standards may face higher barriers to entry for new participants, thereby hindering overall ecosystem growth.

| Role of Regulations and Enforceability

To ensure the enforceability of technology and standards, a regulatory authority and framework is valuable, as they provide the necessary oversight to maintain compliance among all participants in the ecosystem. This need for oversight becomes evident when considering that Open Banking and Open Finance systems rely on the active participation of both supply-side actors, such as data holders (typically banks), and demand-side participants, such as data users (typically TPPs utilising the data to deliver services). Achieving a balanced market between these two sides requires either a regulatory mandate or commercial arrangements that incentivise supply and mitigate risk.

Regulations can define the rules, requirements and obligations for participants when accessing or sharing customer data, offering services and conducting transactions. These may include the adoption of standardised APIs, data formats and protocols to promote interoperability among participants, and they may require fairer pricing, improved access to financial services, or simplified processes. Commercial arrangements, while useful in encouraging data holders to supply data, often fail to provide universal supply. Data holders may struggle to agree on acceptable terms with data users, or data users may focus on larger suppliers, leaving smaller customers unable to access services. For these reasons, even commercial arrangements may require a level of regulatory involvement to ensure sufficient levels of supply and to ensure smaller organisations are not discriminated against due to their lack of negotiating power.

Given the crucial role of regulation in balancing market dynamics, it becomes equally important to focus on how these regulations are enforced. Without robust enforcement mechanisms, regulations would lack the necessary impact to ensure compliance and maintain the integrity of Open Banking and Open Finance systems. Typically, organisations with roles in Open Banking and Open Finance governance include the central bank, banking supervisor, customer protection authority, an API or technical standards body, the competition authority, the data protection authority, and sometimes an alternative dispute resolution body. Most Open Banking and Open Finance regimes have a designated "lead" regulator, which is typically the central bank, or the financial sector conduct authority, or the competition authority. The Open Banking and Open Finance system can be coordinated by an independent entity in collaboration with the lead regulator.[27] Part III further looks at the distribution of lead regulators in different jurisdictions.

These bodies enforce rules related to data protection, consent, security and fair competition. For instance, the GDPR in the EU sets clear standards for handling customer data securely and with consent. Additionally, legal frameworks, such as customer protection and contract laws, establish enforceable guidelines for data sharing, liability, and dispute resolution, ensuring that all participants in the ecosystem adhere to these standards.

| Role of Participation and Trust

For successful data exchange among different types of organisations and customers, there must be trust among them. In financial services ecosystems, the elements of a trust framework include provisions that enable customer trust, data holder trust and participant identity accreditation and verification. Customers need to be able to trust that the system is secure and that the businesses with whom they are sharing their personal data will look after it, and will deliver products and services that are safe, fair and of good quality. Without this trust, hesitations or concerns over data security can result in low adoption rates. Data protection legislation plays a key role in addressing these concerns. In jurisdictions where strong "horizontal" data protection laws are already in place—

such as the UK—regulators can avoid creating separate, "vertical" rules specific to Open Banking or Open Finance, thus streamlining the regulatory process and saving time and resources. In contrast, jurisdictions such as India, which lacked such horizontal frameworks, had to develop specific data protection regulations for Open Finance, notably the Digital Personal Data Protection (DPDP) Act,[28] which came into effect in 2023, adding complexity to their regulatory landscape. Additionally, consent management rules, which specify the terms and duration of consent, along with processes for revoking consent, are critical for fostering trust in the data-sharing process.

Zeeland and Pierson (2021)[29] conducted a study to investigate if banks can expand the trust their clients have in them, from keeping their money safe to also keeping their personal data safe. The study revealed that while customers and regulators primarily trust banks due to stringent regulation and supervision, assuming that trust in financial security can seamlessly translate to trust in personal data security is overly simplistic. This underscores the importance of not only data protection regulations, but also educating customers about data usage, effectively monitoring customer control over their data and ensuring providers adhere to responsible data practices and sharing limitations.

As part of their decision to trust, data holders need to be confident that risks stemming from the reliability and security of data users when sharing customer data can be managed. These risks encompass potential liabilities and other adverse outcomes resulting from inadequate security measures. For example, in Brazil, the regulatory framework emphasises strict compliance measures that help build trust among participants. Conversely, without similar frameworks in jurisdictions such as Sri Lanka, data holders may hesitate to share sensitive customer information, stifling innovation. For data users, in the absence of any trust framework involving independent accreditation, they must forge relationships with multiple data holders, navigating complex challenges that include negotiating technical, commercial and liability arrangements. Once accredited, an authorisation mechanism must be in place to ensure that participants have the necessary permissions and credentials to initiate transactions, access customer data and perform specific functions within the Open Banking and Open Finance infrastructure. This authorisation process ensures users retain control over their data and can limit access as desired and that participants only have access to the information and services they are authorised to use. Additionally, discovery services offer a secure and standardised way for data holders and users to find and connect with one another, thereby enhancing collaboration within the ecosystem. Lastly, government institutions play a crucial role in establishing trust within the ecosystem, as their endorsement and regulatory oversight are essential for assuring all stakeholders that the frameworks in place are secure, effective and transparent.

In Part I, this report has examined the policy objectives, actors and the key enablers that shape the foundation of the Open Banking and Open Finance frameworks. Part II of this report explores the design and implementation of those frameworks.

PART II

Understanding **Governance and Design**

PART II

Understanding Governance and Design

This report identifies several potential pathways to governance. Differences in each jurisdiction's financial market dynamics, digital readiness, and regulatory environment have led to diverse methods of governing and applying Open Banking and Open Finance frameworks. The architectural differences between each approach lie in whether participation is enforced, and if so, which entities are mandated to participate and what data must be shared. Additionally, differences arise in the development and enforcement of technical standards, as well as the functions permitted on accessed data in the provision of Open Banking or Open Finance products.[30] By considering these elements, this report not only deepens the understanding of various strategies but also offers evidence-based insights to support and strengthen policymakers' decision-making processes. This section focuses on key questions that go beyond foundational capabilities, such as:

1. **What types of data should be made shareable, and how can privacy and security be maintained?** The scope and nature of data that should be made shareable require careful consideration. This involves deliberation on e.g. sensitive financial information, personal data and transactional details, - all while ensuring privacy and security standards are upheld.

2. **Who are the entities responsible for sharing data within the Open Banking and Open Finance ecosystem?** Identifying the entities obligated to share data is paramount in the approach to designing governance mechanisms. This could encompass financial institutions, TPPs, fintech startups, and regulatory bodies. Establishing clear roles and responsibilities is essential for fostering trust and accountability within the ecosystem.

3. **What rights and obligations should be established for all stakeholders involved in data sharing?** The framework governing data sharing must delineate the rights and obligations of all stakeholders involved. This includes outlining customer rights regarding consent, transparency and control over their data, as well as specifying the obligations of data custodians to safeguard information and adhere to regulatory requirements.

4. **Who is responsible for addressing data breaches, errors, or misuse, and how should accountability be assigned?** In the event of data breaches, errors, or misuse, clarity on accountability is imperative. Determining who bears responsibility for rectifying issues and compensating affected parties is crucial for maintaining trust and confidence in the Open Banking and Open Finance system.

The regulatory response to these questions can vary significantly depending on several contextual factors. **Different sub-sectors of finance** have unique risks and characteristics, which lead to tailored regulations. For instance, the banking sector emphasises risk management and data security to ensure the secure sharing of customer financial data with authorised third-party providers (TPPs), while the mortgage industry focuses more on lending practices, disclosure requirements and customer protection. **Geographic location** also plays a critical role, as regulations differ across jurisdictions and regions due to variations in legal frameworks, cultural norms, market conditions and political systems. Additionally, external factors such as **industry standards**, emerging best practices, and global trends all influence regulatory decisions, as regulators seek to ensure alignment with broader market and technological developments.

To begin, the various approaches to enforcing participation will be examined, followed by an analysis of the entities mandated to participate and the types of data they are required to share.

To Regulate or not to Regulate

One of the primary distinctions between jurisdictions adopting Open Banking and/or Open Finance lies in their approach to implementation, which can range from legally enforced data-sharing and strict technical standards to a framework driven entirely by market forces.

While no single approach is universally superior, regulation-led frameworks have emerged to be particularly effective in empowering customers, enhancing data accessibility, and supporting new entrants and business models. Within a regulation-led approach, data holders are typically obliged to give access and to share the customer data with data users upon the customer's consent, and/or to allow payment or other actions to be initiated by data users. The specific requirements of a mandatory approach can be set out either through legislation, sector-specific regulation or

as a remedy imposed by a financial authority. In contrast, under a market-driven approach, data holders are not required by law or regulation to facilitate access. Instead, Open Banking and Open Finance services operate primarily based on agreements – either bilateral or multilateral through a scheme-type arrangement - between data holders and data users. In this scenario, participation is based on market dynamics and the commercial incentives of participants. Data sharing can occur via APIs in such a model.

A regulator's decision to adopt a regulation-led approach, rather than rely on a market-driven approach, depends on the characteristics of its market ecosystem, policymakers' preferences and the regulatory environment. Regulators considering regulation-led participation must ensure they have the regulatory powers to do so and that they can enforce compliance effectively. Regulators in EMDEs, often faced with limited enforcement capabilities and resource constraints, should take careful consideration of the potential impacts of implementing a mandatory regime. The main advantage of the regulation-led approach is that it ensures a standardised and uniform approach to Open Banking and Open Finance.[31] It is also the most efficient way to incentivise data holders to share their data and ensure customer empowerment. In cases where regulators lack enforcement powers or resources, a market-driven participation approach may be adopted and, in some cases, encouraged by regulators and/or policymakers. Moreover, if the market is already adopting Open Banking and/or Open Finance practices, policymakers may perceive that a regulation-led participation approach is not required. In such cases, regulators can prioritise addressing industry-led deficiencies, rather than imposing regulations, which can be both time-consuming and costly.

Both regulation-led and market-driven approaches have distinct benefits and drawbacks, and their success depends heavily on the unique conditions within each jurisdiction. However, the chosen approach ultimately depends on the specific circumstances within each jurisdiction, including what resources are scarce and what capabilities are abundant. These factors heavily influence what can be realistically implemented; therefore, **a governance framework was developed** to categorise the approaches, conceptualising them as existing along a continuum rather than a binary choice. This framework classifies jurisdictions into five archetypes within two overarching categories: **regulation-led** and **market-driven**. The regulation-led category encompasses three archetypes: "Mandated & Standardised Data Sharing," "Mandated Data Sharing," and "Standardised Data Sharing". On the other hand, the market-driven category includes "Guided Implementation" and "Voluntary" approaches. These archetypes are described below and illustrated in Figure 4.

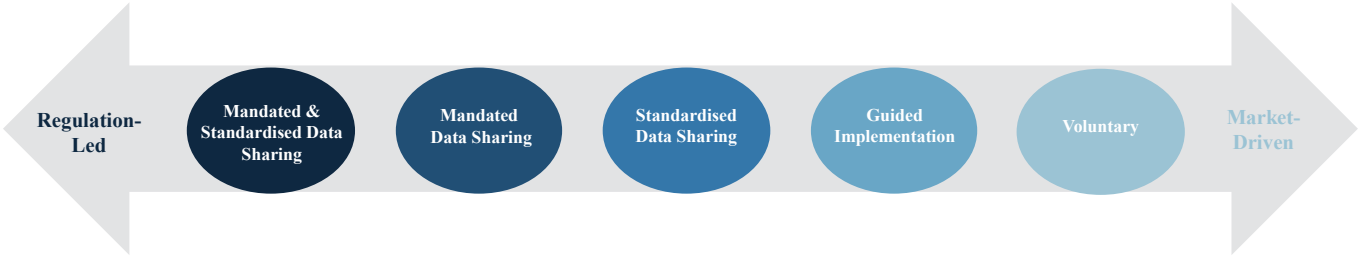
Regulation-Led

1. **Mandated & Standardised Data Sharing:** refers to jurisdictions whose authorities mandate data holders to share customer's data, upon the customer's consent, with data users and stipulate the technical standards to be used for data sharing.
2. **Mandated Data Sharing:** refers to jurisdictions whose authorities mandate data holders to share customer's data, upon the customer's consent, with data users, but do not stipulate the technical standards to be used for data sharing.
3. **Standardised Data Sharing:** refers to jurisdictions where authorities do not mandate data holders to share customer data with data users upon the customer's consent. However, if data holders choose to participate in data sharing, they are required to follow specified technical standards. Regulators can either issue a **single standard** that all participating data holders must use, ensuring consistency, or provide a list of **recommended or recognised standards**, allowing for more flexibility in implementation but potentially creating additional complexity for data users who need to accommodate different systems.

Market-Driven

4. **Guided Implementation:**[32] lies between regulation-led and market-driven approaches. It refers to jurisdictions where authorities may issue API standards and/or best practices without enforcing strict adherence. They may also facilitate discussions, knowledge-sharing events, and create incentives—such as access to government databases—to encourage data-sharing among financial institutions. While compliance is not mandatory (not yet in some jurisdictions), regulators may observe market developments and behaviours from a distance, influencing participation through incentives.
5. **Voluntary:** refers to jurisdictions where governments have largely let the market decide for itself, without any material government initiatives to support the development of Open Banking and Open Finance products and services.

Figure 4: Classification of Open Banking and Open Finance approaches



Source: CCAF

These archetypes exist along a continuum and the classification is not intended to be rigid. Jurisdictions can move fluidly between archetypes as their regulatory environment, market conditions and available resources change. Consequently, a jurisdiction may adopt different strategies over time or blend elements from multiple archetypes. This framework serves as a valuable starting point for regulatory authorities as they develop policies and make decisions that reflect their specific needs and conditions.

How to Regulate

Further nuances arise within a regulation-led approach, particularly concerning the entities ("who") and data types ("what") subject to regulations, which may vary across jurisdictions. For instance, while participation is obligatory in both the EU and the UK, the scope of these regulations differs significantly. The EU's PSD2 mandates that specific financial institutions, including banks and authorised payment service providers, share customer data to enhance competition and protect customer rights. In the UK, PSD2 also applied, but the CMA imposed additional requirements on the nine largest banking groups which were required not only to comply with PSD2, but also to go further by creating and funding an entity to develop and maintain Open Banking standards. These differences highlight the need for regulators to define clearly who is mandated to participate and the types of data to be shared, as these factors can significantly influence the effectiveness and impact of Open Banking and Open Finance frameworks.

| Entities in Scope

Determining the entities within scope is a critical consideration for regulators when implementing a regulation-enforced participation approach. The governance framework identifies three primary categories of data holders, as introduced in Part I under the heading "Actors". These data holders can be further classified into three distinct categories:

1. **The Largest Banks:** This refers to a specific number of the largest banks, often based on factors such as market share or assets. For example, in the US, the Customer Financial Protection Bureau's proposed rule breaks this down into different tiers depending on bank size and influence.[33]
2. **All Banks:** In this approach, every bank, regardless of size, must comply with Open Banking and Open Finance regulations, ensuring uniform participation across the sector. The EU's PSD2 directive takes this approach, while the UK has implemented a hybrid model that combines elements of both strategies—applying additional requirements to its largest banks while ensuring all banks meet baseline Open Banking standards. This hybrid approach is discussed in detail in the Case Studies section.
3. **All Financial Institutions:** This category includes not just banks, but all financial service providers. For example, in Brazil, TPPs must also comply with regulations once they handle data from regulated banks. This report identified six categories of financial institutions involved in data sharing: Payments, General Insurance, Savings & Investments, Mortgages, Customer Lending, and Pensions.
    - **Payment Institutions** include banks and payment processors that handle payment-related data but are not limited to these entities.
    - **General Insurance** institutions include insurance companies and banks that manage insurance policies and claims data, among others.
    - **Savings & Investments** institutions are banks and investment firms dealing with savings accounts and investment products, though

other types of institutions may also fall under this category.

- **Mortgage Institutions** encompass mortgage lenders and banks that hold information about mortgage loans and servicing, but this is not an exhaustive list.
- **Customer Lending** institutions include banks and credit unions managing personal loans and credit information, among others.
- **Pension Institutions** include pension funds and retirement plan administrators overseeing retirement accounts and contributions, but this category may also cover additional entities.

The decision regarding which entities to include in the regulatory scope is often tied to the policy objective. Focusing on the largest banks is effective for addressing competition in a concentrated market and is relatively easier to manage. Conversely, mandating all banks or all financial institutions to participate is more time-consuming and resource-intensive but offers greater inclusivity, particularly if all financial institutions are included. This approach can also address specific use-cases or policy objectives, such as financial inclusion.

| Data Types in Scope

After examining the institutions mandated to participate in Open Banking and Open Finance, the next consideration is the specific types of data they are required to share. The World Bank's report, Open Banking: How to Design for Financial Inclusion,[34] identifies three critical categories of data: Generic Services Data, Transaction Data, and Customer Data. Below, these three categories are discussed in greater detail:

1. **Generic Services Data:** Encompasses publicly available information on specific financial services, such as data on financial products available in the market, including their features, terms, and pricing. It also includes the locations of ATMs, branches and agents.

2. **Transaction Data:** This refers to data that captures a customer's financial activities across various accounts and services. In the context of Open Banking, it includes data from a customer's bank or payment account(s) that show the customer's transaction history, encompassing details of individual financial transactions such as purchases, withdrawals, transfers and payments, including dates and amounts. It also covers information about authorised recurring payments directly debited from a customer's account but does not cover the identity attributes of the customer.

   In an Open Finance context, Transaction Data extends to cover financial activities in sectors beyond banking. For example, in the insurance industry, Transaction Data would include claims history, detailing the nature, status and amounts of insurance claims made by the customer. Similarly, for investments, it includes data on transactions involving stocks, bonds, mutual funds, and contributions to pension plans, retirement accounts, or other retirement savings vehicles. This broader definition ensures that Transaction Data reflects a comprehensive view of the customer's interactions with financial services across different sectors.

3. **Customer Data:** These are personally identifiable attributes used for account opening and management, such as registration, KYC (Know Your Customer) and customer due diligence (CDD) data. It also includes credit scoring data indicative of individuals' creditworthiness, such as credit scores and credit history.

The choice of which data types to regulate is often influenced by their respective levels of risk and sensitivity, which vary significantly. For example, while a branch's location poses minimal sensitivity, an individual's transaction data is highly sensitive. When institutions begin sharing data, they typically start by testing their API pipelines with **Generic Services Data**, which includes less sensitive information such as ATM locations and product descriptions. This initial stage ensures that the API functions correctly and that there are no data leakage concerns. Once the APIs are verified to be working smoothly, institutions progressively move on to sharing more sensitive data, such as **Customer Data** and **Transaction Data.** This gradual journey between data types highlights the need for regulators to account for the potential evolution and complexity of these data types as institutions advance in their data-sharing capabilities.

| Data Sharing in Scope

The framework for data sharing is organised into three distinct stages and six categories of financial institutions, as outlined above in the previous section. Each element is essential for comprehending how data is managed and exchanged among different institutions and sectors. Below, the stages are examined in greater detail:

1. **Allowed Data Types:** For regulation-led jurisdictions, the concept of allowed data types

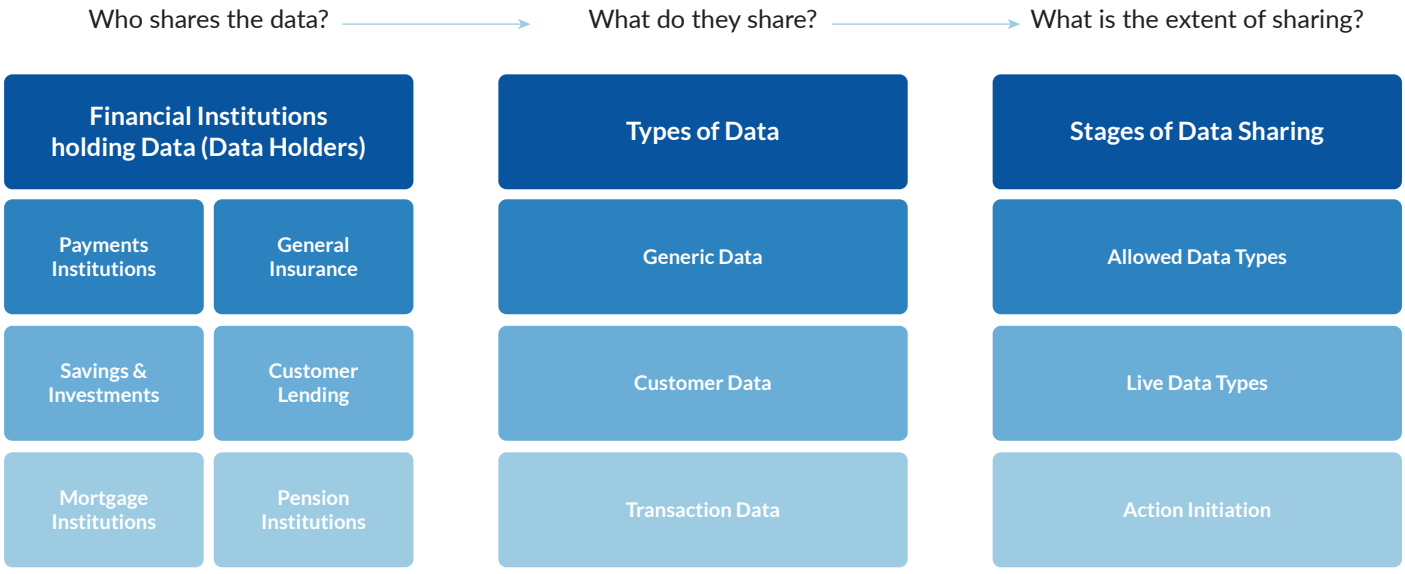
is pivotal, as it defines the specific categories of data that regulators have deemed permissible for sharing under the Open Banking and Open Finance framework. Unlike in market-driven jurisdictions, where data sharing may evolve more organically based on industry demands, regulation-led jurisdictions establish clear data types that fall within the scope of sharing.

2. **Live Data Types (Read Access):** In this stage, institutions can share data with third parties, but access is restricted to viewing only. No modifications or updates can be made, ensuring that the integrity of sensitive data is preserved while providing transparency to customers or other institutions. This functionality is discussed in Appendix I under API functionality.

3. **Action Initiation (Write Access):** This stage enables modification of data. Institutions can initiate actions or updates, such as making payments, transferring funds or updating personal information, marking a complete transition to interactive data sharing. Notably, a Data User does not need to access account data to initiate a payment; in fact, under UK and EU law, PISPs are generally not permitted to access account data solely for this purpose. Instead, payment initiation operates as a separate regulated activity from data sharing, with initiation requests sent via the API infrastructure, allowing alignment in messaging without requiring direct access to account data. However, in practice, a PISP would still need to confirm there are sufficient funds in the account before initiating a payment. This functionality is also covered in Appendix I, which discusses how APIs enable write access for data-driven interactions.

A visual summary of the relationship between the key entities, data types and stages of data sharing is presented in Figure 5.

Figure 5: Stages and levels of data sharing for entities holding payments data



Source: CCAF

To conclude, Part II explored the contrasting governance styles of Open Banking and Open Finance—whether market-driven or regulation-led—and introduced the governance framework. Additionally, it examined critical design considerations that arise specifically within regulation-led approaches. Part III turns the focus to the research findings, analysing the jurisdictions that have moved forward with implementing Open Banking and/or Open Finance, offering insights into their timelines, governance choices, and the impact of their frameworks especially on data sharing and action initiation.

PART III

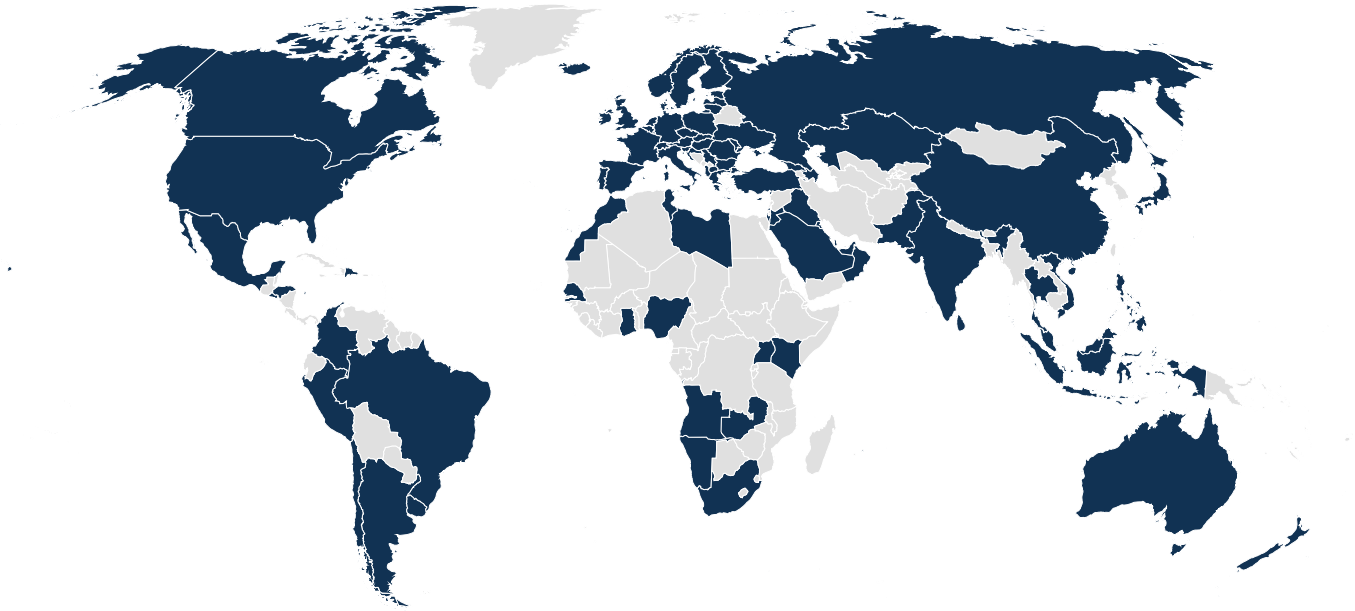
Understanding **Adoption and Impact**

PART III

Understanding Adoption and Impact

The UK pioneered the implementation of Open Banking, issuing the Order for its adoption by the largest British banks in 2017.[35] Since that time, the concept has gained global traction, with 95 jurisdictions adopting or implementing Open Banking or Open Finance frameworks to varying extents and for different reasons. However, the discourse around Open Banking and Open Finance often centres predominantly on data-sharing—allowing customers to share their data with TPPs to access improved financial services. While an essential feature of Open Banking and Open Finance, data-sharing alone does not fully unlock the potential of these initiatives. Equally important is the ability to initiate actions based on this data, such as making payments or switching providers directly. This additional functionality transforms Open Banking and Open Finance from a passive tool into an active ecosystem that empowers customers not just through data control, but also through actionable outcomes. While the development of action initiation is still ongoing (explored further in Part III), Figure 6 below provides a map highlighting regions where some form of Open Banking or Open Finance activities have already been identified.

Figure 6: Global adoption of Open Banking and Open Finance

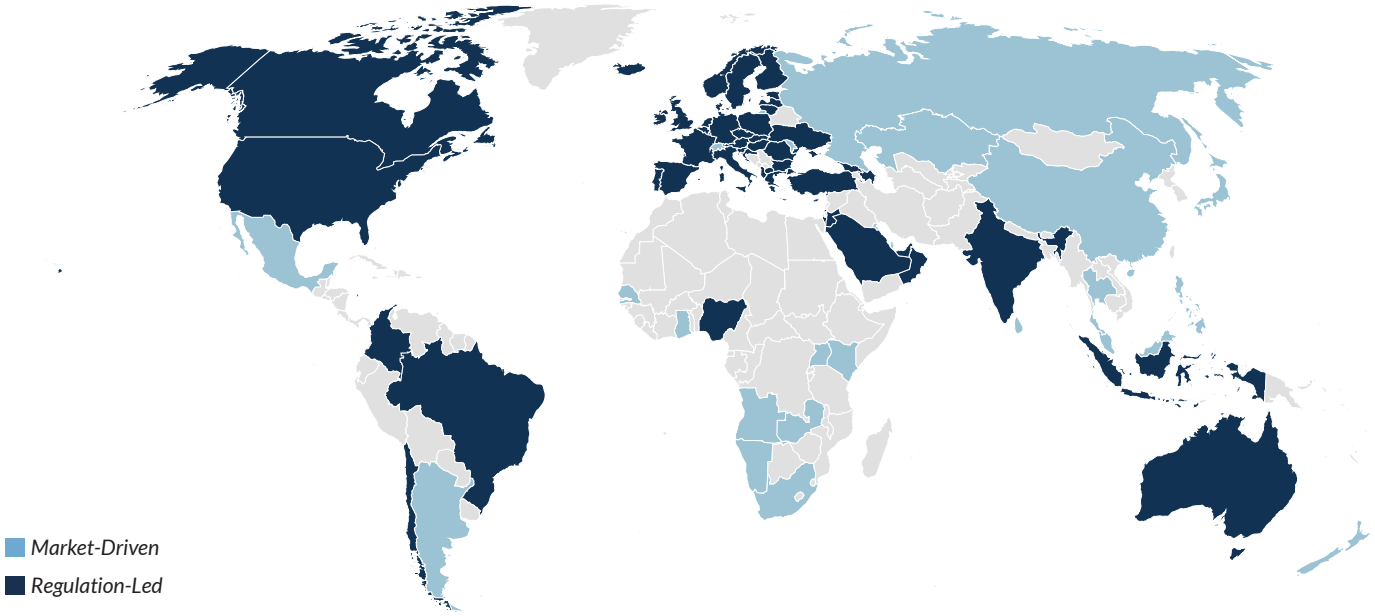


Source: CCAF

Trends in Global Adoption

Building on the earlier discussions, the governance framework introduced in Part II categorised the 95 jurisdictions and further analysed how different approaches can influence implementation success. While the analysis effectively categorised 82 of these jurisdictions, it is essential to recognise that the remaining nations may still be exploring or preparing for Open Banking and/or Open Finance frameworks without yet formalising their strategies. This variability highlights the diverse pace of adoption and the potential for future developments in this landscape. Following this, at the highest classification level, jurisdictions were categorised as either regulation-led or market-driven. Notably, most jurisdictions have implemented a regulation-led approach, with 54 jurisdictions taking this path, while 28 jurisdictions have opted for a market-driven approach. This distinction is illustrated in the map in Figure 7.

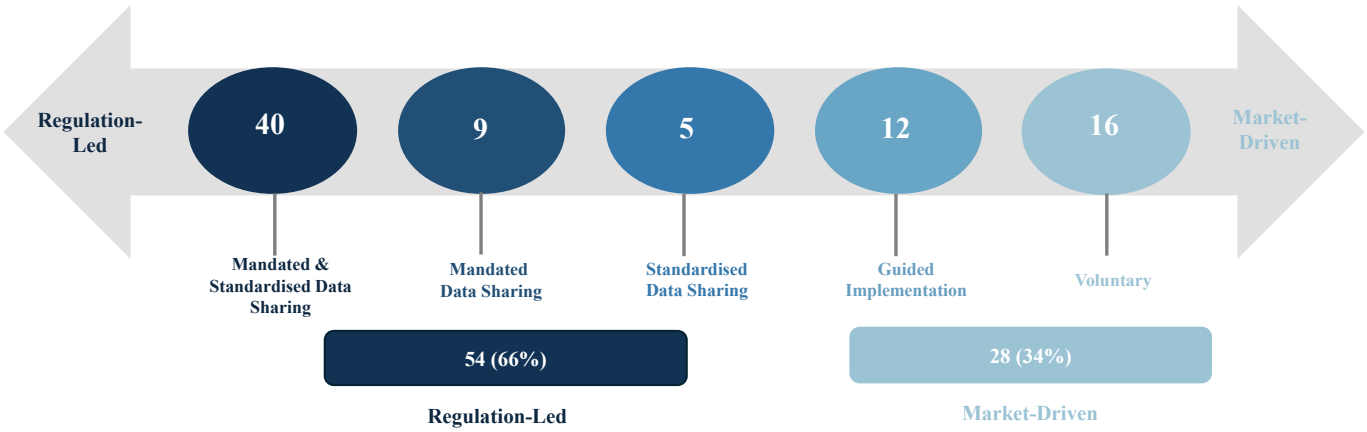
Figure 7: Jurisdictions classified by approach, regulation-led vs. market-driven



Source: CCAF

Within the regulation-led and market-driven categories, further nuances were identified within the second-level classification. Specifically, within the regulation-led approaches, "Mandated & Standardised Data Sharing" was adopted by 40 jurisdictions, "Mandated Data Sharing" by 9 jurisdictions, and "Standardised Only" by 5 jurisdictions. In the market-driven approaches, "Guided Implementation" was adopted by 12 jurisdictions, while "Voluntary" adoption was seen in 16 jurisdictions. This breakdown is illustrated in Figure 8 below:

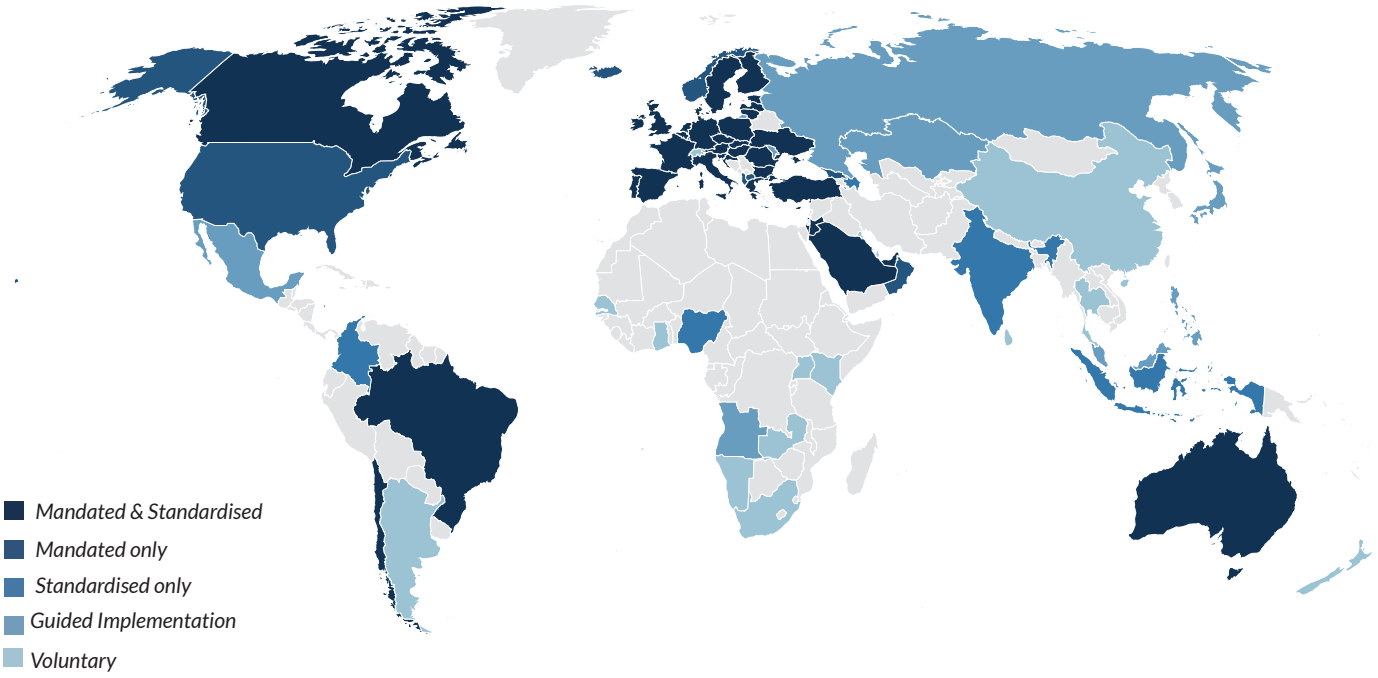
Figure 8: Number of jurisdictions by Open Banking and Open Finance approach classification



Source: CCAF

While most jurisdictions opted for the "Mandated & Standardised Data Sharing" approach, this finding is somewhat skewed due to the inclusion of the 27 jurisdictions in the EU, which was later treated as a single jurisdiction. **This simplification may conceal important differences** between member states, as varying interpretations of the rules and delays in implementation could lead to regulatory fragmentation within the EU's Single Market.[36] This further reinforces the idea that having the same inputs does not necessarily result in the same outputs, whether within the EU or among different jurisdictions. Figure 9 below further illustrates the diverse approaches adopted by the 95 jurisdictions considered in this report.

Figure 9: Classification by Open Banking and Open Finance approach



Source: CCAF

Trends in Regional Adoption

Following a global analysis, the report further investigated regional variations in these approaches. This analysis revealed that jurisdictions often mimic the strategies of their neighbours, highlighting the influence of geographic proximity on regulatory practices. Table 2 categorises jurisdictions into regulation-led and market-driven strategies, further differentiating between guided implementation and voluntary approaches within the market-driven category. This distinction highlights that guided implementation often occupies a unique space at the intersection of regulatory frameworks and market initiatives.

Table 2: Classification of jurisdictions by Open Banking and Open Finance approach, grouped by region

Regulation-Led		Guided Implementation		Voluntary	
Middle East and North Africa					
Bahrain	Israel			Egypt	
Jordan	Oman			Kuwait	
Saudia Arabia	UAE			Qatar	
Europe and Central Asia					
Albania	Azerbaijan	Kazakhstan		Switzerland	
EU (27)	Georgia	Moldova			
Iceland	Liechtenstein	Russian Federation			
Monaco	North Macedonia				
Norway	Turkey				
UK	Ukraine				
Sub-Saharan Africa					
Nigeria		Angola		Ghana	Kenya
		Mauritius		Republic of Namibia	Senegal
				South Africa	Uganda
				Zambia	
Latin America and the Caribbean					
Brazil		Mexico		Argentina	
Chile					
Colombia					
Asia Pacific					
Australia	India	Hong Kong	Japan	China	New Zealand
Indonesia	Republic of Korea	Malaysia	Philippines	Sri Lanka	Thailand
		Singapore	Taiwan		
North America					
Canada					
USA					

Source: CCAF

As illustrated in Table 2, there is a tendency for jurisdictions within the same region to adopt comparable approaches. Across Europe and Central Asia, the Middle East and North Africa, most jurisdictions have embraced a regulation-led approach. Meanwhile, in Sub-Saharan Africa and the Asia Pacific regions, jurisdictions predominantly favour a market-driven approach. In Latin America and the Caribbean, however, there is no consistent trend, with jurisdictions adopting a variety of approaches.

1. **Middle East and North Africa (MENA):** While most jurisdictions in the MENA region have adopted the "Mandated & Standardised Data Sharing" approach, three jurisdictions—Egypt, Qatar, and Kuwait—have opted for the "Voluntary" approach.
2. **Europe and Central Asia:** Most jurisdictions in this region have adopted regulation-led approaches. Most jurisdictions fall under the "Mandated & Standardised" approach, but that could be because all jurisdictions in the EU would follow the same approach in accordance with PSD2, as noted in the previous sections of this report. Interestingly, Switzerland is the only jurisdiction in the region that has adopted a "Voluntary" approach, at the market-driven end of the spectrum.
3. **Sub-Saharan Africa (SSA):** With the exception of Nigeria, all jurisdictions in SSA have adopted a market-driven approach. While most jurisdictions opted for the "Voluntary" approach, Mauritius and Angola have opted for the "Guided Implementation" approach.
4. **Latin America and the Caribbean (LAC):** Jurisdictions in LAC show no consistent trend when it comes to approach. Brazil and Chile have chosen the "Mandated & Standardised" approach,

whereas Colombia has opted for the "Standardised Only" approach. Mexico has adopted the "Guided Implementation" approach and Argentina has chosen a "Voluntary" approach. Disparities in approaches may be strongly influenced by the political landscape and the prioritisation of Open Banking and Open Finance on political agendas, as evidenced by Brazil's swift adoption compared to other LAC jurisdictions.

5. **Asia Pacific (APAC):** Except for Australia, Indonesia, India and the Republic of Korea, most jurisdictions in APAC lean towards approaches closer to the market-driven end of the spectrum. Many jurisdictions fall under the "Guided Implementation" approach. This is likely due to the challenges posed by regulators within these jurisdictions.
6. **North America :** Canada has adopted a "Mandated & Standardised" approach, while the US is implementing a "Mandated" framework. Initially, progress in the US mostly occurred through voluntary implementation; however, regulation is catching up. Under the latest proposals, customers would gain the legal right to share data from accounts such as credit cards and digital wallets with third parties. The US is also seeking to replace screen scraping with secure APIs. Further details on these developments are discussed in the Case Studies.

Trends in Regulatory Authorities

After exploring the varying approaches to Open Banking and Open Finance at the global and regional levels, this report now turns the attention to the underlying factors that drive these differences. A critical aspect of this inquiry involves identifying the authorities that lead or guide these initiatives and understanding the policy objectives that inform their actions. Table 3 is a comparative table highlighting the lead authority, separate implementation entity, and other authorities in regulation-led jurisdictions.

Table 3: Authority types driving Open Banking and Open Finance implementation

	Lead Authority	Authority Type	Separate Implementation Entity	Other Authorities
Albania	Bank of Albania	Central Bank	x	x
Australia	The Treasury	Government Ministry	x	Office of the Australian Information Commission Data Standards Body Australian Competition and Consumer Commission
Azerbaijan	Central Bank of the Republic of Azerbaijan	Central Bank	x	x
Bahrain	Central Bank of Bahrain	Central Bank	x	x
Brazil	Banco Central do Brasil	Central Bank	x	National Monetary Council
Canada	Financial Consumer Agency of Canada	Financial Services Authority	x	x
Chile	The Financial Market Commission	Financial Services Authority	x	Ministry of Finance Central Bank of Chile
Colombia	Superintendencia Financiera de Colombia	Financial Services Authority	x	The Unidad de Proyección Normativa y Estudios de Regulación Financiera
EU Countries (16)	National Competent Authority (NCA)	Central Bank	x	The European Commission European Central Bank
EU Countries (10)	National Competent Authority (NCA)	Financial Services Authority	x	The European Commission European Central Bank
EU Countries (Greece)	Hellenic Capital Market Commission	Securities Commission	x	The European Commission European Central Bank
Georgia	National Bank of Georgia	Central Bank	x	Banking Association of Georgia
Iceland	Financial Supervisory Authority	Financial Services Authority	x	x
India	Reserve Bank of India	Central Bank	x	National Payments Corporation of India The Reserve Bank Information Technology Private Limited
Indonesia	Bank Indonesia	Central Bank	x	The Indonesian Payment Systems Association
Israel	Bank of Israel	Central Bank	x	Israel Securities Authority

Jordan	Central Bank of Jordan	Central Bank	x	Jordan Payments and Clearing Company
Republic of Korea	Financial Services Commission	Financial Services Authority	x	x
Liechtenstein	Financial Market Authority	Financial Services Authority	x	x
Monaco	Commission de Contrôle des Activités Financières	Financial Services Authority	x	x
Nigeria	Central Bank of Nigeria	Central Bank	Open Banking Nigeria	x
North Macedonia	National Bank of the Republic of North Macedonia	Central Bank	x	x
Norway	Financial Supervisory Authority	Financial Services Authority	x	x
Oman	Central Bank of Oman	Central Bank	x	Oman Banks Association Financial Services Authority
Saudi Arabia	Saudi Central Bank	Central Bank	x	x
Turkey	Central Bank of Turkey	Central Bank	x	Banking Regulation and Supervision Agency
UAE	Central Bank of the UAE	Central Bank	x	Abu Dhabi Global Market's Financial Services Regulatory Authority Dubai Financial Services Authority
Ukraine	National Bank of Ukraine	Central Bank	x	Ukrainian Interbank Payment Systems Member Association
UK	Financial Conduct Authority	Financial Services Authority	Open Banking Limited	Competition and Markets Authority Payment Systems Regulator
US	Consumer Financial Protection Bureau	Government Agency	x	Federal Reserve The Office of the Comptroller of the Currency The Federal Deposit Insurance Corporation

Source: CCAF

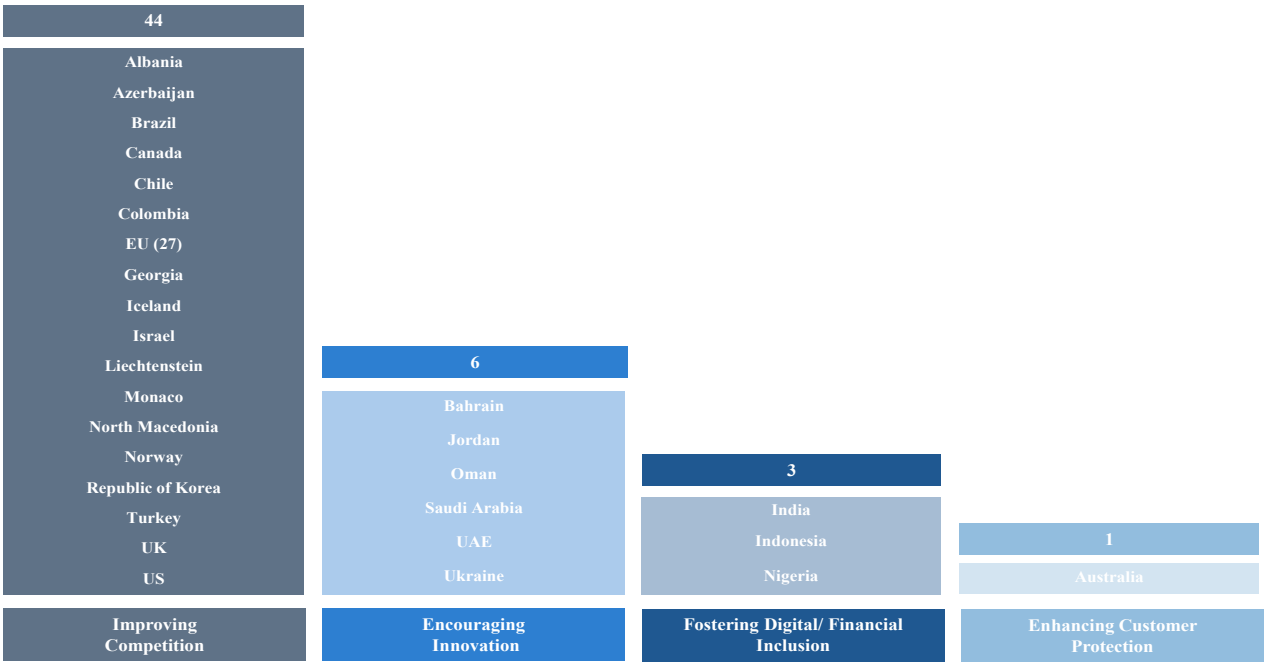
Among the 54 regulation-led jurisdictions, it is noteworthy that 32 (or 59%) are led by central banks, while 19 (or 35%) are guided by financial services authorities. Furthermore, implementation in one jurisdiction is overseen by a government ministry, in another by a government agency, and in a different jurisdiction by a securities commission. Particularly interesting is the prevalence of multiple authorities driving these initiatives within the same jurisdiction; indeed, 42 (or 77%) jurisdictions feature more than one authority involved in this process. This trend is also evident within the EU, where 16 jurisdictions are led by central banks, 10 by financial services authorities, and one by a securities commission. Additionally, the European Central Bank and the European Commission also play key roles in regulations across the EU. While multiple authority involvement can foster diverse perspectives, it also presents challenges. For example, in South Africa, regulators have encountered jurisdictional conflicts, leading to delays in implementation as authorities battle over their roles in the ecosystem.

Further, this diverse regulatory landscape brings to light an important correlation between Open Banking/Open Finance and the type of authority leading the initiative. In most jurisdictions, central banks only have regulatory authority over banks and payments. This often results in central banks focusing on Open Banking initiatives, while Open Finance—which typically extends beyond the banking sector—falls under the jurisdiction of other regulatory bodies, such as financial services authorities or securities commissions. For example, Open Banking in Brazil has progressed relatively well, while Open Insurance is facing challenges in gaining traction. The key difference is that Open Banking is led by the Central Bank of Brazil, with extensive legal powers, while Open Insurance is overseen by a different regulator with a more limited remit. While this specific situation may not apply universally across jurisdictions, it underscores the importance of the regulatory authority and its powers in driving the success of Open Finance initiatives.

Trends in Policy Objectives

Regardless of whether a jurisdiction has a single authority, or multiple authorities involved in the process, there are always specific policy objectives that inform their actions. As outlined in Part I, these objectives typically fall into four main categories, each designed to address distinct aspects of the financial ecosystem. Understanding these policy objectives is essential for developing an accurate picture of Open Banking and Open Finance, as they not only influence the strategic direction but also shape the regulatory landscape and the market's response to these frameworks. This analysis included reviewing government documents, press releases and discussions with stakeholders in various jurisdictions, which enabled a comprehensive understanding of both primary and secondary objectives. In doing so, a distinction was made between primary objectives, explicitly stated as the key drivers of policy, and secondary objectives, which, while often mentioned alongside the primary goal, were not the focus of regulatory efforts. Figure 10 below summarises how various regulation-led jurisdictions have prioritised these primary policy objectives in their adoption of Open Banking and Open Finance.

Figure 10: Primary policy objectives driving Open Banking and Open Finance implementation



Source: CCAF

The primary policy objective of these initiatives, identified in 44 jurisdictions, is to enhance competition within the financial services industry. This includes the 27 EU countries in which Open Banking is driven by a competition mandate. Additionally, fostering innovation and promoting digital and financial inclusion serve as primary objectives across a selection of emerging markets and developing economies. Interestingly, in five out of six jurisdictions in the MENA region, the primary policy objective is "Encouraging Innovation". Notably, none of the jurisdictions analysed, except Australia, have chosen "Enhancing Customer Protection" as their primary objective.

While each jurisdiction typically prioritises a primary policy objective, there are often secondary objectives as well. Table 4 below details both the primary and secondary objectives driving implementation for select jurisdictions.

Table 4: Primary(P) and secondary(S) policy objectives driving Open Banking and Open Finance implementation

Country	Improving Competition	Encouraging Innovation	Enhancing Customer Protection	Fostering Digital/ Financial Inclusion
Albania	P			
Australia	S	S	P	
Azerbaijan	P	S		
Bahrain		P		
Brazil	P			S
Canada	P	S		
Chile	P			S
Colombia	P			S
EU (27)	P		S	
Iceland	P			
India				P
Indonesia	S			P
Israel	P			
Jordan		P	S	S
Liechtenstein	P			
Monaco	P			
Nigeria		S		P
North Macedonia	P			
Norway	P			
Oman	S	P		
Republic of Korea	P	S		
Saudi Arabia		P		
Turkey	P			
UAE		P	S	S
UK	P		S	
Ukraine	S	P		S
US	P		S	

Source: CCAF

This highlights that **policy objectives are interconnected and mutually reinforcing**. For example, fostering inclusion through Open Banking and Open Finance initiatives leads to a more diverse customer base, which in turn stimulates competition among financial service providers to cater to the evolving needs of these newly included segments. This competition drives innovation as institutions seek to differentiate themselves by offering tailored solutions that address the specific requirements of previously underserved customers and businesses. Moreover, enhancing customer protection builds trust and confidence in the financial ecosystem, further encouraging participation and fostering a culture of innovation and competition.

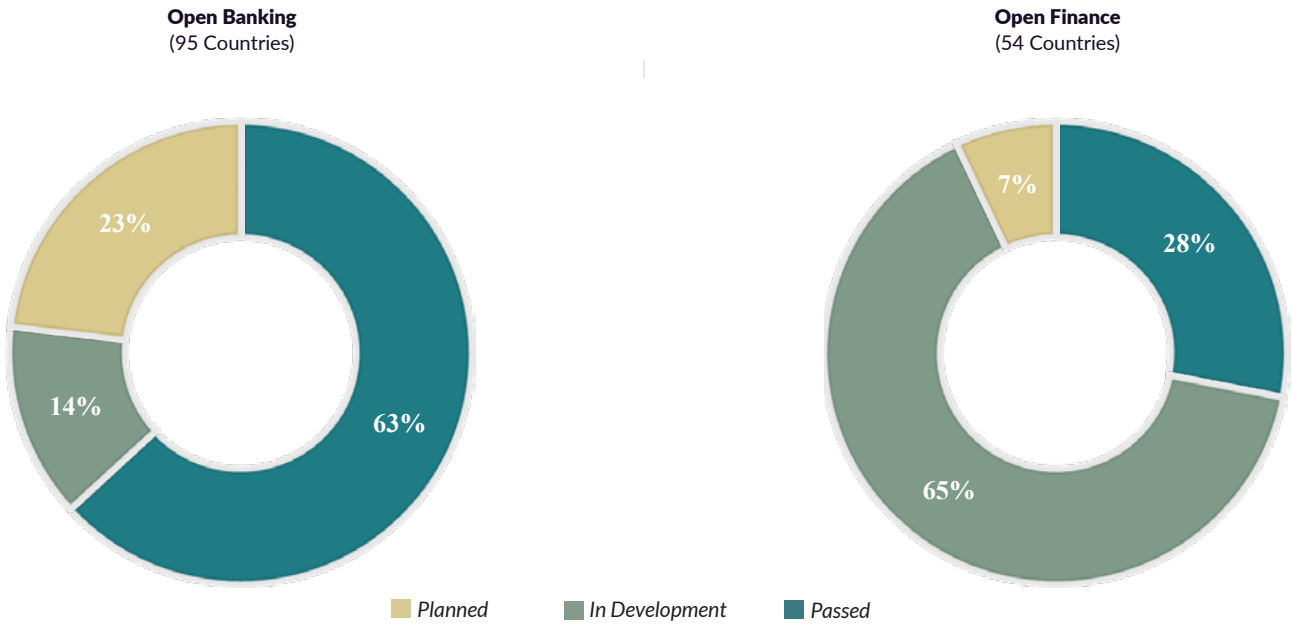
> *"[..] creates the Open Finance System and establishes rules that mandate certain service providers to share consumer information with their consent to receive better offers of financial services and products [...]* ***This is to promote and improve financial inclusion and competition.*** *"* - Chilean Financial Market Commission[37]

Trends in Status

While 82 jurisdictions have been identified as having adopted an Open Banking or Open Finance approach, the analysis also examined the legislative status of these initiatives across different nations. Through extensive desk research, a total of 95 jurisdictions were identified where Open Banking legislation, regulation or 'guidance' in market-driven countries, is at various stages of development, which have been categorised into three distinct phases:

1. **Passed:** Open Banking / Open Finance legislation passed, or guidance issued by the relevant government authority. In the next section, the time taken by regulators to enact these laws after their passage is also examined.
2. **In Development:** Legislation or guidance concerning Open Banking / Open Finance that is currently being formulated and has not yet been finalised or issued (e.g., circular issued, draft proposals, etc.).
3. **Planned:** Open Banking / Open Finance initiative is under consideration or intended for development by relevant authorities, though formal actions or announcements may not have been made yet (e.g., mentioned in government strategies, or calls for consultation initiated).

Figure 11: Status of Open Banking and Open Finance legislation or regulation or guidance



Source: CCAF

Out of 95 jurisdictions with some form of Open Banking framework, 60 (or 63%) have already passed legislation, regulations or guidance for Open Banking. Of these, 49 jurisdictions are regulation-led, while the remaining 11 operate under market-driven models. Additionally, 13 jurisdictions are in the process of drafting or planning Open Banking regulations or guidance. In contrast, Open Finance legislation is less advanced with 57 jurisdictions at various stages, of which only 28% have passed legislation or enacted regulations. Despite this, progress is notable, with a significant majority of 37 jurisdictions in the development stage. Interestingly, 41 jurisdictions that have adopted or are planning Open Banking frameworks do not intend to extend their scope to include a broader range of financial products.

From Market-Driven to Regulation-Led

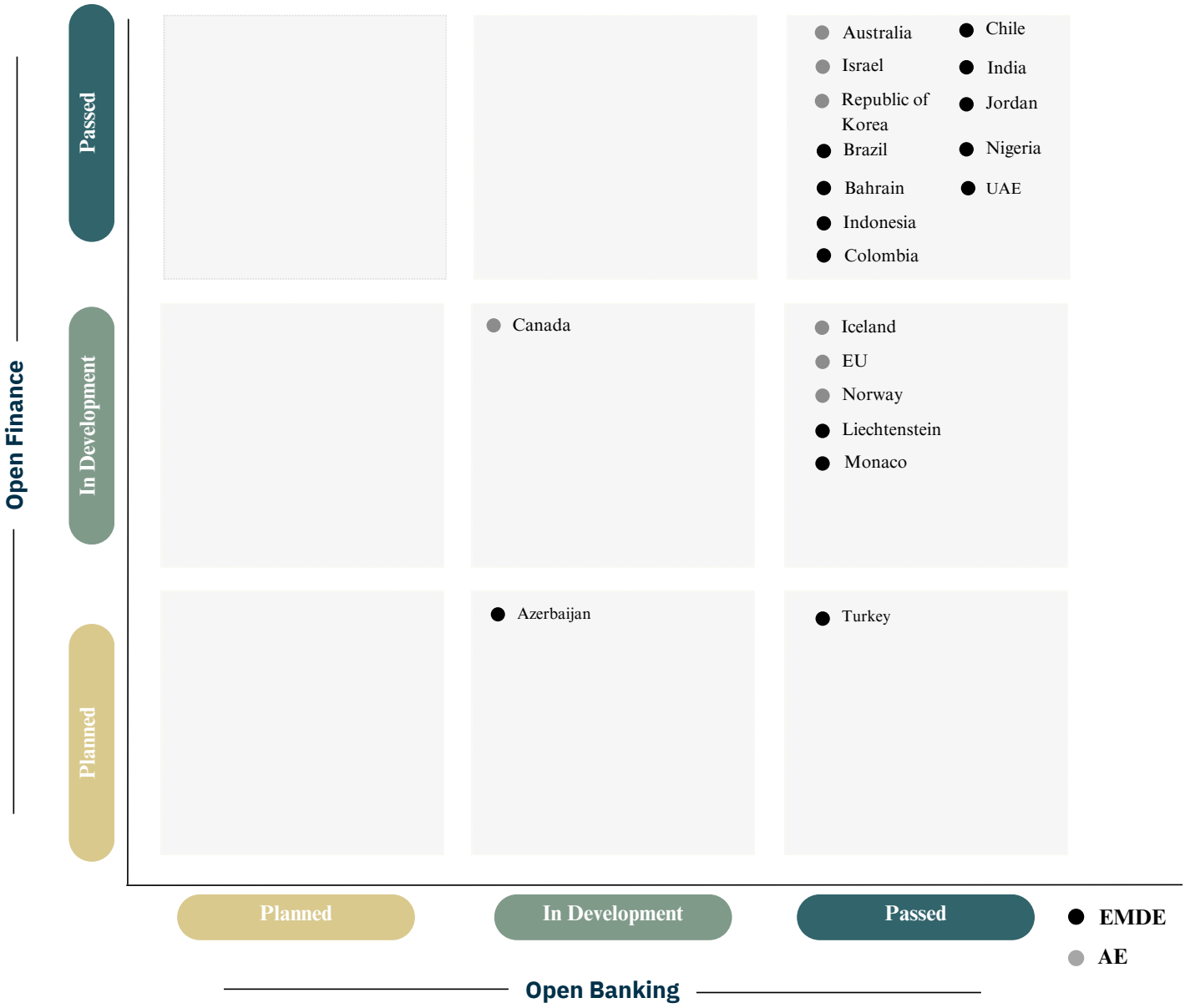
The analysis found that 18 jurisdictions which are currently following a market-driven approach, are simultaneously developing or planning to establish regulatory frameworks. The US is shifting from a market-driven to a regulatory approach, with the Consumer Financial Protection Bureau (CFPB) proposing new rules that would grant customers the right to share their financial data with third-party providers.[38] New Zealand, which initially explored a market-driven approach, is now moving towards implementing a Consumer Data Right law, which will start with the banking sector.[39] Similarly, in Hong Kong, after assessing implementation challenges for a year, the Hong Kong Monetary Authority (HKMA) intends to take a more active role in establishing standards and security for the more complex phases of API implementation.[40] Moreover, some market-driven approaches, such as those in Japan, may not be highly prescriptive but function as de facto mandatory frameworks due to the expectations set by regulators, compelling banks to actively participate (Plaitakis & Staschen, 2020).[41] Additionally, the Bank of Thailand (BoT) issued a consultative document[42] stating that it proposed to require the largest banks in Thailand, if instructed to do so by a customer, to share their transaction data with an accredited third party. The BoT recently confirmed that it was proceeding with this plan[43] and that it would aim to implement the necessary arrangement so that the ecosystem is operation by 2026.[44]

This trend highlights the case for mandating a minimum level of market participation and data-sharing to mitigate first-mover disincentives associated with market-driven models (Mazer, 2023).[45] Such regulations can also help address the risk of market concentration in digital financial services, which could adversely affect customers. Awrey and Macey (2022)[46] point out that in the US, "this high level of industry fragmentation creates significant coordination problems that hinder financial institutions from developing the standardised APIs necessary to realise the potential of Open Finance." They also express concerns that, in an unregulated Open Finance ecosystem, aggregators might attain a level of dominance akin to market-makers.

Conversely, in many EMDEs, the significant concentration of financial services, particularly in banking and payments, poses a substantial risk. Large firms may prevent competitors from accessing crucial data, stifling innovation in products and services (OECD, 2020).[47] This behaviour has been observed in the negotiations on payment interoperability in several African digital financial services markets, where larger actors are likely to oppose sharing valuable customer data with competing third parties.[48] This resistance raises doubts about the viability of market-driven Open Banking and Open Finance models in the emerging markets. Consequently, jurisdictions pursuing regulation-led approaches are advancing more rapidly in implementing Open Banking and Open Finance than those employing market-driven strategies. Thus, even if jurisdictions begin with a market-driven approach, they are likely to evolve towards characteristics of a regulation-led framework.

Among the 60 jurisdictions that have passed Open Banking legislation, only 16 have also passed Open Finance legislation.[49] Notably, 62% of these jurisdictions are EMDEs, suggesting that while Advanced Economies (AEs) initially led with Open Banking, EMDEs may now be leveraging those experiences to advance more rapidly with Open Finance. The status of legislative processes for both Open Banking and Open Finance in regulation-led jurisdictions, categorised by EMDEs and AEs, is illustrated in Figure 12, below.

Figure 12: Status of Open Banking and Open Finance in regulation-led jurisdictions



Source: CCAF

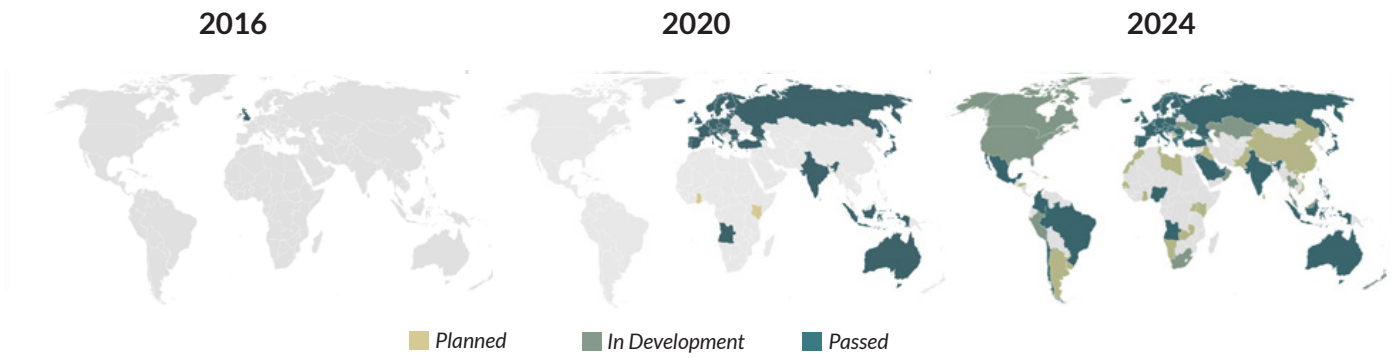
This disparity in implementation between Open Banking and Open Finance can be attributed to varying levels of risk, strategic considerations and the inherent complexity of managing diverse data types and regulatory requirements. As explained in Part I, the scope of Open Banking is often limited to payment data, providing a more manageable starting point for establishing the foundational infrastructure and addressing initial challenges such as data security and customer consent. Conversely, Open Finance involves a broader range of financial information, introducing additional complexities that require more sophisticated data governance and enhanced security protocols, thus necessitating a more robust technological and regulatory environment.

Furthermore, market readiness and stakeholder engagement are also critical factors. Open Banking has seen faster adoption partly due to strong support from fintech companies and customer advocacy groups advocating for greater transparency and competition in the financial services sector. In contrast, Open Finance requires broader collaboration among various financial service providers, each with unique data sets, legacy systems, and regulatory concerns, making coordinated efforts more complex and time-consuming.

Trends in Timelines

In addition to collecting information on which jurisdictions have passed legislation or issued regulations, data was also gathered on when Open Banking or Open Finance legislations were passed, or regulations were issued. As illustrated in Figure 13, the UK announced its intentions to adopt Open Banking in 2016. Since that initial step, the concept has gained significant global traction, with 60 jurisdictions enacting legislation or regulations related to Open Banking by 2024. Furthermore, many other nations are currently in the process of developing or planning similar regulatory frameworks.

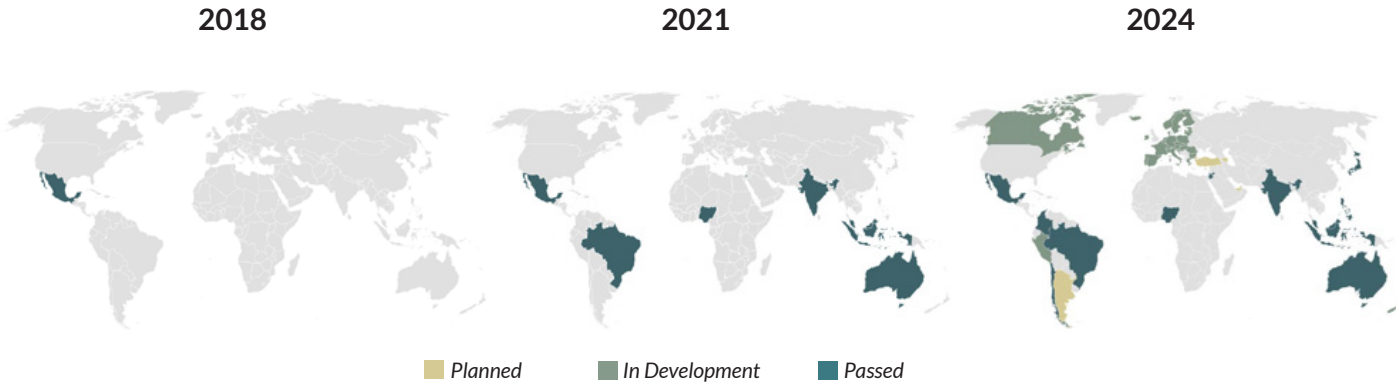
Figure 13: Timeline of Open Banking legislation or regulation or guidance status



Source: CCAF

Initially, and with the exception of India, jurisdictions adopting Open Banking were predominantly AEs characterised by high levels of bank account access and smartphone adoption. The primary policy objectives driving their implementations were largely focused on enhancing competition in the financial services market and/or improving customer protection. Over time, however, EMDEs have increasingly embraced Open Banking to address critical policy objectives, particularly financial inclusion.

Figure 14: Timeline of Open Finance legislation or regulation or guidance status

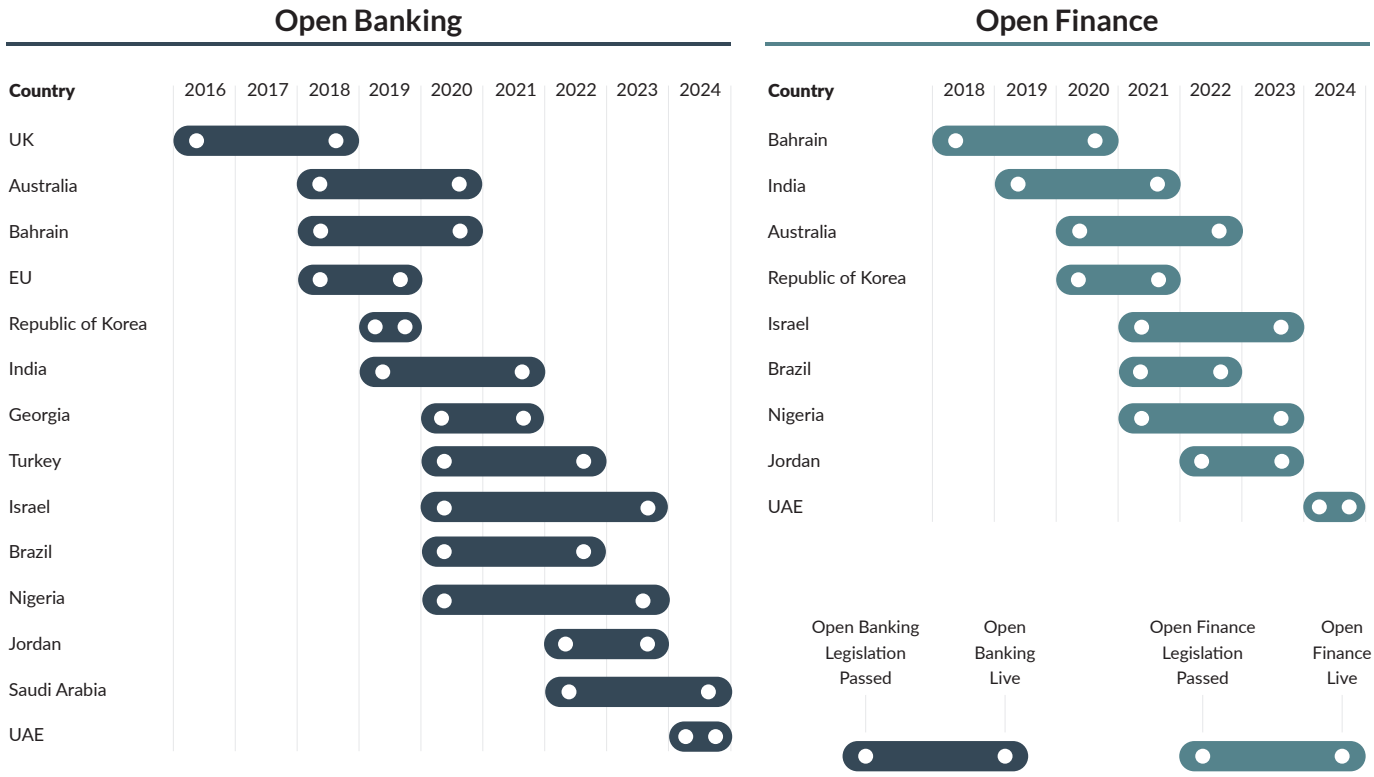


Source: CCAF

As illustrated in Figure 14, the legislative progress for Open Finance naturally lags behind that of Open Banking. Jurisdictions that have adopted Open Finance frameworks are EMDEs, emphasising their focus on financial inclusion, as the broader product coverage in Open Finance can significantly enhance these efforts. Although at a slower pace, AEs are also progressing toward Open Finance, with many developing or planning relevant regulations and legislation.

Over time, a shifting balance has emerged between EMDEs and AEs in their approach to Open Banking and Open Finance. To further investigate the role of time, additional data were gathered on when Open Banking and Open Finance initiatives went live in each jurisdiction, focusing particularly on the introduction of products in the market following the passage of legislation or regulation. Figure 15 illustrates the timelines and gaps between the enactment of legislation or regulation and the launch of Open Banking and Open Finance, underscoring the varying speeds at which different jurisdictions implement these frameworks.

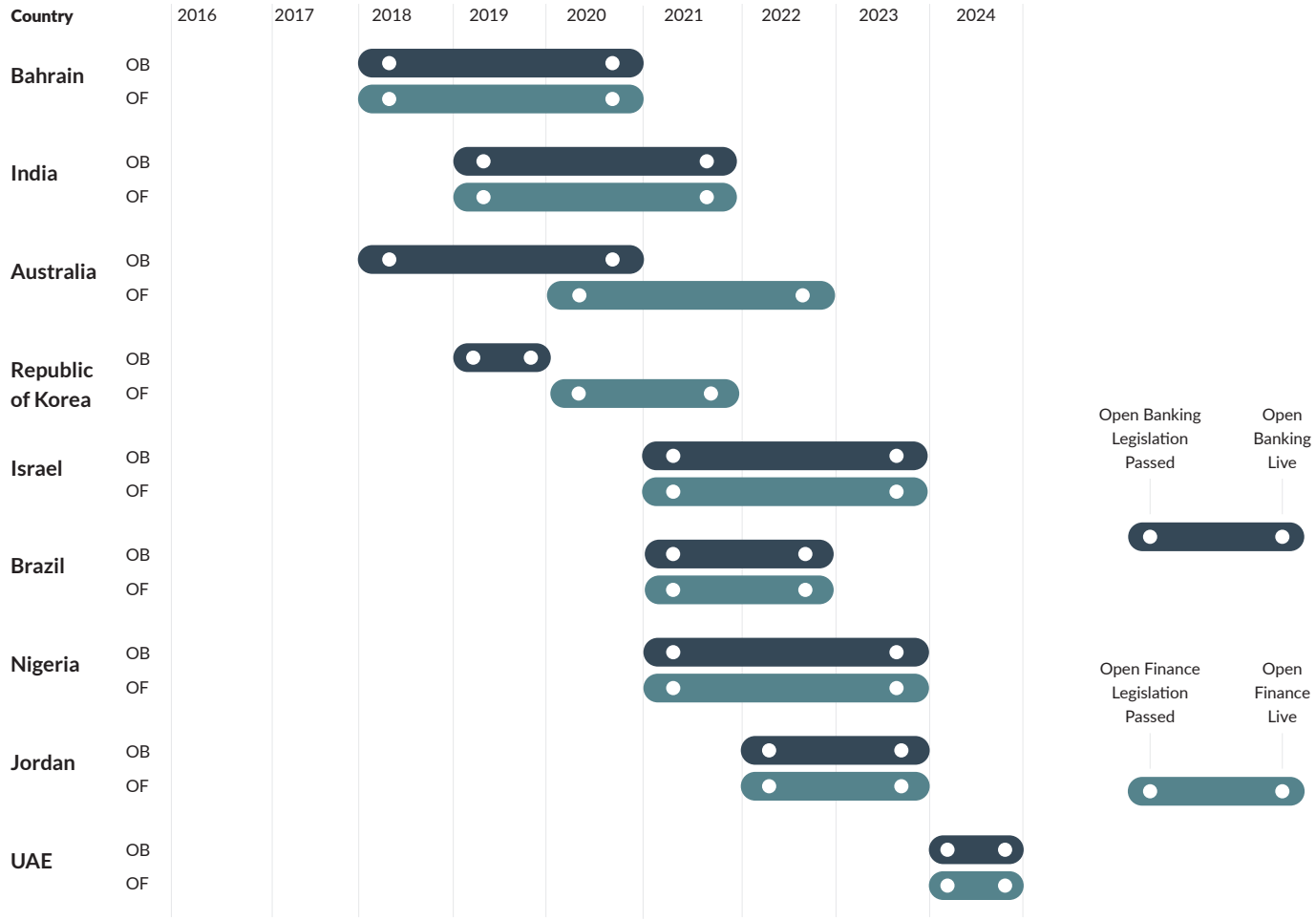
Figure 15: Timeline for year of legislation/regulation/guidance issued vs. year of live implementation of Open Banking and Open Finance



Source: CCAF

Jurisdictions such as Australia, Bahrain, India, Israel, Nigeria, Turkey, Saudi Arabia and the UK were consistently observed to have transitioned from passing Open Banking legislation to launching live services within approximately two years. The Republic of Korea and the UAE, however, stood out by achieving implementation in just one year, reflecting remarkable regulatory and market readiness. In the Republic of Korea, this rapid progress could be attributed to its already-thriving digital payments market and the widespread use of personal finance management (PFM) apps that previously relied on screen scraping. This foundation gave them a head start when Open Banking was introduced, demonstrating how existing digital infrastructure can enable rapid implementation. It was also observed that, as time progresses and frameworks mature, later adopters are closing the gap more swiftly. Emerging markets such as India and Nigeria, while facing initial challenges in infrastructure and execution, are increasingly aligning with global trends. The figure also illustrates the more recent and gradual progression of Open Finance frameworks, which, though lagging behind Open Banking in terms of implementation, are shortening their gaps, particularly in jurisdictions such as the Republic of Korea and Jordan.

Figure 16: Timeline comparison for jurisdictions with Open Banking and Open Finance



Source: CCAF

As illustrated in Figure 16, jurisdictions that have enacted both Open Banking and Open Finance legislation or regulations generally did so within the same year. The Republic of Korea and Australia, while being early adopters of Open Banking were slower to transition to Open Finance. Both jurisdictions had broader data coverage in their Open Finance frameworks from the outset which may have contributed to the delay. Notably, the implementation timelines for Open Finance tend to mirror those of Open Banking, with most jurisdictions taking approximately two years to go live after passing legislation.

Influence of Political and Regulatory Factors on Implementation

The implementation of Open Banking regimes is heavily influenced by factors such as political opposition and technical infrastructure, which can significantly impact both the speed and manner of adoption. In regulation-led jurisdictions, where government agencies and regulators actively shape and mandate Open Banking standards, the implementation process has been more streamlined. On average, these jurisdictions implemented Open Banking within 1.43 years. In contrast, market-driven jurisdictions, where the private sector leads the charge, took an average of 1.83 years to establish Open Banking systems.

While strong regulatory frameworks are essential for timely implementation, they may not always ensure the effective adoption of Open Banking. For example, the Australian government introduced the CDR rules in 2019, initially enabling "read-only" access

for customers to share their data with accredited third parties. However, it was not until 2024 that the CDR expanded to include action initiation, allowing customers to initiate transactions through third parties, marking a significant evolution in the scope of Open Banking.[50]

Similarly, Canada's progress toward Open Banking has been slow but steady. In 2019, Canada's Department of Finance launched a public consultation on Open Banking, and by 2021, it released a roadmap for implementing Open Finance. In its 2024 budget, Canada announced its "Customer-Driven Banking" framework, which will introduce "read-only" access by 2025, demonstrating a phased approach that reflects the broader regulatory and technical challenges faced by many jurisdictions in adopting Open Banking. Ultimately, government buy-in and readiness play a crucial role in the overall adoption and success of Open Banking initiatives, as they help to create an environment conducive to effective implementation and innovation.

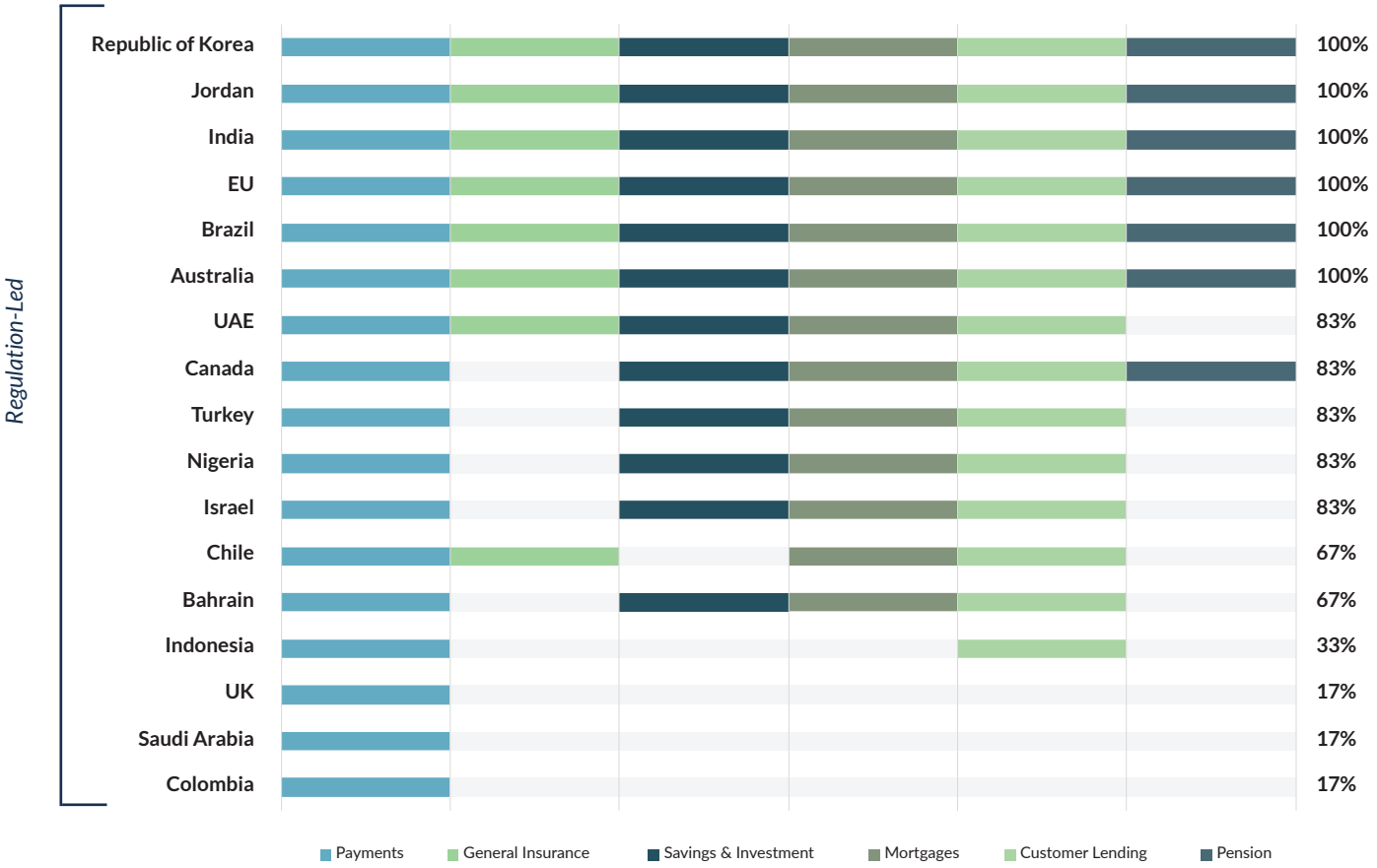
Trends in Data Sharing

To this point, this report has examined the various approaches, regional breakdowns, key authorities overseeing the development of frameworks, as well as their primary and secondary policy objectives. It has also assessed the legislative status of these frameworks—whether passed, planned or in development—along with the gap between the enactment of legislation and live implementation. The next section focuses on a critical aspect affecting transition to Open Banking and Open Finance: the breadth and depth of types of data made available to data users.

| Allowed Data Types

Firstly, regulatory frameworks and guidelines from relevant authorities in regulation-led jurisdictions were examined to assess the extent to which financial entities are permitted to share data across six key categories—Payments, General Insurance, Savings & Investment, Mortgages, Customer Lending, and Pensions. **Advanced markets** such as Australia, Brazil, the EU, India and the Republic of Korea, demonstrated **broad coverage**, with regulations addressing all six categories. This comprehensive approach highlighted a robust regulatory environment that supported extensive data sharing across multiple financial sectors. In contrast, **EMDEs** such as Saudi Arabia and Colombia exhibited **limited coverage**, with regulations focused solely on the Payments sector. However, **developing markets** such as Bahrain, Chile, Indonesia, Israel, Nigeria and Turkey showed **gradual expansion**, extending regulations to a broader range of sectors, though not yet encompassing all categories. Notably, jurisdictions such as Jordan and the UAE implemented a centralised API hub model, broadening the scope of data types compared to other nations, as illustrated in Figure 17.

Figure 17: Data types allowed to be exchanged in scope in regulation-led jurisdictions

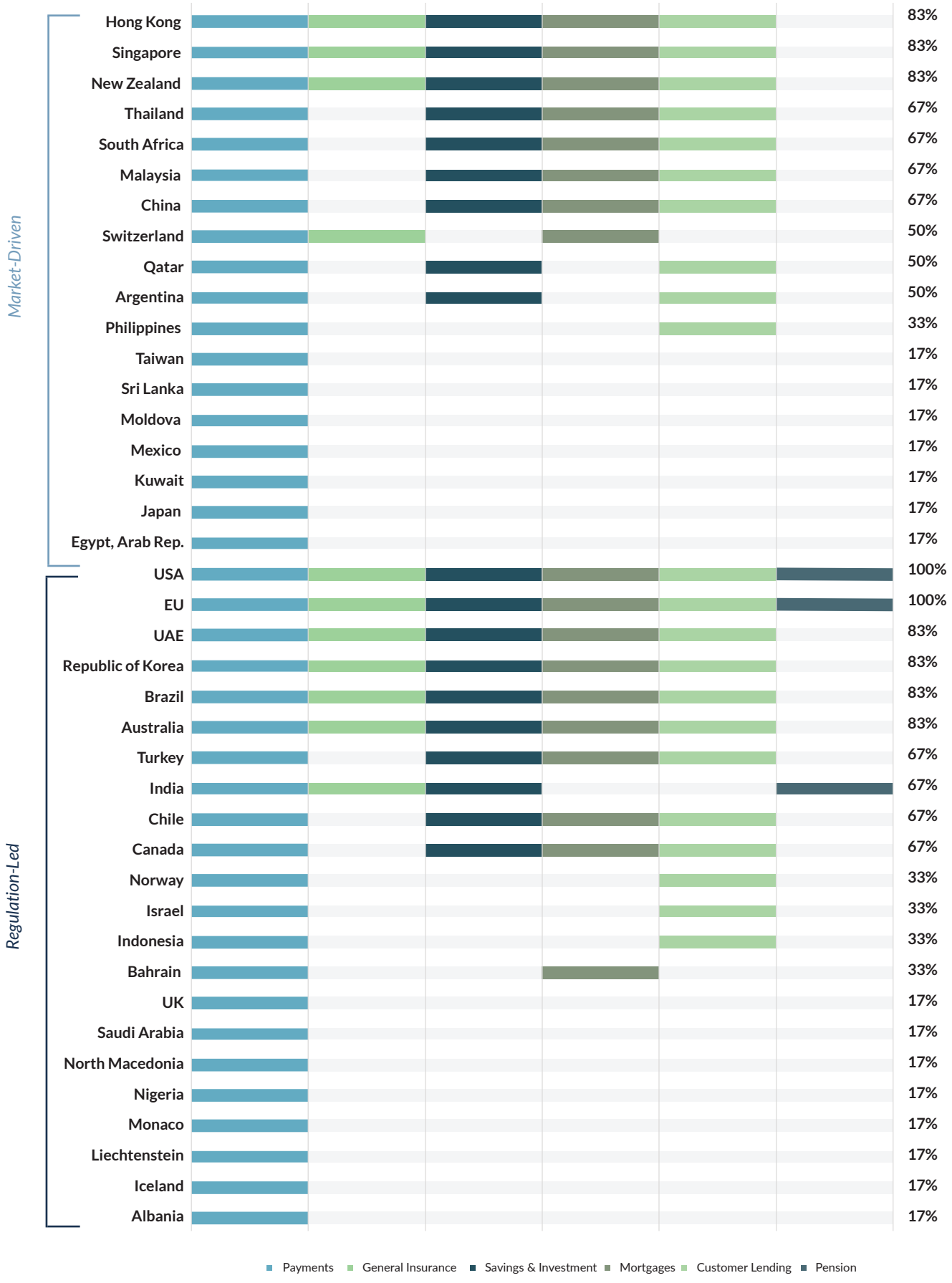


Source: CCAF

Live Data Types

Following the assessment of allowed data types, a deeper examination of live data availability was conducted to understand the current state of data-sharing practices. It is important to note that the inclusion of a data type within regulatory scope does not necessarily mean it is being shared live in practice. This analysis covered the same six key categories: Payments, General Insurance, Savings & Investments, Customer Lending, Mortgages and Pensions. To further delineate the differences between regulation-led and market-driven jurisdictions, each country was assigned a live data score on a scale from 1 to 6, where a score of 6 indicates that all six data types are actively available. This scoring allowed for a straightforward comparison of live data availability across jurisdictions. The results, detailed in Figure 18, illustrate the status of live data types across the jurisdictions considered in this report.

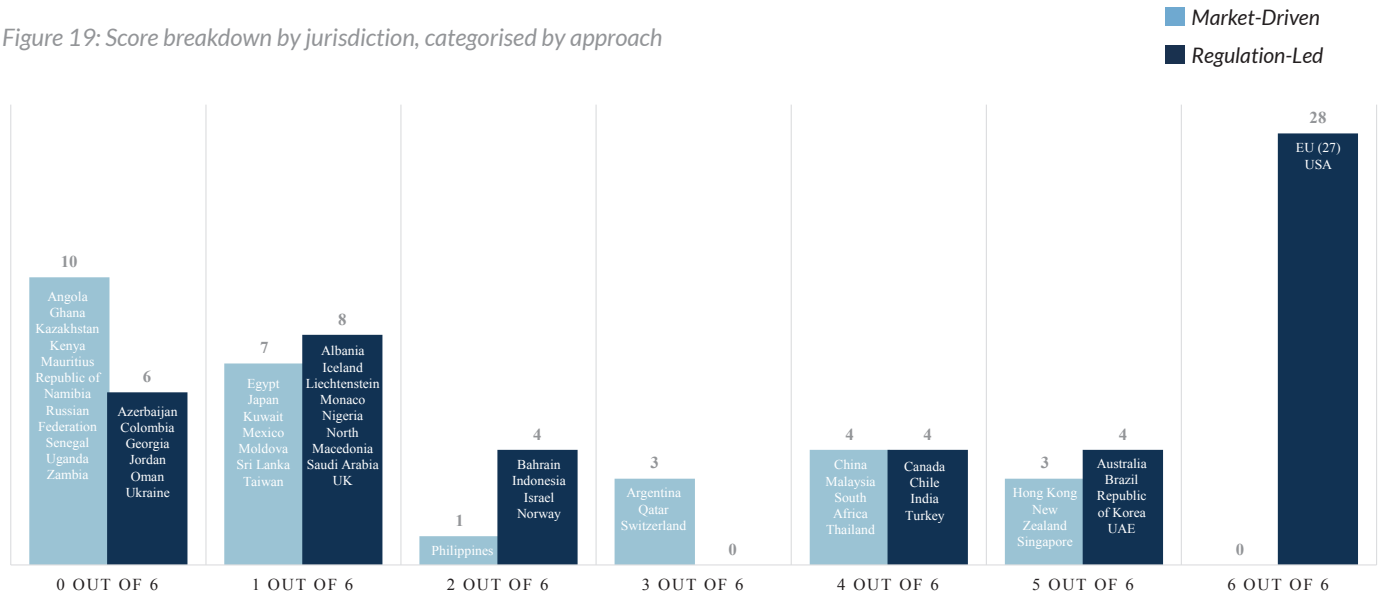
Figure 18: Data types live in regulation-led and market-driven jurisdictions



Source: CCAF

The analysis revealed that regulation-led jurisdictions generally exhibit a higher number of live data types compared to their market-driven counterparts. Specifically, regulation-led jurisdictions averaged a score of 2.7 (with the EU treated as a single entity), whereas market-driven jurisdictions averaged 1.75. This finding underscores a positive correlation between regulation-led approaches and broader data type coverage in scope. Figure 19 below illustrates the scores by jurisdiction, categorised by their respective approaches.

Figure 19: Score breakdown by jurisdiction, categorised by approach



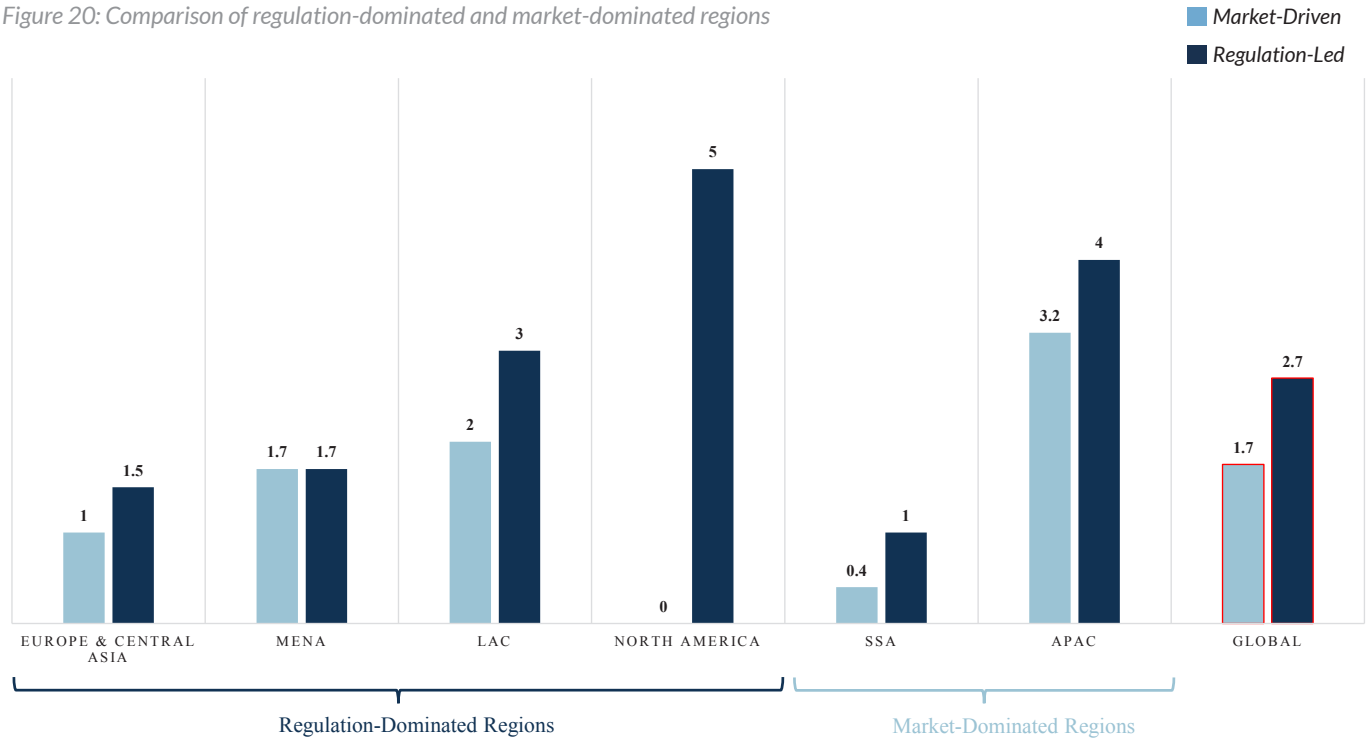
Source: CCAF

The US stands out, scoring a 6 out of 6, indicating the comprehensive availability of all tracked data types. This was achieved primarily under a market-driven framework, as the US is only now transitioning to a regulation-led framework. In contrast, jurisdictions such as the Philippines and Saudi Arabia score significantly lower, with the Philippines achieving only 1 out of 6 and Saudi Arabia at 0, reflecting limited live data offerings. The im

plementation approaches adopted by different jurisdictions also play a crucial role in these outcomes. **The "Mandated & Standardised" approach, employed by 79% of countries scoring 4 or above, has proven to be the most effective, whereas voluntary approaches tend to struggle.** Interestingly, despite General Insurance being considered easier to implement than Savings & Investments (S&I), all jurisdictions demonstrated higher implementation rates for S&I over General Insurance. This observation suggests that while regulatory and standardised frameworks significantly drive adoption, market readiness and industry support are also critical factors. India presents an intriguing case: although its regulatory framework encompasses all six key data types, Payments and Customer Lending data types are not currently live. This underscores the necessity of not only having a comprehensive regulatory framework, but also ensuring effective execution and widespread adoption across all data categories.

Each region was also assigned an average score out of 6. North America had an average score of 5, followed by the APAC region with an average of 3.6. LAC region followed at 2.6, while MENA region scored 1.67. Europe and Central Asia averaged 1.375, and SSA lagged with an average score of 0.5. In the comparison across various regions, Figure 20 reveals distinct patterns.

Figure 20: Comparison of regulation-dominated and market-dominated regions



Source: CCAF

In regulation-dominated regions such as MENA and LAC, where a greater number of jurisdictions employ regulation-led approaches, the live scores for regulation-led jurisdictions were either higher than or equivalent to those of market-driven jurisdictions. Interestingly, in market-dominated regions—such as SSA and APAC where market-driven approaches prevail—regulation-led jurisdictions still demonstrated a higher live score than their market-driven counterparts. This further reinforces the notion that regulation-led approaches tend to yield better outcomes than their market-driven counterparts.

It is important to note that even in jurisdictions where live data types are limited—such as only payments data being actively shared—Open Banking data can still significantly impact and drive innovation in other sectors. A prime example is the use of Open Banking data in customer lending. An increased ability to switch or add lending relationships is an important benefit of greater data sharing and a key channel through which Open Banking is theorised to foster competition and innovation.[51]

In the UK, while the Open Banking regulations initially focused on payment data, some fintechs have harnessed this data alongside artificial intelligence (AI) to offer tailored customer lending products.[52] This illustrates how even a single data type can be leveraged to create innovative solutions and drive value in financial services. Additionally, the principles that underpin Open Banking and Open Finance could be applied to sectors other than banking, such as energy, telecommunications and finance. For instance, Australia has provided for the gradual introduction of non-financial data categories in data sharing arrangements and extended its CDR beyond banking into energy, with non-bank lending to follow as the third sector.[53]

Role of Bigtechs in the Open Banking and Open Finance Landscape

Bigtech firms such as Amazon, Apple, Google, and Meta have the ability, and possibly also the incentive, to reshape the financial services industry. These companies have access to vast amounts of customer data, which could allow them to provide various financial services like payments and insurance, without becoming banks themselves.[54] However, given their influence in the digital ecosystem, their expansion into financial services raises important considerations for Open Banking and Open Finance. The ongoing development of Open Banking and Open Finance, enhances data-sharing capabilities, making it easier for businesses to offer more competitive pricing, improve efficiency, and diversify service offerings. The bigtech firms' unique access to vast amounts of data could further pave way to better products, more competitive prices and wider choice for customers and businesses.[55] Also, bigtech's entry to financial services could bring efficiencies as they can use the data to reduce costs, enhance UX capabilities, and promote greater transparency. Additionally, bigtechs can use customer data to screen and monitor loan applications, eliminating inefficiencies caused by asymmetric information.[56] Furthermore, bigtechs can contribute to fraud prevention through data sharing partnerships. For instance, Meta has partnered with leading UK banks, NatWest and Metro Bank, to combat online fraud through Fraud Intelligence Reciprocal Exchange (FIRE), which allows banks to share information with Meta. Recently, Meta announced that it will expand its information-sharing partnership with UK banks, following a pilot with NatWest and Metro Bank that helped eliminate many scammers from its platforms.[57]

However, there are significant consideration surrounding bigtechs' expanding roles in this space. First, bigtech firms tend to focus on segments like payments and credit, often working around traditional financial infrastructures. For instance, Google has become the second-largest payment provider in India,[58] where it operates independently of card networks. Amazon is also active in the US where it offers credit to retailers based on the extensive data it collects from its own platform, providing it with unique credit-scoring capabilities.[59] While these financial activities fall within the regulatory perimeter, bigtech firms are not deposit-taking institutions, and thus are not subject to the same stringent banking regulations that apply to traditional financial institutions. Secondly, while bigtech's extensive data resources are central to their competitive advantage, their use of personal data for tailored financial services should be of less concern in circumstances in which local data privacy legislation requires positive and informed customer consent. Getting this right is crucial to unlocking their full competitive potential. Lastly, there are concerns about potential market power. If left unchecked, bigtech's influence could inadvertently lead to market concentration, potentially stifling competition and limiting customer choice— the very areas that could be most significantly enhanced by their entry into financial services.

To bring it all together, while bigtechs continue to explore financial services, their expanding role poses questions for regulators, which should be continually informed by research and assessments from the customer's point of view. Bigtechs have already begun to establish a presence in this space, holding licenses that allow them to operate in payments and other financial services across multiple jurisdictions. For example, Apple Wallets in the UK uses the Open Banking ecosystem to aggregate user accounts,[60] and Google has a PISP license in Europe, enabling it to initiate payments on behalf of customers.[61]

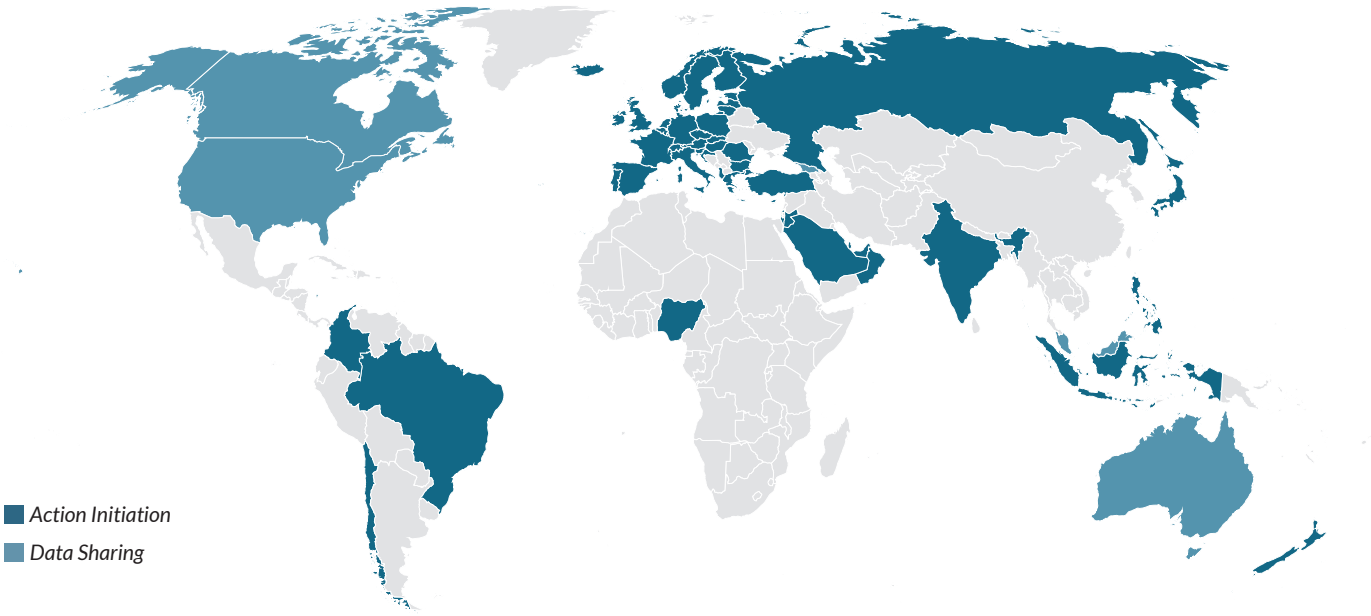
With data playing a key role, it is important for regulators to assess the implications of these players in the Open Banking and Open Finance landscape. In the UK, FCA has already highlighted some of these concerns in a 2023 report, highlighting potential regulatory gaps and the need for a balanced approach to ensure competition and customer protection without stifling innovation.[62]

| Action Initiation

In addition to understanding the data types that are allowed for sharing and those that are actively shared it, is essential to examine the availability of action initiation, such as initiating transactions or making updates. Out of the 82 jurisdictions assessed, 55 have implemented both read-access and write-access within the scope of Open Banking. This means that these jurisdictions enable third parties to initiate transactions. Furthermore, 84% of these

55 jurisdictions with action initiation were regulation-led jurisdictions. By contrast, five jurisdictions have only implemented read access, allowing third parties to access account information but not to initiate transactions.

Figure 21: Breakdown of action initiation & data sharing



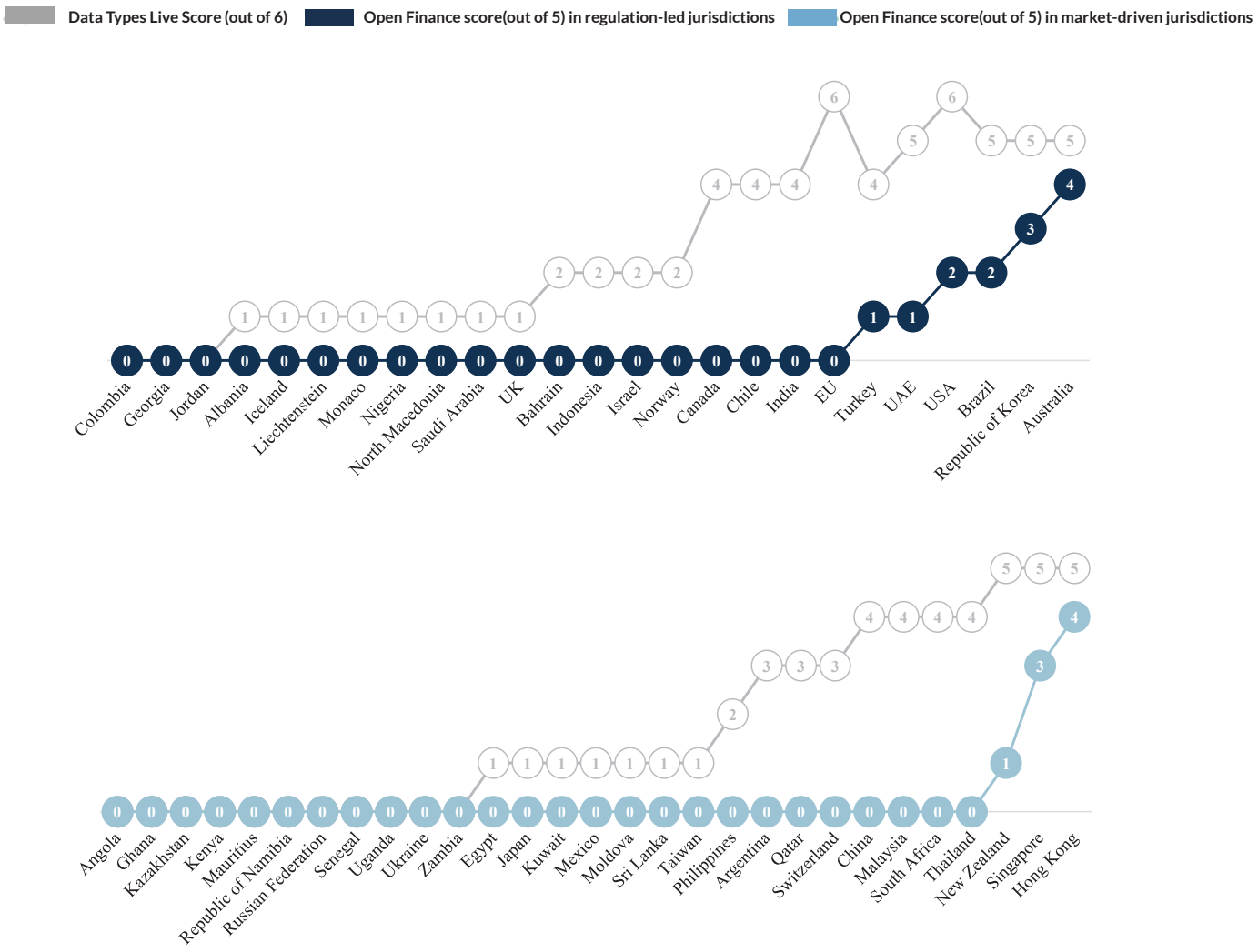
Source: CCAF

Jurisdictions that incorporate action initiation provide a more comprehensive framework, facilitating "read-only" access for viewing account information as well as "write-access" capabilities for initiating transactions such as payments. This expanded functionality significantly enhances the potential for innovative and impactful financial services. Thus far, it has been observed that regulation-led approaches outperform their market-driven counterparts in terms of live data types and action initiation within the scope of Open Banking. However, this raises questions about action initiation within the broader context of Open Finance, which are explored in the next section.

Open Finance Sector

While several data users have begun using Open Banking data to deliver improved financial services, such as personalised loans or financial advice, the full potential of Open Finance remains untapped in many regions. A final analysis was conducted to explore the relationship between live data types and Open Finance initiatives like Open Insurance and Open Savings. For each jurisdiction, the live data score (out of 6) was compared with the number of active Open Finance initiatives (out of 5) to identify any correlation. The findings, presented in Figure 22, reveal distinct patterns between the two governance approaches.

Figure 22: Correlation between data sharing and open finance in market-driven vs regulation-led jurisdictions



Source: CCAF

Among the 54 regulation-led jurisdictions analysed, only six were able to fully unlock Open Finance. These include Australia, Brazil, the Republic of Korea, Turkey, the UAE and the US. In jurisdictions such as Australia and the Republic of Korea, a strong correlation was observed between high live data scores and the advancement of Open Finance initiatives. This trend was consistently positive in the regulation-led group, indicating that increased financial data sharing correlates with a greater unlocking of Open Finance layers, leading to substantial customer benefits.

These observations could imply that regulation-led environments provide a more supportive infrastructure for the growth of Open Finance, enabling more substantial financial innovation. In such settings, TSPs such as customer lending platforms and personal finance managers could leverage shared financial data to create customised financial products that cater to individual customer needs. This could lead to more innovative offerings, improved financial well-being for customers, and enhanced overall efficiency. However, it is important to note that this is not a guarantee, as other factors such as market readiness and stakeholder alignment play crucial roles in driving success.

On the other hand, market-driven jurisdictions exhibited a more varied relationship between live data scores and Open Finance outcomes. Out of the 28 market-driven jurisdictions, only three were able to unlock Open Finance: New Zealand, Singapore, and Hong Kong. Despite high levels of data sharing in jurisdictions such as China, South Africa and Switzerland, the development of Open Finance in these nations lagged. This suggests that, even with

substantial data sharing, the lack of standardised APIs and cohesive regulatory frameworks in market-driven environments can hinder the realisation of Open Finance's full potential.

In closing, Part III examined global and regional trends in the adoption of Open Banking and Open Finance, illuminating the diverse approaches taken by different jurisdictions. The analysis covered the evolving roles of regulatory authorities, shifting policy objectives, and the varied statuses of implementation. It also examined the timelines that jurisdictions followed from policy introduction to live adoption, highlighting both rapid and delayed transitions. A key area of focus was data sharing, where it explored both basic and advanced functionalities such as action initiation and the expansion into Open Finance sectors, such as Open Insurance and Open Customer Lending. This analysis illustrated how the same inputs—such as governance frameworks or policy objectives—can lead to different outputs in Open Banking and Open Finance, highlighting the role of local context and implementation choices.

Conclusion

Conclusion

This report set out to provide a comprehensive analysis of the Open Banking and Open Finance landscape, drawing on empirical data for 95 jurisdictions to examine global market trends, highlight regional insights, and evaluate the impact of both regulation-led and market-driven frameworks on the adoption and implementation of Open Banking and Open Finance.

The data showed that while Open Banking is well-established globally, with 60 jurisdictions enacting relevant regulations or guidance, Open Finance remains in its early stages. Only 16 jurisdictions have implemented frameworks for Open Finance, with 10 of these being emerging markets—underscoring a strong focus on financial inclusion. Meanwhile, 41 jurisdictions have no plans to extend Open Banking to cover additional financial products.

From the perspective of policy objectives, the report highlighted the different focus areas for Open Banking and Open Finance. Four key objectives emerged: enhancing competition, fostering innovation, strengthening customer protection and promoting digital/financial inclusion. Data from 44 jurisdictions revealed that competition was the leading objective globally, while innovation and inclusion were central goals in emerging markets.

Through the conceptual framework, the report categorised 82 jurisdictions into two broad categories: 54 jurisdictions adopted a regulation-led approach, while 28 jurisdictions followed a market-driven approach. The governance choice includes a spectrum of strategies, rather than being a binary choice between market and regulation. Interestingly, while looking at the impact of the governance decisions on the implementation process, an important takeaway was that regulation-led frameworks tend to deliver better outcomes than market-driven approaches in areas such as speed to market and data sharing.

While Open Banking and Open Finance frameworks have transformative potential, they also present notable challenges that require ongoing attention for successful implementation. Key challenges include building robust systems for participation and trust, ensuring the enforceability of regulations and overcoming technical barriers that complicate data sharing. As outlined in Part I, the lack of comprehensive DPI can hinder interoperability, while fragmented systems across markets create friction in cross-border interoperability.

For example, the EU's shift from "mandated only" to "mandated & standardised" data sharing highlights the importance of unified standards for regional cohesion. Another challenge highlighted in this report is the involvement of multiple regulatory authorities and the need to acknowledge the remit and powers of the different institutions. Additionally, bigtech's entry into financial services introduces new regulatory challenges. Regulators now face the task of addressing how to oversee these firms' activities in ways that prevent the consolidation of market power, protect customer interests, and encourage fair competition. Addressing these challenges will be critical for the effective scaling of Open Banking and Open Finance.

To deepen understanding, future research should focus on bridging the gap between the data types permitted in frameworks and those live in regulation-led jurisdictions. Another critical area is understanding the 18 market-driven jurisdictions identified in this research that are transitioning to regulation-led frameworks. Exploring whether these jurisdictions have an advantage—or face unique challenges—in making this shift compared to those that began with regulation-led approaches could provide valuable insights. Additionally, translating data types beyond payments into action initiation in Open Finance is a key step in unlocking more sectors such as Open Insurance, which could significantly enhance customer empowerment. As jurisdictions continue to advance towards comprehensive Open Data ecosystems, examining the evolution and commercialisation of Open Data movements will also be valuable, including the role of multiple cross-sector regulatory authorities. These insights can guide policymakers in creating adaptable frameworks that support both innovation and customer protection.

In conclusion, this report has provided an understanding of Open Banking and Open Finance across policy objectives, key enablers, actors, design, governance, implementation, adoption, and impact. As this field continues to evolve, CCAF will continue to monitor regulatory developments, and the research team look forward to contributing to advancing research on these subjects.

Case Studies

Case Studies

Open Banking and Open Finance initiatives that give customers more control over their data are gaining traction and evolving in various ways in many parts of the world. Policymakers and regulators have adopted a range of actions related to Open Banking and Open Finance in their respective jurisdictions.[63]

While PSD2 in Europe and the UK's Open Banking Standard, launched by the CMA, were the pioneering initiatives to foster competition and innovation in the industry, many jurisdictions around the world are now well on their way to implementing Open Banking and Open Finance. So far, Europe has been leading with regulations, and experiences in Europe have inspired policymakers around the world to define Open Banking and even Open Finance regulations. Some jurisdictions, such as Australia, Canada, and Hong Kong, as well as Brazil and Chile in Latin America and Bahrain and Saudi Arabia in the Middle East, are adopting a more regulatory-driven strategy, influenced by Europe and the UK, with regulated API standards and data access.

In the US and China, open ecosystems have emerged primarily through market forces, with major tech companies playing a leading role due to their extensive user bases and influence. In contrast, jurisdictions such as India, Singapore, and Japan have fostered interconnectivity that, while still market-driven, has been shaped by a more coordinated approach involving both industry and regulatory guidance.

The following case studies (Brazil, the EU, India, the UAE, the UK and the US) explore the oversight approaches chosen for Open Banking and Open Finance implementation, offering a detailed analysis of frameworks in these selected jurisdictions. Readers should note that regulatory environments and market conditions are subject to change, which may impact the frameworks discussed.

Brazil

| Overview

Table 5: Overview of Open Banking & Open Finance in Brazil

Initiative Name	Approach	Type	Authority Type	Policy Objective
Open Finance Brasil	Regulation-Led	Mandated & Standardised	Central Bank	Improving Competition

Source: CCAF

Driven by a regulation-based approach, Brazil's financial ecosystem is characterised by a comprehensive mandate for data sharing and standardised API usage.

The primary policy objective of Brazil's Open Banking and Open Finance regulations is to increase competition within the financial services industry. Brazil aims to create a more inclusive and competitive market environment by mandating open access to financial data and standardising data-sharing practices. This is expected to enhance financial services accessibility and efficiency for customers and businesses.

Key regulatory authorities in Brazil include the Brazilian Central Bank (BCB), which is responsible for establishing the regulatory framework and overseeing compliance. The National Monetary Council (NMC) also plays a central role in defining the scope and participants of the Open Finance ecosystem. These regulatory bodies work together to ensure the effective implementation and evolution of Open Finance in Brazil.

| Regulatory Framework

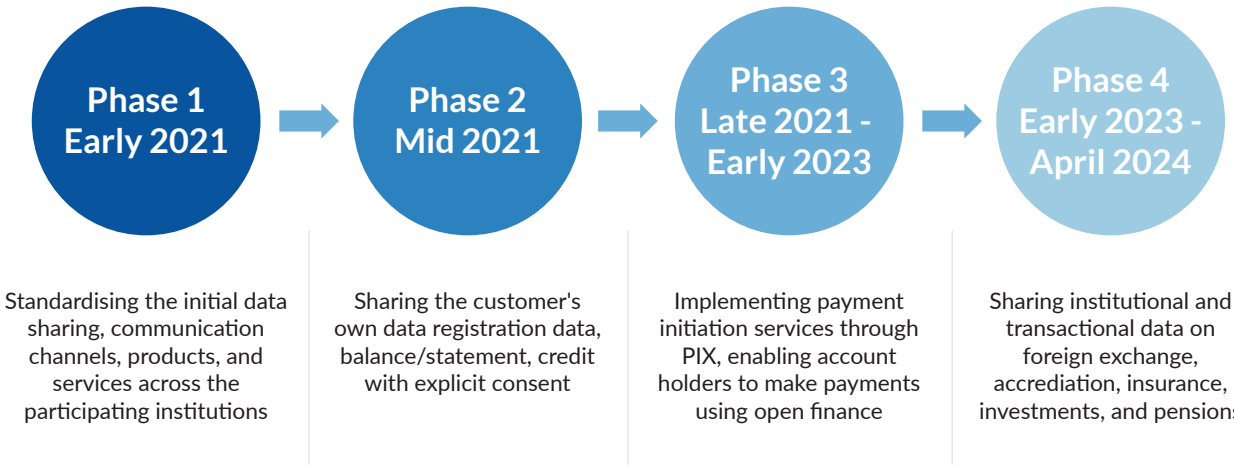
1. **General Law on the Protection of Personal Data (LGPD, 2018):** This law mandates that financial institutions must obtain customer consent before sharing personal data. Modelled after the EU's GDPR, the LGPD[64] sets rules for data collection, handling, storage and sharing, laying the groundwork for Brazil's Open Banking and Open Finance regime.[65]

2. **Agenda BC# (2019):** The BCB launched Agenda BC#[66] as a successor to Agenda BC+ (2016), focusing on addressing structural issues within the National Financial System. The agenda aims to enhance efficiency in Brazil's credit and payments markets by fostering technological innovation and promoting a more inclusive and competitive business environment, while ensuring financial system security and customer protection.[67]

3. **BCB Circular No. 4,015/2020**:[68] Issued in conjunction with the Joint Resolution, this circular specifies the scope of data and services involved in Open Finance, including customer and transactional data.

4. **Joint Resolution by BCB and National Monetary Council (May 2020):** This resolution outlines the participants of the Open Finance ecosystem and defines mandatory and voluntary participation criteria. It ensures that major financial institutions, payment service providers and certain other entities are required to participate in data sharing. Other financial and payment institutions that are authorised to operate by BCB may, voluntarily, become part of the Open Finance ecosystem by observing a data reciprocity requirement.[69]

Figure 23: Open Banking and Open Finance roadmap in Brazil



Source: CCAF

| Implementation and Impact

Table 6: Overview of implementation in Brazil

Status of Open Banking Regulation	Year of Open Banking Regulation	Status of Open Finance Regulation	Year of Open Finance Regulation	API Design	Data Holders	Live Data Score	Payment Initiation
Passed	2021	Passed	2021	Multilateral	All Financial Institutions	5/6	Yes

Source: CCAF

Legislation and Live Status: Brazil passed both Open Banking and Open Finance regulations in 2021, with full implementation going live in 2022. This marked a significant step in the modernisation of the jurisdiction's financial sector.

Data Types and Availability: Brazil allows all types of financial data to be shared and live, except for pension-related data, which is included in the regulatory scope but not yet live. This comprehensive data coverage supports a wide range of financial products and services.

API Design: In Brazil's framework, the API design is multilateral with strong regulatory oversight. The BCB requires participating institutions to develop and implement dedicated APIs for data and service sharing. These APIs

must adhere to technical standards and security protocols outlined in an industry-led convention, which is subject to BCB approval. This approach allows for flexibility and industry collaboration while ensuring compliance with regulatory requirements. The BCB also supports a testing environment under a sandbox regime to ensure API security and functionality.

Data Holders and Participation: Participation in Brazil's framework varies between mandatory and voluntary, depending on the institution and the type of data or service involved. Universal banks, commercial banks, investment banks and certain other large financial institutions are required to share customer data, while other financial and payment institutions may choose to participate voluntarily. The framework also allows for partnerships between regulated institutions and non-regulated entities, creating an inclusive environment for data sharing across a wide range of financial services.

Scoring and Evaluation: Brazil's approach has received a high score of 5/6 for live implementation, indicating the successful rollout and widespread adoption of its Open Banking and Open Finance regulations.

Future Developments

The acceleration of Open Banking and Open Finance adoption in Brazil has been greater than other implementations around the world, mainly because the infrastructure of the financial system is already more technologically mature than in Europe. Although Brazil's framework is relatively newer than the European Union and the United Kingdom, the ecosystem was designed to encompass a much wider range of financial products. This may be because the BCB, with its focus on innovation, has decided that there is no reason to restrict the scope to banking or payments, as opposed to the first Open Banking regimes in the European Union and the United Kingdom.[70] As the Open Finance ecosystem matures, further regulatory adjustments and technological advancements are expected to refine the implementation and expand the scope of covered data and services.

European Union

Overview

Table 7: Overview of Open Banking & Open Finance roadmap in the European Union

Initiative Name	Approach	Type	Policy Objective	Authority Type
Payment Services Directive (PSD2)	Regulation-Led	Mandated & Standardised	Improving Competition	Financial Services Authority

Source: CCAF

The European Union (EU) has established a robust regulatory framework through its Second Payment Services Directive (PSD2), [71] which aims to create a more integrated and efficient payments market across member states. PSD2, effective from January 2018, mandates that banks must provide TPPs with access to customer account information and payment initiation services. This regulation, coupled with the General Data Protection Regulation (GDPR), ensures both the facilitation of innovative financial services and the protection of customer data.

The primary policy objective of PSD2 is to enhance competition within the EU's financial sector. By mandating open access to payment account data and encouraging the participation of TPPs, PSD2 seeks to level the playing field, increase customer choice and foster innovation in financial services.[72] Also, PSD2 aimed to bring emerging market players within the regulatory framework due to concerns around less secure methods of accessing customer data, such as screen scraping. The EU's approach emphasises creating a competitive market environment and improving the efficiency of the payments system across member states.

Key regulatory authorities in the EU include the European Commission, which drafted PSD2, and the European Banking Authority (EBA), which is responsible for the Regulatory Technical Standards (RTS-SCA) and various guidelines. The EBA plays a crucial role in supporting the implementation of PSD2 and coordinating efforts across

the EU member states. Additionally, national competent authorities, such as national regulators and/or central banks, have a key role in terms of supervision and licensing.[73] They may include instructing or warning ASPSPs, or requiring amendments on ASPSP rules, procedures and systems.[74]

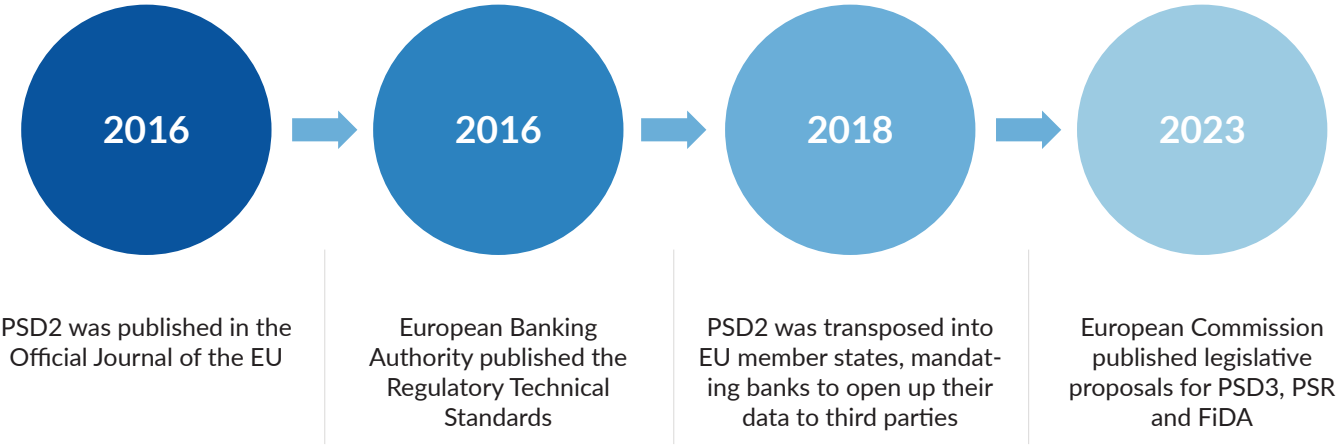
Regulatory Framework

1. **Second Payment Services Directive (PSD2, 2018):** PSD2 mandates that payment account services providers, including banks (Account Servicing Payment Service Providers, ASPSPs) must provide TPPs with access to customer account data and payment initiation services upon customer request.[75] PSD2 promotes competition and security but does not enforce specific technical standards, allowing various industry bodies to develop their own solutions, such as. PSD2 created three new categories of regulated payment institutions:[76]

    - **Payment Initiation Service Providers (PISPs)**, which can initiate payments from a customer's account with an Account Servicing Payment Services Provider (ASPSP) (typically a bank or e-money issuer); and
    - **Account Information Service Providers (AISPs)**, which can access and aggregate account and transaction information from ASPSPs; and
    - **Card Based Payment Instrument Issuers (CBPII)**, which can issue debit cards linked to a customer's bank account and use Open Banking access to obtain a confirmation of funds from the ASPSP. (NB: there is limited uptake of such unbundled debit cards within the EU and the UK).

2. **General Data Protection Regulation (GDPR, 2018):** GDPR provides comprehensive rules on data protection and privacy across the EU. It ensures that customer data is managed responsibly and transparently, complementing PSD2 by safeguarding customer information during Open Banking processes.

Figure 24: Open Banking and Open Finance roadmap in the EU



Source: CCAF

Implementation and Impact

Table 8: Overview of implementation in the European Union

Status of Open Banking Regulation	Year of Passing Open Banking Regulation	Status of Open Finance Regulation	Year of Passing Open Finance Regulation	API Design	Data Holders	Live Data Score	Payment Initiation
Passed	2018	In-Development	-	Multilateral	All Banks	6/6	Yes

Source: CCAF

Legislation and Live Status: PSD2 was fully implemented across the EU in January 2018, marking a significant advancement in Open Banking. The Open Finance regulation, which extends beyond payment accounts, is still in development.

API Design: While PSD2 mandates banks to provide access to customer payment account data through secure interfaces, it does not enforce a unified technical standard across all providers. This contrasts with the CMA Order in the UK, which requires a standardised approach. However, several recognised and widely adopted industry standards have emerged as de facto solutions, including those from the Berlin Group, STET and PolishAPI. Nevertheless, the lack of a single API standard under PSD2 has hindered Open Banking adoption, making it more challenging for developers to design products that seamlessly work across all banks. In response, the EU is planning to take a "Mandated & Standardised" approach for implementing Open Finance, including API standardisation. Under this plan, sectoral schemes will develop standards for Open Finance data, including insurance and investment data. While Open Finance APIs will be standardised, Open Banking APIs will not have full standardisation. Instead, only detailed requirements for API performance and functionality will be specified, though the Berlin Group standard currently accounts for 80% of Open Banking APIs in the EU. These changes are expected to be introduced in 2025.

Data Holders & Participation: PSD2 requires banks and payment service providers to act as data holders, sharing customer payment account information with authorised third parties. This regulatory requirement creates a broad participation base that includes banks, payment institutions, and TSPs across EU member states. The upcoming PSD3 aims to extend this framework to a more comprehensive Open Finance model, broadening the scope of data sharing to include a wider range of financial products and services beyond just payment accounts.

Data Types and Availability: Under PSD2, all payment account-related data types are allowed and live. This regulation facilitates access to account information and payment initiation data, significantly enhancing the range of financial services and products available to customers.

Scoring and Evaluation: The EU's Open Banking framework has achieved a high score of 6/6 for live implementation,[77] reflecting the successful adoption and operationalisation of PSD2. The forthcoming Open Finance regulations are expected to build upon this foundation, expanding data sharing and competition across a broader range of financial services.

Future Developments

PSD3 and Payment Services Regulation (PSR): The European Commission's proposals for PSD3 and PSR aim to update and consolidate payment services regulations, enhancing customer protection, security and competition. These new regulations will integrate existing frameworks into a unified legal structure, with PSD3 requiring national transposition and PSR applying directly across all EU member states. [78]

Financial Data Access (FiDA): The FiDA proposal will extend Open Banking principles to a wider range of financial services, fostering a more comprehensive Open Finance ecosystem. It will introduce data-sharing requirements across various financial sectors, potentially increasing the digital economy and facilitating greater market competition. [79] Unlike PSD2 and PSD3, which only apply to banking institutions that provide online-accessible accounts, FiDA's scope includes institutions across the entire industry, fostering the advancement of Open Finance within Europe. FiDA would impose data-sharing requirements on a broader range of data holders, including not only banks but also credit institutions, investment companies, crypto-asset service providers and managers of alternative investment funds.[80]

Future integration of PSD3, PSR, and FiDA will further harmonise data-sharing practices and regulatory requirements across the EU. This alignment will enhance the efficiency and inclusiveness of the financial services market, leveraging the existing Open Banking infrastructure while addressing emerging challenges and opportunities.

India

| Overview

Table 9 : Overview of Open Banking and Open Finance in India

Initiative Name	Approach	Type	Authority Type	Policy Objective
Account Aggregator (AA) Framework	Regulation-Led	Standardised Only	Central Bank	Fostering Digital/Financial Inclusion

Source: CCAF

India has taken a unique approach to Open Banking and Open Finance, initially known as the 'India Stack' and now more commonly referred to as DPI. This framework, developed in collaboration with the private sector, consists of a series of open APIs designed to build digital financial infrastructure, particularly aimed at promoting financial inclusion. One of the key components of DPI is the Aadhaar system, launched in 2010, which provides individuals with a secure, recognised digital identity that can be used to access a wide range of government and private sector services.

India's Open Banking and Open Finance initiatives are driven by regulations and standardisation, aiming to foster both digital and financial inclusion. The Account Aggregator (AA) framework, which went live in 2019, is the foundation of India's regulatory approach to Open Banking and Open Finance. This framework covers a broad spectrum of financial data, including bank accounts, deposits, loans, mutual funds, investments, insurance policies and pension funds, facilitating a more integrated and efficient financial ecosystem.

The key policy objective of India's initiative is to enhance financial and digital inclusion by making financial data more accessible and interoperable. This strategy is part of a larger effort to streamline various financial services and increase the efficiency of financial transactions across the jurisdiction.

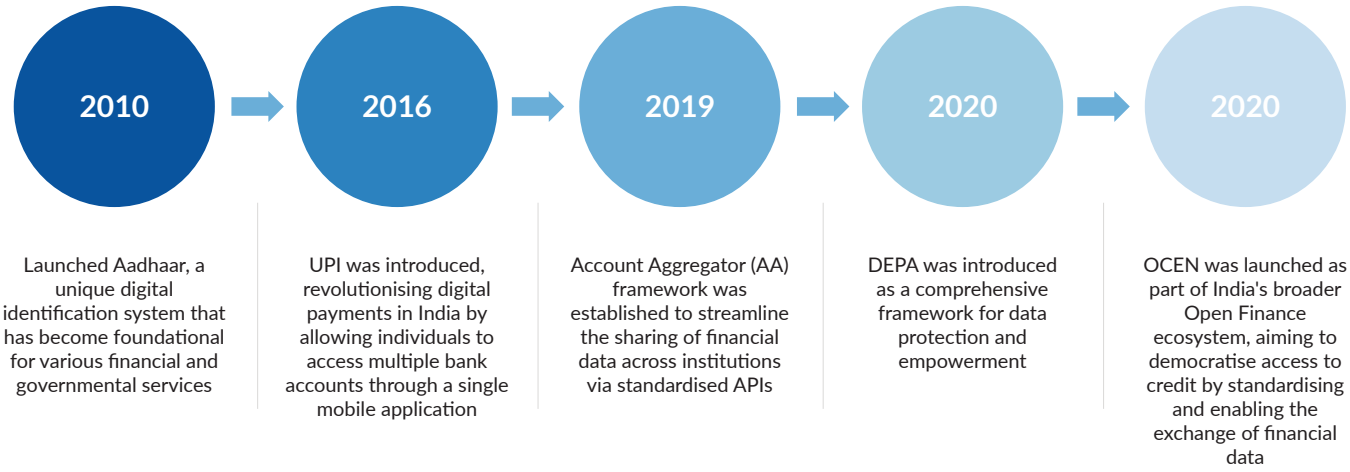
Key regulatory authorities include the Reserve Bank of India (RBI), which oversees the Account Aggregator framework, and Sahamati, a not-for-profit entity that supports the development of the ecosystem. Additionally, the National Payments Corporation of India (NPCI) plays a critical role by managing the Unified Payments Interface (UPI), which integrates digital payment service providers with the banking system to further promote financial inclusion. The NPCI is responsible for approving issuer banks, payments banks, third-party application providers and prepaid payment instrument issuers for participation in the UPI system.

| Regulatory Framework

1. **Account Aggregator Framework (2019):** The Account Aggregator framework was introduced to facilitate the sharing of financial data between institutions through standardised APIs. This framework aims to integrate various financial services by allowing institutions to access and share data efficiently and securely. It covers a wide range of financial products and services, including bank accounts, loans and mutual funds.

2. **Data Empowerment and Protection Architecture (DEPA) (2020):** DEPA, which includes the Personal Data Protection (PDP) Bill, electronic consent artifacts, and the Account Aggregator network, forms the core of India's Open Finance infrastructure. This architecture supports the secure sharing of financial data and empowers users with greater control over their information.

Figure 25 : Open Banking and Open Finance roadmap in India



Source: CCAF

Implementation and Impact

Table 10: Overview of implementation in India

Status of Open Banking Regulation	Year of Passing Open Banking Regulation	Status of Open Finance Regulation	Year of Passing Open Finance Regulation	API Design	Data Holders	Live Data Score	Payment Initiation
Passed	2019	Passed	2019	Multilateral	All Financial Institutions	4/6	Passed

Source: CCAF

India has a high level of mobile phone adoption, with 600 million smartphone users and over 1.2 billion mobile phone users. Approximately 52% of the population have access to internet services, of which most via mobile internet, with 35% of the population engaging in digital payments. The introduction in 2016 of the UPI, which creates an interoperable payments system that enables instant inter-bank fund transfers using a single Virtual Payment Address. Currently, there are nearly 350 million active UPI users in India and over 340 million QR codes at various merchant locations to facilitate payments in a seamless digital manner.[81] These factors contribute to the growing adoption of digital financial services and the Open Banking and Open Finance framework.

Legislation and Live Status: The AA framework and related regulations were fully implemented in 2019. As of January 2024, the framework supports over 1.94 billion financial accounts through integrations with 400 financial institutions across four key regulators.

API: The standardised API structure supports both "read" and "write" access, although the current live implementation predominantly allows for "read-only" access, with "write access" primarily focused on initiating transactions through UPI. The Reserve Bank Information Technology Private Limited (ReBIT) sets the technical standards for the Account Aggregator framework. Sahamati, a not-for-profit entity, oversees the ecosystem's governance and certification processes. This ensures interoperability and smooth data exchange between various financial institutions and account aggregators.

Data Holders and Participation: The framework encourages participation from a wide range of financial institutions, including banks, non-banking financial companies (NBFCs), insurance providers and investment firms. These institutions serve as data holders, facilitating the sharing of financial information through the Account Aggregator network. Unlike other jurisdictions, India does not have a regulatory mandate that forces banks to share customer data with third parties. The obligation for

data holders to allow customers to share their financial information currently applies only to those who have joined the account aggregator ecosystem. As such, "the AA system is yet to become mandatory for any of the ecosystem partners."[82] However, the Indian government has actively promoted the adoption by heavily incentivising banks to participate. These incentives often include providing access to critical databases and digital infrastructure, which enables more seamless data sharing across the ecosystem.

Data Types and Availability: The framework encompasses a broad spectrum of data types, including bank accounts, deposits, loans, mutual funds, and more. Despite the extensive scope, the live integration of data is still developing. The current implementation allows for "read-only" access to transaction information and "write access" for initiating transactions.

Scoring and Evaluation: The Open Banking and Open Finance framework in India scores 4/6 for live implementation. Currently, India's implementation of Open Finance includes only asset-related data, meaning that customer lending and mortgage data sharing is not yet live.

Future Developments

The Account Aggregator framework and DEPA are poised to expand further, increasing the scope of financial data sharing and enhancing the overall impact of Open Banking and Open Finance. Continued efforts to integrate more financial institutions and expand the types of data available will be essential for achieving broader financial inclusion.

Ongoing improvements in technology and regulatory standards will support the growth of India's Open Finance ecosystem. Ensuring that technical standards remain up-to-date and that regulatory frameworks adapt to emerging trends will be key to maintaining the momentum of digital and financial inclusion.

United Arab Emirates

Overview

Table 11: Overview of implementation in the United Arab Emirates

Initiative Name	Approach	Type	Authority Type	Policy Objective
Open Finance Framework	Regulation-Led	Mandated & Standardised	Central Bank	Encouraging Innovation

Source: CCAF

The United Arab Emirates is actively pursuing technology innovation within the MENA region. With a focus on Open Banking and Open Finance, the UAE is working towards integrating financial services with technology, fostering collaboration across various sectors, including banking, real estate and government, to develop a more connected digital economy.

The UAE's strategy aims to drive innovation by fostering a collaborative, secure and customer-centric digital ecosystem. This involves mandating the sharing of customer data—upon consent—and standardising the process to enhance the functionality and security of financial services.[83]

The Central Bank of UAE (CBUAE) is the leading authority that mandates all financial institutions supervised by the CBUAE to participate in the Open Finance framework. Regulators such as the Dubai Financial Services Authority (DFSA) and Abu Dhabi Global Market (ADGM) have made statements in support of Open Banking and Open Finance, which will stimulate financial services and, eventually, enhance the economy.

Regulatory Framework

1. **Dubai Financial Services Authority (DFSA)**

    - **Regulatory Framework on Money Services (April 2020):** The DFSA's framework extends beyond payment accounts, encompassing a broader range of Open Finance use cases. This regulatory framework includes definitions for Account Information Service Providers (AISPs) and Payment Initiation Service Providers (PISPs), facilitating a broader implementation of Open Finance principles.

2. **Abu Dhabi Global Market (ADGM)**

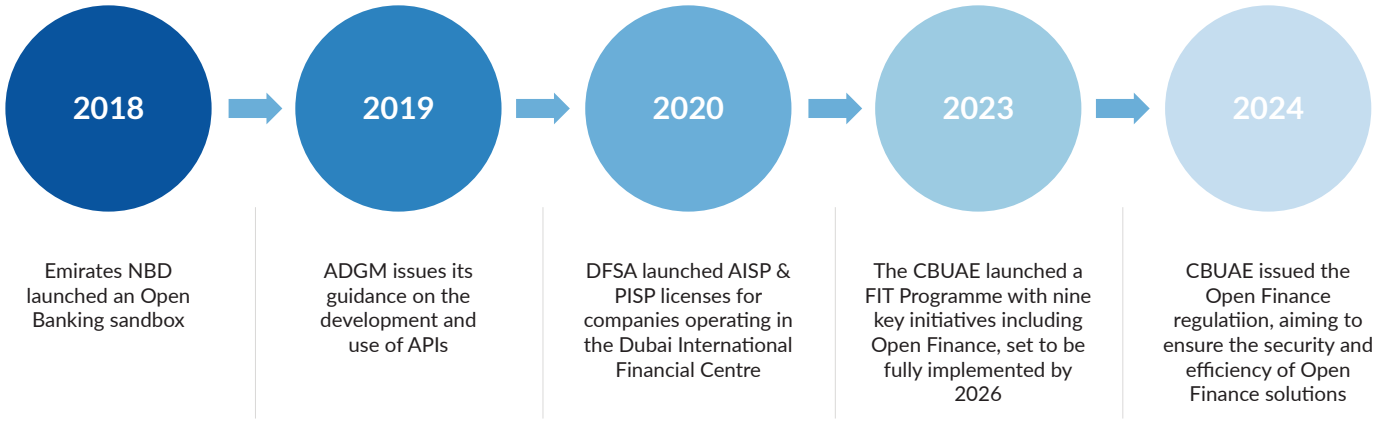
   - **Regulatory Framework on Third-Party Financial Technology Services (April 2021):** ADGM's framework supports the expansion of financial technology services, laying the groundwork for Open Finance by enabling the growth of specified information types and third-party services.

3. **Central Bank of UAE (CBUAE)**

   - **Financial Infrastructure Transformation (FIT) Programme (February 2023):** The CBUAE launched the FIT Programme[84] to spearhead digital transformation within the financial services sector. The Open Finance initiative is one of nine key initiatives under this programme, signalling the UAE's commitment to integrating advanced financial technologies.

   - **Open Finance Regulation (April 23, 2024):** The CBUAE introduced the Open Finance Regulation,[85] establishing a new framework for licensing, supervision and operation. This regulation aims to create a secure platform for regulated parties to exchange financial data and initiate financial services with customer consent. It applies to financial data holders, service owners, market participants and service initiators.[86]

Figure 26: Open Banking and Open Finance roadmap in the UAE



Source: CCAF

Implementation and Impact

Table 12: Overview of implementation in the United Arab Emirates

Status of Open Banking Regulation	Year of Passing Open Banking Regulation	Status of Open Finance Regulation	Year of Passing Open Finance Regulation	API Design	Data Holders	Live Data Score	Payment Initiation
Passed	2024	Passed	2024	Centralised	All Banks	5/6	Yes

Source: CCAF

Legislation and Live Status: Both the Open Banking and Open Finance regulations were passed and went live in 2024. This swift implementation reflects the UAE's proactive stance in integrating and regulating advanced financial technologies.

API Design: The UAE's Open Finance framework features a centralised API Hub that standardises data sharing across financial institutions. This API structure supports secure and interoperable data exchange, with robust encryption and authentication protocols. The CBUAE has set stringent technical standards to ensure that APIs facilitate seamless integration while maintaining high levels of cybersecurity and data protection.

Data Holders and Participation: Participation in the UAE's Open Finance framework is mandatory for a wide range of financial entities, including banks, insurance

companies, payment service providers and other licensed institutions. These entities act as data holders, required to share customer data securely and allow TPPs to initiate transactions, fostering a more competitive and innovative financial ecosystem.

Data Types and Availability: All data types are permitted and operational under the new regulations, except for pensions, which are not yet included. The comprehensive approach ensures that a wide range of financial data can be shared and utilised, enhancing the scope and effectiveness of the Open Finance ecosystem.

Scoring and Evaluation: The UAE's Open Banking and Open Finance systems have achieved a high score of 5/6 for live implementation, indicating a robust and advanced regulatory environment.

Future Developments

Open Finance services in the UAE will require a license, including data sharing and service initiation. The Regulation requires that all financial institutions overseen by the CBUAE must participate in the Open Finance framework for both their products and services. Notably, unlike many other jurisdictions, "Open Insurance" along with "Open Banking" is included in the UAE's Open Finance Framework.

The Open Finance Framework consists of a Trust Framework, an API Hub and Common Infrastructural Services, which provide Open Finance access for the cross-sectoral sharing of data and the initiation of Transactions, on behalf of users. A regulatory sandbox will also be developed to allow for continued experimentation, including in Open Finance, and will be governed by the CBUAE's new Sandbox Regulations,[87] also issued in April 2024 along with these regulations.

United Kingdom

| Overview

Table 13: Overview of Open Banking and Open Finance roadmap in the United Kingdom

Initiative Name	Approach	Type	Policy Objective	Authority Type
Open Banking	Regulation-Led	Mandated & Standardised	Improving Competition	Financial Services /Competition

Source: CCAF

The United Kingdom has been a pioneer in Open Banking, with a regulatory-driven approach that has mandated & standardised practices across the UK financial services ecosystem. The UK's Open Banking regulations were established by the CMA[88] in 2017 and went live in 2018. The regulation mandates that the largest banks in the UK must provide TPPs with access to payment account data through standardised APIs. This framework aims to enhance competition and innovation in the financial services sector by making it easier for customers to access a broader range of financial products, including those offered by non-bank entities.

The primary policy objective of the UK's Open Banking initiative is to increase competition within the retail banking sector. By mandating the sharing of payment account data and standardising APIs, the UK's main competition regulator, the CMA, sought to create a more competitive and innovative financial services market. This approach aims to make it easier for customers to compare financial products and services, while also encouraging the development of new offerings tailored to their needs.

Key regulatory authorities include the Financial Conduct Authority (FCA), designated competent authority under the Payment Services Regulations 2017 (which contained the provisions of PSD2), the CMA which issued the Retail Banking Market Investigation Order 2017. The Open Banking Implementation Entity (OBIE), which the CMA required the large banks to create and fund, was not a regulatory body but was established to oversee the design and adoption of the Open Banking standards.

| Regulatory Framework

1. **Retail Banking Market Investigation Order 2017 (CMA Order):** Issued by the CMA following an investigation into competition within the retail banking

sector, this order mandated the six largest retail banks in England and three in Northern Ireland, known as the "CMA9," to develop and implement standardised "read/write" APIs. The order specifically aimed to promote competition and innovation in the UK's banking sector by enabling TPPs to access customer data securely and efficiently. It is through this order that the Open Banking Implementation Entity (OBIE) was established, tasked with creating and managing the Open Banking standards and infrastructure.

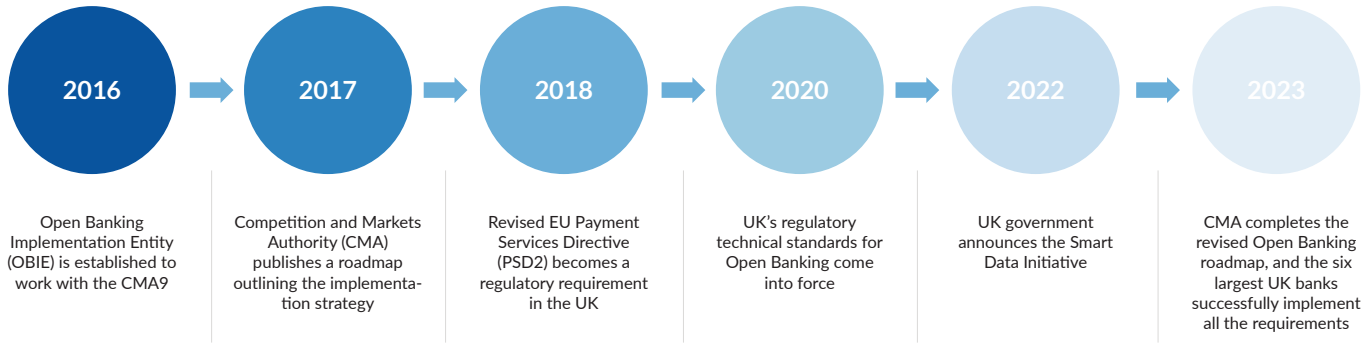
2. **Role of the Open Banking Implementation Entity (OBIE):** The OBIE, created by the CMA Order, was responsible for developing the technical standards and frameworks necessary for Open Banking. Although not a regulatory body itself, the OBIE's standards, if accepted by the CMA, may be legally enforced under the Order. The OBIE's responsibilities include creating and maintaining the Open Banking API standards, managing the Open Banking directory, ensuring the security of the data sharing ecosystem, and providing guidelines for all participants involved in Open Banking.

3. **Interaction with PSD2 and UK Regulations:** Both the EU and the UK have fully implemented the second Payment Services Directive (PSD2), which was transposed into UK law through the Payment Services Regulations 2017. PSD2 established data-sharing obligations for all payment service providers, requiring them to enable customers and SMEs to authorise access to their payment accounts by authorised TPPs. This requirement applies to all banks and payment account providers in the UK, not just the nine largest banks. In addition to implementing PSD2, the UK introduced additional measures through the CMA Order, which required the CMA9 to go further by developing and implementing standardised "read/write" APIs and to fund and support the Open Banking Implementation Entity (OBIE). The OBIE was tasked with creating common technical standards for Open Banking, and while only the CMA9 were legally bound by the Order, these standards became widely adopted across the UK market as they were license-free and PSD2-compliant. In theory, each UK bank or payment account provider other than the CMA9 could have adopted different API standards, which would have made it harder for app developers to connect with all providers. However, virtually all UK banks and payment providers outside the CMA Order's scope adopted these common standards voluntarily, fostering a more consistent and accessible Open Banking ecosystem.

4. **JROC's Long-Term Framework Consideration**: In April 2024, the Joint Regulatory Oversight Committee (JROC) released a paper seeking feedback on their proposals for the design of a Future Entity for Open Banking in the UK. This initiative seeks to establish a roadmap for the continued development and expansion of Open Banking, potentially including areas such as Open Finance and broader data-sharing opportunities in financial services. [89]

5. **Data (Use and Access) Bill:** In November 2024, the UK introduced the Data (Use and Access) Bill in Parliament, aiming to enable Smart Data schemes across different sectors. This Bill will facilitate a framework for securely sharing customer data with authorised providers to enhance competition and innovation. By building on the Open Banking model, this legislation may open doors to new Smart Data initiatives, allowing customers to benefit from tailored products and services in areas beyond traditional banking.[90]

Figure 27: Open Banking and Open Finance roadmap in the United Kingdom



Source: CCAF

Implementation and Impact

Table 14: Overview of implementation in the United Kingdom

Status of Open Banking Regulation	Year of Passing Open Banking Regulation	Status of Open Finance Regulation	Year of Passing Open Finance Regulation	API Design	Data Holders	Live Data Score	Payment Initiation
Passed	2016	In-Development	-	Centralised	N Largest Banks	1/6	Yes

Source: CCAF

Legislation and Live Status: The UK's Open Banking regulations came into force in 2018, requiring major banks to comply with API standards and data-sharing mandates. This framework has led to the development and implementation of standardised APIs for payment data as explained above.

Data Types and Availability: The regulations currently only cover payment account data. While the scope of the live data is limited to payment account transaction data (i.e. the value and beneficiaries of payments both into and out of accounts together with account balances), it has significantly impacted the fintech landscape. [91]

API Design: The Open Banking Implementation Entity (OBIE) has established standardised API specifications that facilitate secure and efficient data sharing and payment initiation. These APIs include both read/write functionalities, allowing TPPs to access customer account information and initiate payments on their behalf.

Data Holders & Participants: The CMA9 between them held over an 80% share of the personal current account market. Their legal obligations are derived from the Retail Banking Market Investigation Order, 2017. All payment account providers were also subject to the Payment Services Regulations, 2017, through which PSD2 was transposed into UK law.

Scoring and Evaluation: The UK's Open Banking framework has a live data score of 1/6, reflecting that while the system is operational, its scope is limited to payment data. However, this limited scope has spurred significant innovation in the fintech sector,[92] demonstrating the potential of Open Banking even within a narrower data range. There is a significant increase in fintech entry following the adoption of Open Banking policies and that this increase is present across several use cases including credit, financial advice applications and payments.[93] This initiative was well-aligned with the Financial Conduct Authority (FCA)'s competition objective, as the FCA is one of the few regulators with a specific mandate to promote competition, further driving the adoption of Open Banking in the UK. The UK Labour Party's 2024 manifesto committed to advancing Open Banking and Open Finance, signalling continued support and development in this area.[94]

Future Developments

While the current regulations focus on payment data, there is potential for expanding the scope to include other types of financial data in the future. The UK's Open Banking framework has already fostered significant advancements in fintech, and further expansions could enhance its impact on other financial sectors. The Open Banking Implementation Entity (OBIE) will continue to play a role in maintaining and evolving the API standards and infrastructure. Ensuring that these standards remain relevant and effective will be key to supporting ongoing innovation and competition in the financial services market.

In June 2023, the Joint Regulatory Oversight Committee (HM Treasury, CMA, FCA and PSR) set out a plan to take forward recommendations for the next phase of Open Banking in the UK. This included the creation of two regulator-led working groups. The groups will develop the framework for the expansion of variable recurring payments and the design of the future Open Banking entity. [95] In addition, recent speeches by the FCA have underscored the ambition for Open Finance, emphasising the need to build upon the existing framework and broaden its scope to include a wider range of financial data and services.

United States of America

Overview

Table 15: Overview of Open Banking & Open Finance in the US

Initiative Name	Approach	Type	Authority Type	Policy Objective
Proposed Rule	Regulation-Led	Mandated only	Financial Services Authority	Increasing Competition

Source: CCAF

The US has yet to fully establish and implement a comprehensive Open Banking and Open Finance framework similar to those in Europe and the UK.[96] Previously, the US had largely adopted a "market-driven" approach, allowing the financial industry to set its own standards for data sharing and API usage.[97] As a result, the landscape remained fragmented, with various private-sector initiatives filling the gap left by a lack of formal regulatory mandates. While recent developments [98] aim to formalise data-sharing practices and mark a step towards a regulatory approach, it is important to note that most of the advancements have taken place within the previous market-driven framework, even as the approach has evolved toward a "Mandated only" approach.

The primary policy objective of the US approach is to increase competition within the financial sector. The aim of enabling a broader range of innovative financial services and fostering a more competitive environment is to drive customer benefits and stimulate market growth. This policy focuses on leveraging market forces rather than imposing government mandates, encouraging voluntary adoption of Open Banking and Open Finance practices.

Key regulatory players in the US include the Customer Financial Protection Bureau (CFPB), which oversees financial data sharing and influences the regulatory landscape through its reports and proposals. The Financial Data Exchange (FDX) is a major industry organisation working to standardise financial data sharing through its API. Additionally, organisations such as the National Automated Clearing House Association (NACHA) and the Financial Services Information Sharing and Analysis Centre (FS-ISAC) contribute to the development of secure data transfer frameworks.

Regulatory Framework

1. **Dodd-Frank Wall Street Reform and Customer Protection Act (2010):** Section 1033 of this Act mandates that financial institutions must make data available to customers and establish standards for data formats. Implementation has been gradual, with specific regulatory actions yet to be fully realised.

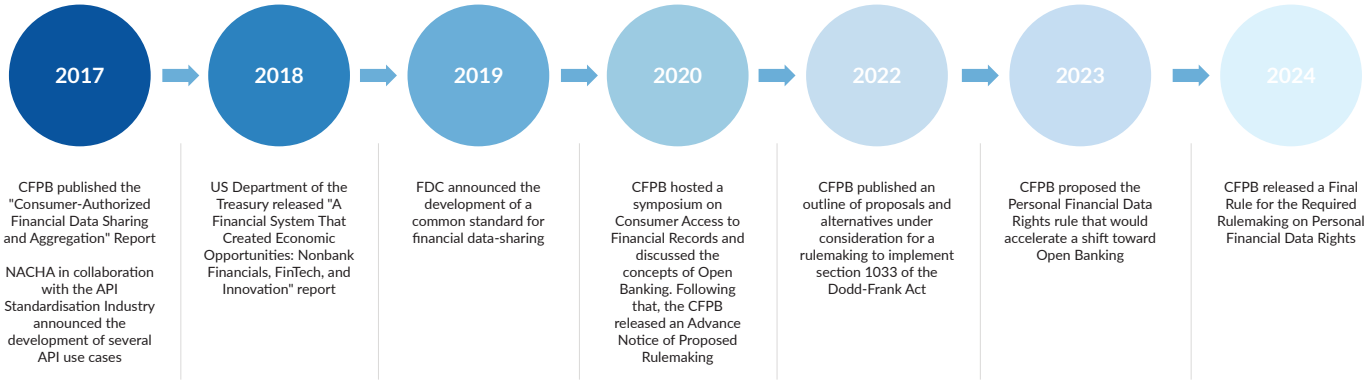
2. **CFPB Reports and Proposals:** Since 2017, the CFPB has issued reports and non-binding principles outlining potential regulations for financial data sharing. These efforts have laid the groundwork for future regulatory measures but have not yet resulted in comprehensive rules.

3. **CFPB's Proposed Rule (2023-2024):** The CFPB's proposed rule, called the "Personal Financial Data Rights" rule, would activate a dormant provision in the Dodd-Frank Act that is meant to prevent financial institutions from hoarding a person's data by requiring companies to share data at the person's direction with other companies. The new rule would require financial institutions, including card issuers and other payment providers,[99] to develop APIs that allow customers and authorised third parties to access financial data. This data would include transaction history, account balances, and payment initiation information—among others. The rule would impose strict standards for API performance, security and accuracy, while also prohibiting screen scraping and limiting data use to what the customer explicitly authorises. Notably, data providers would bear the cost of implementing these interfaces and would be given between six months to four years to comply, depending on their size. Although limited

to financial data, it is particularly notable that the rule prioritises protecting data rights.[100] Financial institutions will be required to provide customer access via secure APIs and phase out less secure methods such as screen scraping. Compliance will be phased, with larger institutions having six months to implement these standards and smaller organisations up to several years.

In 2024, the CFPB took concrete steps by finalising part of the proposed "Personal Financial Data Rights" rule. This included establishing minimum criteria that a standard-setting body must meet to receive CFPB recognition. The rule outlines the key attributes that a standard-setting body must exhibit to be recognised by the CFPB as a designated standard setter. These attributes include openness, balanced decision-making, consensus-building and adherence to due process and appeals, as well as maintaining transparency.[101] In October 2024, the CFPB released a Final Rule for the Required Rulemaking on Personal Financial Data Rights.[102]

Figure 28: Open Banking and Open Finance roadmap in the US



Source: CCAF

| Implementation and Impact

Table 16: Overview of implementation in the US

Status of Open Banking Regulation	Year of Passing Open Banking Regulation	Status of Open Finance Regulation	Year of Passing Open Finance Regulation	API Design	Data Holders	Live Data Score	Payment Initiation
In-Development	-	-	-	Decen-tralised	-	6/6	No

Source: CCAF

Legislation and Live Status: The US has made progress through private-sector initiatives but lacks a cohesive Open Banking and Open Finance regulation. The CFPB's recent proposals represent a significant step towards formalising the ecosystem.

API Design: Since a comprehensive regulatory framework around APIs and financial data sharing does not exist currently, the liability regime for Open Banking and Open Finance is voluntarily established by bilateral agreements between various institutions and fintech firms. In the absence of an industry-wide API policy, "screen scraping" remains prevalent as a means for TPPs to provide innovative services to customers without entering into a contractual agreement with each bank.[103] Various financial institutions and fintech companies have independently developed APIs to facilitate data sharing. These APIs vary in their design and standards, as they are not governed by a centralised protocol or regulatory requirement. The recent CFPB proposal, however, aims to introduce standardised API requirements, ensuring consistent performance, security and data accuracy. Rather than mandating a single technical standard, the proposal requires banks to follow industry-wide standards set by an approved standards body, such

as the Financial Data Exchange (FDX), which is currently seeking CFPB approval.[104]

Data Types and Availability: The comprehensive approach ensures that a wide range of financial data can be shared and utilised, enhancing the scope and effectiveness of the Open Finance ecosystem. All data types are permitted and operational under the current market conditions, including pension data. Banks are required to provide customers with the ability to electronically transfer their financial data to third-party providers upon request.

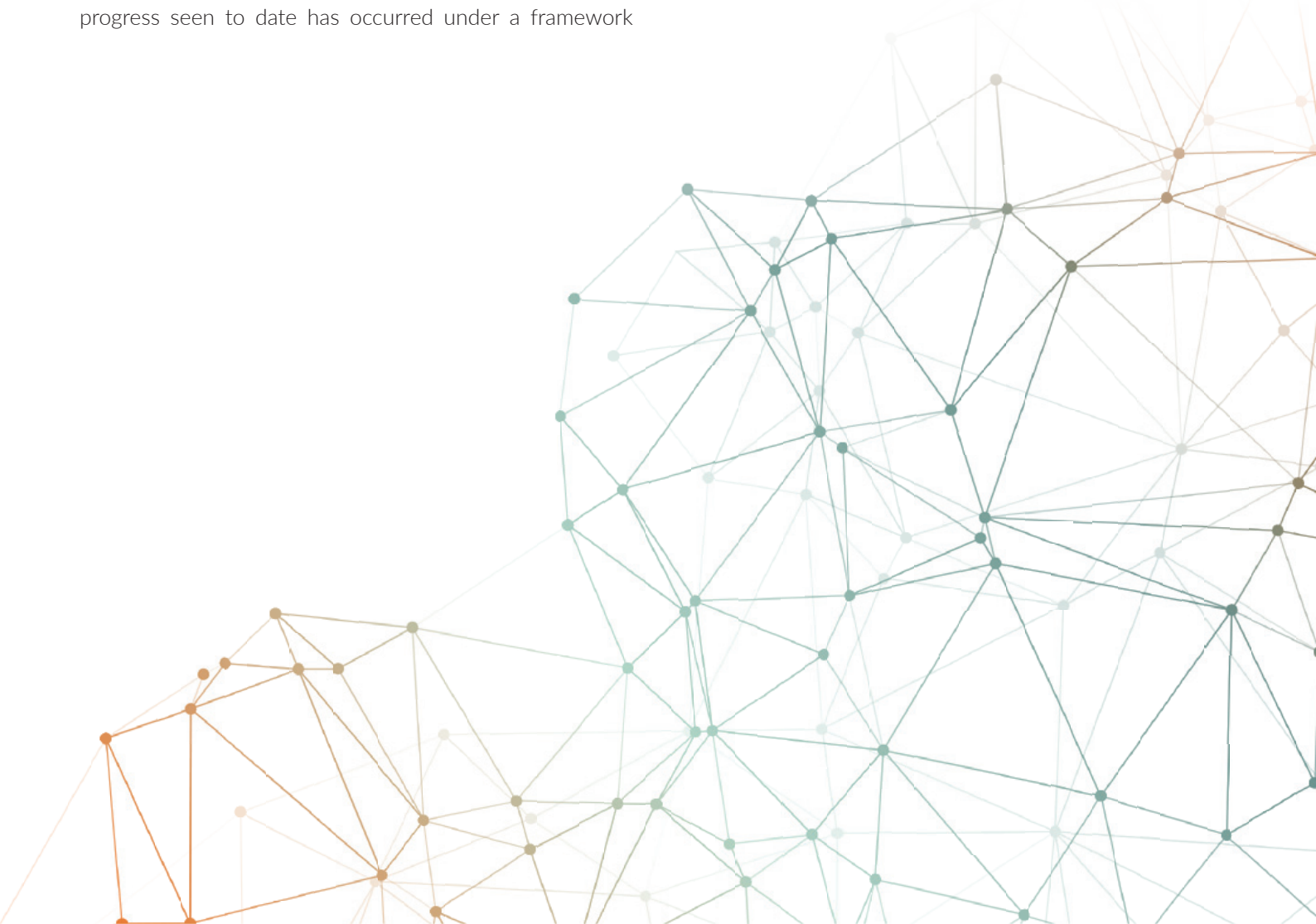
Data Holders and Participants: In the US, participation is mandatory to the extent that, when requested by a customer, financial institutions must enable the electronic transfer of their data to third-party providers. Banks, credit unions and card issuers often facilitate this through bilateral agreements with fintech firms and other third-party providers.

Scoring and Evaluation: The US's Open Banking and Open Finance approach has achieved a high score of 6/6 for live implementation. However, it is important to note that the US framework does not neatly fit into any of the five traditional implementation categories. Much of the progress seen to date has occurred under a framework that resembles a voluntary, market-driven model, resulting in extensive live data availability. That said, the approach has now moved towards a regulation-led framework.

Future Developments

Under the CFPB's newly unveiled proposal in October 2024,[105] customers would have a legal right to grant third parties' access to information associated with their credit card, checking, prepaid, and digital wallet accounts. This could significantly improve pricing and access across credit markets, including facilitating cash flow-based underwriting, it still requires further legislative and governance approvals before moving forward.

The new ruling also seeks to end access to customers' transaction data via screen scraping in favour of the much more secure use of APIs. In September 2024, FDX applied for recognition as an authorised body to establish standards for financial companies providing Open Banking and open finance services to customers. This recognition would enhance the credibility of FDX's standards, helping to standardise API performance and security, and pushing the market towards more secure, regulated data-sharing practices.[106]



Appendices

Appendices

Appendix I - Technical Design

In Part I, the discussion highlighted how APIs provide a more secure method for data transfer compared to reverse engineering and screen scraping. However, while APIs are widely regarded as the preferred technical solution, the complexity of connecting many data users to many data holders introduces additional challenges. Unlike traditional scheme-based networks such as Visa or Mastercard, which operate in a more linear manner, Open Banking and Open Finance ecosystems require a many-to-many architecture, which introduces challenges in scalability, security, and cost-efficiency. Without robust technical solutions, this complexity can result in high operational costs and slower adoption rates. To overcome these challenges, a variety of approaches can be employed, from API standardisation to market-driven infrastructures.

This section explores these technical pathways, analysing how different jurisdictions and institutions can leverage them to build efficient, secure and scalable ecosystems. These solutions are not mutually exclusive, meaning a combination of approaches may be the most effective route.

| Design

A critical consideration in the design process involves determining how connections between ecosystem participants are managed. The choice between centralised and multilateral API design hinges on the specific attributes of each jurisdiction and the extent of their digital public infrastructure advancement.

1. **Centralised API Design:** All participants connect to a central entity or platform, simplifying network governance and entry requirements.

   Pros:
   - Uniform entry requirements facilitate faster implementation of regulation and supervision.
   - Governance reduces the power of entities with market dominance.
   - Fewer connections are needed for full interconnection, ensuring interoperability.
   - Easier and centralised consent management.

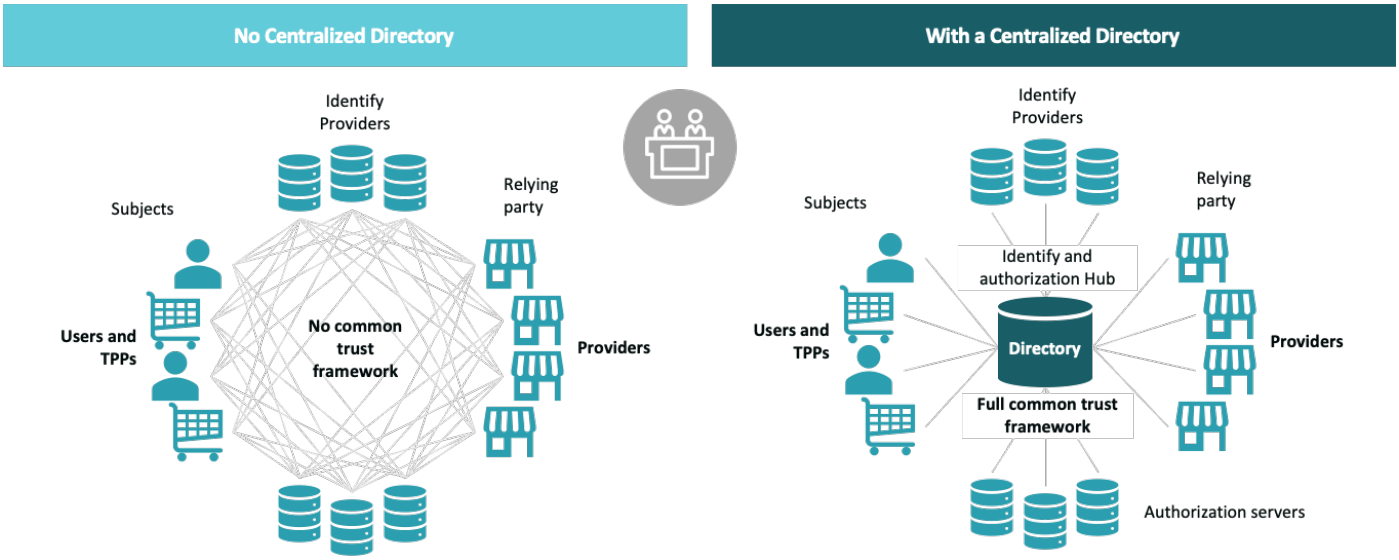
   Cons:
   - Susceptible to service interruptions if the central entity fails.
   - Standardised connections may stifle innovation and hinder certain business models.
   - Agreement on design, funding and governance of the central entity may be challenging to reach.

2. **Multilateral API Design:** Participants connect either through multiple connectivity providers or directly with each other.

   Pros:
   - More resilient to service interruptions, as there is no single point of failure.
   - Networks can focus on specific sectors, attracting targeted participants.
   - Allows for diverse entry and operation requirements, fostering innovation.

   Cons:
   - Variability in network governance may result in market power disparities.
   - Regulators may struggle to align incentives and oversee multiple networks.
   - Interoperability is not guaranteed, leading to potential fragmentation and higher connection costs.

Figure 29: Differences between Open Banking ecosystems, without and with a centralised directory[107]



Source: Raidiam

In summary, while centralised API design offers simplicity, uniformity and more easier consent management process, multilateral API design provides resilience and innovation opportunities in the ecosystem, albeit with challenges related to governance and interoperability. Figure 29 above shows the differences between an Open Banking ecosystem with a centralised directory and one without.

With this foundational understanding of the various API design approaches established, the next section explores the key characteristics and attributes that these APIs must have to ensure effective implementation.

| Key Attributes

APIs can accommodate technical standards, technological architecture, security and communication protocols, consent management methods, customer authentication, responsibility and dispute resolution methods.[108] The development of APIs involves a comprehensive assessment and necessitates careful consideration of various characteristics that are integral to its implementation. Key considerations or characteristics include:

1. **API Accessibility:** Typically, APIs offer three primary access levels: public, private, and partner, each contingent upon regulatory frameworks and data-sharing strategies employed by the governing body. Public APIs are generally unrestricted and openly accessible, while private or internal APIs are restricted to specific service customers. Partner APIs allow external access exclusively to predetermined service customers, typically affiliated with partner organisations.

2. **API Usage:** Evaluates and measures the bandwidth, resilience, concurrency, scalability and sizing of the infrastructure before implementing data-sharing solutions.[109]

3. **API Functionality:** The read/write data API specification dictates what data can be viewed, and under what conditions it may be viewed and used:
   - **Read-Access:** This only allows the underlying data fields to be viewed; existing data cannot be amended, and additional data cannot be added to existing fields.
   - **Write-Access:** This permits the underlying datasets to be altered, for example, by performing additional commands upon the data, 'writing' new instructions, and amending and adding additional fields or descriptors. It refers to transaction initiation, 'permitting a third party to make transfers, to switch and open or close products, make purchases, sales, or redemptions.[110] In the context of Open Banking, this is typically associated with payment initiation.

Ensuring robust security measures within APIs is paramount to protect sensitive data. Authentication stands as the primary line of defence, validating the identities of both TPPs and customers before granting access. Following authentication, access control mechanisms come into play, regulating the actions permitted to API customers post-authentication. Encryption plays a crucial role in safeguarding data integrity and confidentiality. By utilising encrypted tokens, sensitive information such as usernames and passwords are stored securely, with expiration mechanisms further bolstering security by limiting the window of vulnerability.[111]

After understanding these critical attributes of API security, the next step is to explore practical implementation strategies that effectively leverage these designed APIs, ensuring that they not only meet functional requirements but also provide a secure environment for data sharing.

| Approaches

The methods vary significantly in terms of flexibility and complexity, ranging from highly standardised APIs to more flexible and market-driven solutions. The balance between cost-efficiency, innovation and ease of integration will depend on the approach chosen by regulators and data holders. Below, three possible routes are explored, ordered by increasing flexibility:

1. **Single Connectivity Provider:** In some markets, to facilitate connectivity, and recognising that data users' focus is on providing services to customers and SMEs rather than implementing technology, the regulator has contracted directly with a single provider of connectivity services who connect to every data holder. Whilst usually this requires a standardised API, it can also accommodate a degree of flexibility. In some markets, this approach can be a useful step in speeding up Open Banking or Open Finance implementation as it solves the complexity of connectivity. However, it requires significant regulatory involvement in procuring an appropriate connectivity provider and a methodology for determining cost allocation. In the UK, the Open Banking Implementation Entity (OBIE) facilitated the development of a single connectivity model that allows third-party providers to connect to multiple banks through one API provider. This approach simplifies the connectivity process and accelerates the implementation of Open Banking services.

2. **Functional API Standardisation:** Ensuring that all data holders implement a tightly defined technical API standard ensures that the functional specifications will be the same and therefore lowers the entry requirements for data users, as they can be confident that they will be able to connect to multiple data holders. However, implementing a single API standard may add significantly to the cost base of some data holders as the specific implementation requirements may be easier for some organisations to address than others. It may also make it harder for changes to be made, as all data holders will need to be able to implement changes which may require more time and delay innovative developments. Given the implications for data holders, it is important that there are appropriate standards of governance that allow data holders to input into the API design. Additionally, enforcing conformance to the single API standard is an additional cost. The Australian CDR mandates a functional API standard for data sharing among banks and other financial service providers. This requirement ensures that all data holders implement the same technical specifications, allowing for easier access and integration for data users.

3. **Flexible API Development:** This approach sets out the functional requirements of the API but not the technical specifications, enabling the data holder to determine the most efficient way to implement it. Whilst this can reduce the costs to data holders, and create scope for data holder innovation, without additional enablers it will create costs for data users seeking to connect directly or necessitate that they use the services of a dedicated connectivity provider. A possible mitigation is to enable only limited flexibility, with a small number of technical options provided to data holders, with a provision for publication of the API by each data holder. For example, the Monetary Authority of Singapore (MAS) has adopted a flexible API framework that outlines functional requirements without imposing strict technical specifications. This encourages innovation among data holders while allowing them to choose the most efficient means of implementation.

In conclusion, each jurisdiction's approach to setting API and technical standards can vary significantly, reflecting diverse regulatory landscapes and market needs. For instance, even within jurisdictions that have adopted a

mandatory data-sharing regime, such as the EU, API and technical standards may lack uniformity. While establishing a mandatory standard API can promote consistency, it may inadvertently hinder innovation by limiting developers' flexibility and creativity, potentially stifling the emergence of diverse and advanced solutions. Conversely, the absence of standardised APIs can lead to increased compliance costs for Third-Party Providers (TPPs), fostering an uncompetitive and fragmented market.[112] Moreover, the responsibility for defining these API standards differs across jurisdictions. Some, such as the US and Canada, may rely on market-driven approaches, while others, such as the Republic of Korea and Turkey, place this responsibility in the hands of regulatory authorities. Additionally, independent standard-setting organisations play a pivotal role in jurisdictions such as the United Kingdom and Brazil. As jurisdictions navigate these various pathways, it is crucial to strike a balance between fostering innovation and ensuring a cohesive framework for Open Banking and Open Finance systems.

Appendix II - Use Cases

Building on the technical and governance approaches discussed in the previous chapters, Open Banking and Open Finance leverage APIs to empower data users in creating innovative financial products and services. The development of applications that provide real value and are commercially sustainable is vital for the successful uptake of Open Banking and Open Finance, irrespective of the technical and governance approaches taken. These applications not only demonstrate tangible benefits but also showcase real-world solutions that improve user experiences, drive innovation and enhance overall financial services for both customers and businesses. Some of the key use cases are outlined below.

| Account Aggregation

At the forefront of Open Banking's utility is the concept of account aggregation, a cornerstone functionality that seamlessly integrates various financial accounts through dedicated Application Programming Interfaces (APIs). This integration affords users a consolidated view of their financial landscape, encompassing bank accounts, investments, and more. Such consolidation not only streamlines financial management but also fosters a sense of trust as users navigate their financial affairs with seamless ease and clarity. In May 2022 alone, Open Banking services recorded over 1 billion API calls,[113] highlighting the widespread adoption and usage of account aggregation services. These APIs establish a direct connection between the user's accounts and the aggregation platform, enabling real-time retrieval and synchronisation of account information.

| Financial Management

Beyond mere aggregation, Open Banking facilitates a spectrum of financial management enhancements. It facilitates the development of personal finance management tools that help users budget, track expenses, and set financial goals. With access to real-time transaction data and account information, personal finance management apps powered by Open Banking and Open Finance enable users to gain deeper insights into their spending habits, and track progress towards their financial objectives. Furthermore, individuals benefit from better savings outcomes through personalised insights.

Moreover, Open Banking and Open Finance facilitate cash management and liquidity optimisation for businesses by integrating banking services with treasury management systems. Treasury management solutions powered by APIs enable businesses to automate cash flow forecasting, optimise liquidity, and execute payments and transfers more efficiently. By providing real-time access to financial data and transaction capabilities, Open Banking and Open Finance enhance visibility, control, and efficiency in treasury operations, enabling businesses to mitigate risks, optimise returns, and support strategic decision-making. Furthermore, these initiatives streamline payment processes, facilitating swift and secure transactions that inspire confidence among customers and businesses alike.

| Credit Scoring

Through mechanisms for better borrowing, lenders leverage Open Banking and Open Finance data to assess individuals' creditworthiness and facilitate more accurate credit scoring processes. Traditional credit scoring models often rely on limited financial data, leading to incomplete assessments of individuals' creditworthiness. By leveraging this data, lenders can access a comprehensive view of an individual's financial behaviour, including income, spending patterns, and repayment history. For instance, rental income checks provide landlords with transparent insights into tenants' financial standings, thereby bolstering trust and confidence in lease agreements and rental transactions. This holistic approach to credit scoring enables more accurate risk assessment, expands access to credit for underserved populations and promotes financial inclusion.

Additionally, this enables SMEs to access financing more efficiently by providing lenders with a comprehensive view of their financial health. SMEs often face challenges in accessing credit due to limited financial history and collateral. Open Banking and Open Finance address this barrier by allowing lenders to assess SMEs' creditworthiness based on real-time financial data, such as cash flow, transaction history and business performance metrics. This data-driven approach streamlines the lending process, reduces the risk of default, and fosters entrepreneurship and economic growth.

| Cloud-Based Accounting Solutions

For SMEs, the amalgamation of Open Banking and Open Finance with cloud-based accounting solutions significantly improves operational efficiency. By automating the direct transfer of bank data into accounting systems, SMEs alleviate the burden of manual data entry, thereby saving

time and minimising errors. This seamless integration cultivates trust as businesses rely on accurate, real-time financial information to inform strategic decision-making and ensure fiscal prudence.

Payment Initiation

Payment initiation websites and apps streamline online payments by enabling users to initiate transactions directly from their bank accounts, bypassing traditional payment methods such as credit or debit cards. These platforms leverage APIs to securely connect with users' bank accounts and facilitate transactions. Users begin by selecting the payment initiation option during checkout on a merchant's website or app. Upon selection, they are redirected to their bank's secure authentication page to authorise the payment. Once authorised, the payment initiation service communicates with the user's bank through APIs to initiate the real-time transfer of funds from the user's account to the merchant's account. The transaction details, including the amount and recipient information, are transmitted between the parties involved.

One of the significant developments in payment initiation is Variable Recurring Payments (VRP), an emerging innovative payment functionality in the United Kingdom.[114] VRPs are a form of payment instruction that can be set up and used to make a series of future payments. They allow customers to safely connect authorised PISPs to their bank accounts, and these providers can then make a series of payments on a customer's behalf within agreed parameters. This offers more control and transparency than existing alternatives like Direct Debit or debit card transactions. Unlike traditional methods of recurring payments, a VRP works by letting customers safely connect authorised PISPs to their bank accounts so they can make payments on their behalf. The timing or amount of each payment need not be fixed during the VRP Consent Setup, but is instead subject to the constraints of certain parameters agreed between the PISP and the customer.

VRPs are often associated with sweeping, which involves automatic transfer of funds between two accounts belonging to the same customer. For example, a fixed or variable amount could be sent to a savings or investment account each month, or funds could be swept between current accounts to allow a customer to benefit from new account feature rates or fees, without having to switch current accounts.

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[77] While this report treats all six data types as live within the EU, Open Finance has not yet been officially implemented across the union. Currently, data sharing practices vary among member states, and comprehensive Open Finance frameworks are anticipated to take effect early next year, shortly after this report's publication.

[78] Directives require EU member states to achieve a certain result, while leaving them free to determine how to do so. To accomplish the directive's aims, EU members must implement steps to incorporate them into their national laws. National authorities must communicate these measures to the European Commission. On the other hand, regulations are legal acts that apply automatically and uniformly to all EU member states as soon as they come into force, without the need to be transposed into national law. They are fully binding on all EU members.

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