Committee on
Payments and Market
Infrastructures

Improving access to payment systems for cross-border payments: best practices for self-assessments

May 2022

BANK FOR INTERNATIONAL SETTLEMENTS

This publication is available on the BIS website (www.bis.org).

ISBN 978-92-9259-553-1 (online)

Table of contents

Executive summary

Faster, cheaper, more transparent and more inclusive cross-border payment services could deliver widespread benefits for people and economies worldwide, supporting economic growth, international trade, global development and financial inclusion. In October 2020, the G20 endorsed a roadmap to enhancing cross-border payments. The roadmap was developed by the Financial Stability Board (FSB) in coordination with the Bank for International Settlements' Committee on Payments and Market Infrastructures (CPMI) and other relevant international organisations and standard-setting bodies.

The G20 cross-border payments programme aims to address long-standing challenges in the cross-border payments market, including high costs, low speed, limited access and insufficient transparency. The programme comprises the necessary elements of a globally coordinated response in the form of a set of 19 building blocks (BBs). This report was produced by the CPMI Cross-border Payments Expansion Workstream and developed as part of BB 10 on improving (direct) access to payment systems by banks, non-banks and payment infrastructures (CPMI (2020b), FSB (2020c)).

At the core of this report are best practices for jurisdictions and payment system operators conducting a self-assessment with the aim of expanding access to key payment systems. Access to payment systems is critical for banks and other payment service providers (PSPs) in providing cross-border payment services safely and efficiently. Authorities and operators should weigh these benefits against the potential barriers and risks.

Access to payment systems can be either direct or indirect, depending on the needs of participants as well as the institutional framework in place for a specific payment system. *Direct access* generally means that an entity has the capacity to instruct, clear and settle payments on its own behalf. Such access typically requires the entity to have a settlement account at a central bank. In contrast, *indirect access* involves a direct participant as an intermediary, thus offering an alternative to direct payment system access.

A global survey among central banks finds that only a minority of payment systems currently provide direct access to entities other than domestic banks. Hence, stakeholders in the cross-border payments ecosystem, such as non-bank PSPs, financial market infrastructures (FMIs) and foreign banks, can face challenges in obtaining direct payment system access. Thus, there is scope for jurisdictions to consider improving access to real-time gross settlement (RTGS) systems and other key payment systems that settle in central bank money.

Improved access to domestic payment systems could benefit cross-border payments by addressing four key frictions – long transaction chains, high funding costs, weak competition and legacy technology. In particular, expanded access can level the playing field for PSPs and foster greater competition and innovation. This can, in turn, lead to greater choice and better pricing for end users and improve financial inclusion. PSPs with direct access can benefit from reduced funding costs since they may not have to prefund at the same levels as with some indirect arrangements. The financial system more broadly could benefit from enhanced settlement risk mitigation and potential financial stability benefits through the reduction of tiered arrangements and a more diverse and resilient ecosystem.

Expanded access, however, can also entail risks that can adversely affect cross-border payments or the smooth functioning of domestic payment systems if not appropriately addressed. Widening the types of direct participant may introduce additional risks and the nature and degree of counterparty credit and collateral risks could change. Finally, authorities and operators could face reputational risk in the event of a problem with an entity to which authorities have granted direct access.

Authorities and payment system operators might face barriers that need to be overcome to expand access to payment systems. Legal and regulatory frameworks can limit the type of entity eligible for direct access to payment systems or central bank settlement accounts. Operational, technical and financial barriers to be considered can include funding requirements, the provision of adequate staffing and technical infrastructure investments.

The self-assessment framework developed in this report is a tool that could help authorities and payment system operators to holistically evaluate the benefits, risks and barriers of expanding direct access. While the primary focus of this report is on direct access, in some cases indirect access may be a viable alternative that can achieve net risk-efficiency benefits for certain types of provider. The self-assessment comprises four steps, and each step has guiding questions that should be considered when assessing the expansion of access to payment systems. These four steps are:

1) **Setting the main objectives and determining the scope of the self-assessment.** The authorities involved should consider how expanded access could help enhance cross-border payments as well as achieve domestic objectives.

2) **Evaluating the benefits of broadening direct access to payment systems.** Central banks and payment system operators should analyse the benefits that improving access to payment systems would entail for current or prospective new participants. The aim is to determine the frictions that would be mitigated in cross-border and/or domestic payments and qualify to what extent they would be addressed.

3) **Assessing the potential barriers and risks of broadening direct access to payment systems.** The authorities involved should evaluate what barriers and risks expanded access policies may present for current participants, prospective new participants and payment system operators, and how they can be addressed.

4) **Developing conclusions.** As a final step, authorities and payment system operators should conclude whether changes to the payment system access framework are needed and if there is a case for pursuing these changes.

The report also presents case studies that illustrate how, in some cases, the benefits of expanding access can exceed the associated costs and risks, and that the barriers to expand access can also be overcome. For instance, the use of technology shows that some operational and technical barriers could be overcome when expanding access to smaller cross-border PSPs. In contrast, changes in the regulatory framework are complex and outcomes could considerably differ across jurisdictions. That said, these findings should not be generalised, as each jurisdiction has its own attributes to address. However, the report and its findings can be referenced by any jurisdiction or operator wishing to consider expanding access to their payment systems.

This report completes action 2 of BB 10 and forms the basis for the remaining BB 10 actions. Following the publication of this report, jurisdictions and payment system operators that are considering expanding access would undertake self-assessments of their respective access policies (action 3, to start May 2022). If authorities and payment system operators conclude that there is a case for expanding access, they can proceed with identifying the changes required and developing an action plan towards overcoming barriers and addressing risks. In parallel, relevant bodies should support self-assessments by providing technical assistance to jurisdictions and payment system operators, where needed (action 4). The benefits of expanding access for cross-border payments could be amplified if developments occur in multiple jurisdictions and in a coordinated manner. Thus, collaboration and coordination of jurisdictions will be important for the successful implementation of BB 10. Finally, interdependencies with other elements of the G20 cross-border payments programme and developments in other jurisdictions should also be taken into consideration.

1. Introduction

In 2019, the G20 finance ministers and central bank governors tasked the Financial Stability Board (FSB), together with the Bank for International Settlements' Committee on Payments and Market Infrastructures (CPMI) and other international standard-setting bodies, to develop a roadmap to address challenges with cross-border payments: high costs, low speed, limited access and limited transparency. Through a three-stage process, 19 building blocks (BBs) were identified to tackle these challenges and ultimately enhance cross-border payments. The CPMI is leading 11 of these BBs, including one on improving (direct) access to payment systems (BB 10). The CPMI Cross-border Payments Expansion Workstream produced this report, which represents the output of BB 10 action 2.

1.1 Improving direct access to payment systems can be one key aspect in enhancing cross-border payments

The G20 cross-border payments programme considers improving access to domestic payment systems that settle in central bank money as one of the key BBs to facilitate the increased speed and reduce the costs of cross-border payments (CPMI (2020a,b), FSB (2020c)). It also highlights how achieving more innovative, competitive, transparent and inclusive cross-border payment services could support economic growth, international trade, global development and financial inclusion. Despite these many benefits, improving access to payment systems also comes with barriers and risks that need to be considered.

This report sets out best practices for self-assessing the access policies of domestic payment systems for authorities and payment system operators considering expanding access to banks, non-bank payment service providers (PSPs) and financial market infrastructures (FMIs).[1] It focuses on direct access to payment systems while also briefly discussing indirect access and agent-only participation. For the purpose of this report, direct access means that an organisation has full membership of a domestic payment system to instruct, clear and settle payments on its own behalf. Direct access also typically requires the organisation to have an account at a central bank since domestic payment systems often use a settlement provider (usually the central bank).[2] In contrast, indirect access generally involves a direct participant as an intermediary, thus offering an alternative to access payment systems. In the case of agent-only participation, an entity accesses the system in a pure agent capacity to instruct payments solely on behalf of other participants.

1.2 Non-bank PSPs, FMIs and foreign banks often face challenges with direct access

Survey evidence, presented in Section 3, shows that non-bank PSPs, domestic FMIs and foreign banks are less likely to be eligible for direct access to relevant domestic payment systems than are domestic financial institutions with a banking licence.[3] The survey also shows that some key barriers preventing expanded access include regulatory eligibility, technology requirements, risk-sharing models and high upfront costs. To overcome these constraints, some organisations pursue indirect access as an alternative. This implies that given the diversity of market participants, there is a diversity of needs as well. For example, smaller cross-border non-bank PSPs may prefer indirect participation because it will give them geographical reach, while larger non-bank PSPs that have grown in scale may require liquidity facilities and deposit services

1 The focus of this report is on access for payment infrastructures supporting cross-border payment services. At present, there are very few operational examples of payment infrastructures that have the capability to operate across multiple currencies.

2 In some jurisdictions, such as the United Kingdom, direct instruction or clearing is separate from settlement. For the purposes of this report, direct instruction or clearing without direct settlement would not be considered direct participation.

3 The CPMI conducted a global stocktake on payment system access arrangements in the first quarter of 2021, covering 82 jurisdictions. The current report focuses on 184 key payment systems in 76 different jurisdictions, including both CPMI and non-CPMI jurisdictions.

typically only offered to banks. System operators may need to consider a set of access and participation models that are sufficiently flexible to cater to different needs and to address related risks.

This report has three main goals:

1. Assess the objectives, benefits, barriers and risks to improving direct access to relevant domestic payment systems that settle in central bank money for cross-border payment providers.

2. Outline best practices for self-assessments for authorities and operators who are considering the expansion of access to domestic payment systems.

3. Provide real-world examples and case studies of jurisdictions that have successfully improved access to domestic payment systems to illustrate how some of the barriers to expanded access to payment systems could be overcome.

Section 2 provides a foundational discussion of access by defining the different forms of access to domestic payment systems that settle in central bank money and different types of central bank settlement account as a potential underlying requirement. Section 3 describes the current state of access to relevant payment systems that require settlement in central bank money. Section 4 discusses potential benefits, risks and barriers that should be considered in assessing the case for improving access to payment systems that settle in central bank money. Section 5 outlines best practices of how a holistic assessment of the benefits, barriers and risks to improving access can be performed by presenting guiding questions. Section 6 provides concrete examples and case studies of jurisdictions that have successfully overcome the barriers to broadening access, as outlined in Section 4.[4] The report concludes with a list of takeaways and an outlook of next steps for BB 10 (Section 7).

2. Scope and types of access to payment systems

This section sets out the various forms of access to domestic wholesale payment systems and retail payment systems, such as fast payment systems (FPS), that settle in central bank money. It also describes the different types of central bank settlement account needed, as access to these may be a prerequisite for participating in a domestic payment system.

2.1 Relationship between payment systems and settlement accounts

To make payments, organisations need access to a payment system, which is a set of instruments, procedures and rules for the transfer of funds between participants. The payment system includes the participants and the entity operating the arrangement (CPSS-IOSCO (2012a)). The operator of a payment system can be either a public or a private sector entity. Payment system operators administer the governance, membership, risk management, rules and standards for the payment system. They may appoint one or more providers of hardware, software and communication networks to support operations or undertake some of these functions themselves. Payment systems can range from wholesale payment systems to retail payment systems including FPS and card payment systems.

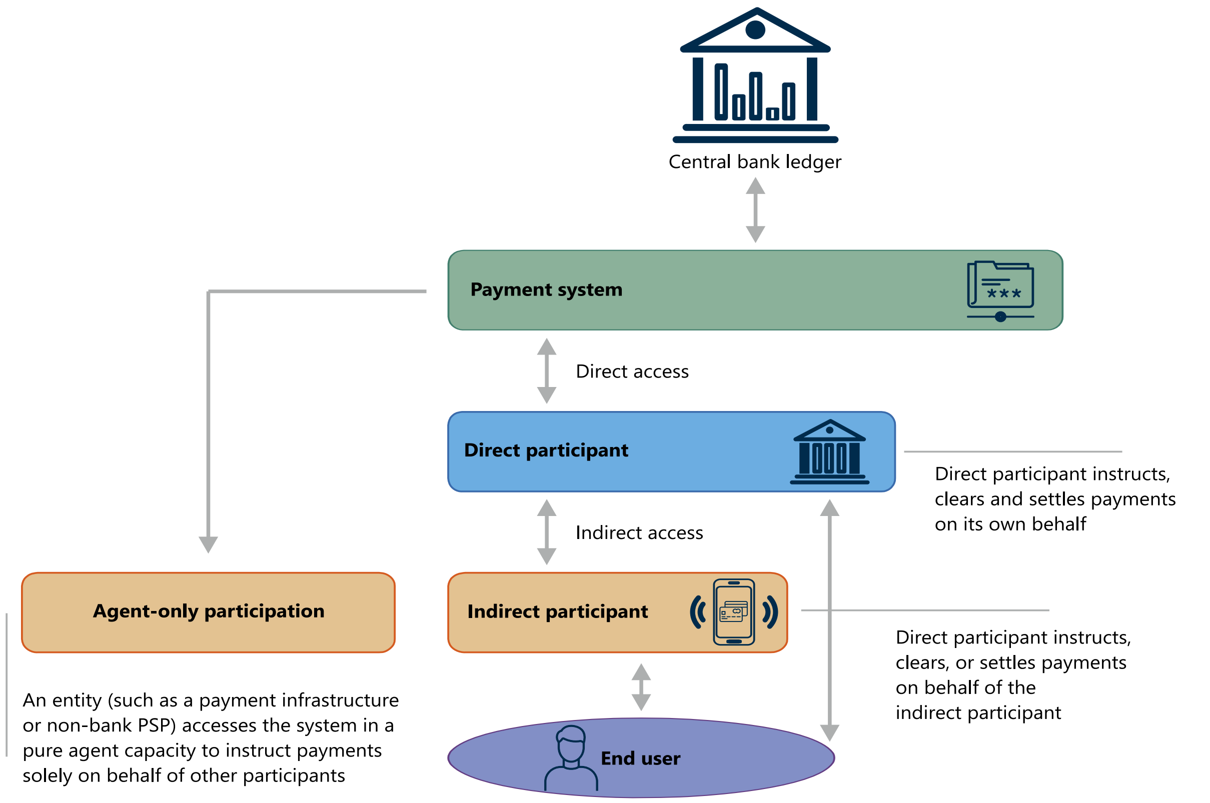
A payment system often uses an intermediary known as a settlement provider, with whom participants hold accounts to enable the final settlement of funds between participants. Central bank-operated RTGS systems often serve as the settlement provider for privately operated payment systems in their jurisdiction.

[4] This report does not cover (i) front-end individual or business user access to interbank or card payment systems; (ii) participant account access criteria for multicurrency systems (although the report does consider how multicurrency payment infrastructures would access central bank accounts and payment systems); (iii) policies around participation in other types of FMIs that are not directly used for cross-border payments; (iv) individual/retail central bank accounts or retail and wholesale central bank digital currencies (CBDCs); or (v) access to payment systems that settle in commercial bank money.

2.2 Types of access to payment systems

Payment systems offer various alternatives for accessing their services depending on a number of factors including participant eligibility, service needs and costs. Along with the arrangements available with other service providers, these factors can influence the participation models observed. While direct participation is the focus of this report, other forms of payment system participation are also considered (Graph 1). The choice of the participation model is one of the various factors that can influence the speed, cost, transparency and efficiency of cross-border payments, as described below.

Direct and indirect access to payment systems — Graph 1



Source: CPMI.

2.2.1 Direct participation

For the purposes of this report, a direct participant in a payment system is a party that instructs, clears and settles payments on its own behalf. Direct participants agree to the contractual rules and requirements set by the payment system operator. For payment systems that settle in central bank money, direct participation typically requires the participant to have a central bank account of some kind (eg a settlement account) and to connect directly to the payments infrastructure used to settle obligations and clear payment messages. The account may allow settlement only or could include additional services, such as central bank credit or deposit facilities, which may be accessible depending on the participant's settlement model and central bank policy.[5] Direct participants may also act as intermediaries for PSPs that do not meet the criteria for direct participation or choose not to participate directly for other reasons and thus can only access the payment system as an indirect participant. While domestic banks are typically eligible for direct participation (and, where eligible, domestically located FMIs), this form of participation may be

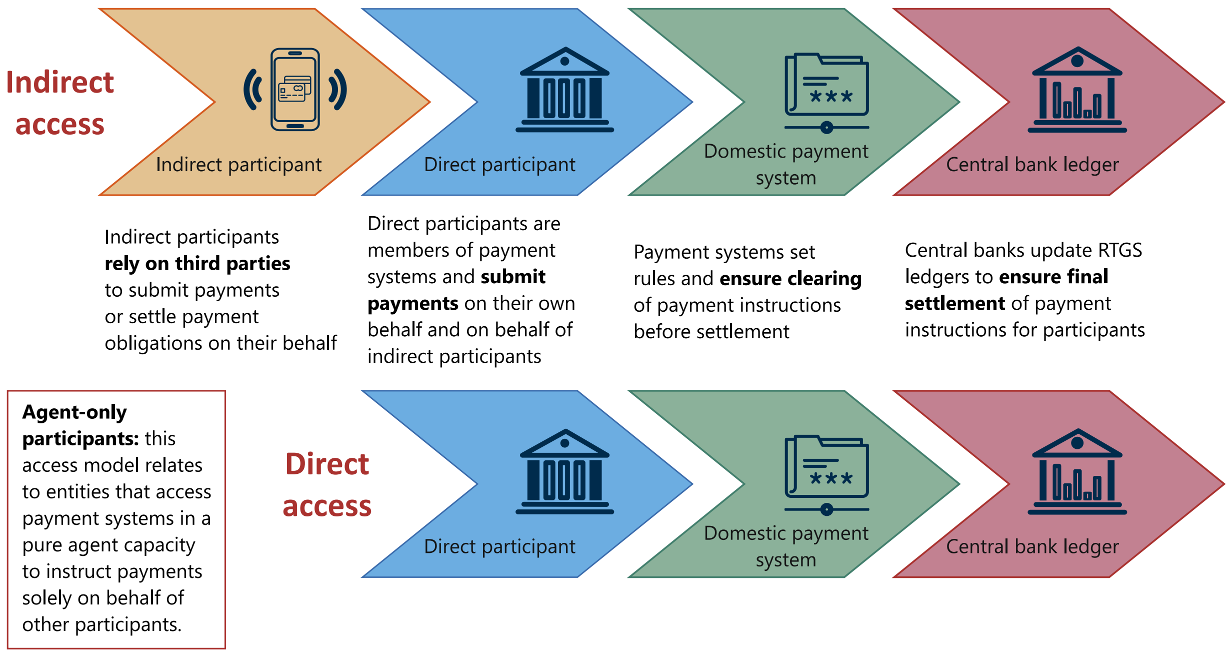
[5] See Annex 3 for additional details on central bank accounts.

viable only for larger banks given the operational, regulatory and cost implications of being a direct participant.

2.2.2 Indirect participation

Indirect participation in payment systems takes various forms but, in general, involves the use of a direct participant acting as an intermediary for payment initiation, clearing and/or settlement on an indirect participant's behalf. Therefore, indirect participants rely on a direct participant both operationally and commercially. Other possibilities include direct technical access without a settlement account. In this case, an indirect participant connects directly to the payment system to instruct its own payments, but the direct participant performs the settlement. By definition, indirect participation entails longer transaction chains in which more frictions can occur (Graph 2). Indirect participation is usually used by smaller banks and FMIs with a low volume of payments. Additionally, given that direct participation is typically limited to domestic banks and domestically located FMIs, indirect participants may have only a limited degree of choice when selecting a direct participant to act as their intermediary (see Section 4). This limitation can present a major challenge for cross-border payments as it undermines the competitiveness of PSPs looking to provide cross-border payment services via indirect access.

Transaction chains of indirect vs direct participants — Graph 2



Implications for cross-border payments: costs, speed and transparency pose the greatest challenge for cross-border payments as most of these payments may use long correspondent banking chains that span multiple jurisdictions (Graph 8). Extended access can improve efficiencies by shortening transaction chains, leveraging modern payment systems that prioritise speed and increasing economies of scale.

Source: CPMI.

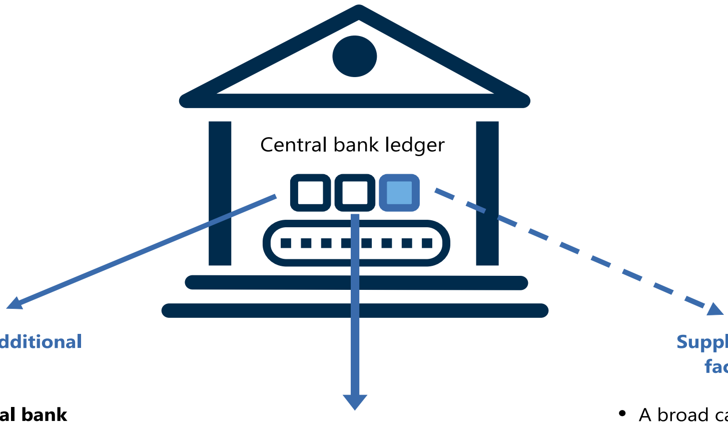
2.2.3 Agent-only participation or connection

Many payment systems allow entities to access the system in a pure agent capacity to instruct payments solely on behalf of other participants. There is some variation in agency access models and the types of entities that may use or offer them (such as payment infrastructures or non-bank PSPs) depending on the settlement needs of the participant. For example, in some payment systems, the agent can issue instructions to the system on behalf of the participants and the system will settle those instructions in the participants' accounts. In other payment systems, the agent maintains an account at the central bank or administers a jointly owned account with direct participants (joint account) to facilitate settlement between and among account holders. Because of this range of options, agent access models can vary greatly and may be considered direct or indirect access depending on the jurisdiction and the perspective of the payment system operator.

2.3 Access to central bank settlement accounts

Direct participation in payment systems that settle in central bank money often involves holding a central bank settlement account. This report considers three main categories of central bank settlement accounts: (i) settlement accounts with additional services; (ii) settlement-only accounts; and (iii) supplemental accounts to facilitate settlement (Graph 3).

Different types of central bank settlement account — Graph 3



Settlement account with additional available services

- **The most standard central bank settlement account.**
- A primary settlement account that can also enable access to additional central bank services, such as access to overnight or intraday credit and the ability to maintain an overnight account balance (eg hold central bank deposits).
- This account type is also known as a reserve account or overnight account.

Settlement-only account

- A primary settlement account that is used to settle payment obligations arising from payment arrangements that settle in central bank money.
- These accounts enable entities to have direct access to payment systems and are purely transactional in nature.
- With a settlement-only account, participants are unable to hold balances beyond those necessary for effecting settlement.

Supplemental accounts to facilitate settlement

- A broad category of accounts that may be used with a settlement account for various payment infrastructure settlement arrangements.
- Supplemental accounts do not enable entities to have direct access to payment systems; therefore, a settlement account is needed in addition to supplemental accounts.
- This account type is also known as a cash collateral account in some jurisdictions.

Not all of these accounts are available at all central banks as there might be variance in what accounts are offered. See Annex 3 for more information.

Source: CPMI.

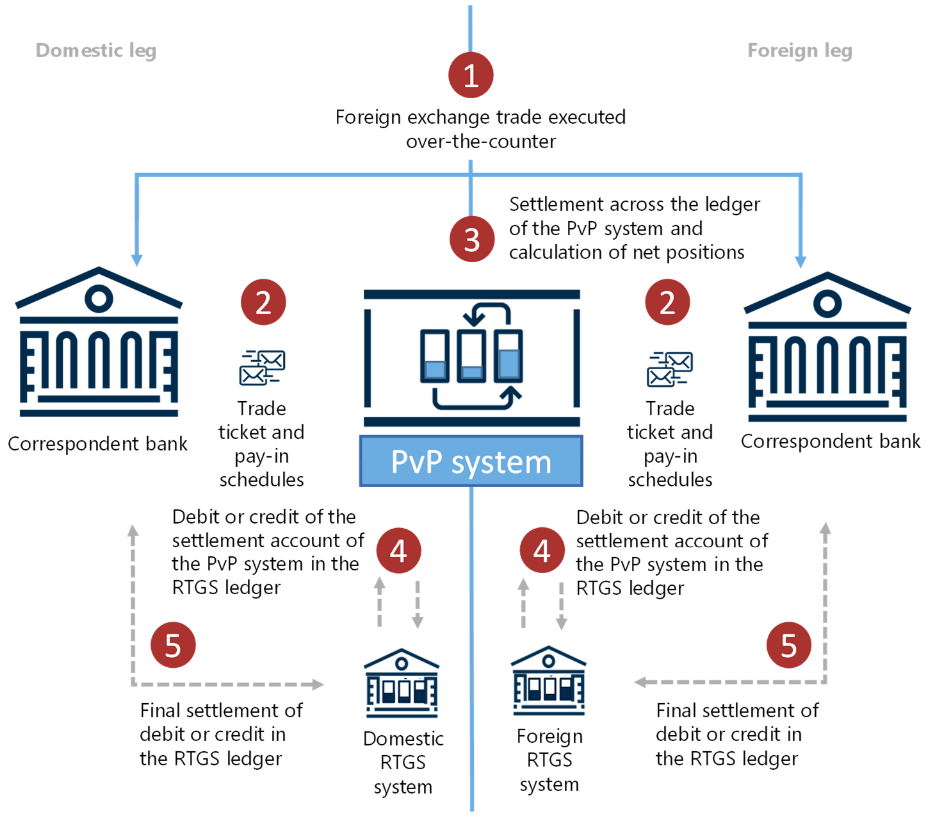
Participants may use one or a combination of these three account types depending on the central bank's access policies. As the three types of account illustrate, some account structures provide only for settlement of transactions while other account structures combine the ability to settle with the potential for access to additional central bank services. Account structures with access to additional services may be subject to heightened access requirements or barriers due to the risks associated with offering central bank deposits, credit or liquidity, while accounts that are limited to settlement activity may be more easily accessible.[6]

[6] See Annex 3 for additional details on types of central bank settlement account and examples of jurisdictions with account structures that fall under each category.

Most RTGS systems offer methods for regulated FMIs to facilitate settlement on behalf of their participants.[7] Access to central bank accounts by FMIs and payment infrastructures specifically may differ from the approach taken for non-bank PSPs or foreign banks. For example, payment infrastructures may need to meet more stringent access requirements given their business model and systemic nature. Typically, RTGS systems provide two access options for payment infrastructures: (i) via a settlement account enabling participants to settle through the payment infrastructure in central bank money (effecting payment infrastructure settlement as principal), or (ii) through settlement provider services that enable the payment infrastructure to initiate and control payments across the central bank accounts of their members (effecting payment infrastructure settlement as agent). In the context of cross-border payments, these options imply the following:

(i) *Payment infrastructure settlement as principal:* The central bank maintains a settlement account for the payment infrastructure. This model is already used by payment infrastructures to achieve payment-versus-payment (PvP) settlement of foreign exchange (FX) transactions across its own ledgers and is proven to be effective (Graph 4). The model implies that participants take on credit risk with the payment infrastructure – a risk that can be managed and mitigated in various ways[8] – and can only be used during RTGS operating hours. Payments between the PvP system and its participants across central bank accounts are typically restricted to a settlement window that occurs during the overlapping hours of the RTGS systems involved.

Payment infrastructure settlement as principal | Graph 4



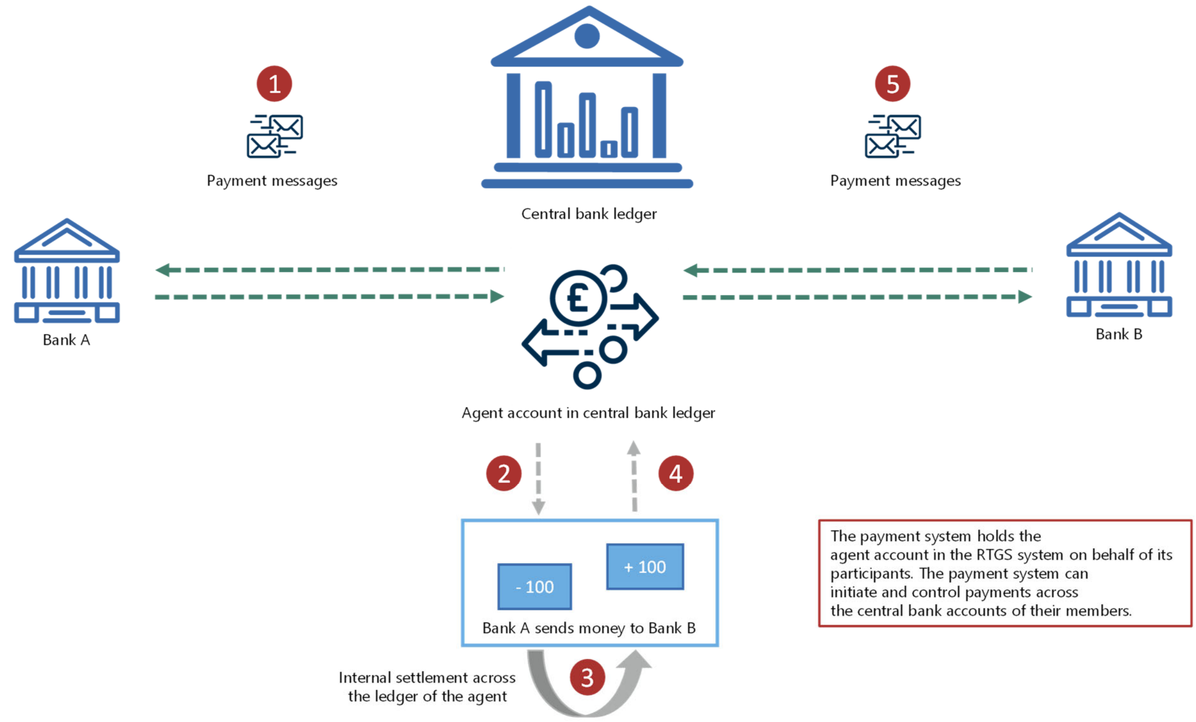
Source: CPMI.

[7] This covers a diverse group of entities ranging from retail payment systems, central securities depositories (CSDs) or central counterparties (CCPs).

[8] See paragraph 3.9.7 of the *Principles for financial market infrastructures* (PFMI) (CPSS-IOSCO (2012)).

(ii) *Payment infrastructure settlement as agent:* In this model, the payment infrastructure creates an agent structure around its settlement account so that it has operational control of all funds that are held for the joint benefit of the account holders (Graph 5). This model is used by payment systems such as RT1[9] in the European Union and has recently been introduced by the Bank of England. This model does not create credit exposures for participants to the payment infrastructure and can also facilitate PvP if the payment infrastructure holds joint accounts (on behalf of its participants) at multiple central banks. However, it requires greater legal certainty around the ownership of funds held. This model is potentially less constrained by operating hour limitations as participants can continue to transact on the payment infrastructure ledger outside RTGS operating hours.[10]

Agent settlement account interaction with a domestic infrastructure (as agent) Graph 5



Source: CPMI.

3. Current status of access to payment systems

To understand the current landscape on access, the CPMI conducted a survey of central banks on access arrangements covering 82 jurisdictions in the first quarter of 2021. The current report focuses on 184 key payment systems reported in 76 different jurisdictions, including both CPMI and non-CPMI jurisdictions. The survey results provide information on current payment system access policies for various types of entity as well as information on recent changes and future access policies plans.

9 RT1 is an FPS. An overview of RT1 can be found at www.ebaclearing.eu/services/rt1/overview/

10 To mitigate settlement risk in a private sector arrangement, a payment system operator could hold funds in an account at the central bank to back the settlement conducted on the payment system's own books, but not use the central bank account to perform settlements. This model is used by Real-Time Payments (RTP) in the United States.

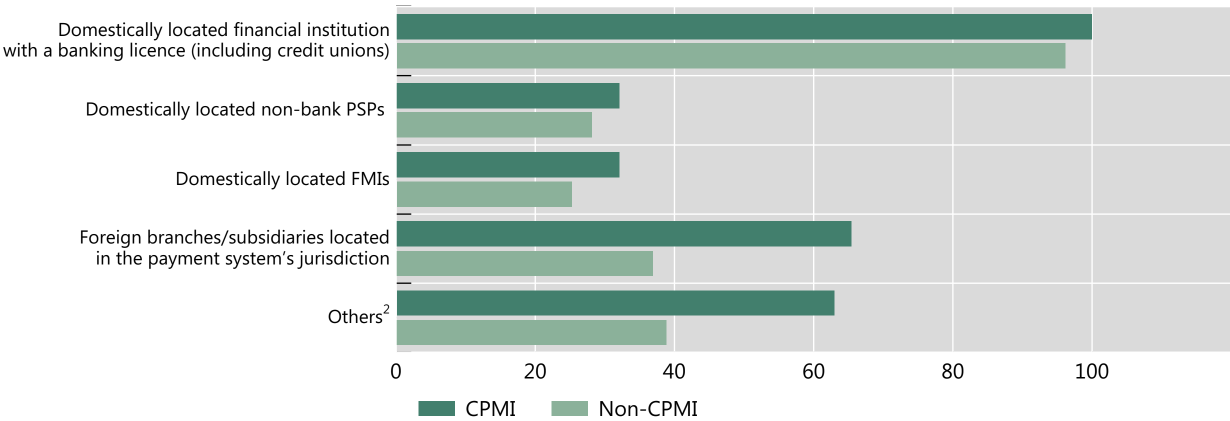
3.1 Direct and indirect access eligibility criteria

The types of entity that are currently eligible for direct and indirect access are diverse. Almost all payment systems, both in CPMI and non-CPMI jurisdictions, allow the direct participation of domestic financial institutions with a banking licence. Other types of entity that could have an important role in providing cross-border payment services, such as non-bank PSPs[11] or foreign branches/subsidiaries located in the payment system jurisdiction, are significantly less likely to be eligible for direct access. Domestically located FMIs are also not eligible in a majority of the payment systems reported (Graph 6).

Type of entity eligible for direct access to the payment system[1]

As a percentage of reported payment systems

Graph 6



[1] Participants that have direct access are participants in a system that directly exchange transfer orders with other participants in the system, without an intermediary, and are directly responsible for settling them. In some systems, direct participants also exchange orders on behalf of indirect participants. The sample includes 81 payment systems in CPMI jurisdictions and 103 payment systems in non-CPMI jurisdictions. [2] The category "Other" includes domestically located broker-dealers, domestically domiciled commercial entities including technical aggregators and the option "others" given to the respondent.

Source: CPMI survey.

Eligibility criteria for direct access vary between jurisdictions, but they focus mainly on compliance with applicable banking and finance law (eg anti-money laundering/combating the financing of terrorism (AML/CFT) regulations), operational and technical requirements and the payment of certain fees, with some payment systems having additional requirements. For those systems with non-bank PSPs or foreign branches/subsidiaries as eligible entities, additional requirements are imposed in approximately 40% of the reported systems.[12] These additional requirements are varied and include additional liquidity and solvency requirements, specific registration or licensing requirements, obtaining a foreign legal opinion, or fulfilling supplementary conditions as deemed necessary by the central bank if participation is seen to pose a high risk (usually connected to conflicting laws).

Focusing on indirect access, the majority (63%) of reported payment systems allow for formalised indirect access but with significant variances by entity type. In terms of eligibility, results are similar as for direct access in that domestically located banks are typically eligible, whereas the rates of eligibility drop significantly for domestic non-bank PSPs, foreign banks and FMIs (Graph A3 in Annex 4).[13] Where indirect access is available, there are various eligibility criteria for both the indirect access applicants and

[11] This concept encompasses a diverse set of entities such as money transfer operators, e-money institutions, payment institutions and others (including mobile payment service companies, fintech companies and prepaid payment instrument issuers).

[12] This figure increases to 58% in CPMI jurisdictions. Percentages may differ slightly as per type of specific entity (eg in the case of foreign branches or subsidiaries, additional requirements were established in 42% of cases).

[13] Thirty-two per cent and 25% of the systems surveyed for non-bank PSPs and foreign branches, respectively. This figure is even lower for FMIs.

participants enabling the indirect access by acting as an intermediary. For a few payment systems, the criteria are the same as for direct access, but others require a sponsored agreement between a direct and indirect participant, a licence by a competent authority to provide payment services, compliance with relevant schemes, or to be located in the payment system's jurisdiction.

3.2 Recent changes and future outlook of access policies

Demand for access to payment systems is reportedly increasing in specific jurisdictions, but in the aggregate, no widespread changes to access policies have taken place recently or are expected in the short run. Only 28% of payment systems reported have made adjustments to their access policies (33% if only CPMI jurisdictions are considered). Jurisdictions that have expanded their access policy, particularly to non-bank PSPs, did not report major negative impact to the structure or operation of their payment systems. However, next to a growth in transaction volumes, several payment systems reported increased need for help desk support and a rise in operational incidents (including cyber attacks) as an impact of a change in the composition of participants accessing the payment system (Graph A2 in Annex 4).[14]

The survey results indicate increasing demand for direct access to payment systems, with almost half of the reported payment systems indicating an interest from non-bank PSPs and/or foreign banks to gain direct access, especially in CPMI jurisdictions (Table 1). At the same time, discussions held with non-bank PSPs[15] showed that, in some jurisdictions, appetite for indirect access was also relatively high or viewed as a viable option in parallel to direct access, depending on the cost and complexities of direct access.

Increased interest in recent years from non-bank PSPs and/or foreign entities in having access to the payment system[1]

Table 1

	All payment systems		CPMI		Non-CPMI	
	Total	%	Total	%	Total	%
Yes	118	64.1%	62	76.5%	56	54.4%
Yes, on direct access	77	41.8%	41	50.6%	36	35.0%
Yes, on indirect access	41	22.3%	21	25.9%	20	19.4%
Both, direct and indirect access	20	10.9%	13	16.0%	7	6.8%

[1] The percentages are computed as a share of the 184 payment systems, of which 81 are in CPMI jurisdictions and 103 in non-CPMI jurisdictions.

Source: CPMI survey.

A majority of payment systems are open to consideration of expanding access within the next five years, mainly to foster innovation and competition. However, few payment systems currently have concrete plans to expand access (Table 2). This may reflect the significant barriers to expanding direct access that would need to be addressed but also the fact that current access policies vary greatly.[16]

[14] These operational impacts were observed slightly more by non-CPMI jurisdictions than by CPMI jurisdictions.

[15] In order to enrich the analysis on the main barriers and challenges faced by non-bank PSPs, Expansion Workstream members held discussions in several jurisdictions (Australia, Canada, Switzerland, Spain, Hong Kong SAR, India, Japan, the United Kingdom and the United States) with individual providers and/or industry associations.

[16] Specifically, 60% of payment systems currently provide either direct, indirect or both types of access to foreign branches/subsidiaries located in the payment system's jurisdiction. Nevertheless, the proportion falls by nearly 40% in the case of non-bank PSPs.

Potential expansion of the type of institution eligible for directly and/or indirectly connecting to the payment system within the next five years[1]						Table 2
	All payment systems		CPMI		Non-CPMI	
	Total	%	Total	%	Total	%
Yes	110	59.8%	49	60.5%	61	59.2%
Yes, possible if certain conditions are met	67	36.4%	32	39.5%	35	34.0%
Yes, very likely	29	15.8%	12	14.8%	17	16.5%
Yes, there are concrete plans	14	7.6%	5	6.2%	9	8.7%
No	65	35.3%	30	37.0%	35	34.0%
No answer	9	4.9%	2	2.5%	7	6.8%

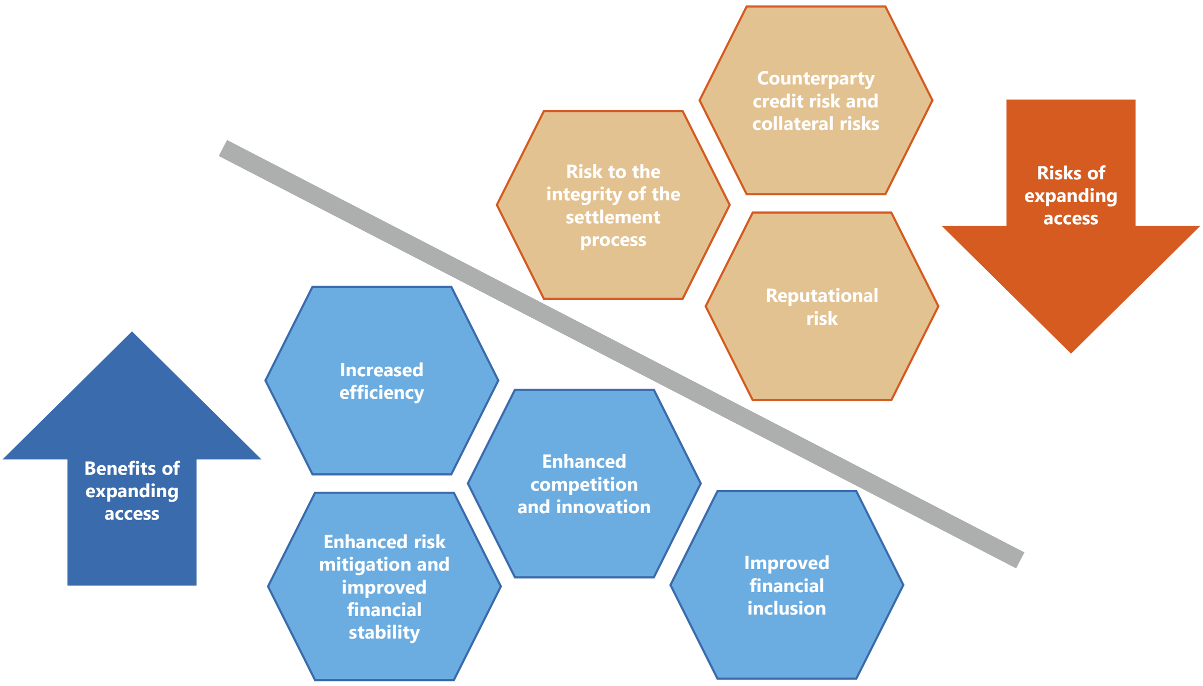
[1] The percentages are computed as a share of the 184 payment systems, of which 81 are in CPMI jurisdictions and 103 in non-CPMI jurisdictions.

Source: CPMI survey.

4. Benefits, risks and barriers of expanding direct access

This section discusses the potential benefits of expanding access to payment systems for cross-border payments and the broader financial system as well as the potential risks and barriers that need to be considered (Graph 7). The discussion has been informed by findings gathered from discussions held with non-bank PSPs, central bank survey results, case studies and two industry workshops.

Benefits and risks of broadening access to domestic payment systems Graph 7



Source: CPMI.

4.1 Benefits of improving direct access to payment systems

Improving direct access could impact *long transaction chains, high funding costs, legacy technology* and *weak competition*, four of the seven fundamental frictions that are being tackled by the G20 cross-border payments programme (CPMI (2020b), FSB (2020b)).[17] Broadening access could also have benefits for non-bank PSPs, FMIs, foreign banks and payment system operators[18] that will be explored below.

4.1.1 Greater competition and innovation by levelling the playing field and reducing barriers to entry

Weak competition, which can contribute to higher prices for end users and underinvestment in related processes, has been identified as a key friction in cross-border payments. Broadening direct access to payment systems could help alleviate this friction and result in:

1. *Levelling the playing field:* Entities without direct access to payment systems and central bank money may experience several competitive disadvantages. These include (i) higher costs and slower processing speeds due to the use of intermediaries; (ii) exposing their business model, clients and flows to the direct participant they conduct business through; and (iii) less influence on the design and operation of the payment system, as they are not represented in the governance arrangements. In a cross-border context, broader access could provide improved opportunities to PSPs and help level the playing field.

2. *Reduced barriers to entry:* Expanding direct access to payment systems could reduce barriers to entry in the market since current indirect participants would not depend on finding a direct participant to represent them. Moreover, it could put competitive pressure on private settlement providers, which may allow indirect participants to negotiate better terms and conditions with their agent. This suggests that increasing eligibility to accounts may improve efficiencies, even if the take-up of expanded direct participation remains low.

3. *New and innovative entrants:* As outlined by previous CPMI reports, the cross-border payments market is dominated by correspondent banking arrangements, and greater diversity is needed in back-end arrangements (CPMI (2016), (2018), (2020b)). If competitive pressure increases as a result of expanding access, PSPs may be encouraged to lower costs, improve the products and services they provide and/or develop new ones, advancing innovation in the market. Innovation can particularly increase where direct access is expanded to new innovation-driven entrants, particularly non-bank PSPs or entities that will provide agency services for them.[19]

Efficiency can be defined narrowly as lower costs and higher speeds for the purposes of this report, which can also be associated with more transparent and predictable payments. Broadening access can support these elements as follows:

1. *Shorter transaction chains:* More direct access to payment systems helps reduce the number of intermediaries, which is particularly important in cross-border payments where transaction chains are often long (Graph 8). This, in turn, increases processing speed, reduces transaction costs and increases both transparency and control over the end-to-end process. For example, fewer intermediaries make payment processing faster and/or less costly, since there are fewer AML/CFT compliance reviews and fewer instances where different messaging standards must be translated. Shorter transaction chains could also mitigate one of the issues frequently mentioned by surveyed non-bank PSPs: the uncertainty in the

[17] To help overcome these frictions and link the benefits of improved cross-border payments to concrete outcomes, the G20 endorsed specific targets in 2021 on cost, speed, access and transparency (FSB (2021b)).

[18] For further details off the benefits of broadening access for system operators, please also see Graph 9.

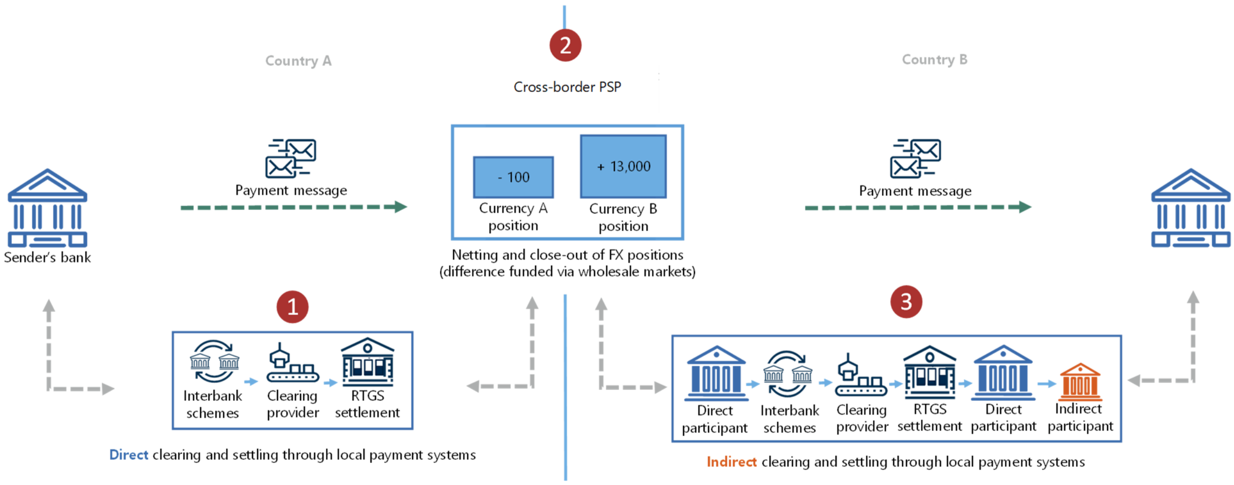
[19] Non-bank PSPs are more likely to have different business models and risk tolerance than banks, and they are generally built on modern, flexible technology which allows them to bring new products and services to the market faster than traditional players.

liquidity management process, where liquidity constraints or ineffective liquidity management by an intermediary could lead to payment delays or rejection.[20]

2. *Modern and faster payment systems:* Despite the increasing development of modern and faster payment systems in individual jurisdictions, a significant proportion of cross-border payments are still processed on legacy platforms or based on correspondent banking arrangements. This can hinder automation and make it challenging to interface with customers using more modern technology (FSB (2020b)). Expanding access to new payment providers with new technology could increase the speed of cross-border payments and incentivise incumbents to upgrade their legacy systems.

3. *Economies of scale:* According to the CPMI survey, some payment system operators believe that expanded access can increase volumes and values in their payment systems.[21] This could be because expanded access enables new businesses models that were previously not viable through indirect participation. Higher volumes and values can spread fixed operating costs across more participants and thus reduce individual transaction costs for (both direct and indirect) participants and end users.

Transaction chains of direct participants (domestic leg of the payment) vs indirect participants (cross-border leg of the payment) — Graph 8



Source: CPMI.

4.1.2 Greater financial inclusion and improved remittance services through lower costs, increased innovation, and improved processing speed

Reducing costs for remittances and increased access are essential aspects of the targets set in the G20 roadmap for enhancing cross-border payments (FSB (2021a)). Facilitating access to new and innovative PSPs (eg mobile money operators) might be particularly relevant for low-value cross-border payments such as remittances. This is because the current infrastructure may result in remittance payments incurring high fees and experiencing slower processing speed, in part due to lack of competition and lack of innovation.

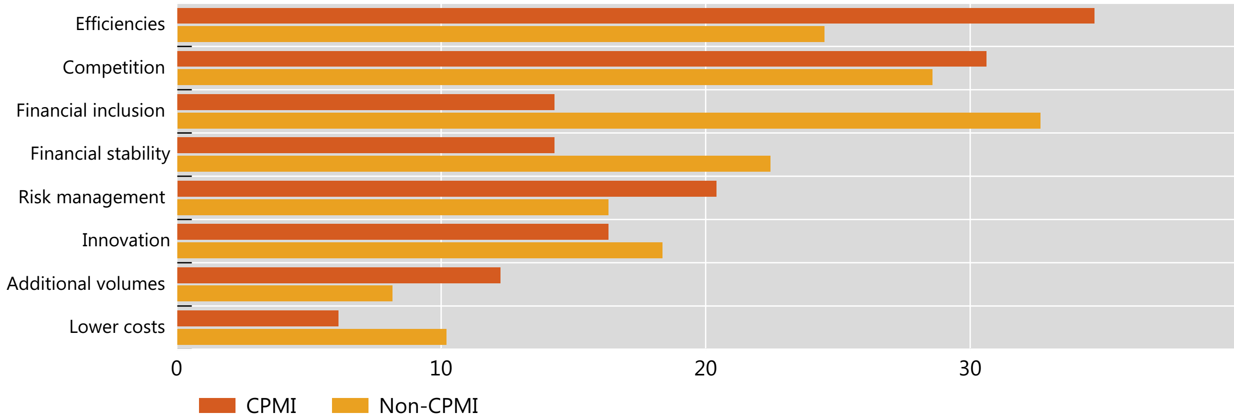
[20] To enable the rapid onward settlement of cross-border payments, intermediaries are required to arrange prefunding, often across multiple currencies. Immobilising funds in these open liquidity positions implies costs, both in terms of opportunity costs and possible capital regulatory charges. Funding costs are typically higher for transactions in illiquid or difficult-to-trade currencies.

[21] In 2009, Brazil expanded access to its RTGS service and experienced a temporary but significant and unanticipated increase in daily transaction volumes. See Brazil case study in Annex 5.

Correspondingly, improved access to payment systems could also facilitate financial inclusion efforts due to increased competition, innovation and efficiency pressure on incumbents and legacy payment infrastructures. These incumbents and legacy payment infrastructures may currently lag behind in fulfilling the needs of unbanked and underbanked end users, whether they are paying domestically or cross-border. This could be particularly relevant for emerging markets and developing economies (EMDEs) where there might be fewer high-value payment corridors, as shown by the survey results (Graph 9).

Benefits of providing direct and indirect access from an operator's perspective[1]

As a percentage of reported payment systems for each category | Graph 9



[1] The figures are computed as a percentage of the reported payment systems for which in recent years there has been an increased interest from non-bank financial institutions/PSPs and/or foreign entities in having direct or indirect access to the payment system. The sample includes 49 payment systems in CPMI jurisdictions and 49 payment systems in non-CPMI jurisdictions.

Source: CPMI survey.

4.1.3 Improved financial stability and a more resilient ecosystem through mitigation of settlement, liquidity, credit and tiered participation risks

Access to central bank money and payment systems can help to improve financial stability by reducing specific risks, and potentially improving resilience from diversity. More specifically, expanded access can contribute to:

1. *Reduced settlement, credit and liquidity risks:* Improved access to payment systems and central bank accounts removes or reduces the need for intermediaries, hence reducing counterparty credit risk, as well as the credit and liquidity risks due to multiple open liquidity positions across the payment chain. Direct participation in a payment system also helps to better manage credit and liquidity risks by providing certain controls and protections such as settlement finality rules. For example, some central bank-operated systems have statutory protections which ensure that their settlement rules override bankruptcy/insolvency laws. Finally, risks may also be reduced by increasing access to RTGS systems and, potentially, to routine central bank liquidity facilities (since it might facilitate emergency liquidity provision in case of need and when the central bank so decides).

2. *Reduced risk from tiered participation:* Tiered participation arrangements have inherent risks in terms of financial and operational issues between direct and indirect participants. There is a risk of spillovers if a direct participant's risk to default increases due to the transactions of indirect participants,

and this could pose risks to financial stability, if systemic[22] in terms of activity or size.[23] Increased direct participation in the payment system could reduce these risks, which has led some authorities, such as the Bank of England, to work in this direction (Finan et al (2013)). Moreover, less tiering could provide greater transparency for regulatory authorities and market participants, improving the management of compliance (including with AML/CFT regulations) and reputational risks.

3. *Greater resilience from diversity:* Expanding access policies to accept a range of different types of entity (eg non-bank PSPs who operate with different business models and technologies and from dispersed geographies) could facilitate a more diverse (and potentially more resilient) ecosystem. For example, a natural disaster could impact the local servers of a bank but not the cloud technology stack used by a non-bank PSP, allowing the latter to stay operative.

4.2 Barriers and risks associated with expanding direct access to payment systems

Expanding the types of entity that can directly access payment systems may raise concerns from system operators, central banks and financial regulators as changes in the risk profile of participants may introduce additional risks to the smooth functioning of the payment system. Additionally, to obtain access to payment systems or central bank settlement accounts, prospective participants must meet a range of financial, operational and technical requirements that can be difficult to achieve for non-bank PSPs, small or emerging intermediaries[24] or foreign banks that process a lower value or volume of payments. This can reduce the likelihood that these institutions will opt for, and be granted, direct access. However, removing barriers to entry may not be straightforward as it could involve lengthy or complex adjustments to laws, regulations and scheme rules that are subject to complicated governance processes. Additionally, removing barriers to entry may have risk implications that would need to be evaluated. These barriers and risks will be explored in the sections below.

There are also barriers to the emergence of multicurrency payment infrastructures. Many of these are barriers rooted in the systemic nature of payment infrastructures, which naturally lead central banks to impose stringent access requirements on this category of firms. For authorities, the emergence of cross-border payment infrastructures might require enhanced coordination among supervisors and overseers in developing cooperative supervision and oversight arrangements for infrastructures operating in multiple jurisdictions. The lack of clearly defined processes for setting up these arrangements swiftly and efficiently, could be a significant barrier. On top of this, some prospect participants may find it discouraging or impractical to seek direct access, considering higher technical, financial and operational requirements.

4.2.1 Legal and regulatory frameworks might limit what entities are eligible for direct access to payment systems or central bank settlement accounts

The types of entity that are eligible to be direct participants may be stipulated in legislation. While the nature of the legislative barrier can differ, the effect on eligibility is similar. For example, in the European Union, current legislation (the EU Settlement Finality Directive) precludes non-bank PSPs from becoming direct participants of central bank-operated TARGET Services, including TARGET2 (RTGS system) and the TARGET instant payment settlement (TIPS) service for the settlement of fast payments. In Canada, non-bank PSPs are not legally eligible for membership of the payments association that operates the national payments system. In the United Kingdom, small FMIs cannot access the RTGS system as access is limited to systemic FMIs only.

22 A participant can be considered systemic due to its size, substitutability, role in the payment ecosystem or its user base.

23 Tiering risk arises where a large number of indirect participants rely on a relatively small number of direct participants to perform settlement on their behalf, or where the value of an indirect participant's transactions is large relative to the direct participant's capacity to manage the risks, which may increase the direct participant's default risk.

24 These could be businesses based on a novel business model; foreign businesses that are trying to enter a new market or large entities that are bringing a new payment service to market.

The need for a banking licence might not be stipulated in legislation but be a requirement of the payment system. Payment systems in different jurisdictions may have different access eligibility criteria that exclude certain PSPs. For instance, payment systems often require direct participants to hold a banking licence. This can be the case where an adequate regulatory or supervisory scheme for non-bank PSPs does not exist, or payment system operators do not have the capacity or authority to oversee or supervise participants. In such a situation requiring participants to have a banking licence provides for a certain level of assurance on risk management. This approach reduces counterparty and other risks faced by other participants, the system operator and/or the central bank. But it also means that non-bank PSPs are eligible for direct access only in a minority of payment systems globally (see Graph 6) as obtaining a banking licence is a hurdle for institutions that facilitate payments but do not assume the significant balance sheet risks inherent in traditional banking activities such as credit provision. In addition, cross-border payment intermediaries would need to obtain a local banking licence in multiple countries which can be a major constraint, especially due to differing requirements across jurisdictions.

Access to central bank settlement accounts may be a prerequisite for direct payment system access. In other cases, central banks may be legally allowed to offer settlement accounts (or types of settlement account) only to certain categories of financial institutions. For example, US law allows the Federal Reserve System to provide settlement accounts (with additional available services) to banks and other specified institutions, but not to non-bank PSPs. Central banks typically only allow banks access to accounts with credit facilities and often do not offer dedicated prefunded accounts for settlement purposes. This may preclude non-bank PSPs from being direct participants in a payment system, such as some RTGS or FPS that may require access to central bank liquidity given relatively high liquidity risks faced by participants.

4.2.2 Operational, technical and financial barriers

Direct participants can be subject to a range of necessary operational, technical and financial requirements, which may be more challenging for smaller or emerging intermediaries to meet than for incumbents. Even when an entity may be eligible for direct access, the application process for securing direct access to payment systems can be complex. For example, smaller banks and non-bank PSPs may not have the resources needed to demonstrate compliance, making the application process longer and more costly.[25] In addition, requirements can differ substantially across jurisdictions, which adds further complexity for cross-border intermediaries. The feedback from non-bank PSPs indicates that the necessary information for accessing some payment systems (eg membership criteria and transaction fees) may not always be publicly available or easily accessible, which makes it harder to determine the business case for joining.

In the case of payment infrastructures accessing other payment systems, requirements for direct participation are particularly complex. This is due to systemic risk concerns, since the offering of settlement accounts might create significant exposures or dependencies in multiple currencies. In addition, existing settlement agent interfaces do not seem well suited to providing the control required to enable cross-system settlement.

1. *Operational requirements:* Direct participants usually need to demonstrate that they comply with a number of operational and security requirements to ensure operational resilience and thus the smooth functioning of the payment system. For example, direct participants need to demonstrate that they have adequate staffing and robust systems including contingency and end-point security arrangements to reduce cyber risk. These operational requirements may prevent direct participation by smaller participants, even when payment systems allow potential participants to meet requirements in a staged approach (ie not all requirements need to be met on day one). Furthermore, the CPMI survey found that payment system operators and central banks may impose additional requirements on certain types of payment provider such as foreign banks, domestically located non-bank PSPs or providers undertaking higher-risk activities. These requirements could include, for example, additional assurances related to robust risk

[25] For example, by leading to a protracted application process or forcing applicants to hire external support.

management processes for financial crime and sanctions. Non-bank PSPs, which in some cases might not be subject to regulatory oversight, may find it difficult to provide these additional assurances.

2. *Technical requirements:* The technical ability to directly connect to a payment system requires high upfront investment, both in terms of the technology needed and the resources to support changes. This is particularly the case where bilateral connections need to be established as opposed to connecting via a central hub and where the scope for using cloud-based services is limited or non-existent. In addition, the technical requirements may vary across countries further increasing the costs and complexity, and thus posing a barrier for smaller cross-border PSPs.

3. *Location requirements:* Payment system operators and central banks often have location-based requirements, for example, related to where computer servers, data and staff must be based. Such requirements can have a big impact on cross-border payment infrastructures, which undertake activity in multiple jurisdictions yet may prefer to centralise or regionalise some aspects of their operations for efficiency and resiliency purposes. Industry feedback suggests that newer players often prefer to use cloud-based services. Where payment infrastructures are required to be locally established to have access to the RTGS system and/or the central bank settlement account, this can further increase the costs of operating across multiple jurisdictions.

4. *Financial requirements*: Direct participants can be subject to a range of financial requirements including membership fees, capital contributions or loss-sharing arrangements. Consistent with the Principles for Financial Market Infrastructures (PFMI), payment system operators commonly apply risk-based financial criteria, such as minimum credit ratings or capital adequacy requirements, when assessing applicants seeking direct participation (CPSS-IOSCO (2012a)). These financial requirements may be more challenging for smaller or emerging PSPs to meet than for incumbents.[26] Another challenge for smaller intermediaries considering direct access is the tiered pricing model used by some payment systems, where the fee per transaction decreases as a participant's payment volumes or values increase.

5. *Liquidity requirements*: Direct participants need to hold a minimum balance with the central bank for settlement purposes and need to be able to manage their liquidity in an agile way. For example, in the case of cross-border payments, on a given day or at a specific time, providers could have a net payable amount in one currency, which will need to be quickly funded from a liquidity pool in that currency or via entering the spot market using a foreign currency liquidity pool. As non-bank PSPs are typically not eligible to access central bank liquidity facilities[27] (and might not have the collateral to do so in practice), they would typically need to rely on commercial bank liquidity providers to replenish their central bank account balances, which may be expensive and difficult to obtain. Moreover, such arrangements may need to be in place for a range of currencies, given the difficulty of moving liquidity across borders outside banks and payment systems operating hours. In some cases, central banks and payment system operators require cash prefunding to allow settlement completion, including in the event of a shortfall. This removes credit risk associated with any settlement participant failing to have the required cash to settle, and any contagion that could arise from any participants failing to pay their obligations. However, this liquidity requirement can pose a challenge for some participants, especially if own funds are reserved for this purpose (which can be the case in some prefunding models).

[26] However, lowering membership fees or capital contributions could also raise level playing field arguments, as they may be a way of recouping pre-existing investments. Expanding access to non-bank PSPs that have not incurred the same degree of regulatory costs (even in relation to just their payment activities) could also give rise to level playing field concerns.

[27] Central bank credit or liquidity facilities are typically available to financial institutions in wholesale payment systems, to address temporary or short-term liquidity shortages. In RTGS systems, for example, these tools can help prevent gridlocks, liquidity shortages or spikes in the overnight interest rate. Having targeted access to these facilities when needed, yet with adequate safeguards, could ease some of the burden a direct participant faces when executing cross-border payments that rely on a liquidity pool in a given currency.

4.2.3 Increased reputational, operational and financial stability risks for payment system operators and central banks

Extending access to a larger number of entities or a different type of entity may lead to additional counterparty credit risks, operational risks as well as risks to the stability of the payment system. If a direct participant has access to overnight deposit facilities or credit facilities, further risks, including collateral risks, can arise.

1. *Credit risk:* Expanding access to payment systems may lead to an increase in the number of participants. Where participants face credit risks in the system, incumbent participants may have to review their credit risk management, as they would be exposed to new participants. Where credit facilities are provided, payment system operators would need to ensure appropriate credit risk management by the new participant.

2. *Operational risk:* New participants would need to fulfil expectations around staffing, cyber security management and IT infrastructure in order to mitigate operational risks associated with participation in payment systems. This is especially relevant for FPS, where high levels of operational risk management are necessary to meet the heightened requirements for participating in systems operating on a 24/7 basis with little or no downtime. Discussions with stakeholders indicated that, in some jurisdictions, newer participants seem to have underestimated the operational requirements they need to comply with when joining an FPS. For payment system operators, depending on the extent of demand, and the volume of transactions that potential participants bring to the system, capacity pressures on the system could raise operational concerns. Furthermore, the payment system operator itself may face staffing pressures if applications for access exceed expectations.

3. *Reputational risk:* Payment system operators, especially central banks, face reputational risk if a problem arises with an entity that becomes a direct participant through expanded access. In order to manage such risks, central banks need to ensure their access policy is transparent and consistently applied, and that the procedures underpinning the application process are robust.

4. *Financial stability risks:* In addition to the risks described, there may be concerns relevant for the broader financial system. Moral hazard concerns may need to be addressed depending on the extent of access new participants are granted through broader access policies. This would especially be the case where credit facility access is provided, as this could be seen as a backstop and lead to less robust risk management. Furthermore, where deposit facility access is provided, this could lead to direct competition with commercial banks, which have traditionally provided deposit services to PSPs.

A robust regulatory and supervisory framework for potential participants is indispensable to appropriately control risks relevant for expanding access. In the case of new market entrants, an appropriate framework might need to be established first. Ongoing monitoring after initial onboarding is also key for identifying and mitigating potential risks. Additionally, there could be concerns specific to central banks when they consider broadening access to systems they operate. Expanding access to central bank-operated payment systems could have monetary policy implications, depending on the services offered. As such, implications would be contingent on the account type for which access is broadened, as well as the extent of demand by potential participants.

4.3 Improved indirect access

Indirect participation can provide a connection to a payment system without the high fixed costs associated with direct participation. This is especially beneficial for smaller participants when they do not attain the volumes or values necessary to achieve the economies of scale required to justify the fixed costs. In addition, mature treasury and collateral management operations to anticipate and manage the intraday liquidity needs of real-time settlement systems may be more efficiently outsourced to a more experienced direct participant.

Indirect access might be preferable for some market participants, especially if it offers a level of speed and currency coverage similar to that of direct access but at a lower cost. In some instances (eg FPS), indirect participation may guarantee execution times similar to those of direct access as clients' funds are ultimately received and credited without delay. Considering the above-mentioned risks and challenges, improved indirect access could be a viable option for some PSPs in certain jurisdictions. An improved indirect access model could yield some benefits, even if the possible gains to cross-border payments may not be as large as those from an expansion of direct access, for example in reducing long transaction chains.

Some payment systems have partial indirect access models that allow indirect participants to directly send and receive their own payments, while using another participant as a settlement provider as described in Section 2.[28] In this model, the levels of speed, control and transparency over an indirect participant's payments may be similar to those experienced by a direct participant. However, indirect access can also pose several challenges and barriers to non-bank PSPs and foreign banks, as they need to enter into an agreement with a direct participant that provides access. Some of the issues related to indirect participation are the following:

1. *Lack of choice and of portability:* It may be difficult for non-bank PSPs to find a direct participant that is willing to provide indirect access, as only a few direct participants might be offering this service. Changing between direct participants may be difficult as well.

2. *Competitive forces:* There may be insufficient competition between direct participants that offer access services to indirect participants. This can lead to unattractive services and costs for indirect participants. In cases where direct participants are in competition with prospective indirect participants, they might not be willing to enter into a business relationship with their competitor.

3. *Risk considerations:* Payment system operators and settlement providers may also be disincentivised to offer indirect access if they are concerned about indirect participants' compliance with payment system rules and legal obligations, among other risks. Risk considerations are likely to be heightened for riskier payment activities. Most notably, cross-border transactions have longer and more opaque payment chains, and AML/CFT and sanctions compliance risks can be much higher. The decline of correspondent banking arrangements has been an issue in recent years — particularly in some jurisdictions — or for non-bank PSPs facilitating payments to particular regions or undertaking riskier activities.

4. *Operational and technology constraints of direct participants:* Intermediaries seeking indirect access to a payment system need to conform with the operational and technical setup of the direct participant that provides access to indirect participants. Discussions with non-bank PSPs suggest that some direct participants allow only a relatively limited amount of payments information to be transmitted, which can hamper the indirect participants' activity. Some direct participants can also be slow to roll out additional payment functionalities, which may constrain the indirect participants' ability to pursue new business opportunities.

[28] This can be achieved by allowing an indirect participant to establish a direct technical connection to the payment system or use a third-party technology service provider to establish a connection on their behalf (eg a technical aggregator).

5. Best practices for self-assessing access policies of domestic payment systems

This framework of best practices is aimed at helping central banks and payment system operators considering expanding access to self-assess the direct access arrangements of existing domestic payment systems settling in central bank money. While the decision to conduct a self-assessment will be made by each jurisdiction individually, national authorities and payment system operators that are considering expanding access are encouraged to undertake self-assessments of their respective domestic framework against the best practices and to identify any changes required to expand access.[29] As the central bank alone may not have full authority or control over payment system access policies, it may wish to engage other national authorities or payment system operators to jointly complete the self-assessment. Additionally, central banks may be constrained by institutional mandate and therefore may need to tailor the self-assessment framework accordingly.

The framework outlined below is designed for identifying and overcoming access frictions in both domestic and cross-border payments, since authorities and payment system operators will want to holistically assess the benefits relative to the risks and barriers before making policy or operational changes. The framework foresees four steps in the self-assessment process and suggests approaches and guiding questions for each of them. The self-assessment framework could be adapted by the central bank or payment system operator to suit its own needs and the needs of its jurisdiction:

1. *Set the main objectives and determine the scope of the self-assessment:* As a first step, central banks and payment system operators need to determine what the main objectives of a self-assessment are. As part of this work, the central bank may need to study the eligibility conditions for payment system access, or survey market uptake or demand for access. On that basis, central banks and payment system operators can decide which payment systems' access policies will be subject to the self-assessment and for which participant categories.

2. *Evaluate the benefits of broadening direct access to payment systems:* As a next step, central banks and payment system operators need to analyse the benefits that improving access to payment systems would entail for current or prospective new participants in scope.

3. *Assess potential barriers and risks of broadening access to payment systems:* In the third step, central banks and payment system operators should assess what barriers and risks expanded access may present for payment system operators, as well as current and prospective new participants. These barriers and risks might need to be addressed through mitigating measures. In addition, existing participation requirements may represent barriers to entry to currently eligible participants. The assessment should explore if these participation requirements could be removed or changed while still managing risks they aim to address.

4. *Develop conclusions*: Following the previous steps, authorities and payment system operators would be in a position to assess whether changes to the payment system access policies are needed and if there is a case for pursuing these changes. If authorities and payment system operators decide there is a strong case, then they could proceed to develop a plan towards removing barriers and addressing risks. Section 6 provides case studies and examples on strategies and approaches for addressing some of these barriers and risks to inform the development of this plan.

To reach that end, consultations and interviews with stakeholders are a useful tool for gathering information throughout the access review (see Box 1). Self-assessments completed by payment system operators using the PFMI assessment methodology for Principle 18 (access and participation requirements) may also provide a useful starting point for self-assessments against this best practice, particularly the assessment of risks posed by eligible participants and identification of barriers to access posed by existing participation requirements (CPSS-IOSCO (2012b)).

[29] This is in line with BB 10 (action 3) of the G20 roadmap (FSB (2020c)).

5.1 Set the main objectives and determine the scope of the self-assessment

The objectives should define the goals and criteria for broadening access. At least one of these objectives is assumed to relate to enhancing cross-border payments and could be based on opportunities identified through the landscape analysis discussed below. In addition, a central bank will need to determine how the self-assessment will fit into its domestic objectives and priorities. These complementary domestic objectives could include greater competition, innovation and financial inclusion.

In developing these additional objectives, consideration should be given to the overall strategy for enhancing cross-border payments, broader public policy initiatives (eg financial inclusion, digital payments), and the mandate of authorities involved (eg financial stability, competition). There may be interdependencies between different initiatives for enhancing cross-border payments that need to be considered. For example, a central bank may wish to expand access to payment systems that will be interlinked with foreign payment systems to reap the benefits from the planned interlinking. As another example, a central bank extending the operating hours of a payment system may need to review access requirements to make sure they remain commensurate with the risks associated with longer operating hours. This framework does not provide guidance on how expanding access may be prioritised vis-à-vis other cross-border initiatives or other central bank mandates and priorities (for more information on interdependencies, refer to Annex 2).

Based on the set objectives, central banks and payment system operators need to define the scope of the self-assessment. Based on these objectives, the central bank, in conjunction with other relevant payment system operators and national authorities, should define the perimeter of the payments ecosystem for which improved access is being considered. It should describe the scope of:

- payment systems and services for which access policies will be reviewed;
- new participant categories being considered for payment system access (for cross-border payments, prospective firms could include foreign banks, non-bank PSPs, and/or payment infrastructures); and
- access policies within the control or influence of authorities involved.

The scope should be consistent with the objectives of expanded payment system access. For example, if an objective is to improve cross-border person-to-person payments and the self-assessment is being conducted by a central bank, then the scope could be settlement account policies for retail payment systems and non-bank PSPs that provide cross-border remittance services.

As part of the scoping exercise, the central bank may need to gather information via a landscape analysis. The landscape analysis is intended to help the central bank and/or payment system operators gain knowledge about current payment system access arrangements and participation in relevant domestic payment systems as well as market demand for expanded access to those systems. It could also include information on access arrangements in foreign payment systems, which can help benchmark domestic access policies and identify opportunities for improvement. The amount of information to be gathered will depend on the central bank's prior knowledge.

Analysis of participation requirements to identify the specific barriers to access will be conducted in a subsequent step (step 3), but the landscape analysis may provide a preliminary view of where these barriers may be. This section provides guidance on the type of information that would be needed to determine how access can be improved to support cross-border payments.

Guiding questions for landscape analysis — Table 3

Type of information	Self-assessment questions
Current access arrangements, participants and policies for potentially relevant domestic payment systems	• What types of access arrangement are currently granted (eg direct, indirect, agent-only participants)? • For each type of access arrangement, what categories of entities are currently eligible and what are their access or participation criteria? • How is the payment system access policy determined? Who are the relevant authorities or entities that set eligibility criteria and participation requirements? • How are eligibility criteria currently assessed? • Who are the participants in the payment system, by category (eg foreign bank, non-bank PSP, FMI)?[1] • How many direct and indirect participants are there by category for each of the major payment systems and what share of the local market do they present?
Firms active in cross-border payments and opportunities to enhance access to domestic payment systems for these PSPs	• What firms are active in cross-border payments and in which market segment (wholesale, retail, remittances) are they operating? • How do cross-border PSPs currently access domestic payment systems (eg direct, indirect, agent-only participants)? • How do cross-border PSPs currently access foreign payment systems (eg direct, indirect, agent-only participants)? What are the access policies in those foreign payment systems? Is there an opportunity to align domestic access arrangement with foreign access arrangements? • Are firms active in cross-border payments requesting or demonstrating interest in broader direct and indirect access to certain payment systems? Why are these payment systems more attractive (eg do they address certain use cases or have certain features that make them more attractive)? • What types of additional service could these cross-border PSPs benefit from (eg intraday liquidity)?
Other demand for broader access	• Have other market participants (non-bank PSPs, FMIs, foreign banks) expressed interest in expanded direct access to certain payment systems? For what use case? • Is there evidence that current access arrangements (direct and indirect) are not meeting market needs? • Have concerns been raised that direct access to payment systems is not sufficiently open or fair?
Domestic policy objectives to enhance cross-border payments	• Have you identified any additional domestic objectives that are relevant for the self-assessment such as supporting greater competition, innovation and financial inclusion?
Interdependencies with other initiatives on improving cross-border payments	• Are there any interdependencies between domestic policies and initiatives related to cross-border payments that need to be included in the self-assessment? • Are there any interdependencies between domestic policies and initiatives under the G20 cross-border payments programme that need to be included in the access review?

[1] If this information is difficult to obtain, a rough order of magnitude for each participant type could be sufficient.

Source: CPMI.

5.2 Evaluate the benefits of expanding access to payment systems

Assessment of potential benefits can help authorities and payment system operators to understand the case for expanding access to additional entities. The benefits to evaluate will depend on the objectives of the self-assessment. Evaluation of those benefits will likely include an assessment of frictions in domestic and cross-border payments that could be addressed by improved access. Information gathered from market participants during the scoping exercise and landscape analysis may already provide the market perspective of where frictions may lie and could help inform evaluation of benefits. For each category of benefit in scope, the central bank should provide an overall determination or evaluation of the extent to which those benefits exist or could be realised with expanded access. The evaluation could:

- explain the importance or relevance of the benefit to overall objectives;
- qualify the benefits by explaining the ways in which the benefit can be realised (see Section 4.1 for examples) and quantify those benefits where possible (eg from case studies);
- describe how those benefits may vary across different stakeholders (eg payment system operator, prospective participant, existing participant, end user), where applicable; and
- explain which benefits are likely to be realised in the shorter term and which will accrue over a longer time frame.

Guiding questions for the benefits evaluation | Table 4

Benefit	Self-assessment questions
Efficiency • Shorter transaction chains • Modern and faster payment systems • Economies of scale	• What other jurisdictions do (prospective) participants operate in and are they direct members of other foreign payment systems? • What are the correspondent banking relationships of (prospective) participants, if applicable? • What technologies do (prospective) participants use and how efficiently can they process payments in terms of cost and speed? • What are (prospective) participants' (potential) transaction volumes and values?
Competition and innovation • Level playing field • Reduced barriers to entry • New and innovative entrants	• Is there currently significant concentration in the provision of (cross-border) payment services? • What additional costs or processing delays may be experienced by indirect participants relative to direct participants? • Is there evidence of direct participants having access to detailed information about indirect participants' client information? • Is there evidence of direct participants using their role in the governance of the payment system to obtain strategic advantages over indirect participants? • What products and services do prospective participants offer? How does this compare with current participants and traditional players in the market? • Do prospective participants plan to become settlement providers, and if so, who would be their clients? • What is the size of the (prospective) participants' customer base? • Have market participants identified related level playing field concerns that would need to be addressed before access is expanded (such as introducing or aligning participation requirements or regulatory regimes)?
Risk mitigation and financial stability • Reduced settlement and liquidity risk • Reduced risks from tiered participation • Resilience from diversity	• What are the tiered participation relationships in the payment system? Is there any concentration risk associated with traditional players providing indirect access? Are compliance or AML/CFT risk exacerbated by long payment chains? • Are any indirect participants systemically important or could they become systemic in the future? • Does any indirect participant represent a large proportion of their settlement bank's transaction values or volumes? Would such indirect participants be interested in and capable of managing the risks of becoming a direct participant?
Financial inclusion	• Do prospective participants provide services to marginalised or underserved communities? Would such participants be interested in and capable of managing the risks of becoming a direct or indirect participant? • What requirements (eg technology, financial) do end customers of prospective participants need to meet to access that participant's products and services?

Source: CPMI.

5.3 Assess potential barriers and risks of expanding access to payment systems

Together with evaluating the potential benefits, it is important for central banks and other relevant authorities to identify potential barriers to expanding direct access and the risks expanded access could result in. Addressing the legal and regulatory barriers to broadening payment system eligibility would be a prerequisite to expanding access since the types of entity that are eligible to be direct participants may be stipulated in the legislation. In addition, the introduction of new participant types may present risks that would need to be effectively managed or may give rise to equity concerns from existing participants.

Guiding questions for the barriers and risks assessment

Table 5

Challenges	Self-assessment questions
Legal restrictions on eligibility	• Are there legal restrictions on allowing direct access for certain types of prospective participant – such as licensing requirements? • Are there legal restrictions on the central banks' ability to offer settlement accounts to certain entity types? Do restrictions to settlement accounts inhibit entities' access to payment systems? • Do payment system rules/regulations need to be changed for new entity types to be eligible? What parties or relevant authorities are involved in setting and adjusting eligibility rules? • Do payment system service level agreements (SLAs) and scheme processes need to be changed for new entity types to be eligible? Is there a new SLA/scheme to be implemented? What parties or relevant authorities are involved in setting and adjusting the SLA/scheme?
Regulation and supervision/oversight for additional entity types	• Are (prospective) participants subject to local regulatory and supervision/oversight frameworks? How do these frameworks differ per entity type, including in relation to financial requirements and safeguarding of customer funds, operational resilience, data-related practices and AML/CFT frameworks? Could these frameworks lead to different outcomes for risk management and policies? • Would a new regulatory and supervision/oversight regime need to be introduced for new participant types to facilitate access? And if so, does that need to happen in coordination with other authorities in the jurisdiction? • Are there changes to existing oversight and/or supervisory frameworks, such as greater coordination across jurisdictions that could mitigate barriers for cross-border firms' access to payment systems? • Are there other safety and soundness concerns related to prospective entity types?
Financial requirements	• What are the drivers of the cost of participating in a payment system, and who has authority over cost-related requirements and policies? Do they need to be adjusted? Are the costs for participating in the payment system viewed as a barrier to participation? • Are financial requirements aimed at mitigating risks to the payment system or its participants (eg capital adequacy, credit ratings, liquidity requirements) proportionate to the risks posed by potential participants? • Would additional financial or liquidity requirements need to be introduced to address risks posed by new entity types participating?
Operational and technical requirements	• Are existing operational requirements (including in relation to systems, data, security, staffing, business continuity and incident management) reasonable and proportionate to the risks posed by new participant types? Would additional operational risk requirements for new participant types need to be introduced to address specific risks that they present? • Are location-based requirements in place and what risks do they aim to address? Are there other reasonable ways to mitigate such risks? Are technical and connectivity requirements appropriately risk-based?

Challenges	Self-assessment questions
Other	• Do specific participant types (eg foreign banks, non-bank PSPs, FMIs) pose any additional risk? Are the corresponding requirements reasonable and proportionate to those risks? • Are the participant requirements publicly available or easily accessible in one place for prospective applicants? Are the requirements (and related documentation) clear?

Source: CPMI.

Box 1

Stakeholder involvement in the self-assessment

Consultations and interviews with stakeholders – including relevant operators, authorities, prospective participants and current participants — are a useful tool for gathering information throughout the self-assessment (eg landscape analysis, evaluation of benefits, assessment of potential barriers and risks). While public consultations have the broadest reach, targeted bilateral interviews can help supplement information gathered and enable a more open dialogue with stakeholders, particularly with smaller entities.

Engagement with a broad set of stakeholders is recommended, as a broad dispersion of net benefits among key stakeholders can provide a balanced view off the potential benefits and risks of expanding payment system access expanded access. Authorities/operators can provide their perspective of potential benefits and risks from a system-wide perspective. In cases where action by the relevant authorities is necessary to ensure there is an appropriate supervisory/regulatory framework for new participants, coordination among authorities and payment system operators will be key for broadening access. Gaining input from authorities/operators in other jurisdictions who have recently experienced broadening access can also provide useful input. Evidence from their experiences can contribute to assessing potential benefits and risks, as well as gain a better understanding on potential mitigating measures.

– Prospective participants are expected to receive the most direct benefits from improved access. When consulting prospective participants, the key objectives will be to understand:
  - o the firm's business model, including as it relates to cross-border payments, and how the firm is currently accessing relevant payment and settlement systems;
  - o type of payment system (eg retail vs wholesale) and services (eg settlement, intraday liquidity) the firm would ideally have direct access to and those where indirect access is sufficient; and
  - o an overview of the anticipated benefits of different forms of access, including in terms of the costs, speed and transparency of cross-border payments.
– Current participants can provide insights into the risks and impacts that broader access could bring to the payment system, as well as current barriers and challenges based on their past onboarding experience. When consulting current participants, key objectives will be to understand their:
  - o assessment of risks that could be posed by prospective participants or by expanding access in general;
  - o resources and costs associated with participating in the payment system; and
  - o challenges faced during the application and onboarding process.

Source: CPMI.

5.4 Develop conclusions

After completing the self-assessment, the central bank or payment system operator will be able to conclude whether changes to access policies are needed to support improved access and whether there is a compelling benefit case for pursuing these changes. At the conclusion of the self-assessment, a central bank or payment system operator should have a clear view on:

- the potential benefits associated with expanding access to payment systems settling in central bank money and the types of entity in scope;
- the potential barriers and risks associated with expanding access, and ways to mitigate or appropriately control them;
- the areas where additional consultation or collaboration with other relevant authorities is needed; and
- the conditions and access criteria for various market participants as well as the changes that could be introduced to enable (expanded) access and the trade-offs of doing so.

If the self-assessment informs a central bank that there is a compelling case for expanding direct access to payment systems, then it could proceed to develop a plan towards removing barriers and addressing risks. Section 6 provides case studies and examples off strategies and approaches for addressing some of these barriers and risks to inform the development of this plan. This report focuses on expanded direct access, but depending on the specificities of the jurisdiction, including its legal and regulatory framework, types of prospective participants and their needs, alternative options such as improved indirect access could also be considered by central banks and payment system operators (see Section 4.3).

6. Approaches to addressing barriers to improved payment system access

This section sets out practical experience from different jurisdictions that have expanded access, thus addressing the various barriers identified in Section 4. Strategies for overcoming barriers will differ across jurisdictions depending on the current access situation as well as the payments landscape. As such, there is no one-size-fits-all solution to improving access and the case studies in this section provide illustrative examples rather than exhaustive solutions of how each barrier could be addressed.

While the various barriers will need to be considered individually, there could also be merit in considering the barriers and their solutions in parallel. For example, if a jurisdiction faces legal barriers, which could require longer time frames to realise changes, it could be useful to consider steps to overcoming other barriers at the same time. Furthermore, it should be kept in mind that the barriers are often linked to certain risks that need to be addressed and adequately controlled. Many of the identified barriers help prevent or control risk. Therefore, in many cases, the most effective way to address the barrier is to find a way to contain the relevant risk.

6.1 Overcoming legal and regulatory barriers

Legal and regulatory barriers can be especially relevant in cases where expanded payment system access is considered for entities that were previously not active in financial services, and for which a robust regulatory framework might not yet be established and/or which have not been eligible to participate in payment systems. In some cases, payment system access requirements may not be objective, proportionate and non-discriminatory, and would require revision. The main legislative barrier is to obtain a banking licence. Box 2 summarises the approach taken by the authorities in three jurisdictions where the legal and regulatory perimeter was amended to allow new entrants to access payment systems.

Box 2

Examples of overcoming legal and regulatory barriers: case studies of Singapore, Switzerland and the United Kingdom

Singapore

- *Background*: Access to FAST (Fast and Secure Transfers), Singapore's real-time electronic funds transfer retail payment system, was expanded in early 2021 to include non-bank PSPs. The Payment Services (PS) Act of 2019, combined legislation of various payment services that reflected changes to business models and changes in the payments landscape. The PS Act provided a consistent, forward-looking and flexible risk-based framework for the regulation of payment systems and payment service providers in Singapore that encourages innovation and competition in the market.
- *Barrier:* There was no consistent and aligned risk-based framework to regulate key payment activities provided by both banks and non-bank financial institutions in the area of AML/CFT.
- *Solution:* The PS Act established an activity-based, risk-focused licensing framework that authorises the Monetary Authority of Singapore (MAS) to consistently regulate seven types of payment service (with three types of licence available so that non-bank financial institutions can provide those services). For example, the PS Act subjects non-bank financial institutions to the same standards as banks regarding AML/CFT requirements, including customer due diligence and monitoring. Applying the same standards creates a level playing field for all PSPs who want to access FAST.

Switzerland

- *Background:* The Swiss National Bank's (SNB) access policy for the Swiss Interbank Clearing (SIC) system was opened to banks domiciled abroad in 1998 with further additions to date. In 2019, with the creation of a new licensing regime in the Swiss Banking Act, fintech companies regulated and licenced under this regime were added to the entities eligible for access to the SIC system. The promotion of innovation was a principal motivation behind this strategic decision, which was aimed at sustaining the attractiveness and competitiveness of the Swiss financial market.
- *Barrier:* Fintech companies were not eligible for access to the SIC system.
- *Solution:* The new licence is a dedicated regime for fintech companies and imposes no minimum financial requirements (capital, liquidity), taking into account that investment of deposits received and interest payments are not foreseen. The SNB grants these regulated fintech companies access to the SIC system if they have a significant business model in Swiss franc payment services.

United Kingdom

- *Background:* In July 2017, the Bank of England (BoE) announced its policy framework to expand access to RTGS accounts for non-bank PSPs seeking to join UK payment systems. The key drivers for the United Kingdom to expand access centred on improving competition and innovation in the payments market and creating a more level playing field. Additionally, the Payment Services Regulations 2017 (PSR 2017) also came into effect in January 2018, putting in place new obligations, backed by an enforcement regime, on access providers.
- *Barrier:* There were two types of barrier that needed to be addressed. Firstly, the regulatory requirements in place for non-bank PSPs were different from those for traditional commercial banks, most notably with respect to safeguarding requirements for "relevant funds". Secondly, there was no regulator for the payment systems industry, which meant that diverging requirements represented high barriers for new participants. This is why the introduction of the PSR 2017 was critical.
- *Solution:* Amendments to legislation were made to ensure that non-bank PSPs could still meet their safeguarding requirements after becoming a direct participant. This included changes to client funds safeguarding rules to allow non-bank PSPs to safeguard client funds at the BoE and allow client funds to be used to prefund client payments.

Further legislative change was required to the Settlement Finality Regulations (1999) to ensure that all non-bank PSPs eligible for direct access were covered by settlement finality protections. Second, the PSR 2017 included new requirements to treat requests for direct and indirect access in a proportionate, objective and non-discriminatory (POND) way, and for credit institutions to notify the Financial Conduct Authority (FCA) each time they refuse or withdraw access to a PSP. Since that time, the PSR has conducted several reviews into direct and indirect access and found that the number of direct participants has increased but concerns remain such as limited or no choice of indirect access options for small PSPs, and barriers to switching access providers.

Source: CPMI.

6.2 Overcoming financial, operational and technical barriers

6.2.1 Financial barriers

The expansion of access in the United Kingdom and Brazil provides examples of how financial barriers were addressed to enable expanded access to payment systems by non-bank PSPs. The case studies show that the solution to the barriers should be tailored to the exact nature of the financial barrier (eg overall costs in gaining access, meeting financial requirements for safeguarding of funds).

Box 3

Examples of addressing financial barriers: case studies of Brazil and the United Kingdom

Brazil

- *Background*: The Central Bank of Brazil (BCB) expanded access to the central bank-operated RTGS system (Reserves Transfer System, STR) in 2009 to include non-bank PSPs authorised by the BCB through expanded settlement account access. The main motivation for expanding access was to foster competition in the domestic financial system, which should result in more efficiency, reduced costs and risks, and a more level playing field. BCB also wanted to expand access to reduce concentration risk in the Brazilian financial system and allow better visibility into the operations of non-bank PSPs.
- *Barrier*: The main financial barrier to Brazil's Reserves Transfer System (STR) was the cost to participants, since participants must meet several technical, operational and regulatory requirements, and indirect participation is not allowed. For example, participants must have access to the National Financial System Network (RSFN), a dedicated communications network, which requires meeting various security, contingency and redundancy requirements.
- *Solution*: As a lower-cost option, small participants may access STR manually through STR-Web, an application developed by the BCB. This option is, however, only viable for a lower volume of transactions and therefore small participants given its manual nature.

United Kingdom

- *Background*: In July 2017, the Bank of England (BoE) announced its policy framework to expand access to RTGS accounts for non-bank PSPs seeking to join UK payment systems.
- *Barrier*: Regulatory requirements for non-bank PSPs differed from those applicable to traditional commercial banks, most notably in safeguarding requirements for ""relevant funds"."
- *Solution*: In the United Kingdom, expanding access to non-bank PSPs necessitated a revision of regulatory requirements for the safeguarding of client funds by allowing for: (i) the safeguarding of funds at the BoE; and (ii) the use of client funds for the prefunding of client payments. The need to meet prefunding requirements was still judged necessary to eliminate settlement risk.

Source: CPMI.

6.2.2 Operational barriers

Operational barriers can be addressed in different ways. The strategy that was adopted in Brazil highlights that payment system operators need to assess their own operational capabilities when deciding on the way forward.

Box 4

Examples of overcoming operational barriers: case study of Brazil

Brazil

- *Background:* Although expanded access had been in place for several years (and the BCB prepared for an increase in daily transactions), the BCB experienced a temporary significant and unanticipated increase in daily transaction volumes of STR in 2019, which affected the STR's processing capacity.
- *Barrier:* Following the expansion of access to the STR, the BCB experienced a significant increase in daily transaction volumes, which affected the STR's performance.
- *Solution:* A separate initiative for the STR's' technological update changed the system's data processing centres from mainframe to distributed systems to increase performance and support processing capacity. Furthermore, the transaction volumes stabilised after access to the fast payment system (SPI) was expanded in 2020, with smaller participants opting to send individual transactions via SPI. The BCB continuously monitors STR performance, utilising tests and transaction projections on an ongoing basis in order to assure performance of the STR even when transaction volumes surge.

Source: CPMI.

6.2.3 Technical barriers

The cases of Brazil and India provide examples of how technical barriers can be addressed. As shown below, web-based interfaces can be a feasible alternative. Additionally, as noted in these cases, solutions must be continuously updated as the needs of the participants and the systems evolve.

Box 5

Examples of addressing technical barriers: case studies of Brazil and India

Brazil

- *Background:* The Central Bank of Brazil (BCB) expanded access to the central bank-operated RTGS system – the Reserves Transfer System (STR) – in 2009 to include non-bank PSPs authorised by the BCB through expanded settlement account access.
- *Barrier:* Participants in the STR must use a dedicated communication network (National Financial System Network, RSFN) meeting various security, contingency and redundancy requirements, which can lead to high costs and present a barrier to payment system access.
- *Solution:* In conjunction with the expansion of access to non-bank payment institutions, as a contingency access measure as well as a cheaper and more convenient option for smaller participants, an internet-based connection to the STR (STR-Web) was developed. Since STR-Web is manual, some small to medium-sized participants use IT service providers for more convenient and customised access solutions to STR. The IT service providers must be approved by the central bank to ensure that they comply with the relevant procedures and requirements.

India

- *Background:* In India, guidelines issued by the Reserve Bank of India (RBI) in July 2021 extended access to payment systems operated by the central bank to certain non-bank PSPs regulated by the RBI or other financial sector regulators. Expanding access reflected the increasing role that non-banks play in offering financial services and addressed the need for a level-playing field. Enhancing the overall resilience of the payments ecosystem by eliminating risk of failure or delay in execution of fund transfers was also a rationale for expanding access.
- *Barrier:* Non-banks seeking access could face technical barriers in accessing the payment system, as this usually requires joining a dedicated communication network and adapting to a proprietary messaging infrastructure.
- *Solution:* The RBI introduced the option of a web-based interface to access the payment system, offering a low-cost alternative for participants with a low volume of payments.

Source: CPMI.

6.3 Information challenges

A lack of transparency could either deter potential participants from requesting access or result in extensive communication needs between the payment system operator and the potential participants. An important approach to tackling this challenge and foster transparency is to publish clear guidelines on the access requirements and clearly communicate any changes to the access policy.

Box 6

Examples of overcoming information challenges: case studies of Switzerland and the United Kingdom

Switzerland

- *Background*: The Swiss National Bank's (SNB) access policy for the Swiss Interbank Clearing (SIC) system was opened to banks domiciled abroad in 1998 with further additions to date. In 2019, a new licensing regime for fintechs in the Swiss Banking Act was created.
- *Barrier:* In the past, new participants had challenges finding information on the types of admission to the SIC system.
- *Solution:* The SNB publishes an instruction sheet providing information on the types of admission to the SIC system and sight deposit accounts, defining the corresponding admission criteria and specifying the circumstances under which a participant may be suspended/excluded from the SIC system. The instruction sheet also describes the administrative procedure for submitting an application for admission.

United Kingdom

- *Background*: In July 2017, the Bank of England (BoE) announced its policy framework to expand access to RTGS accounts for non-bank PSPs seeking to join UK payment systems.
- *Barrier:* When access was expanded, there was no information for prospective participants on how to apply for direct access.
- *Solution:* When announcing that applications could start for non-bank PSP access to RTGS in 2017, the BoE published a guide on the onboarding process. This was drafted jointly with the relevant private payment system operators to give clarity to prospective users on how the application process would work and the roles and responsibilities of the different actors involved.

Source: CPMI.

7. Conclusion and outlook

The G20 cross-border payments programme identified improving (direct) access to payment systems as an important means of enhancing cross-border payments and tasked the CPMI with a series of actions in this regard under BB 10. This report marks the end of the analytical phase and forms the CPMI's response to the action in developing and publishing best practices for authorities and payment system operators that are considering the expansion of direct access.

The report finds that, across the 76 jurisdictions in focus in this analysis, currently only a minority of the 184 relevant payment systems provide direct access to three important categories of cross-border payment service providers, ie non-bank PSPs, FMIs and foreign banks. The findings of this report are based on a global survey among central banks and discussions held with payment systems operators, current payment participants and new entrants.

The report also presents recent experience of expanding access in several jurisdictions. It further identifies a range of benefits that could accrue from expanding access, but also the risks that would need to be addressed, and the barriers that would have to be overcome, to enable access to be expanded to the above types of PSP. This report should serve as a tool for authorities and payment system operators considering options to expand direct access. It supports a holistic analysis of the case for improving payment system access by providing detailed guidance on three key areas:

1. The benefits, risks and barriers that central banks and payment system operators need to consider when assessing the case for expanding access to payment systems

– Expanding access to new types of firm can bring material benefits. These include increased efficiency through shorter transaction chains, more competition and innovation through reduced barriers to entry and enhanced settlement risk mitigation. New entrants can also reduce concentration risk and increase diversity in cross-border payments provision, potentially supporting greater financial inclusion.

– Barriers that typically need to be addressed to enable expanded access include regulatory and legal barriers (as the entities eligible for direct access might be restricted by law), financial barriers (such as membership fees), and operational and technical barriers (such as technical infrastructure investments).

– Risks that central banks and payment system operators need to appropriately control when expanding access include changes in thethe risk profiles of participants, risks to the integrity of the settlement process, counterparty credit risks and collateral risks, and resourcing needs.

2. A detailed framework that can be used by central banks and payment system operators that are considering expanding access for self-assessing the access policies of domestic payment systems based on best practices

To undertake a holistic self-assessment of access policies, central banks and payment system operators should follow four steps, liaising as need be, with relevant stakeholders:

– *Set the main objectives and determine the scope of the access review:* The authorities involved should take a holistic approach and consider how expanded access could help achieve domestic objectives as well as enhance cross-border payments. Domestic considerations could be enhanced competition, innovation and how expanded access aligns with the central bank's priorities.

– *Evaluate the benefits of expanding access to domestic payment systems:* Central banks and payment system operators should analyse the benefits that improving access to payment systems would entail for current or prospective new participants. The aim is to determine the frictions that would be addressed in domestic and/or cross-border payments, and assess to what extent they would be addressed.

– *Assess potential barriers and risks of expanding access to domestic payment systems:* The authorities involved should evaluate what barriers and risks access policies may present for current participants, prospective new participants and payment system operators, and how they can be addressed and mitigated.

– *Develop conclusions:* As a final step, authorities and payment system operators would be in a position to assess whether changes to the payment system access framework are needed and if there is a case forfor pursuing these changes.

3. Existing examples and lessons learnt through case studies of jurisdictions that have successfully expanded access and overcome existing barriers

– There is no one-size-fits-all solution to expanding access, and strategies to overcome barriers will differ across jurisdictions depending on the current access situation as well as the payments landscape. However, the country examples discussed in this report should provide some insights and help jurisdictions to learn from each other.

The publication of this report is an important milestone of the G20 cross-border payments programme as it sets out a holistic self-assessment framework that jurisdictions can use to review access policies. But while an important achievement, this report is one step to improving (direct) access. The BB 10 sets out that authorities and payment system operators considering expanding access undertake self-assessments of domestic frameworks against the best practices and, if they conclude there is a case for expanding access, they should proceed to do so. Relevant international organisations might consider including the evaluation of domestic frameworks against the best practices in this report into their technical assistance programmes.

The benefits of expanding access could be amplified if developments occur in multiple jurisdictions, and if interdependencies with other BBs of the G20 cross-border payments programme are considered. Hence, collaboration and coordination of jurisdictions and payment system operators will be important success factors for the implementation of BB 10.

References

Bank of England (2021): "Bank of England publishes policy for omnibus accounts in RTGS", press release, 19 April.

Committee on Payments and Market Infrastructures (2016): *Correspondent banking*, June.

——— (2018): *Cross-border retail payments*, February.

——— (2020a): *Enhancing cross-border payments: building blocks of a global roadmap*, July.

——— (2020b): *Enhancing cross-border payments: building blocks of a global roadmap –technical–background report*, July.

Committee on Payment and Settlement Systems[30] and International Organization of Securities Commissions (2012a): *Principles for financial market infrastructures*, April.

——— (2012b): *Principles for financial market infrastructures: Disclosure framework and Assessment methodology*, December.

Finan, K, A Lasaosa and J Sunderland (2013): "Tiering in CHAPS", *Bank of England Quarterly Bulletin*, 2013 Q4, pp 371–78–.

Financial Stability Board (2020a): *Enhancing cross-border payments – stage 1 assessment report to the G20*, April.

——— (2020b): *Enhancing cross-border payments – stage 1 report to the G20: technical background report*, April.

——— (2020c): *Enhancing cross-border payments: stage 3 roadmap*, October.

——— (2021a): *Targets for addressing the four challenges of cross-border payments*, October.

——— (2021b): *G20 roadmap for enhancing cross-border payments – first consolidated progress report*, October.

Government of Canada (1996): Payment Clearing and Settlement Act (as amended 2019).

30 The Committee on Payment and Settlement Systems (CPSS) changed its name to Committee on Payments and Market Infrastructures in September 2014. References to reports published before that date use the Committee's old name.

Annex 1: Summary of the self-assessment framework steps and guiding questions

Step 1: Set the main objectives and determine the scope of the self-assessment

As a first step, central banks and payment system operators need to determine what the main objectives of a self-assessment are. As part of this work, the central bank may need to study eligibility conditions for payment system access and survey market uptake or demand for access. On that basis, central banks and payment system operators can decide which payment systems' access policies will be subject to the self-assessment and for which participant categories.

Guiding questions for landscape analysis Table A1

Type of information	Self-assessment questions
Current access arrangements, participants and policies for potentially relevant domestic payment systems	• What types of access arrangement are currently granted (eg direct, indirect, agent-only participants)? • For each type of access arrangement, what categories of entities are currently eligible and what are their access or participation criteria? • How is payment system access policy determined? Who are the relevant authorities or entities that set eligibility criteria and participation requirements? • How are eligibility criteria currently assessed? • Who are the participants in the payment system, by category (eg foreign bank, non-bank PSP, FMI)?[1] • How many direct and indirect participants are there by category for each of the major payment systems and what share of the local market do the present?
Firms active in cross-border payments and opportunities to enhance access to domestic payment systems for these PSPs	• What firms are active in cross-border payments and in which market segment (wholesale, retail, remittances) are they operating? • How do cross-border PSPs currently access domestic payment systems (eg direct, indirect, agent-only participants)? • How do cross-border PSPs currently access foreign payment systems (eg direct, indirect, agent-only participants)? What are the access policies in those foreign payment systems? Is there an opportunity to align domestic access arrangement with foreign access arrangements? • Are firms active in cross-border payments requesting or demonstrating interest in broader direct and indirect access to certain payment systems? Why are these payment systems more attractive (eg do they address certain use cases or have certain features that make them more attractive)? • What types of additional service could these cross-border PSPs benefit from (eg intraday liquidity)?
Other demand for broader access	• Have other market participants (non-bank PSPs, FMIs, foreign banks) expressed interest in expanded direct access to certain payment systems? For what use case? • Is there evidence that current access arrangements (direct and indirect) are not meeting market needs? • Have concerns been raised that direct access to payment systems is not sufficiently open or fair?
Domestic policy objectives to enhance cross-border payments	• Have you identified any additional domestic objectives that are relevant for the self-assessment such as supporting greater competition, innovation and financial inclusion?
Interdependencies with other initiatives on improving cross-border payments	• Are there any interdependencies between domestic policies and initiatives related to cross-border payments that need to be included in the self-assessment? • Are there any interdependencies between domestic policies and initiatives under the G20 roadmap on cross-border payments that need to be included in the access review?

[1] If this information is difficult to obtain, a rough order of magnitude for each participant type could be sufficient.

Source: CPMI.

Step 2: Evaluate the benefits of expanding direct access to payment systems

As a next step, central banks and payment system operators need to analyse the benefits that improving access to payment systems would entail for current or prospective new participants in scope.

Guiding questions for the benefits evaluation — Table A2

Benefit	Self-assessment questions
Efficiency • Shorter transaction chains • Modern and faster payment systems • Economies of scale	• What other jurisdictions do (prospective) participants operate in and are they direct members of other foreign payment systems? • What are the correspondent banking relationships of (prospective) participants, if applicable? • What technologies do (prospective) participants use and how efficiently can they process payments in terms of cost and speed? • What are (prospective) participants' (potential) transaction volumes and values?
Competition and innovation • Level playing field • Reduced barriers to entry • New and innovative entrants	• Is there currently significant concentration in the provision of (cross-border) payment services? • What additional costs or processing delays may be experienced by indirect participants relative to direct participants? • Is there evidence of direct participants having access to detailed information about indirect participants' client information? • Is there evidence of direct participants using their role in the governance of the payment system to obtain strategic advantages over indirect participants? • What products and services do prospective participants offer? How does this compare to current participants and traditional players in the market? • Do prospective participants plan to become settlement providers, and if so, who would be their clients? • What is the size of the (prospective) participants' customer base? • Have market participants identified related level playing field concerns that would need to be addressed before access is expanded (such as introducing or aligning participation requirements or regulatory regimes)?
Risk mitigation and financial stability • Reduced settlement and liquidity risk • Reduced risks from tiered participation • Resilience from diversity	• What are the tiered participation relationships in the payment system? Is there any concentration risk associated with traditional players providing indirect access? Is compliance or AML/CFT risk exacerbated by long payment chains? • Are any indirect participants systemically important or could they become systemic in the future? • Does any indirect participant represent a large proportion of their settlement bank's transaction values or volumes? Would such indirect participants be interested in and capable of managing the risks of becoming a direct participant?
Financial inclusion	• Do prospective participants provide services to marginalised or underserved communities? Would such participants be interested in and capable of managing the risks of becoming a direct or indirect participant? • What requirements (eg technology, financial) do end-customers of prospective participants need to meet to access that participant's products and services?

Source: CPMI.

Step 3: Assess potential barriers and risks of expanding access to payment systems

In the third step, central banks and payment system operators should assess what barriers and risks expanded access may present for payment system operators, current participants and prospective new participants. These barriers and risks might need to be addressed through mitigating measures. In addition, existing participation requirements may represent barriers to entry to currently eligible participants. The assessment should explore if these participation requirements could be removed or changed while still managing risks they aim to address.

Guiding questions for the barriers and risks assessment Table A3

Challenges	Self-assessment questions
Legal restrictions on eligibility	• Are there legal restrictions on allowing direct access for certain types of prospective participant – such as licensing requirements? • Are there legal restrictions on the central banks' ability to offer settlement accounts to certain entity types? Do restrictions to settlement accounts inhibit entities' access to payment systems? • Do payment system rules/regulations need to be changed for new entity types to be eligible? What parties or relevant authorities are involved in setting and adjusting eligibility rules? • Do payment system service level agreements (SLAs) and scheme processes need to be changed for new entity types to be eligible? Is there a new SLA/scheme to be implemented? What parties or relevant authorities are involved in setting and adjusting the SLA/scheme?
Regulation and supervision/ oversight for additional entity types	• Are (prospective) participants subject to local regulatory and supervision/oversight frameworks? How do these frameworks differ per entity type, including in relation to financial requirements and safeguarding of customer funds, operational resilience, data-related practices and AML/CFT frameworks? Could these frameworks lead to different outcomes for risk management and policies? • Would a new regulatory and supervision/oversight regime need to be introduced for new participant types to facilitate access? And if so, does that need to happen in coordination with other authorities in the jurisdiction? • Are there changes to existing oversight and/or supervisory frameworks, such as greater coordination across jurisdictions that could mitigate barriers for cross-border firms' access to payment systems? • Are there other safety and soundness concerns related to prospective entity types?
Financial requirements	• What are the drivers of the cost of participating in a payment system, and who has authority over cost-related requirements and policies? Do they need to be adjusted? Are the costs for participating in the payment system viewed as a barrier to participation? • Are financial requirements aimed at mitigating risks to the payment system or its participants (eg capital adequacy, credit ratings, liquidity requirements) proportionate to the risks posed by potential participants? • Would additional financial or liquidity requirements need to be introduced to address risks posed by new entity types participating?
Operational and technical requirements	• Are existing operational requirements, (including in relation to systems, data, security, staffing, business continuity and incident management) reasonable and proportionate to the risks posed by new participant types? Would additional operational risk requirements for new participant types need to be introduced to address specific risks that they present? • Are location-based requirements in place and what risks do they aim to address? Are there other reasonable ways to mitigate such risks? Are technical and connectivity requirements appropriately risk-based?
Other	• Do specific participant types (eg foreign banks, non-bank PSPs, FMIs) pose any additional risk? Are the corresponding requirements reasonable and proportionate to those risks? • Are the participant requirements publicly available or easily accessible in one place for prospective applicants? Are the requirements (and related documentation) clear?

Source: CPMI.

Step 4: Develop conclusions

Following the previous steps, authorities and payment system operators would be in a position to assess whether changes to the payment system access policies are needed and if there is a case for pursuing these changes. If authorities and payment system operators decide there is a strong case, then they could proceed to develop a plan towards removing barriers and addressing risks. Section 6 provides case studies and examples on strategies and approaches for addressing some of these barriers and risks to inform the development of this plan.

Annex 2: Key interdependencies of BB 10 with other building blocks

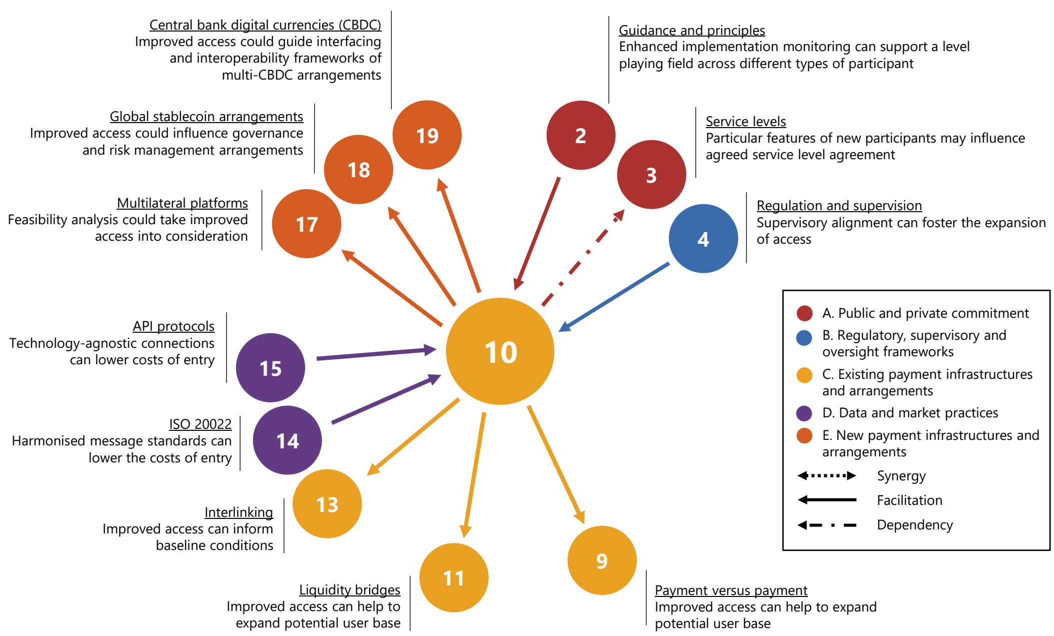
The various BBs underpinning the five focus areas of the G20 cross-border payments programme have interdependencies. This means, in addition to bringing notable improvements to cross-border payments individually, the BB contributions are likely to become most significant when deployed in a coordinated manner.

BB 10 is a foundational BB as access conditions to payment systems play a pivotal role in addressing existing frictions in cross-border payments. Therefore, BB 10 has a number of interdependencies with other BBs.

Alignment of regulatory, supervisory and oversight frameworks across jurisdictions (BB 4) can facilitate achieving the benefits of improved access (enhanced competition, reduced risk, better financial inclusion and greater efficiency). Leveraging existing international standards and guidance as well as enhancing their implementation can mitigate concerns over the lack of soundness of certain participants (BB 2).

Greater technical harmonisation of access interfaces such as application programming interfaces (APIs) (BB 15) can help facilitate expanded access and have these infrastructures broadly leveraged to perform data and value exchange across jurisdictions. Better technical connections to payment systems are critical for new types of entrant as they can bring down costs and reduce other practical complexities for these firms. Similarly, promoting the adoption of common messaging formats, including a harmonised version of ISO 20022 (BB 14) is likely to contribute to achieving fully automated straight through processing.

Overview of interdependencies between building blocks — Graph A1



Source: CPMI.

Annex 3: Additional information on types of central bank account

Section 2.3 discusses the three categories of central bank settlement account considered in this report: Settlement-only accounts, settlement accounts with additional services and supplemental accounts to facilitate settlement. The table below summarises examples of jurisdictions with account structures that fall under each category.

Categories of central bank settlement account

Table A4

Account purpose	Account type	Description	Potential access to credit facilities	Examples
Settlement-only[1]	RTGS settlement-only account	Account used to settle the payment obligations arising from payment arrangements which settle at the central bank.[2]	No	• The United Kingdom offers access to domestic depository institutions and non-bank PSPs
Settlement with additional available services *(eg central bank credit/liquidity, ability to hold overnight balances)*	RTGS settlement account *(typically for systemically important entities)*	A standalone account with the RTGS system that allows users to settle payments on their own behalf or for their customers/members.	Yes	• Brazil offers settlement accounts to participants that are not required to hold a reserve account, and eligible institutions (eg financial institutions) can access credit facilities. • Switzerland offers access to domestic banks and branches of foreign banks.[3] • The Eurosystem offers RTGS settlement accounts for TARGET2.[4] • South Africa offers a settlement account for settlement banks only to enable settlement of all obligations.
	Reserve / master / current account	Accounts that maintain the record of financial rights and obligations of an account holder and the central bank where opening, intraday and closing balances are determined. Typically used to maintain reserve balances and may also serve as a settlement account for payment systems (eg RTGS).	Yes[5]	• Banks in India maintain current accounts with the RBI. RTGS participants maintain a RTGS settlement account that is funded from the current account. • The United States offers master accounts to eligible participants (eg depository institutions) • Japan offers current accounts to eligible participants (eg domestic depository institutions, broker-dealers)
	Joint / omnibus account	Settlement or other deposit account where the rights and liabilities are shared among multiple account holders (eg institutions eligible to open an account at the central bank).[6]	No	• The United States offers access to institutions eligible for master accounts within a private sector arrangement[8] • The United Kingdom offers omnibus accounts to payment system operators[9]

Account purpose	Account type	Description	Potential access to credit facilities	Examples
		Joint/omnibus accounts can hold funds for the joint benefit of private-sector participants to back settlement between and among account holders on an internal ledger maintained by a private sector operator. [7]		
Supplemental accounts to facilitate settlements *(used in addition to a settlement account)*	Loan or cash collateral	Accounts that serve as collateral for settlement or otherwise enable central bank credit. In case of insufficient funds available in participant settlement account, the RTGS system will automatically grant a loan to the participant against acceptable collateral.	Sometimes	• In South Africa, settlement banks hold a loan account backed by collateral in addition to a settlement account. If a bank has insufficient funds available in its settlement account, the RTGS system will automatically grant a loan to the bank's loan account against sufficient acceptable collateral to enable settlement to take place. • The United Kingdom offers prefunding accounts for direct settlement participants in certain retail payment systems to hold funds in the case of a participant default, at which point the prefunding account balance would be used to complete settlement.
	Dedicated liquidity (eg guaranteed fund account, sub-account, mirror account)	Specific account and holding dedicated liquidity, or sources of liquidity, to guarantee the settlement of an ancillary system.	No	• South Africa offers sub-accounts (eg Continuous Processing Line accounts) where banks can allocate funds dedicated for specific settlement in the domestic settlement system SAMOS. These accounts have to be funded before settlement occurs. • The Eurosystem TARGET2 offers "technical accounts" for ancillary systems to conduct settlement procedures. The Eurosystem also offers "sub-accounts" for dedicating liquidity and cross-system settlement in TARGET2. Finally, the Eurosystem offers mirror accounts, which are debited or credited in the case of liquidity transfer between a participant's RTGS account and its account in an ancillary system.

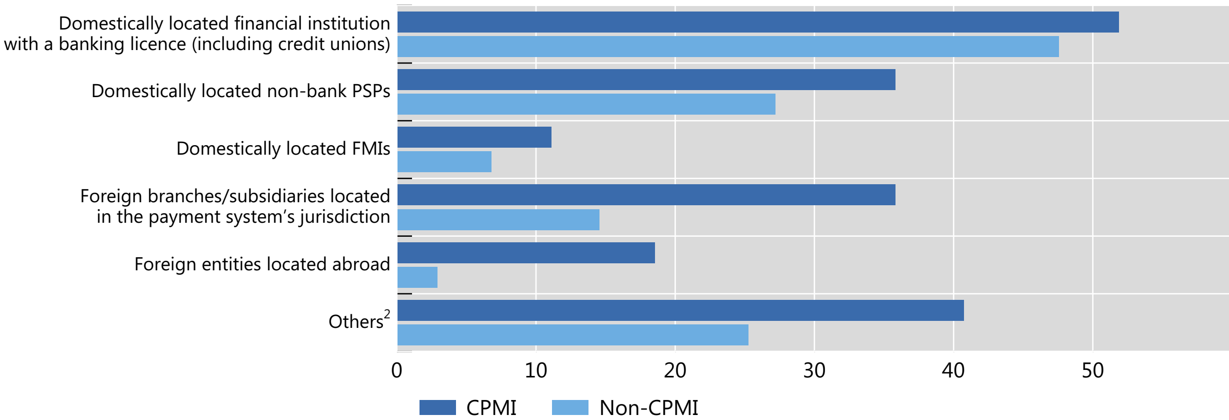
[1] In the context of this report, settlement account refers to accounts held by qualified entities (eg credit institutions) at central banks. [2] The RTGS system may require sufficient funds in the settlement accounts of participants for immediate settlement to occur. [3] Access is also granted for securities dealers, cash processing operators, fintech companies, financial market infrastructures and insurance companies as long as they have a corresponding licence and have a relevant relationship to payment transactions in Swiss francs. [4] TARGET2 is the Eurosystem RTGS payment system. [5] Account eligibility does not guarantee eligibility for credit. [6] Account structures in which a single account holder operates an ancillary payment system may enable multiple payment system participants to have a similar legal claim on funds in an account held by a single entity. [7] The joint account agreement may include additional obligations or conditions in order to limit operational or credit risk (eg adjusted remuneration, adherence to the PFMI). [8] To mitigate settlement risk in a private sector arrangement, a payment system could hold funds in an account at the central bank to back the settlements conducted on the payment system's own books, but not use the central bank account to perform settlements. This model is used by The Clearing House Interbank Payments System (CHIPS) and Real-Time Payments (RTP) in the United States. [9] In April 2021, the Bank of England introduced a new access model in which payment system operators can hold an omnibus account in RTGS on behalf of their participants (eg credit institutions). Payment system operators holding an omnibus account can offer participants a method of settling payment obligations that is fully funded with central bank money.

Source: Bank of England, CPMI.

Annex 4: Supplementary graphs

Types of entity eligible for indirect access to the payment system[1]

As a percentage of reported payment systems — Graph A2

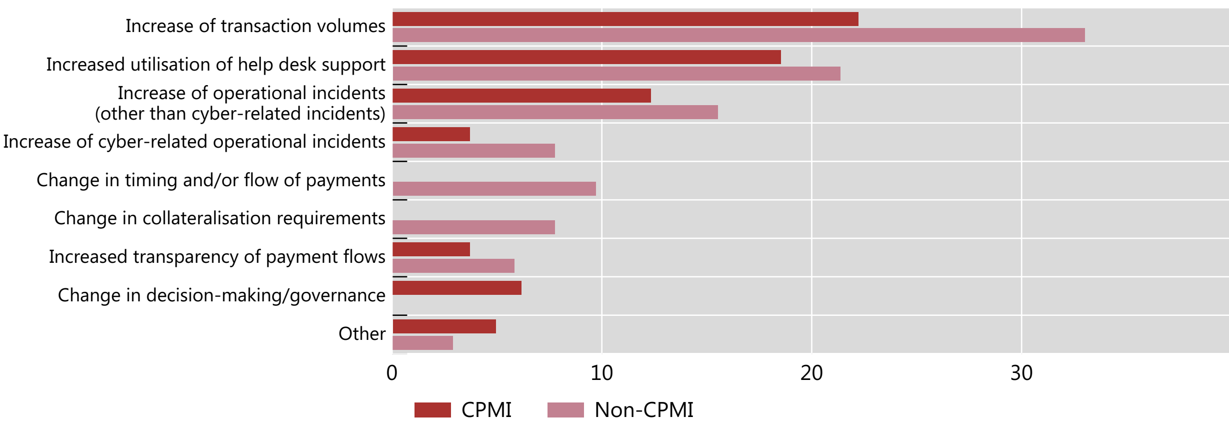


[1] Participants that have indirect access are firms that rely on the services offered by other firms (participants that have direct access) to use the payment system's facilities. The sample includes 81 payment systems in CPMI jurisdictions and 103 payment systems in non-CPMI jurisdictions. [2] The category "Others" includes domestically located broker-dealers, domestically domiciled commercial entities including technical aggregators and the option "others" given to the respondent.

Source: CPMI survey.

Impact on the structure and/or operation of the system resulting from a change in composition of participants accessing it[1]

As a percentage of reported payment systems on each category — Graph A3

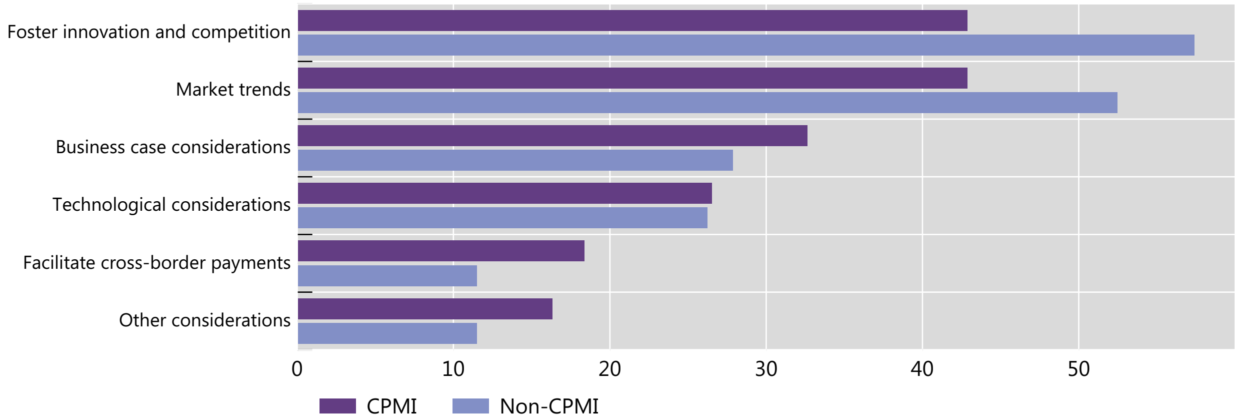


[1] The sample includes 81 payment systems in CPMI jurisdictions and 103 payment systems in non-CPMI jurisdictions.

Source: CPMI Survey.

Main motivations for considering increased access[1]

As a percentage of reported payment systems on each category | Graph A4



[1] The figures are computed as a share of the reported payment systems for which an expansion of the type of institution eligible for direct and/or indirect access to the payment system within the next five years is possible if certain conditions are met, very likely or there are concrete plans. The sample includes 49 payment systems in CPMI jurisdictions and 61 in non-CPMI jurisdictions.

Source: CPMI survey.

Annex 5: Detailed case studies

Case study 1: United Kingdom

Expanding access for non-bank PSPs in the BoE's RTGS system

History and overview

The key drivers for the United Kingdom to broaden access focused on improving competition and innovation in the payments market and creating a more level playing field. In July 2017, the BoE announced its policy framework to broaden access to RTGS accounts for non-bank PSPs seeking to join UK domestic payment systems as a direct member. This change enabled non-bank PSPs for the first time to directly access the UK payment systems that settle in central bank money. Non-bank PSPs seeking to become a direct settlement member of these payment systems must hold a settlement account at the BoE. As part of the BoE's work to broaden access, two main risk categories were identified from a central bank perspective. First, risks to payment system users, which includes settlement, liquidity, operational and cyber risks. Second, risks to central bank objectives including legal, conduct, financial crime, reputational and credit risks. The first non-bank PSP became a direct participant of the UK Faster Payment system with access to a settlement account in the BoE's RTGS system in April 2018.

Regulatory landscape

There was no requirement to develop a new supervisory framework for non-bank PSPs. The United Kingdom had introduced the Electronic Money Regulations 2011 and the Payment Services Regulations 2017, which established a regulatory regime for payment institutions and e-money providers in the United Kingdom. These regulations ensure that non-bank PSPs can provide payment services in a safe and secure way for the financial system and end users.

Legal changes required to expand access

The regulatory requirements for non-bank PSPs are different from those for traditional banks, most notably in safeguarding requirements for "client funds". These regulatory requirements were not written with direct participation in payment systems in mind, which meant amendments to legislation were needed to ensure that non-bank PSPs could still meet their safeguarding requirements after becoming a direct participant in a payment system. For example, legislative changes to client funds safeguarding rules were made to allow non-bank PSPs to safeguard client funds at the BoE and allow client funds to be used to prefund client payments. Own funds used for payments are held in a separate account with separate prefunding arrangements. The supervisory treatment of client funds was also altered to allow for deferred net settlement. These changes were enacted in the Payment Services Regulations 2017 (PSR 2017).

Further legislative change was required to the Settlement Finality Regulations 1999 to ensure that all non-bank PSPs who could be eligible for direct access were covered by settlement finality protections. Without this, risks would be created for other scheme members if a non-bank PSP went into bankruptcy.

Additionally, the PSR 2017 came into effect in January 2018, putting in place new obligations on access providers, backed by an enforcement regime. Prior to that, there was no regulator to oversee the payment systems industry, which meant that diverging requirements represented high barriers for new participants. The PSR 2017 included new requirements to treat requests for direct and indirect access in a proportionate, objective and non-discriminatory way, and for credit institutions to notify the Financial Conduct Authority (FCA) each time they refuse or withdraw access to a PSP.

Regulatory changes required to expand access

New scheme requirements were also introduced to ensure that non-bank PSPs applying for direct access could meet the same onboarding requirements as existing direct members. For example, direct access to payment systems is only available to those e-money institutions and payment institutions authorised by the FCA, the authority responsible for the supervision of non-bank PSPs in the United Kingdom. A new supervisory assessment conducted by the FCA (and sometimes Her Majesty's' Revenue and Customs (HMRC))[31] was introduced to provide assurance that non-bank PSPs could meet existing regulatory requirements particularly around risk and governance, safeguarding and AML/CFT rules. Account applicants are required to pass the supervisory assessment before a settlement account in the RTGS system can be granted.

Non-bank PSPs are also required to be able to meet the technical requirements for joining the RTGS system (eg SWIFT connectivity). The BoE grants certain types of institution access to reserves accounts in the Sterling Monetary Framework.[32] By their nature, non-bank PSPs do not meet the eligibility criteria for access to reserves accounts and are thus not eligible for deposit accounts and liquidity facilities at the BoE.

Settlement risks that were addressed to expand access

In addition to legal and regulatory barriers that were addressed, the possible emergence of settlement risk leading to financial contagion was also evaluated. It was decided that non-bank PSPs could access the Bacs, Faster Payments and CHAPS payment systems on the same basis as direct participants. This means that CHAPS payments will need to be funded at the time that the payment is made and the principle of prefunding will apply for Bacs and Faster Payments participation. The need to meet prefunding requirements could restrict the number and variety of non-bank PSPs seeking direct access but it was judged necessary to eliminate settlement risk.

Current state and impact of changes

In response to changing innovation in the payments landscape, the BoE announced a new type of central bank settlement model available in its RTGS service in April 2021. The omnibus account[33] (also known as agent-only participation) extends the range of access options available to payment system operators by allowing regulated payment system operators to hold funds of different entities in a single pooled account to enable fully funded wholesale settlement in central bank money.[34] The account can hold funds both during and outside RTGS operating hours. The BoE published a new *Omnibus account policy* document to explain the access policy and eligibility requirements. In deciding whether to grant an account to a payment system operator, the BoE will complete an assessment against five eligibility criteria outlined in the *Omnibus account policy*. The payment system operator will also need to join CHAPS as a direct member and meet the associated criteria in the *CHAPS reference manual*.

Future state considerations and lessons learned

Looking ahead, the BoE continues to have a pipeline of prospective applications from non-bank PSPs with a range of business models although we expect the majority of non-bank PSPs to access RTGS indirectly for the time being. It is likely that as some non-bank PSPs with settlement accounts grow they will seek banking licences and transition to a reserves account with access to liquidity facilities. Over the longer-

[31] HMRC has responsibility for supervising money remitters for AML/CFT purposes only.

[32] Eligibility is judged on importance to the financial system, the extent of overnight liquidity risk run and whether the firm is subject to appropriate regulatory scrutiny.

[33] The omnibus account allows reserve-backed digital currencies operators to access a BoE account such that settlement is backed one to one by central bank money, which would otherwise be impossible.

[34] But only Sterling Monetary Framework participants can have claims to funds in the omnibus account.

term, there is a possibility that direct access for non-banks will encourage tech giants to enter the payments industry.

Case study 2: Switzerland

Access policy of the Swiss National Bank in the context of cross-border payments

History and overview

The Swiss RTGS system –known as the Swiss Interbank Clearing (SIC) system – processes interbank and retail payments in Swiss francs. Payments are settled irrevocably and with finality in central bank money. Participants in the SIC system are mainly banks, but also include insurance companies, securities firms and other financial institutions. The SNB decides on admission to the SIC system.

In 1998, the SNB opened the SIC system to banks domiciled abroad. The first foreign banks joined in 1999. The key motivation was to foster liquidity in the Swiss franc repo market, which was established in 1998. Since then, the SNB has further expanded its access policy in various phases. Currently a wide range of domestic financial market participants are allowed to participate, such as securities dealers, central mortgage bond institutions, cash processing operators and insurance companies. Access criteria vary according to the type of institution. While domestic banks and branches of foreign banks in Switzerland are generally eligible to participate in SIC, others must fulfil further criteria. For instance, insurance companies must be active in the secured Swiss franc money market. Another type of SIC admission is "SIC participation without a sight deposit account". This admission category applies to third-party system operators that can make debits and credits from/to the SIC settlement accounts of other SIC participants. This special form of admission is used primarily by service providers in the interbank area. For instance, the SIC system is linked to the Swiss securities settlement system SECOM. SIX SIS Ltd – the operator of SECOM – participates in the SIC system as a third-party system operator. As a result of this link, it is possible to settle the delivery and payment obligations arising from the purchase or sale of securities on a delivery-versus-payment basis. The delivery of securities takes place in SECOM, while SIX SIS Ltd as third-party system operator triggers the corresponding payment from the payer's SIC account, which is simultaneously settled in the SIC system.

Regulatory landscape

The basis for the SNB's role as commissioning party and system manager of the SIC system is its statutory task to facilitate and secure the operation of cashless payment systems in Switzerland. The SNB has entrusted the operation of the SIC system to SIC Ltd. The rights and obligations of the SNB as the commissioning party and system manager, and of SIC Ltd as operator of the SIC system, are governed by contract.

Participation in the SIC system has a legal basis in agreements between the different parties. Technical regulations, in particular, the Swiss RTGS handbook and directives (such as circulars and implementation guidelines) provide more details on the areas governed by these agreements. In addition, SNB's terms of business also apply. The individual agreements between SIC participants, the SNB and SIC Ltd are subject to Swiss law.

The SIC system is overseen by the SNB. The SIC system is not subject to authorisation or supervision by the Swiss Financial Market Supervisory Authority (FINMA). However, FINMA supervises domestic participants such as banks and fintech companies. Foreign banks must be subject to a level of standards regarding supervision, AML/CFT and telecommunications infrastructure which is equivalent to that applied to Swiss participants.

Regulatory changes and participants involved in cross-border payments

As all transactions in SIC are carried out in accordance with the Swiss Financial Market Infrastructure Act, the Swiss franc balances always remain in the Swiss jurisdiction and thus a "border is never crossed". However, the categories most relevant in the context of cross-border payments are branches of foreign banks located in Switzerland, foreign banks without a branch in Switzerland and certain regulated fintech companies. The last category, fintech companies, can also include PSPs with a focus on cross-border payments. This category was added in 2019 after a revision of the Swiss Banking Act created a new licence model, the fintech licence. Introducing this new licence model was a strategic decision in Switzerland to promote innovation and thus ensure the continued attractiveness and competitiveness of the overall Swiss financial market. This includes innovation and improvements for cross-border payments. The fintech licence imposes no capital and liquidity regulations, as it does not allow the deposits to be invested or interest to be paid on them. Furthermore, it allows a maximum of CHF 100 million in public deposits. The SNB grants these regulated fintech companies access to the SIC system if they have a significant business model in the area of payment transactions in Swiss francs. So far, several fintech companies have been granted access to an account at the SNB.[35]

Advantages of an open access policy

Originally, the key motivation to broaden access was to foster liquidity in the secured money market, which is a reference market for the SNB's monetary policy.[36] This is still one key motivation, but there are also other reasons, such as to improve competition and innovation in the payments market. Increased competition should lower costs for payments in the long run. Furthermore, direct access reduces the need of correspondent banks, which lowers overall risks and costs. Direct access also allows a faster and more transparent settlement of payments.

Risks of an open access policy and general rule

There are also risks regarding an open access policy. These risks are mainly legal, operational and reputational. The SNB addresses these risks mainly by limiting access to the SIC system to authorised and supervised institutions. Furthermore, the SNB is not bound by the published guidelines and may expand or restrict admission, either entirely or for specific categories of participant. As a general rule, to be admitted participants must make a significant contribution to the fulfilment of the SNB's tasks, and their admission must not pose any major risks. An important contribution is, for example, a meaningful contribution to the payment ecosystem in Swiss francs.

Transparency as a best practice for access policy

An important tool for fostering and realising the benefits of an open access policy to the payment system is to have clear guidelines on the requirements for access to settlement and sight deposit accounts. The SNB publishes an instruction sheet providing information on the types of admission to the SIC system and sight deposit accounts, defining the corresponding admission criteria and specifying the circumstances under which a participant may be suspended/excluded from the SIC system. The instruction sheet also describes the administrative procedure for submitting an application for admission.[37]

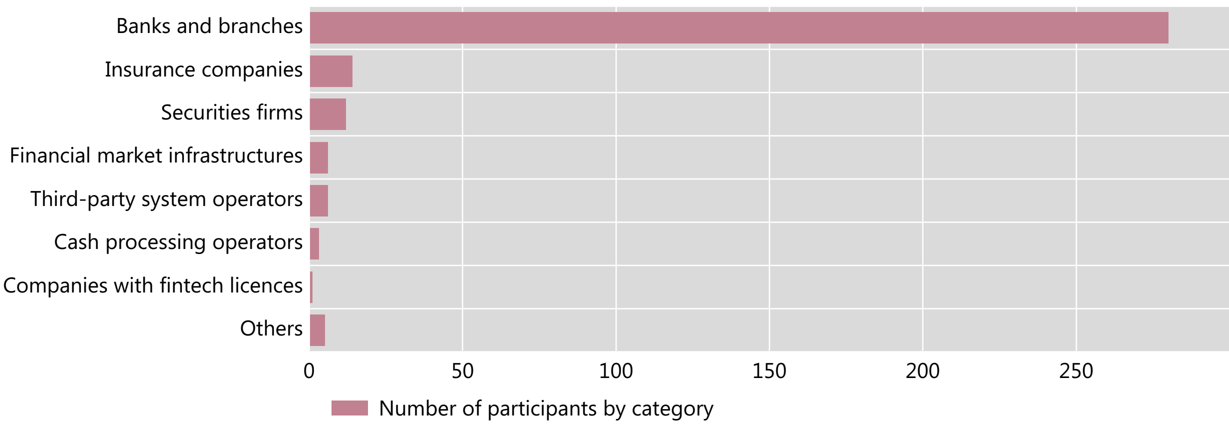
[35] SIC Ltd, the operator of the SIC system, publishes the list of institutions with a settlement account.

[36] The SNB implements its monetary policy via the SNB policy rate. The SNB seeks to keep the short-term Swiss franc money market rates close to the SNB policy rate.

[37] Further information can be found in the instruction sheet.

Overview of SIC participants

Number of participants | Graph A5



Source: SNB, "Report on the SIC systems and disclosure report", February 2021.

Case Study 3: Brazil

The Central Bank of Brazil (BCB) wanted to support competition and efficiency in the market by creating a more level playing field for access to its RTGS system. To this end, it expanded direct access and provided settlement accounts to non-banks in 2009, as final settlement of all financial obligations takes place in the Reserves Transfer System (STR)[38]. This was made possible in part because the legal environment in Brazil gives the BCB broad authority to authorise (eg licence) what types of entity may access their payment system. There was a significant and unanticipated increase in the daily transaction volumes of the STR after expanding access. BCB anticipates that future expansion will occur in the Brazilian FPS, and is not currently planning any further expansion of the STR.

History and overview

Brazil established the STR, its domestic RTGS system, in 2002, as part of broader payment system reforms focused on risk management. All Brazilian payment systems settle in the STR in central bank money. To participate in the STR, an entity must have an account at the BCB. Depending on the type of entity, the account may be a reserve account or settlement account, or in the case of the FPS an instant payment account (Table A5). Before the BCB expanded direct access to the STR in 2009, only banks and systemically important FMIs were allowed to participate in the system. BCB has responsibility for licensing, regulating, and supervising financial institutions, including banks, finance companies, lending companies, brokerage companies, and payment institutions. Regulation issued by the BCB prescribes who may participate in the STR and the associated requirements.

Legal and policy changes required to expand access

The main motivation for expanding access was to foster competition in the domestic financial system, which should result in more efficiency, reduced costs and risks, and a more increased level playing field. The BCB was also interested in expanding access to reduce the concentration risk in the Brazilian financial system and allow better visibility into the operations of non-bank institutions.

[38] Enoch, C., Bossu, W., Caceres, C., & Singh, D. (2017). "Back Matter". In Financial Integration in Latin America. USA: International Monetary Fund.

The BCB has extensive authority to authorise what types of entity may access their payment system. In 2009, access to the STR was granted to non-bank institutions authorised to operate by the BCB through expanded settlement account access (Table A5).[39] The expansion allowed non-bank institutions authorised to operate by the BCB to hold settlement accounts and therefore participate directly in STR.[40] However, only financial institutions, which could include non-bank financial institutions but not payment institutions, have access to overnight or intraday repo.

Central bank account options for access to the STR — Table A5

	Bank reserves account	Settlement account
Mandatory	• Commercial banks • Universal banks with commercial bank activities • Savings banks	• Systemically important FMIs
Optional	• Foreign exchange banks • Development banks • Investment banks • Universal banks without commercial bank activities	• Payment institutions[1] • Other institutions authorised to operate by the BCB[1]

[1] Primary mean of access to STR can be RSFN or internet, at the discretion of the participant. For all other entities the RSFN is the primary mean of access.

Source: BCB (2021).

Risks considered

The main operational risk considered by the BCB was the processing capacity of the STR system. Stress tests were executed periodically to evaluate the actual processing capacity, and the system was adjusted so that it could process the projected number of transactions from new participants. Since only institutions authorised to operate by the BCB may have direct access to the STR, both authorised banks and non-banks are subject to the same AML/CFT legislation and regulation, and are under the BCB's' oversight.[41]

Barriers to expanding access

In Brazil, the legal, financial and technical barriers were considered or addressed. There were no legal or policy difficulties, given that the BCB can largely make its own decisions around settlement access. BCB holds broad authority to authorise what types of entity may access their payment system, which provides the foundation needed to create regulatory and policy changes.

The main financial barrier is the cost to participants, since participants must meet several technical, operational and regulatory requirements, and indirect participation is not allowed. The cost is directly associated with the security and resilience of the system. Except for users of the STR-Web application, all participants must have access to the National Financial System Network (RSFN), a communications network completely isolated from the internet and any other networks, with requirements for availability, reliability, performance, security, contingency and redundancy. Adjusting to all these requirements could be very costly, representing a financial barrier to participation.

39 Additionally, payment institutions have been authorised to operate by BCB since 2013, and platform and peer-to-peer lending companies since 2018.

40 Systemically important FMIs, commercial banks, universal banks with commercial bank activities, and savings banks are required to hold a central bank account. Other institutions authorised by BCB to operate may hold an account at their own discretion. Source: Banco Central do Brasil (2021). "Guide for opening reserves and settlement accounts at Banco Central do Brasil". February.

41 All of the BCB's' supervised entities must comply with AML/CFT regulation, whether or not they participate in the STR.

All STR participants can connect to the STR through the RSFN. However, as this type of connection may not be feasible for smaller participants, the BCB developed the STR-Web application as a lower cost participation option. This allows manual access to STR via the internet. The application can be also be used as a contingency access to STR but is designed for a lower volume of transactions. Additionally, given the manual nature of STR-Web, some small to medium-sized participants are moving towards leveraging IT service providers for more convenient and customised access solutions to the STR. IT service providers must be pre-approved by BCB to ensure that they comply with the relevant procedures and requirements. As of September 2021, there were six active IT service providers. IT service providers go through a rigorous authorisation process to ensure they can meet all the requirements for connection to the RSFN and to guarantee that no external parties have any digital or physical channel by which they could gain unauthorised access to the network.

Current state and impact of changes

Today, of the approximately 300 STR participants, about half are non-bank institutions. Those non-bank institutions provide a wide range of services for their clients (the services they can offer depend in part on the authorisation granted by BCB). Today, about 30% of all Brazilian RTGS transfers are routed through the STR instead of the privately operated RTGS.[42] In particular, a few payment institutions decided to submit all of their transactions to the STR to avoid the costs arising from connecting to two RTGS systems. When SPI, the FPS, was launched in November 2020, it reduced the number of transactions in the STR. While there was a sharp reduction immediately after the launch of SPI, the number of transactions in the STR has since stabilised. Participants consider that efficiency gains and lower overall costs are the main benefits of the expanded access to the STR. For the BCB as operator of the STR, there has been a reduction in concentration risk, as new participants provide liquidity for their operations directly, given that they now have direct access, instead of having to use another participant's account to do so (eg via correspondent banking). The main effect of the recent expansion on cross border payments is a gain in efficiency and a reduction in costs for some exchange brokerage companies. Prior to expansion, these were not permitted to participate in the STR, but 18 such companies are now authorised to participate. These companies are the only non-bank institutions that are authorised to perform foreign exchange transactions. Given that the STR has no link with international payment systems and only operates in the Brazilian real, currency exchanges provide important services for cross-border transactions and an increasing number of institutions can offer these services, which is positive for the entire system.

Future state considerations and lessons learned

Although expanded access had been in place for several years and the BCB was prepared for an increase in the number of daily transactions, there was a temporary significant and unanticipated increase in the daily transaction volume of the STR in 2019, which put pressure on its processing capacity. The STR technological update initiative changed the system's data processing centres from mainframe to distributed systems to increase performance and support processing capacity, and the BCB continues to monitor processing capacity on an ongoing basis. For the future, the BCB's main concern is monitoring processing capacity in the FPS SPI as the volume of transactions is increasing steadily and new features are being incorporated in the Pix payment scheme. Action plans for increasing the processing capacity of SPI are already in motion. BCB anticipates that future expansion will occur in SPI since this system will accept indirect participants that do not have to meet the eligibility requirements of those participating directly in the STR.[43] Additionally, BCB intends to offer some cross-border payments in SPI after 2022. For the RTGS, the STR has regional agreements with Paraguay, Uruguay, and Argentina that allow international payments to be settled in their respective currencies without the use of an intermediary currency.

[42] Before its expansion, only 10% of payments went through the STR, with the remainder routed over the privately operated RTGS.

[43] According to BCB, considering the facilitated direct access to the STR, the cost of adjusting it to allow indirect access is considered too high when compared with the benefits.

Case Study 4: India

The Reserve Bank of India (RBI) authorises payment system operators and providers under the Payment and Settlement Systems Act 2007 (PSS Act). The PSS Act is applicable to all payment systems, except stock exchanges. Under the PSS Act, the Payment and Settlement Systems Regulations 2008 (PSS Regulations) cover matters such as the form of application for authorisation for payment system operations and grant of authorisation, payment instructions and the determination of standards for payment systems. The full list of entities authorised to set up and operate payment systems is available on the RBI website.

History and overview

The RBI owns and operates two centralised payment systems (CPS): the RTGS system, a large-value payment system, and the National Electronic Fund Transfer (NEFT) system, a retail payment system with deferred net settlements in half-hourly batches. NEFT has been available 24/7 since December 2019 and RTGS has been available 24/7 since December 2020. Besides these two, there are other retail payment systems such as the Unified Payments Interface (UPI) operated by the umbrella organisation for retail payments. This case study covers only the developments to expand direct access to the two CPS operated by RBI. The RBI prescribed the access criteria for payment systems in September 2011. Earlier, membership to CPS was limited to banks, with a few exceptions. Other entities eligible were standalone primary dealers, clearing corporations of stock exchanges, CCPs, retail payment system operators, and select financial institutions. These entities were participating as direct members in CPS. Banks as members were eligible for collateralised interest-free intraday liquidity. Sub-membership is an alternative mechanism for all scheduled/licenced banks that are not directly participating in payment systems on account of either not meeting the access criteria or because of cost considerations. Sub-members participate through sponsor banks which are direct members.

The Vision Document of Reserve Bank of India on Payment and Settlement Systems 2019—2021 (RBI (2019a)) and the High Level Committee on Deepening of Digital Payments (High Level Committee (2019)) advocated for neutrality between banks and non-banks for access to payment systems. Further, the advantages envisaged for expanding access of CPS to non-banks were in terms of promoting competition and innovation. It was observed that non-banks increasingly and actively offered financial services and direct access to CPS could enable them to leverage technology and offer more choices to their consumers. Apart from managing settlement risk in the payments landscape, expanding access and the participation of non-banks would be a progressive move and would lead to diversity and resilience of the payment ecosystem.

Direct access for non-banks to CPS would lower the overall risk in the payment ecosystem. It would also bring advantages to non-banks such as a reduction in the cost of payments, reduced dependence on banks, increased speed and final settlement in central bank money. The risk of failure or delay in execution of fund transfers could also be avoided when transactions are directly initiated and processed by the non-bank entities.

Legal and policy changes required to expand access

There were no legal bottlenecks before expanding access as the RBI is authorised to regulate payment systems in the country including prescribing access requirements, through the PSS Act and PSS Regulations. However, only specific non-banking institutions were permitted direct access to CPS. Considering the above factors, in April 2021, the RBI announced its proposal to expand direct membership to different categories of non-banks.

The access criteria include a valid certificate of authorisation as a PSP, minimum net worth requirements, availability of centralised processing, compliance with local payment data storage requirements and regulatory comfort, among others. Entities incorporated outside India need to empower their local offices to carry out all operations in respect of payment systems, but the responsibility for all operations and management of any contingency, including settlement obligations, remains with the foreign parent institution, which has accepted authorisation as a PSP.

Similar to banks, all non-bank applicants applying for direct access to the RTGS need to have regulatory comfort, meaning there should not be any regulatory or supervisory concerns at the time of application. CPS members must join INFINET (a closed user group communication network for banks) and the Structured Financial Messaging System (a proprietary messaging infrastructure for communication among participants and operators). This requires the necessary infrastructure to be enabled by non-bank PSPs. However, they can choose the type of access to the RTGS system, ie the SFMS member interface, web service interface or payment originator module through INFINET. Non-banks are not eligible for intraday liquidity facilities from the central bank. They must arrange a line of credit with commercial banks to avoid any shortfall/default in completing the payment/settlement obligations. These entities cannot enrol indirect participants as sub-members.

Current state and impact of changes in terms of benefits

After conducting extensive consultations with stakeholders, the final guidelines were issued by the RBI in July 2021 to extend access in phases to non-banks, which include entities such as PSPs and non-banking financial companies (NBFCs) that are regulated by the RBI and also entities under the remit of other financial sector regulators such as insurance, pension fund and securities regulators. In the first phase, three categories of non-banks, ie prepaid payment instrument issuers (PPIs, eg mobile wallet providers), card networks (such as Visa and Mastercard) and white label ATM (WLA) operators have been enabled to participate as direct members.

Among the non-banks accepted in the first phase, PPI issuers can be members of both the RTGS and NEFT and can initiate customer and inter-institutional transfers. Card networks can become members of the RTGS and can initiate multilateral net settlement transfers. WLA operators can be members of the RTGS. All can open a current account with the core banking system (e-Kuber) and maintain a settlement account in the RTGS. The detailed process of applying for membership is included in the guidelines. In addition, a set of frequently asked questions is available on the RBI website.

The benefits of expanding access to non-banks can be outlined as follows:

- Efficiency: forf non-banks, the cost of routing payments through banks can be reduced.reduced The risk of failure or delay in execution of fund transfers can be eliminated if the transactions are directly initiated by non-banks.
- Competition and innovation: nonn-banks increasinglyoffer financial services which hitherto were the sole domain of banks. They are seen to be agile in coming up with innovative products and solutions as well. Direct access can further enable them to leverage technology to offer customised choices to consumers. They can use their capabilities to assimilate and analyse data to support their innovations and solutions. As non-banks compete in the same segment as banks, direct access can provide a level playing field, reducing the need to use intermediaries.
- Risk management and stability: asasettlement is carried out in central bank money, it greatly reduces uncertainty in the finality of the payments and settlement risk. Expanding access and participation facilitates diversity and resiliency of the ecosystem.
- Data protection: directd access enablesnon-banks to safeguard customer information and fund flows, which may not be possible when using banks to provide payment services. Further, there could be benefits to the central bank in terms of better insight into the payment activities of these non-banks.

Future state considerations

The three categories of non-banks permitted direct access in July 2021 are evaluating the various aspects of direct access to CPS and are at various stages of application. With the experience gained, direct access could be expanded in subsequent phases to other categories of eligible non-banks, including those regulated by other financial sector regulators.

Case Study 5: Singapore

For the last several years, the Monetary Authority of Singapore (MAS) and the industry have sought ways to improve the way consumers and businesses access and use digital payments. With the commencement of the Payment Services Act (PS Act) of 2019, MAS is empowered to licence non-bank participants of payment systems such as non-bank financial institutions (NBFIs), to better regulate key payment activities under a consistent and aligned risk-based framework. In February 2021, MAS announced its policy decision to allow NBFIs direct access to the country's Fast and Secure Transfers (FAST) real-time electronic funds transfer retail payment system for the first time, in order to drive innovation, competition and consumer confidence in the ecosystem. Access to FAST gave Singaporean businesses and consumers a real-time and interoperable channel to top up e-wallets from their bank accounts, and to make instant person-to-person and merchant payments using bank accounts and e-wallets.

History and overview

Since 2014, FAST payments are instant and available 24/7 at participating banks and finance companies in Singapore. Due to the growth of NBFIs, the free movement of funds across different e-wallet providers, as well as between e-wallets and bank accounts, increased in importance. Customers using e-wallets had limited options for easily topping up their wallets in real time from their bank accounts, or transferring funds from an e-wallet to a bank account or another e-wallet. This lack of interoperability and openness also made it harder for newer players (eg fintechs and other NBFIs) to enter the payments ecosystem and drive innovation and competition, to the ultimate benefit of end users.

Running on top of the FAST payment rails, PayNow is an overlay central addressing service that allows consumers and businesses to make instant payments across accounts using a proxy such as a mobile number, National Registration Identification Card/Foreign Identification Number, virtual payment address (VPA) or Unique Entity Number (UEN). PayNow is also available 24/7, 365 days of the year. PayNow was launched in 2017 and is owned by the Association of Banks in Singapore (ABS) and operated by Singapore's Banking Computer Services (BCS). Subsequently, PayNow Corporate was launched in 2018 to expand PayNow service to businesses, including corporations and government agencies. This allowed businesses to leverage the UEN proxy as a way to receive and make payments under the PayNow Corporate scheme.

In 2018, triggered by increasing demand from NBFIs to join FAST and PayNow, MAS and BCS organised a Direct FAST Working Group (DFWG) comprising banks and NBFIs, with a view to assessing the demand for and feasibility of expanding access to these systems. NBFIs expressed a strong desire to join FAST and PayNow and utilise VPAs as the proxy means of sending and receiving payments.

Regulatory landscape

Historically, the MAS had the authority to regulate Singapore's financial services market and various types of payment service.[44] Prior to the PS Act, the Payment Systems (Oversight) Act (PSOA) and Money Changing and Remittance Businesses Act (MCRBA) authorised the licensing of NBFIs. However, non-bank payment service providers were not subjected to the same level of AML/CFT requirements as financial institutions. The Singaporean Parliament passed the PS Act in 2019 to provide a consistent, forward-

[44] Monetary Authority of Singapore Act (Cap. 186) (https://www.mas.gov.sg/regulation/acts/mas-act)

looking and flexible risk-based framework for the regulation of payment systems and payment service providers in Singapore that encourages innovation and competition.[45] On top of enhanced AML/CFT requirements, the PS Act also empowers MAS to designate and regulate the operators, settlement institutions, and participations of these payment systems for financial stability, efficiency or competitive reasons.[46]

Legal and policy changes required to expand access

The MAS now regulates seven payment services under the PS Act, with three types of licence that NBFIs can hold to provide those payment services.[47] From February 2021, NBFIs interested in joining FAST have to be licenced as a major payment institution (MPI) and have a FAST sponsoring bank.[48] MPIs are also subjected to heightened requirements as compared with standard payment institutions.[49] This policy change enabled participating NBFIs to send and receive payments from other FAST participants, including both banks and NBFIs. The expansion has allowed payments to flow more quickly between NBFIs, without the need to mandate interoperability among NBFIs' systems and between NBFIs and customers' banks. With access to FAST, customers of these NBFIs can instantly top up their accounts or access funds from bank accounts.

In terms of regulation and supervision, MAS holds NBFIs to the same standards as banks with respect to AML/CFT requirements, which include customer due diligence and monitoring. Applying the same standards creates a level playing field for all payments providers who want to access FAST. Similar to other financial institutions that hold customer funds, payment providers must use bank accounts for safekeeping, segregation and settlement of customer funds. MAS takes a risk-based approach to compliance based upon the systemic importance and risk profile of the financial institution.[50]

Current state and impact of changes

As of October 2021, five NBFI participants have joined FAST, of which Grab Financial Group, Liquid Group, and Singtel's Dash have access to PayNow and are able to transfer funds via proxies such as VPAs. In 2020, the annual transaction volumes in FAST increased 24%,[51] of which 4 percentage points is due to the expansion of access to NBFIs and the remaining increase attributed to increase in e-payment usage due to Covid-19 and the generic push for e-payment adoption.

Presently, the primary benefits of the recent expansion efforts are increased accessibility to real-time payments, which can increase ease of use of digital payments for individuals, as well as progress towards MAS's goals of further developing the digital payments landscape and reducing reliance on cash.

In April 2021, Singapore and Thailand linked their real-time payment systems, PayNow and PromptPay respectively, allowing customers to send and receive instant payments between the two

45 "Payment Services Bill", Second Reading Speech by Mr Ong Ye Kung, Minister For Education, On Behalf of Mr Tharman Shanmugaratnam, Deputy Prime Minister and Minister-In-Charge of The Monetary Authority of Singapore on 14 January 2019 (https://www.mas.gov.sg/news/speeches/2019/payment-services-bill).

46 *Payment Services Act: A Guide to the Essential Aspects of the Payment Services Act of 2019,* Monetary Authority of Singapore.

47 For more information, see https://www.mas.gov.sg/regulation/payments.

48 As of August 2021, only e-wallet providers have direct access to FAST.

49 Major Payment Institutions cancan conduct multiple payment services without any limits on transaction volume or float. Standard Payment Institutions cancan conduct multiple payment services below specified thresholds. Source: https://www.mas.gov.sg/regulation/payments.

50 www.mas.gov.sg/-/media/MAS/News-and-Publications/Monographs-and-Information-Papers/Monograph--MAS-Framework-for-Impact-and-Risk-Assessment.pdf.

51 Refer to MAS Semi-Annual Retail Payment Statistics H1 2021 (https://www.mas.gov.sg/-/media/mas-media-library/statistics/payment-statistics/semi-annual-retail-payment-statistics/).

jurisdictions using just a mobile number as a proxy, similar to the experience of sending payments via these systems domestically. The initial rollout of the linkage connected systems of piloting banks to PayNow and PromptPay, culminating in three FAST participant banks being able to facilitate instant cross-border transfers to counterparty accounts in the four Thai banks participating in the linkage. MAS has reported an exponential increase in transaction volumes on the linkage since its launch in April 2021 and plans to work with the Bank of Thailand to increase the number of participants, including both banks and NBFIs, and otherwise increase the available features and functionalities, in a phased approach. Institutions that participate in the linkage are also subject to dedicated rules and requirements specific to PayNow-PromptPay. MAS views its partnership with the Bank of Thailand as an intermediate step toward realising the ASEAN Payment Connectivity Collaboration, an initiative to interlink payment systems across Southeast Asia. MAS also announced plans to link PayNow to India's UPI real-time retail payment system by July 2022, and to Malaysia's DuitNow real-time retail payment system by December 2022.

Future state considerations and lessons learned

With the direct connection of FAST and PayNow for NBFIs, MAS hopes to drive higher adoption of e-payments, build a more inclusive payments ecosystem and develop more innovative domestic and cross-border payments solutions for residents. MAS will continue to work with other stakeholders to onboard more NBFIs participants to FAST and PayNow and provide support to interested NBFIs who wish to join these payment schemes.

Annex 6: BB 10 — Improving (direct) access to payment systems by banks, non-banks and payment infrastructures

The full actions and milestones for BB 10 based on the G20 roadmap are listed below (FSB (2020a), FSB (2021b)). The dates indicate the start date and completion date for the steps described in the milestone. For all actions in 2022: actions and dates are committed deliverables. The content of actions and dates of milestones beyond end-2022 are indicative.

Actions and milestones

Action 1: Assessment of direct access objectives, benefits and barriers to support national authorities and operators in evaluating their own frameworks.

CPMI, building on existing analysis, to assess objectives, benefits and current barriers to improve direct access to relevant payment systems and central bank money for cross-border payment providers.

[Completed: May 2021. Findings form the basis for Action 2].

Action 2: Development of best practices on (direct) access to payment systems for authorities and operators.

CPMI, based on the examples of broadened access policies and the assessment in Action 1, to develop and publish best practices for authorities and payment system operators of jurisdictions considering options to expand direct access across all relevant types of payment systems and payment providers.

April 2021–April 2022

Action 3: Self-assessment/evaluation of selected current frameworks against best practices

National authorities and payment system operators that are considering expanding access to undertake self-assessments/evaluation of the respective domestic framework against the best practices and Identifying any changes required to expand access and development of action plans. Preferably this will not only include G20 countries, but a larger set of jurisdictions.

May 2022–April 2023

Action 4: Technical assistance for assessment to improve direct access and implementation of action plans

Relevant bodies to provide technical assistance to authorities and payment system operators of jurisdictions considering expanding access, by supporting the evaluation of the respective domestic framework against the best practice, and the development and implementation of action plans.

From January 2022 onwards

Annex 7: Cross-border Payments Expansion Workstream

Chair of the Workstream	Carlos Conesa (Bank of Spain)
Members	
Reserve Bank of Australia	Grant Turner[1]
National Bank of Belgium	Reinout Temmerman
Bank of Canada	Annetta Ho[1] [until November 2021] Sajjad Jafri [from November 2021]
Bank of France	Nicolas Peligry Pierre Berger (Alternate)[2]
Hong Kong Monetary Authority	Jessica Szeto Angel Lam (Alternate)
Reserve Bank of India	Visvanathan Srinivasan Satish Singh (Alternate)
Bank Indonesia	Butet Linda Nenden Endah Sari (Alternate)
Bank of Italy	Enrica Detto
Bank of Japan	Masami Inoue[1] Hironori Ishizaki (Alternate) [until June 2021] Seiya Hikuma (Alternate) [since June 2021]
Bank of Korea	Youngsun Yoo [since June 2021] Jisoon Park [since October 2021] Yunhwa Kim (Alternate) [until February 2022]
Netherlands Bank	Ellen Naudts[1, 2] Judy van der Graaf (Alternate) [since September 2021]
Central Bank of the Russian Federation±	Andrey Shamrayev [until February 2022]
Saudi Central Bank	Lamya Alhumaid
South African Reserve Bank	Annah Masoga Peter Makgetsi (Alternate) Pearl Malumane (Alternate)

± The access of the Central Bank of the Russian Federation to all BIS services, meetings and other BIS activities has been suspended.

Bank of Spain	Esther Barruetabeña[2] [until September 2021] Sergio Gorjón Rivas[1, 2] [since September 2021] Ana Fernández Bedoya[1, 2] (Alternate) Justo Arenillas (Alternate)
Swiss National Bank	Basil Guggenheim[1] Maurizio Denaro (Alternate)
Central Bank of the Republic of Türkiye	Bilal Taşkın Ömer Cem Aksoy (Alternate)
Bank of England	John Jackson* Michaela Costello (Alternate)[2] Lisa Gupta (Alternate)[2] [until August 2021] Michael Pywell (Alternate)[1] [until September 2021] Abigail Whiting (Alternate)[2] Anna Koch (Alternate)[1]
Board of Governors of the Federal Reserve System	Mark Manuszak** Kathy Wilson (Alternate) [until June 2021] Aaron Compton (Alternate) [2] Priyanka Slattery (Alternate)[1]
Federal Reserve Bank of New York	John Rutigliano [until September 2021] Heidy Medina [since September 2021][2] Vanessa Lee (Alternate) [2] Emilie Walgenbach (Alternate)[1]

Observers

Basel Committee on Banking Supervision	Stefan Hohl
Financial Stability Board	Kieran Murphy Alexandre Stervinou (Alternate) [until September 2021] Kris Natoli (Alternate) [from February 2022]
International Monetary Fund	Anca Paduraru Tommaso Mancini Griffoli (Alternate)
World Bank Group	Gynedi Srinivas

Secretariat

CPMI Secretariat	Boniswa Khohliso (Secretary) [until December 2021] Raúl Morales (Secretary) [from December 2021] Thomas Lammer

* Lead of the drafting team for BB 10
** Lead of the drafting team for BB 12
1 Core BB 10 drafting team member
2 Core BB 12 drafting team member

The workstream's work has also benefited from the contributions and support provided by Jérémy Cuny and Nathan Crespy (Bank of France); Seaira Christian-Daniels [until February 2022] (Federal Reserve Bank of New York); Larkin Turman (Board of Governors of the Federal Reserve System); Amika Matsui (Bank of Japan); and Yudha Wastu Prawira, Indah Ayu Fauziah, Martha K. Pratiwi, Jultarda Hutagalung and Franz Hansa (Bank Indonesia); Hyerim Jeong [until May 2021] (Bank of Korea); and Patrick Tuin [until August 2021] (Netherlands Bank).

Regis Bouther (Bank of England) and Ilaria Mattei (Bank for International Settlements) provided data support to the Workstream.

Annex 8: Acronyms and abbreviations

AML	anti-money laundering
API	application programming interface
BB	building block
BIS	Bank for International Settlements
CBDC	central bank digital currencies
CCPs	central counterparties
CFT	combating the financing of terrorism
CHIPS	Clearing House Interbank Payments System
CPSS	Committee on Payment and Settlement Systems
CPMI	Committee on Payments and Market Infrastructures
CSD	central securities depositories
EMDE	emerging market and developing economy
FAST	Fast and Secure Transfers
FCA	Financial Conduct Authority
FMI	financial market infrastructure
FPS	fast payment system
FX	foreign exchange
G20	Group of Twenty
HK	Hong Kong SAR
HMRC	Her Majesty's Revenue and Customs
IMF	International Monetary Fund
ISO	International Organization for Standardization
IT	information technology
LVPS	large-value payment system
MAS	Monetary Authority of Singapore
PFMI	Principles for Financial Market Infrastructures
PSP	payment service provider
PSR	Payment Services Regulations
PvP	payment-versus-payment
RTGS	real-time gross settlement
RTP	Real-Time Payments
SAMOS	South African Multiple Option Settlement
SIC	Swiss Interbank Clearing
SNB	Swiss National Bank
STR	Reserves Transfer System
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TIPS	TARGET Instant Payment Settlement