



# ➤ ACCESS TO PAYMENT INFRASTRUCTURES

ITU-T FOCUS GROUP ON DIGITAL FINANCIAL SERVICES



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## **Access to Payment Infrastructures**

Focus Group Technical Report

ITU-T

## FOREWORD

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# **Access to Payment Infrastructures**

## **About this Report**

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## **List of acronyms**

ACH	Automated Clearing House
AML	Anti-money Laundering
ATM	Automated Teller Machine
CFT	Combating the Financing of Terrorism
CPMI	Committee on Payments and Market Infrastructures
DFS	Digital Financial Services
IOSCO	International Organization of Securities Commissions
ITU	International Telecommunication Union
MNO	Mobile Network Operator
NBFI	Non-bank Financial Institution
NPS	National Payments System
PFMIs	Principles for Financial Market Infrastructures
PIN	Personal Identification Number
POS	Point of Sale
PSO	Payment System Operator
PSP	Payment Service Provider
RSP	Remittance Service Provider
RTGS	Real Time Gross Settlement

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## **Executive Summary**

Non-banks are having an increasing role in payments, including the provision of payments services directly to end-users. Despite this increasing role, many of them are still not accepted as direct participants of key payment infrastructures, which often leads to limited or null interoperability in the services/products they offer. Moreover, being able to use key payment infrastructures at a reasonable cost and with appropriate service levels is an important element underlying a competitive payments market.

The operators of these payment infrastructures should adhere to international standards and best practice and establish risk-based and objective access criteria, and ensure that any PSP that wishes to gain direct access and meets such criteria is able to join as a direct participant.

Still, for many non-bank PSPs gaining direct access may not be feasible due to the investments they would need to make in order to fulfill the infrastructure's access criteria. In such cases indirect access mechanisms may be capable of providing these PSPs with suitable payment services. However, in certain cases indirect access may not be as effective, for example if charges applied by the principal (an entity that is a direct participant in the infrastructure) are excessive relative to the costs it itself incurs for using the system, or if the criteria set by the principal for opening accounts and providing payment services to customer PSPs are disproportionate.

Payment system regulators, in particular the central bank as the payment system overseer, should ensure that all PSPs are able to gain fair access to payment *services*, including those for which direct access is not financially feasible and need to access the services through a principal.

Effective access to payment infrastructures may also be hampered if there are barriers to accessing the telecommunications networks serving those infrastructures. Telecomm regulators may also have a role to play in markets where it has been observed that MNOs that are involved in the payments business restrict in some form the access to other PSPs to the mobile telecommunications network that these MNOs operate.

## Introduction and Background

Until relatively recently, non-cash payment services were essentially – and in some countries, exclusively – provided by commercial banks. The role of banks as retail payment service providers was historically linked to another of their key functions, which is deposit-taking. This is: banks provide their depositors a gateway for making payments to other depositors in the same bank or in another bank. For this purpose, banks (including the central bank) developed payment systems, and traditionally were the sole direct participants in most of these.

However, the payments landscape has changed significantly in line with evolving payment needs, product, process and technical innovations, as well as other structural developments. In many countries, financial inclusion has been a major driver of change in the retail payments arena.

Development of digital financial services (and in general the shift from cash and paper-based instruments to electronic) and the expansion of the networks of service delivery/customer service points to bring financial services closer to where people live and transact are regarded as critical tools for achieving financial inclusion objectives, as well as overall payments efficiency objectives. Interoperability of the various payment services offered is another key tool to enhance the proximity of financial services and to increase overall convenience to end-users.

In this context, non-banks are having an increasing role in payments in general, and in retail payments in particular, including for the continued development of digital financial services.

Despite this increasing role, many non-banks that provide payment services are still not accepted as direct participants<sup>1</sup> in many payment infrastructures, either of a retail nature or a large-value nature. This often results in fragmentation of payment services and/or of payment service providers, which leads to their limited or null interoperability.

In addition, being able to make effective use of key payment infrastructures is an important element underlying a competitive payments market. Payment systems generally benefit largely from economies of scale and network effects, and for this reason in any particular market there is a very small number of payment systems. Hence, not being able to participate in a key payments infrastructure may significantly affect the competitive balance among market participants.

From a financial inclusion perspective, in their 2016 report “Payment Aspects of Financial Inclusion” the Committee on Payments and Market Infrastructures (CPMI) and the World Bank Group have described the issue at stake as follows:

*“Restricted access to financial and ICT infrastructures, especially of new or non-traditional service providers, tends to constrain the supply of payment services to users. Often incumbents with a dominant position in one infrastructure have the incentive to create barriers for access to new entrants. However, there are some more fundamental challenges to accessing the messaging, clearing and settlement service infrastructures, including those associated with technical, legal/regulatory and/or financial viability issues (i.e. direct access might be too expensive).”*

The main purpose of this report is therefore to discuss access-to-payment-infrastructure issues around the world, and how these can affect the development of safe, efficient, interoperable and financially inclusive payment services.

This document builds on the collective experience of the members of the Interoperability Working Group and the broader Focus Group on Digital Financial Services, convened by the International Telecommunication Union (ITU).

The document is organized as follows: the first section provides a general description of the historical role of banks in the payments business, and highlights the increasing role of non-banks in

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<sup>1</sup> “DIRECT PARTICIPATION” AND OTHER RELEVANT TERMS IN THE CONTEXT OF ACCESS TO PAYMENT INFRASTRUCTURES ARE DESCRIBED IN DETAIL IN SECTION III OF THIS DOCUMENT.

this area in recent years; the second section describes the core interbank payment infrastructures that are observed in most markets around the world, namely real-time gross settlement systems, automated clearinghouses and payment card switches, emphasizing the important role that these infrastructures play in making PSPs interoperable at different levels; section IV discusses legal and regulatory aspects related to access to payment infrastructures, in particular the various types of access criteria that are typically included in the rules or regulations of those systems; Section V then presents and analyzes global data on access-to-payment infrastructures issues. The main body of the report ends with a section that discussed key insights and conclusions. A number of specific case studies are then presented in Annex I.

## **1 Involvement of banks and non-banks in the payments business**

Banks have been the “traditional” retail payment service providers, largely because through one of their core functions which is deposit-taking, they provide their depositors a gateway for making payments to other depositors in the same bank or in another bank. Nevertheless, banks also provide certain payment services to individuals and businesses that do not hold deposits with them. Examples of the latter include bill and other service payments made in cash, or acceptance of payments made with payments cards issued by another entity.

In recent years, non-banks have made a significant incursion into the retail payments market. Some of the elements that favored this development include the range of technical and other innovations in payment methods, the emergence of new payment needs/changing payment habits and customer preferences, and several other market-driven factors. In addition, in some countries the regulatory environment has facilitated and promoted the incursion of non-banks in this field, while in others it has become a hurdle or even an impediment.

For the purposes of this report, it is deemed useful to have a working definition of “non-banks” as regards their role in payments. In many jurisdictions, there is no specific legal definition of non-banks, or various definitions may apply depending on the functions that a non-bank performs. For reasons like these, it is proposed to adopt the functional definition of non-banks stated in the CPMI 2014 report “Role of non-banks in retail payments”:

*“a non-bank is defined as: any entity involved in the provision of retail payment services whose main business is not related to taking deposits from the public and using these deposits to make loans”.*

Moreover, in the payments field non-banks (as well as banks) are involved in a number of activities, not all of which are directly affected by the regulatory environment surrounding the access to payment infrastructures (e.g. access policies, conditions, restrictions, etc.). For this reason, it is also useful to specify the payments-related activities that are covered in this report.

Hence, following also CPMI (2014), non-banks involved in retail payments can be categorized as follows according to the stages of the payments chain in which they engage, the type of payment service provided and also their relationship with banks:

- Front-end providers that provide services directly to end-users such as consumers and businesses/corporates
- Back-end providers that typically provide services to banks
- Operators of retail payment infrastructures; and,
- End-to-end providers that combine front-end services to end users with clearing and settlement services.

This report will focus mainly on the first category, although it will also analyze access to central bank-operated settlement systems for operators of retail payment infrastructures.<sup>2</sup>

Lastly, for the purpose of this report, banks and non-banks that provide services directly to end-users are referred to as “payment service providers” or “PSPs”.

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<sup>2</sup> NON-BANKS IN THE FOURTH CATEGORY ALSO PROVIDE CLEARING AND SETTLEMENT SERVICES, EVEN IF ONLY FOR A LIMITED NUMBER OF PARTICIPANTS. FOR DETERMINING ACCESS TO THE CORE PAYMENT AND SETTLEMENT INFRASTRUCTURES IN THEIR RESPECTIVE JURISDICTION, THE NON-BANKS IN THIS CATEGORY WOULD ALSO BE REGARDED AS OPERATORS OF RETAIL PAYMENT INFRASTRUCTURES.

## 2 Payment infrastructures<sup>3</sup>

An individual that holds a transaction account with a bank or non-bank PSP can normally make payments using that transaction account to other individuals, businesses and government entities that also hold a transaction account with the same PSP (i.e. so-called “on us” payments), or in some cases also to parties that hold a transaction account with a different PSP (i.e. “off us” payments).

For “on us” payments, the PSP only needs to debit and credit, in its own books, the account of the payer and the account of the beneficiary, respectively. While this can be done manually, modern PSPs have deployed an automated and centralized account management infrastructure within their so-called “core banking system” (or equivalent).

The main payment infrastructures that support “off us” payments are large-value settlement systems (e.g. a real-time gross settlement (RTGS) system), automated clearinghouses (ACH) for retail electronic funds transfers and/or for cheques, and payment card processing platforms (i.e. so-called payment card switches).<sup>4</sup>

RTGS systems are the backbone of a country’s payment and settlement infrastructure and are owned and operated by central banks.<sup>5</sup> Retail payment services are typically not processed at a large scale directly through RTGS systems, although there are exceptions (e.g. SPEI in Mexico). Nevertheless, RTGS systems are a critical foundation for retail payments because many retail payment infrastructures rely on an RTGS system to settle their participants’ final balances from each clearing cycle.

ACHs are designed to centrally handle and process mass payments of an “off us” nature. Some ACHs focus on cheque processing, others on fully electronic retail instruments like direct credit transfers and direct debit transfers, and some others process all these instruments.<sup>6</sup>

In practice, one of the effects of an ACH is that it *enables the interoperability of its members for the payment instruments it clears*, and by this means it “increases” the network size of service points for individual customers. This is because any branch (or in some cases also ATMs and other service point types) of a PSP that is a member of that ACH can be used to initiate a funds transfer to a customer of any other PSP that is also a member. This supports nationwide reachability of PSPs, even if some of them do not have a large network of service points.

ACHs have traditionally operated on the basis of a daily clearing and settlement cycle, although more recently many have incorporated two or more daily settlement cycles. During each cycle, ACH participants exchange payment instructions, which are then cleared and settled on net basis at the end of the cycle (i.e. so-called “deferred net settlement”). Final beneficiaries are often credited later on (e.g. one or two days), although in some cases they may get credited even before the settlement cycle has been completed. In fact, some ACH operators around the world have launched so-called “instant payments”, by means of which the final beneficiary of a payment processed through the ACH is credited immediately after the payment instruction is approved, while the settlement between PSPs that participate in the ACH occurs at a later stage.

A payment card processing platform or switch is a mechanism that connects various payment card issuers and the payment card acceptance infrastructure deployed by card acquirers. Through the switch, payments initiated at a merchant via a point-of-sale terminal (POS terminal), at an ATM or other card acceptance device or channel (e.g. Internet, mobile phones) are routed to the issuer of the

<sup>3</sup> THIS SECTION DRAWS LARGELY ON CPMI AND THE WORLD BANK GROUP (2016), SECTION 3.1.3.1.

<sup>4</sup> AS NOTED BY CPMI AND THE WORLD BANK GROUP (2016), “ABSENCE OF ANY OF THESE INFRASTRUCTURE COMPONENTS HINDERS THE NATIONAL PAYMENT SYSTEM IN EXPLOITING THE POTENTIAL BENEFITS OF MODERN PAYMENT INSTRUMENTS, AND THEREFORE ADVERSELY AFFECTS FINANCIAL INCLUSION”.

<sup>5</sup> THE WORLD BANK’S GLOBAL PAYMENT SYSTEM SURVEY 2012 SHOWS THAT RTGS SYSTEMS ARE OPERATING IN 127 COUNTRIES. THERE ARE ONLY TWO CASES IN WHICH THE OPERATOR IS NOT THE CENTRAL BANK: CANADA AND SWITZERLAND.

<sup>6</sup> DUE TO THE FOCUS OF THIS REPORT BEING ON DIGITAL FINANCIAL SERVICES, ONLY ACHS THAT HANDLE ELECTRONIC PAYMENT INSTRUMENTS ARE DISCUSSED.

underlying payment card for approval.<sup>7</sup> Approved transactions are then exchanged, cleared and settled between PSPs, normally on a daily basis. Payees (typically merchants) are normally credited later on, from one day to a few days.

Similar to ACHs, card switches also increase the effective size of the network of service points/channel. This is because the switch enables processing transactions with cards issued by any member of that switch and that were made at any merchant affiliated to, or at an ATM belonging to, any acquirer that is also a member of the switch. In other words, *card switches enable the interoperability of its members for the payment services it processes on their behalf*. Higher levels of interconnectedness increase the positive network externalities to the benefit of customers, i.e. with the same payment card they are able to use the funds (or credit) in their account at numerous service points and channels

Moreover, in many cases a switch may be able to process transactions with payment cards from card issuers that are not members of the switch, and/or that were made at merchants affiliated to acquirers that are not members of that switch.<sup>8</sup> Typically, this is possible if these payment cards have been issued under - and the switch is enabled to process transactions made with - one or more of the payment card brands/schemes with nationwide or international acceptance (e.g. Visa and MasterCard, among others).

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7 ONLY TRANSACTIONS WITH CARDS ISSUED BY A MEMBER OF THE SWITCH AND THAT WERE MADE AT MERCHANTS AFFILIATED TO (OR ATMS BELONGING TO) AN ACQUIRER THAT IS ALSO A MEMBER CAN BE EXCHANGED, CLEARED AND SETTLED THROUGH THE PLATFORM.

8 THIS IS RELEVANT, FOR EXAMPLE, WHEN PAYMENT CARD SWITCH ONLY HAVE REGIONAL RATHER THAN NATIONAL COVERAGE, OR FOR PAYMENT CARD TRANSACTIONS MADE IN A FOREIGN COUNTRY.

### 3 Types of access to payment infrastructures

#### a. Access for PSPs

To provide “off us” payment services to end-users, a PSP will need to be able to make use of the domestic payment infrastructures. This is necessary for the PSP to be able to exchange customer payment orders with other PSPs, and on this basis proceed with the clearing and settlement of such payment orders.

Access to payment infrastructures is generally considered as being of either a “direct” or an “indirect” nature. Nevertheless, there is also the possibility that direct access be obtained for some specific processes or sub-processes only, while others will need to be carried out through indirect access (i.e. through another direct participant). For example, some non-banks that are direct participants of an RTGS system may not be able to access some of the features of that system, like central bank intraday and/or overnight liquidity. Other possibilities (e.g. access for transaction switching only) are discussed in sub-section III.b below.

In principle, both direct access and indirect access could be capable of providing PSPs with suitable payment services for the purposes they pursue. As will be discussed in the following paragraphs, advantages and disadvantages of direct access *versus* indirect access vary according to specific circumstances.

In essence, *direct access* means that a PSP is itself a direct participant in the system, submits its payment instructions directly to the system, and is responsible vis-à-vis the system and other direct participants for the settlement of its (debit) positions.

Criteria for having direct access to a payments infrastructure includes technical and financial requirements, and in some cases other types of requirements. The latter often refer to aspects such as the need to have a specific legal or regulatory standing (e.g. having a specific license, such as a banking license, or being regulated by the central bank or financial supervisor). Technical, financial and other access criteria are explained in further detail in section IV of this document.

Complying with such criteria, especially when it comes to the national clearing and settlement backbone (i.e. the RTGS system that is operated by the central bank), will normally entail substantial internal investments from the applicant.<sup>9</sup> This is because the RTGS system is almost always considered systemically important.<sup>10</sup> Hence, for some PSPs, direct access to an infrastructure like the RTGS system might be overly expensive and/or complex.

From the technical and financial standpoints, the criteria for gaining direct access to payment systems like an ACH or a payment card switch are generally not as demanding as they are for the RTGS system operated by the central bank. However, ACHs and/or payment card switches still may have access criteria that can be difficult to meet, especially for smaller PSPs.

*Indirect access* occurs when a PSP is not itself a direct participant in the system but instead uses another PSP, which is a direct participant, to act on its behalf—i.e., the first PSP is a customer of the second PSP. For some PSPs, indirect access may be a better option for using a given payments infrastructure, for example due to cost reasons and technological limitations.

It should be noted that PSPs as customers of other PSPs are operationally reliant on their chosen intermediary to make payments on their behalf, and incur credit risk where receipts of funds are held with the intermediary. In turn, intermediary PSPs incur risks on their customer PSPs where they provide them with any form of credit as part of the payment (and/or other) services provided.

<sup>9</sup> THESE INVESTMENTS ARE IN ADDITION TO THE INITIAL, PER TRANSACTION AND MAINTENANCE FEES USUALLY REQUIRED BY THE OPERATOR OF THE PAYMENTS SYSTEM.

<sup>10</sup> ACHS AND PAYMENT CARD SWITCHES ARE ONLY RARELY CONSIDERED SYSTEMICALLY IMPORTANT. NEVERTHELESS, IN AN INCREASING NUMBER OF COUNTRIES THESE INFRASTRUCTURES ARE BEING CONSIDERED AS “SYSTEM WIDE IMPORTANT PAYMENT SYSTEMS” (OR SIMILAR TERM), BASED ON THEIR IMPORTANCE FOR THE REAL ECONOMY AND THE CONFIDENCE IN THE DOMESTIC CURRENCY.

### **b. Other variants of access to payment infrastructures for PSPs**

In some cases – notably in the area of payment cards - some PSPs may opt out of the inter-PSP clearing and settlement process. These would normally be PSPs that are card issuers but that do not acquire transactions made with other cards, or that do not act as acquirers at all. Nevertheless, for their cards to be attractive to their customers those cards must still be usable throughout the network of ATMs and/or POS terminals (or other merchant types), for which purpose the PSP card issuer will need access to the payments infrastructure for transaction switching. In this case, transactions are not exchanged among card issuers and acquirers; instead, the switch simply routes the transactions associated to the relevant PSP card issuer to him and excludes those transactions from the general clearing and settlement process. This PSP will then make payments directly to the merchants that accepted its card.

This type of access for switching purposes only is likely to become popular also for inter-PSP mobile money payments.

Yet in other cases, some PSPs that are direct participants are able to exchange payment transactions through the payments infrastructure but need to be “sponsored” into clearing and settlement by another direct participant (i.e. the former PSPs cannot clear and settle with others on its own behalf, but need to do this through others).<sup>11</sup>

In summary, as noted earlier in sub-section III.a, access to payment infrastructures can be either direct or indirect. However, in cases like the ones described above access may be a mix of the two: i.e. there may be “direct access” when it comes to transaction switching/exchanges, but inter-PSP transaction clearing and settlement may occur under indirect access.

### **c. Access for operators of other payment systems**

Payment infrastructures like ACHs, payment card switches and others increasingly settle their final balances in an RTGS system operated by the central bank.<sup>12</sup> When this is the case, the operators of those infrastructures will need to have some form of access to the RTGS system.

It should be noted that participation by a PSP and by an operator of another payment system are different in nature, and this is very often reflected in different access criteria for each of them and in the conditions under which they are allowed to operate in the RTGS system (e.g. the various system functionalities and services they will have access to).

For example, different from a PSP that settles vis-à-vis other PSPs, an operator of another payments system generally only settles in the RTGS system the final balances of their participants. Hence, on one hand an operator may only need discrete access to the RTGS system (e.g. to settle the balances of each settlement cycle, which may be one or few per day).<sup>13</sup>

In another example, an operator of a retail payments infrastructure will not normally undertake credit risks vis-à-vis its participants, and will only settle the outcome of a settlement cycle once it has received all the necessary funds from participants with a debit position at the end of that cycle, in order to credit those funds to participants with a credit position at the end of the cycle. For this reason, an operator will only rarely need to use features of the RTGS system such as payment instruction queuing, or using intraday credit from the central bank.

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11 THIS NORMALLY OCCURS WHEN HAVING AN ACCOUNT AT THE CENTRAL BANK IS A CONDITION FOR BECOMING PART OF THE CLEARING AND SETTLEMENT MECHANISM. THIS REQUIREMENT IS DISCUSSED IN DETAIL IN SECTION IV OF THIS DOCUMENT.

12 SOME ACHS AND/OR SWITCHES SETTLE IN THE ACCOUNTS OF A BANK WHICH IS ONE OF ITS PARTICIPANTS. AS WILL BE DISCUSSED IN SECTION IV, RTGS SYSTEMS SETTLES IN THE ACCOUNTS HELD AT THE RELEVANT CENTRAL BANK. THIS PRACTICE IS GENERALLY CONSIDERED SAFER THAN SETTLING THROUGH THE BOOKS OF A COMMERCIAL BANK.

13 IN SOME SYSTEMS, HOWEVER, THE OPERATOR MAY NEED MORE CONTINUOUS ACCESS TO THE RTGS SYSTEM TO, FOR EXAMPLE, MANAGE COLLATERAL IN CASH POSTED BY ITS PARTICIPANTS AND WHICH IS DEPOSITED AT THEIR ACCOUNT WITH THE CENTRAL BANK.

Worldwide trends on the issues described in this Section of the report are explored in Section V. Likewise, these aspects are further illustrated with specific country cases in Annex I.

#### **4 Legal & regulatory, ownership and governance aspects**

Access to payment infrastructures is regulated in some form in the vast majority of countries. Access issues may be provided for in laws, general regulations and/or rules that are specific to the relevant payments infrastructure.

The law(s) and/or regulation(s) that refers to access to a given payments infrastructure may state that access to that infrastructure is confined to banks only, or to banks and a limited set of licensed and regulated non-bank financial institutions (NBFIs). In some cases the applicable law(s) or regulation(s) will not limit access directly as such, but may require for a PSP that wishes to become a direct participant of a payments infrastructure to hold a settlement account at the national central bank. Access to a settlement account at the central bank may in turn be limited to banks only and to selected NBFIs. In other cases, central banks that operate a RTGS system may be forbidden by local laws to act as liquidity providers for unregulated financial entities.<sup>14</sup>

The requirement to have a settlement account at the central bank is most common in the case of RTGS systems. All around the world, these systems settle in the accounts that system participants hold at the central bank (i.e. also referred as “central bank money”) as this is widely recognized as a safe practice for systemically important payment systems.

Other payment infrastructures including ACHs and payment cards switches very often settle the final participant balances of each of their settlement cycles in central bank money as well. Hence, a PSP that does not have a settlement account at a central bank but that is a direct participant of the ACH or the card switch will most likely end up being sponsored into clearing and settlement. In other cases, direct participation in the ACH or switch of a PSP lacking such an account will simply not be allowed.

##### **a. System access rules**

Payment infrastructures generally have rules that state the specific criteria to be met by any PSP that wishes to become a direct participant. Access criteria typically include technical, financial and other requirements.

Technical requirements normally entail having a robust internal technological infrastructure to connect with the payments infrastructure, ensuring operational reliability and business continuity, adequate handling of anti-money laundering (AML) and combating the financing of terrorism (CFT) policies and procedures, availability of sufficient and capable staff that handle the interconnection with the infrastructure, etc.

Financial requirements generally refer to a PSP having appropriate indicators of creditworthiness (e.g. fulfilling a minimum capital requirement), and having sufficient financial resources for contributing to any pre-funded default arrangements (which are common in deferred net settlement systems such as ACHs and payment card switches).

Other requirements typically include being able to provide evidence on the good standing of the owners and managers of the PSP, on the qualifications of managers and staff (e.g. on risk management issues), etc. In addition, as earlier discussed, non-technical requirements may also include having a specific license type (e.g. a banking license) in order to become a direct participant, and/or that the applicant has a settlement account at the central bank.

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<sup>14</sup> DEPENDING ON THE SPECIFIC SYSTEM AND ITS DESIGN, THIS MAY MAKE THE PARTICIPATION OF SUCH ENTITIES IMPOSSIBLE FROM A PRACTICAL PERSPECTIVE

## **b. International standards and other guidance**

Access rules to payment infrastructures vary across countries and across the various infrastructures in each country, and keep evolving based on experience, market developments and other needs. Standards and other internationally recognized guidance for payments and other settlement systems provide general references or instructions on the features that a system's rules ought to include with regard to access aspects.

The CPMI-IOSCO “Principles for Financial Market Infrastructures” (PFMIs) issued in 2012 are the most widely-recognized international standards for payment systems and other financial market infrastructures (FMIs).<sup>15</sup> Although the PFMIs were designed for being applicable to systemically important payment systems (and other FMIs), many central banks also apply the PFMIs, or a subset thereof, to the main retail payment systems in their jurisdiction.

The PFMIs contain a specific principle on the issue of access to the infrastructure. Principle 18 on “Access and participation requirements” states that:

*An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.*

According to this principle, a payments system (and other FMIs) should allow for fair and open access to its services, based on reasonable risk-related participation requirements. In other words, a payments system should allow for fair and open access to its services, but at the same time it must control the risks to which it is exposed by its participants by setting the necessary risk-related requirements for participation in its services. The latter should have the least-restrictive impact on access and competition that circumstances permit.

Moreover, the operator of a payments infrastructure must set robust risk management controls for day-to-day operations. The effectiveness of these controls may also mitigate the need for the operator to impose onerous participation requirements that limit access.

More recently, in their 2016 “Payment Aspects of Financial Inclusion” report the CPMI and the World Bank Group further recognize the importance for financial inclusion of appropriate access to infrastructures and their interoperability. For example, two of the key actions that relate to Guiding Principle 3<sup>16</sup> in that report state the following:

- Payment infrastructures, including those operated by central banks, have objective, risk-based participation requirements that permit fair and open access to their services.
- Increased interoperability of and access to infrastructures supporting the switching, processing, clearing and settlement of payment instruments of the same kind are promoted, where this could lead to material reductions in cost and to broader availability consistent with the local regulatory regime, in order to leverage the positive network externalities of transaction accounts.

## **c. Ownership and governance of payments infrastructures**

As mentioned in section III, RTGS systems are owned by central banks which are very often bounded by their respective organic laws on the types of entities that can become direct participants of this and other payment systems they operate. Many central banks in their role as monetary and financial stability authorities also limit participation on the basis of concerns of potential negative implications of NBFIs and other entities becoming direct participants in the RTGS system.<sup>17</sup>

<sup>15</sup> OTHER FMIS INCLUDE CENTRAL SECURITIES DEPOSITORIES, SECURITIES SETTLEMENT SYSTEMS, CENTRAL COUNTERPARTIES AND TRADE REPOSITORIES.

<sup>16</sup> GUIDING PRINCIPLE 3 ON FINANCIAL AND ICT INFRASTRUCTURES: “ROBUST, SAFE, EFFICIENT AND WIDELY REACHABLE FINANCIAL AND ICT INFRASTRUCTURES ARE EFFECTIVE FOR THE PROVISION OF TRANSACTION ACCOUNTS SERVICES, AND ALSO SUPPORT THE PROVISION OF BROADER FINANCIAL SERVICES”.

<sup>17</sup> FOR EXAMPLE, THERE MAY BE CONCERNS THAT SUCH OTHER ENTITIES, ONCE THEY JOIN THE SYSTEM, MAY BE SEEN AS BEING UNDER THE GENERAL REGULATORY PURVIEW OF THE CENTRAL BANK AND BEING COVERED BY “SAFETY NET” MECHANISMS.

Hence, direct participation in RTGS systems is often restricted to commercial banks and to some operators of other payment and settlement systems (e.g. retail payment systems, securities settlement systems, central counterparties, etc.). In some cases, other non-bank financial institutions that have been licensed and are supervised can also become direct participants.

ACHs can be owned by the central bank, by the private sector or have mixed ownership. For central bank-owned ACHs, it is common for direct participation to be restricted in the same way as for the RTGS system, often because in both cases participation is largely dependent on being able to have an account at the central bank.

For privately operated ACHs two common scenarios are: 1) the ACH is owned by a consortium of banks and is operated as a cost center rather than with a profit-maximizing objective; and, 2) the ACH is privately owned, with ownership being partly or largely independent from participation, and is a profit-maximizing venture. In the first scenario, direct participation tends to be limited to the banks that are also shareholders, or in some cases also to other banks as this allows the ACH to reach the whole banking sector. In the second case, direct participation tends to be open also to at least some types of non-bank PSPs as the ACH owner(s) will have an incentive to process the largest possible volume of transactions in order to help it maximize total revenue and profits.

Similar considerations apply to payment card switches, which only rarely are owned by central banks. In these infrastructures, however, participation for the sole purpose of transaction routing/switching (see section III.b) is likely to be more open to non-banks PSPs that operate payment cards or other payment instruments that can be processed through the same switch.

The governance structure of a payments infrastructure also has a significant influence on its access policies. Infrastructures owned by bank consortia and whose governance structures are based solely or essentially on ownership (e.g. based on the percentage of company shares owned) will tend to preserve the status quo, i.e. limiting participation to owners and possibly a few other entities. Or, even if other non-bank PSPs may access the infrastructure directly, the underlying terms and conditions might be disadvantageous relative to those that are applied to traditional participants in aspects like the initial subscription fee, monthly fee, per transaction fees, etc.

In some cases the central bank participates in the governance structure of these infrastructures, or is able to influence it through regulation and/or moral suasion so that all existing or potential participants are given fair access conditions.

## **5 International evidence and trends**

The purpose of this Section is to show global data on access-to-payment infrastructures issues. A number of specific cases studies are then presented in Annex I.

The data shown in this Section have been obtained from the World Bank Group's Global Payment Systems Survey (GPSS). Most recent data was publicly released in 2014 and shows information as of end-2012, and is therefore referred to below as the "GPSS 2012".

**a. Access to RTGS systems****Table 1: Access of non-bank institutions to the RTGS system**

	Supervised NBFIs		Unsupervised NBFIs		Non-financial institutions (other than Ministry of Finance or equivalent)	
	Direct access to settlement account and credit	Direct access to settlement account, NO credit	Direct access to settlement account and credit	Direct access to settlement account, NO credit	Direct access to settlement account and credit	Direct access to settlement account, NO credit
<b>Countries</b>	#	#	#	#	#	#
<b>Total worldwide (117)</b>	18	18	1	5	1	9
<b>By Region</b>						
East Asia and the Pacific (9)	1	3	0	2	0	1
Europe and Central Asia (13)	1	2	0	1	1	3
Latin America and the Caribbean (24)	3	8	0	1	0	3
Middle East and North Africa (10)	2	0	0	0	0	0
South Asia (3)	0	0	0	0	0	0
Sub-Saharan Africa (19)	0	1	0	0	0	1
Euro area (15)	3	2	0	1	0	0
Other European Union members (11)	2	1	0	0	0	1
Other developed countries (13)	6	1	1	0	0	0

**Notes:**

1. Source: World Bank Group, Global Payment Systems Survey 2012 (adaptation of Table IX.1).
2. The “Total worldwide” figure of 117 represents the number of central banks that answered this section of the GPSS 2012. Some central banks represent more than one country (e.g. BCEAO, ECB, ECCB).
3. Numbers in the table represent the number of central banks that answered positively each question.
4. “Other developed countries” refers to developed countries outside the European Union.

From Table 1 it may be observed that direct participation of entities other than commercial banks was relatively uncommon in RTGS systems worldwide at the time of the GPSS 2012. The non-bank type with the least restrictive figures were supervised NBFIs. Even for the latter, however, at the global level only 36 countries (about 30% of the total that answered the GPSS 2012) informed that supervised NBFIs were direct participants in their RTGS system. In only half of those cases an NBF can access payment system-related central bank credit.

On the other hand, direct participation of unsupervised NBFIs and of non-financial institutions other than the Ministry of Finance (e.g. mobile network operators or “MNOs”) was practically inexistent. Only about 5% of countries informed that unsupervised NBFIs can become direct participants in their RTGS system. This number raises slightly to 9% for the case of non-financial institutions.

From a regional perspective, direct access to the RTGS system by supervised NBFIs is more common in Latin America and the Caribbean and in developed countries outside the European Union. About 50% of the central banks in these two regions informed that they give NBFIs direct access to their RTGS system. In contrast, such access is zero or close to zero in South Asia and Sub-Saharan Africa.

**Table 2: Access of payment system operators to the RTGS system**

	ACH Operators		Payment Card Switch Operators	
	Direct access to account and credit	Direct access to account, no credit	Direct access to account and credit	Direct access to account, no credit
<b>Countries</b>	#	#	#	#
<b>Total worldwide (117)</b>	15	44	6	22

Source: World Bank Group, Global Payment Systems Survey 2012 (adaptation of Table IX.1).

Table 2 shows that direct participation of payment system operators in RTGS system is much more common, albeit still far from universal. Operators of ACHs have direct access to the RTGS system in 51% of the respondent countries. The corresponding figure for payment card switch operators is significantly lower, at 24%. Only a small fraction of ACH and payment card switch operators also have access to central bank credit.

Additional relevant data from the GPSS 2012 shows that access criteria in RTGS systems was still largely institution-based: 107 respondents (91% of the total) mentioned that direct access is based on the type of license/authorization of the applicant or potential participant.

#### b. Access to ACHs

**Table 3: Direct access of non-bank institutions to ACHs**

	Credit Unions	MTOs	Supervised Cooperatives	Unsupervised Cooperatives	Other MFIs	Postal network	Exchange bureaus	Other
<b>Countries</b>	#	#	#	#	#	#	#	#
<b>Total worldwide (96)</b>	17	7	14	2	11	14	3	9
<b>By Region</b>								
East Asia and the Pacific (8)	1	0	0	0	0	0	0	0
Europe and Central Asia (8)	0	0	0	0	1	2	0	0
Latin America and the Caribbean (22)	7	2	5	1	2	1	1	1
Middle East and North Africa (6)	0	0	0	0	0	2	0	0
South Asia (4)	0	0	1	0	1	1	0	0
Sub-Saharan Africa (19)	1	0	2	0	0	1	0	4
Euro area (10)	3	2	3	0	4	2	1	0
Other European Union members (10)	1	1	1	0	2	1	0	1
Other developed countries (9)	4	2	2	1	1	4	1	3

## Notes:

1. Source: World Bank Group, Global Payment Systems Survey 2012 (adaptation of Table IX.3).
2. The “Total worldwide” figure of 96 represents the number of central banks that answered this section of the GPSS 2012. Some central banks represent more than one country (e.g. BCEAO, ECB, ECCB).
3. Numbers in the table represent the number of central banks that answered positively each question.
4. “Other developed countries” refers to developed countries outside the European Union.

With regard to direct access of non-banks to ACHs, the numbers are not very different from those discussed in the previous sub-section on access to RTGS systems.

Credit unions, supervised cooperatives and postal networks are the non-bank types with better direct access to ACHs. However, in none of these cases the share of countries where these entities enjoy direct access to ACHs exceeds 20%. Exchange bureaus and, unsurprisingly, unsupervised cooperatives show lower access figures than other non-banks.

Direct access to ACHs is more common in Latin America and the Caribbean region, Euro area-countries and developed countries outside the EU. Direct access of credit unions is stronger in these regions than in others.

Direct access of postal networks is especially strong in developed countries outside the EU (44% of the cases). Interestingly, the Middle East and North Africa region postal networks are the only non-banks with direct access to ACHs, in 2 out of 6 countries (33% of the cases) that responded the GPSS 2012.

## 6 Insights and conclusions

### a. Implications for operators, banks and non-banks

Being able to make use of key payment infrastructures at a reasonable cost and with appropriate service levels is an important element underlying a competitive payments market. In addition, by further enabling interoperability of PSPs, fair and open access to payment infrastructures promotes efficient and low-cost payment services.

As mentioned in sub-section III.A, both direct access and indirect access mechanisms to payment infrastructures could, *in principle*, be capable of providing PSPs with suitable payment services. However, in certain cases indirect access may not be as effective for many customer PSPs. This could occur because customer PSPs are often direct competitors of the PSP(s) that provides them access to the payments infrastructure (i.e. the PSP acting as principal).

For example, charges applied by the latter PSP may be significantly higher than the ones it itself faces as a direct participant of the relevant payments infrastructure, even after due consideration of the amortization of the investments needed to gain such direct access. Naturally, this would place customer PSPs at a disadvantage if they are serving the same market segment as their principals.

In other cases, the principal may set disproportionate criteria for opening accounts and providing payment services to customer PSPs – or may even decide not to provide such services at all. This is currently being observed in several markets worldwide.<sup>18</sup>

On the other hand, it must be recognized that for a (probably large) share of non-bank PSPs, gaining direct access to a payments infrastructure may not be cost effective. This could be the case for many smaller and newer non-bank PSPs that process a relatively small volume of transactions. For them, the costs of joining a payments infrastructure as direct participants (e.g. initial and monthly membership fees, internal IT and other investments to meet the essential system access criteria, etc.)

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<sup>18</sup> AS PART OF THE SO-CALLED “DE-RISKING” TREND, MANY BANKS THAT ARE CANCELLING OR DENYING THESE SERVICES TO PSPS SUCH AS NON-BANK REMITTANCE SERVICE PROVIDERS (RSPS), ESPECIALLY AT THE CROSS-BORDER LEVEL. SOME LARGE GLOBAL BANKS ARE EVEN DENYING THESE SERVICES TO FOREIGN BANKS WHICH DEPEND ON THE FORMER FOR ALL SORTS OF CROSS-BORDER TRANSACTIONS. FOR MORE INFORMATION SEE CPMI (2016) AND THE WORLD BANK (2015).

could be greater than if they were operating as customer PSPs through another direct participant PSP.

Best practice for payment system operators would therefore be adhering strictly to the spirit of international standards and other relevant international guidance. As per the discussion in sub-section IV.b, this would entail establishing risk-based and objective access criteria and ensuring that any PSP that wishes to gain direct access and meets such criteria is able to join the system as a direct participant. Operators must nevertheless also ensure that the risk-based criteria they set also consider the potential risks that a participant may bring into the payments infrastructure through its direct participation, and that such criteria are clear and are publicly available.

Lastly, in a related though at the same time different matter, in some markets it has been observed that certain MNOs that are also involved in the payments business as PSPs for mobile payments have restricted access to the mobile telecommunications network that they themselves operate to other PSPs. Although different from restricting access to clearing and settlement infrastructures, restricting access to the mobile telecommunications network is likely to have similar overall effects in terms of limiting interoperability and competition in the market place.

### **b. Implications for central banks and other authorities**

Several institutions around the world have called upon payment system regulators, in particular the central bank in its role as payment system overseer, to ensure that all PSPs are able to gain fair access to payment services.

As regards direct participation, as already mentioned international standards require central banks to ensure that a payment system's participation requirements allow for fair and open access. This applies both to infrastructures operated by the central bank as well as to those operated by other parties.

However, emphasis has also been placed on ensuring effective access to payment *services* for PSPs for which direct access is not a possibility based on overall cost-benefit considerations.

In this last regard, for example, the CPMI-World Bank "General Principles for International Remittance Services" state, as part of the possible actions to implement the principles, in particular General Principle 4, that:

*"The relevant authorities may want to check that RSPs without direct access to core payment systems can obtain fair indirect access. Institutions with direct access should be encouraged to provide relevant payment services, including foreign exchange services, on an equitable basis to RSPs."*<sup>19</sup>

Other entities have specifically stressed the risk that certain requirements, like those associated to AML/CFT, be used inappropriately by PSPs acting as principals (i.e. they have direct access to payment infrastructures) to discriminate against other PSPs when providing payment services to them.

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19 MOREOVER, WITH REGARD TO DIRECT ACCESS CPMI AND THE WORLD BANK (2007) STATE "PAYMENT SYSTEM OPERATORS AND THEIR OVERSEERS MAY WANT TO CHECK WHETHER THEIR DIRECT ACCESS REQUIREMENTS ARE CONSISTENT WITH INTERNATIONAL PRINCIPLES TO ENSURE PAYMENT SYSTEM SAFETY AND SOUNDNESS. ACCESS CRITERIA SHOULD BE CLEAR, WELL DEFINED AND FAIR; AND ACCESS SHOULD BE GRANTED TO ALL ENTITIES, INCLUDING RSPS, WHICH COMPLY WITH SUCH REQUIREMENTS".

## Annex I

### Case studies

#### **Egypt**

The introduction of the Automated Clearing House (ACH-EG) in 2010 enabled interoperability across banks by allowing the exchange and clearing of transactions among participating financial institutions. Mobile payments entered the ecosystem in 2013. It is expected that mobile payment interoperability will also be achieved by layering it on the ACH-EG via a mobile payments gateway solution, i.e. a mobile payments switch.

As of now, only one MNO e-wallet service is equipped with a function that allows funds transfers to other e-wallets. This is due to close integration of the MNO that operates this e-wallet service with the banking infrastructure (due to mobile money regulations in Egypt, MNOs are required to contract with a bank). Once the mobile payments switch in ACH-EG is released for production, which is expected for late 2016, mobile payments would flow seamlessly between e-wallets of different issuers, and between e-wallets and any bank account.

Among other responsibilities, ACH EG will be responsible for clearing, and settlement will be done at the RTGS system operated by the Central Bank of Egypt. As only banks are allowed as direct participants in this RTGS system, non-banks participating in the switch will have to be sponsored into settlement, most likely through the same bank that they will have contracted for providing the e-wallet service.

#### **Jordan**

The National Mobile Payment Switch (JoMoPay) was developed and built following an initiative of the Central Bank of Jordan (CBJ) for the purposes of exchanging "on us" and "off us" payments among PSPs, including banks and MNOs that operate e-wallets.

MNOs need to open account at a commercial bank in order to be able to settle transactions in the country's RTGS system (the "RTGS-JO", operated by the CBJ). In other words, MNOs are direct participants in JoMoPay which allows them to exchange payment transactions directly, but need to be sponsored into settlement in the RTGS-JO by a direct participant of the latter (i.e. a commercial bank).

In parallel, the CBJ issued the Mobile Payment Instructions and Operational Framework that set the technical, financial and other requirements for MNOs to connect to JoMoPay, which is compulsory in order to ensure all levels of interoperability among all PSPs and PSOs involved in mobile payments throughout the Kingdom. For example, in terms of the technical requirements, MNOs cannot connect to JoMoPay unless they have the certification and approval from CBJ. As for financial requirements, a minimum capital of JOD 1.5 Million has been established. The Mobile Payment Instructions and Operational Framework also empowers the CBJ to oversee MNOs with regard to their role as PSPs.

The CBJ has made available access to JoMoPay without collecting the testing fees and annual infrastructure fees from PSPs for the first two years in order to facilitate that mobile payments customers receive the lowest price possible and increase financial inclusion levels in the country.

## **Mexico**

Banco de México regulates mobile payment services in order to achieve mobile payments adoption, foster competition among mobile payments PSPs, and to reduce the associated costs. The mobile payments regulation has focused on achieving interoperability among PSPs. The regulation establishes that transactions across ecosystems must be settled through the RTGS system operated by Banco de México (i.e. SPEI) for “off us” mobile payments, either directly by the paying and payee mobile payments PSPs, or through a connected clearinghouse (see below).

Mobile payments are bank-led, in association with MNOs. It is compulsory to provide mobile payment services “on us” and “off us” in similar conditions regarding hours of service, times of processing and costs. In the case of “off us” transactions, banks can additionally charge SPEI costs.

In 2014, Banco de México issued rules for the creation and operation of mobile payments clearinghouses. Such entities need Banco de Mexico’s authorization to operate and are allowed to become direct participants in SPEI.

As a result of the measures taken so far, the processing costs and processing time of “off us” mobile payments have been reduced.

## **Nigeria**

Twenty-one MNOs (known locally as “Mobile Money Operators” or “MMOs”) have been licensed by the Central Bank of Nigeria (CBN), and they are all required to connect to the Nigeria Central Switch operated by the Nigeria Inter-Bank Settlement System Plc (NIBSS) to achieve interoperability among MMOs, and between MMOs and the bankers’ clearing system. Some of the MMO licensees are banks, while others are fintech companies.

Every fintech-owned MMO is required to enter into an agreement with a commercial bank of its choice for the latter to act as its settlement agent. MMOs’ access to the RTGS system operated by the CBN is made possible by this settlement arrangement. There is a back-to-back clearing collateral mechanism in place to protect the entire system against settlement risks. As part of this mechanism banks pledge collateral to the CBN, while individual MMOs pledge collateral to their settlement bank.

Recently, the CBN began to issue “Payments Solution Service Provider” licenses to fintechs who want to specialize in the provision of payment services. These specialized PSPs have access to the bankers’ clearing system through settlement banks, like the MMOs, and they also connect to the Nigeria Central Switch. Through this means, they are able to reach the bank accounts of their respective subscribers.

In parallel, the CBN, working with payment system industry players, commenced the process of benchmarking the Nigerian payments system against the PFMI in 2015. The gaps that exist have been documented and there are ongoing initiatives to bridge the gaps.

## **Pakistan**

In Pakistan, interoperability of mobile money services/e-wallets has been live since 2014 and is enabled through “1LINK”, a commercial interbank switch. Interoperability allows for funds transfers from e-wallet to e-wallet, e-wallet to bank account and bank account to e-wallet.

It is important to note that interoperability between mobile money services was not mandated by the central bank (i.e. the State Bank of Pakistan, “SPB”) or other regulators. The decision to interoperate was reached purely on market situation. In this regard, Pakistan’s mobile money model is bank-led (run jointly by a MNO and a bank), so PSPs providing mobile payment services were in

general already familiar with an interbank switch: banks were already connected to 1LINK, so they only had to also integrate their mobile money platforms to the switch.

Recently, the SBP and the telecom regulator Pakistan Telecommunication Authority (PTA) issued joint regulations on the technical implementation and interoperability of mobile/branchless banking. Under these regulations, PTA licenses Third Party Service Providers (TPSPs) under class value added services, while the SBP provides authorization for what concerns payment services and operations. The TPSP model is expected to offer maximum outreach and connectivity, whereby all banks and all MNOs will be able to entertain each other's customers.

## **Peru**

Peru's shared mobile payments platform/switch became operational in February 2016. Known as "BiM" (which stands for "*billetera móvil*" or "mobile wallet"), it is the result of a partnership formed by the country's financial institutions, government, telecommunications companies, and large payers and payees.

The ultimate goal of this effort is to achieve interoperability in mobile payments between banks and other approved entities, across telecommunications networks, while making use of existing financial infrastructure (i.e. banks, branches, agents, ATMs, online channels) so that a payment can be accepted by anyone.

Circular No. 013-2016 of the Central Bank of Peru (BCRP) regulates e-money payment agreements (known as "APDE"). BiM is regarded as an APDE. *Pagos Digitales Peruanos*, which is the administrator of BiM, clears payment transactions and calculates inter-participant positions on the basis of multilateral netting at the end of each day. BiM participants that have direct access to the BCRP's RTGS system settle their positions directly in this system, while other BiM participants must be sponsored into settlement by a direct participant of the RTGS system.

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