Introduction to the National Payments System

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Note: This is a beta version. Comments are welcome to comments@nps-institute.com.
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Through reading this chapter, you will be introduced to:

- The National Payments System (NPS); and
- The structure of this book.

Payments are all around us. The average person in a developed country such as the US or Canada makes sixty or seventy payments per month. Poor people in developing countries may well make payments more often since they cannot afford to make bulk purchases (they buy daily from a variety of local suppliers, rather than from large grocers). Governments and businesses make many payments, as well — to employees, vendors, or to citizens who receive pensions or social transfers. They also receive payments from many sources. In Canada, one of the relatively few countries in which payments of all sorts have been studied holistically, there were an estimated 20 billion payments across the economy in 2010. Most of these payments were small in value. What’s more, most of these payments (and most in the US now, too) were made using electronic means, whereas in most countries, the overwhelming number of payments is made using paper-based means, such as cash or cheques.

The National Payments System

The National Payments System (NPS) controls how participants at all levels — from the person on the street to banks, governments and international participants — exchange value within an economy and across national borders.

In practice, the NPS is the framework of laws, regulations, systems, mechanisms, procedures and agreements (commercial, process and risk management) that governs payments. It covers the entire payment process and all participants. This holistic perspective is summarized in Figure 1 overleaf.
As Figure 1 shows, the NPS has the following components:

- National issues and objectives: the NPS is in alignment with the priorities and objectives of the financial system and the economy as a whole (see Chapter 3);
- Legal: the NPS is based on a legal foundation, which may come from a range of laws, regulations and rules (see Chapter 4);
- Monitoring and management: the understanding, monitoring and management of risk informs the approach of payment regulators and other participants (see Chapter 5);
- Architecture: the modern NPS requires procedures, processes and rules executed using sophisticated information technology (IT) systems and platforms (see Chapter 6);
- Roles and structures: each actor in the NPS has complementary responsibilities yet, potentially, competing interests that have to be clearly specified (Chapter 6); and
- Financial arrangements: who pays for the infrastructure and its ongoing maintenance, and how it is owned and governed, are important considerations in the functioning of the NPS (see Chapter 6).
Structure of this book

This book is designed to provide the reader with a foundation for understanding the NPS as a whole — its basic components, layers, payment instruments and channels, participants, and how it is regulated and overseen. The concepts apply widely, though examples from specific countries are cited throughout. Many existing works focus on one part of the NPS or another or on specific payment instruments or channels. This book fills a gap in explaining how those parts fit together — what an NPS looks like and does.

Further, much work has been done on analysing large-value payments. These payments are the emphasis of the modern economy, but that is changing: electronic payments systems are developing quickly, and there is now an emphasis on financial inclusion in many countries. So this book will primarily deal with electronic payments, with a special focus on retail payments, a term that will be discussed in the next chapter.

Chapter 2 introduces the core building blocks of the payment landscape, distinguishing payments by three dimensions: the payment instrument, the store of value and the channel used. It also introduces the payment grid, which differentiates flows by the identity of payer and payee.

Chapter 3 addresses how the health and functioning of the NPS affects the national and international economy; and what this means for the main users of payment systems — consumers, businesses and governments — as well as for the providers.

Chapter 4 outlines the rules that shape the NPS, and Chapter 5 looks at how those rules are applied by regulators and overseers. Chapter 6 surveys the main participants in the payments system. In the final chapter, we look at emerging trends and what they mean for the future of payments.
Chapter 2

Introducing the payment landscape

Through reading this chapter, you will be introduced to:

- The main categories of payment instruments and types of payment channels;
- Stores of value;
- The payment use case concept;
- The payment process; and
- The distinction between wholesale and retail payments.

A payment instrument enables a user to transfer funds or make a payment.¹ In the broadest sense, the NPS is the collection of all uses of payment instruments in a variety of different channels, which will be described shortly. The more sophisticated an NPS, the greater the number of types of payment instruments and payment channels available and used. Confusingly, the distinction between instruments and channels sometimes seems to blur; the concept of payment use cases, also discussed below, will help to clarify things.

There are five main categories of payment instruments:

- **Cash**: physical money (paper and coins) in circulation — in most places, issued by the central bank;
- **Cheques or bills of exchange**: written orders from one party (the drawer) to another (the drawee, normally a bank) to pay a third party, the payee;
- **Electronic credit transfers**: electronic instructions to debit the payer’s own account and credit the account of the payee; they are known as ‘push payments’ since the payer directly authorizes the debit to his account and the credit to the payee (sometimes also known as EFT credits);
- **Electronic debits (such as direct debits)**: debits that are pre-authorized by the payer but are submitted by the payee; they are known as ‘pull payments’ since the payer’s instruction is introduced to the system by the payee’s provider, which pulls the funds across from the payer (sometimes also known as debit orders); and
- **Payment cards**: a broad category including debit, credit and prepaid cards, which are presented by the cardholder, usually to a merchant, and, usually together with a signature or PIN, authorize the merchant’s bank to initiate a charge on the payer’s account; card payments generally follow a pull approach, but they are subject to very different sets of rules from direct debits.
Of this list, the first two are usually considered paper-based instruments, whereas the last three are considered electronic because an electronic message is used to authorize and effect payment. However, the cheque truncation process takes the paper instrument and quickly converts it to electronic, blurring the definitions.

As their definitions suggest, these categories of payment instruments differ in material ways:
• How the payment is authorized by the payer;
• How the payment is authenticated;
• When the payment is received by the payee;
• The dispute resolution procedures that apply;
• The rights of payer and payee if the payment is not completed;
• The fees charged to payer and payee for using the instrument; and
• The risks associated with all of the above.

Our emphasis in this book is on electronic instruments because they are growing in volume and importance in most places; and because they require legal, regulatory and technical considerations that are often not well understood compared with more traditional paper-based instruments.

Transaction types
Payments are typically described as ‘pull’ or ‘push’ transactions because the underlying process is different. In the case of a pull transaction, another party gives an instruction to debit the payer’s account. When the payer’s financial institution accepts the charge, it needs to be sure that the transaction was in fact authorized by the payer; otherwise it would risk paying the payee and then having the payer repudiate the transaction. Unless the rules for repudiation are clear and enforced, financial institutions would be unlikely to accept pull transactions such as direct debit instructions. With push transactions, on the other hand, the sending financial institution is able to verify that the payer has in fact issued the instruction according to the transaction protocol (a process known as authentication and authorization, described below).

Payment channels
Payment channels are the means by which payment instructions are introduced into a payments system. Some channels, like bank branches and cash-in and cash-out merchants (known as agents in some places), require employees to effect withdrawals or deposits; ATMs do not. Other channels — like internet banking or point-of-sale channels at merchants — are ‘pure’ electronic channels in the sense that transactions are both initiated and executed electronically (no cash changes hands).

Payment channels usually require an electronic device of some sort — such as a computer terminal or a PC, or a point-of-sale device or indeed an ATM. Devices run on a variety of communications channels, including intranets, virtual private networks, satellite networks and across fixed or mobile phone bearer channels. What are called ‘mobile payments’ are usually initiated using a mobile phone as a device, but the payment instructions may run across a variety of communications channels, from mobile-specific data channels such as SMS to the internet if the phone has that capability.

Stores of value
Payments involve transfers between different stores of financial or monetary value denominated in a way that is widely accepted and adequately liquid. Accounts at banks are the most common stores of value involved in payments in most countries, since banks are authorized to take deposits, which
are generally transferable on demand for multiple uses. Banks often specialize in providing payment services to their clients. However, value need not be held in an account at a bank: electronic money, or ‘e-money,’ is a particular type of store of value that may in some countries be stored at a non-deposit-taking institution. E-money usually must be backed by a safe asset like a bank deposit. E-money is an important and sometimes confusing topic (Box A).

Payments effect transfers between accounts — whether across different accounts of the same customer at the same financial institution, across accounts of different customers at the same financial institution (known as “on us” transfers) or across accounts held at different financial institutions (“off us”).

Payment use cases
Now we can put together the concepts of payment instruments, channels and stores of value to bring precision to our discussion of payments. Figure 2 shows these three main dimensions of the payments system. Just as GPS can pinpoint an object’s physical location by its longitude, latitude and elevation, every payment can be basically defined by its position in each of these three dimensions. The description, consisting of the ‘coordinate’ in each dimension, is the payment use case.

An example of the importance of specificity: There may be a number of different transaction types with different characteristics (not least the fee charged) underlying each payment instrument. Under the broad category of payment cards, transaction types can include:

• Cash withdrawals;
• Balance enquiries;
• Purchases of goods at physical merchants;
• Purchases of goods at electronic merchants (e-commerce); and
• Bill payments.

Box A: What is e-money?
Defining e-money is not simple. All bank deposits today are electronic money, since the value is stored electronically. Banks are issuers (and creators) of e-money. But the term ‘e-money’ usually has a more specific, technical meaning — different from a deposit on the one side, and from a payment on the other.

E-money has some of the features of both concepts: Value is stored like a deposit, but the purpose of having e-money is usually to transact, as in a payment. In principle, there is nothing preventing e-money from being used for savings, although regulators generally prefer to emphasize the difference from a bank account by requiring that it not be marketed for savings or, in some cases, that it be prohibited from paying interest. Unfortunately, e-money often is not clearly defined, and as a result, non-bank e-money issuers are not subject to regulation — whether by bank supervisors or payment regulators. Good practice suggests that non-bank e-money issuers and acquirers should be subject to proportionate regulation, which differentiates the intensity of regulation based on the intensity of risk, just as for banks. While a number of countries still refuse to allow non-banks to issue e-money, an increasing number, such as Malaysia (2008) and the Philippines (2009) have introduced regulations to define and regulate non-bank issuers.
Each payment use case is managed by a set of agreements called a payments stream. For payments with cards at merchant point-of-sale (POS) devices, for example, there may be multiple payments systems operated by the large international card associations (Visa, MasterCard), as well as a local card payments system that does not carry the international systems' brands or rules. These systems constitute the payment stream for this use case.

The NPS, which was introduced in the first chapter, can now be understood as the payments system made up of all the payment streams managing all the defined payment use cases.

**Box B: Mobile payments: What are the use cases?**

Payments made using mobile phones have taken off in various places in the past five years. But what are mobile payments? The term is used inconsistently and can generate much unnecessary confusion. Figure 2 above helps put mobile payments in their place: A mobile payment is simply a payment that is initiated using a mobile phone (Dimension 3). That mobile payment may be between two bank accounts, two so-called ‘mobile wallets’ (which are e-money accounts stored on a server), or some combination of the two (in Dimension 1). And it would most likely take the form of an electronic transfer (Dimension 2).
Use case:

- a) Mobile banking transfers
- b) 'Mobile money' transfers
- c) Bank-based mobile money transfers

<table>
<thead>
<tr>
<th>Transaction type</th>
<th>a) Mobile banking transfers</th>
<th>b) 'Mobile money' transfers</th>
<th>c) Bank-based mobile money transfers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Store of value</td>
<td>Bank account</td>
<td>E-money account at telco</td>
<td>Bank account</td>
</tr>
<tr>
<td>2. Payment instrument</td>
<td>Credit transfer</td>
<td>Credit transfer</td>
<td>Credit transfer</td>
</tr>
<tr>
<td>3. Channel</td>
<td>Mobile phone</td>
<td>Mobile phone</td>
<td>Mobile phone</td>
</tr>
<tr>
<td>Example</td>
<td>Many banks</td>
<td>M-PESA (Kenya)</td>
<td>Smartmoney (Philippines)</td>
</tr>
</tbody>
</table>

The mobile phone may also use mobile-specific channels such as SMS to carry the message, or it could access the internet directly. As the functionality of mobile phones and devices becomes more like that of computers, the distinction between mobile payments and internet payments becomes less important. However, particular features of mobile-specific channels bring risks and considerations for providers and regulators.

**Payment processes**

All payment transactions pass through a sequence of processes before they are complete. Consider a simple cash transaction. The payment instrument (note or coin) has been issued by a monetary authority and is in the possession of a person wishing to make a payment. The payee receives the note and in some contexts gives change and/or checks if the note is genuine. Value has been transferred, and the transaction is then considered settled — more or less in real time. In this case, neither the issuer of the payment instrument nor any other third party needs to participate in the transaction because receipt of the store of value can usually be verified by the payee on sight. If the payee had doubts about whether a note was genuine, she might refuse to accept it, or else require that it first be taken to the issuer (the nearest branch of the central bank) for validation.

The electronic counterpart to the cash transaction is a bit more complicated but follows the same steps:

**Step 1 — Payment initiation:** The payer (or payee in the case of an electronic debit) identifies, obtains and presents the chosen payment instrument, through which a payment instruction can be submitted. In the case of a payment card, this may involve swiping (or dipping) the card through a point-of-sale terminal.

**Step 2 — Authentication:** This is the protocol for determining that a party to the transaction is who he says he is. In an electronic transaction, the terminal itself may first have been authenticated with the back-end system; and then the customer would authenticate his identity through the use of a card and PIN. When two different means of authentication (something you have, the card, and something you know, the PIN) are used, the protocol is known as two factor authentication. Two factor authentication is common in many, but not all, electronic channels. Some transactions involve only one factor: with a cheque, the payee may request proof of identity.

**Step 3 — Authorization:** The payer gives permission using the protocol for the transaction. For a cheque, this means a signature; for a payment card transaction, typically the PIN used to authenticate is also considered authorization.

**Step 4 — Processing:** The transaction is received and executed by the system of the payee’s financial institution. Processing also happens on the payer’s side. If the transaction is between two account holders...
of the same financial institution ("on us"), then the transaction is complete when the payer’s account is debited and the payee’s credited. That would end the payment process.

If the transaction is between clients of two different financial institutions ("off us"), then additional steps are involved:

**Step 5 — Clearing:** Payment instructions are exchanged (cleared) between institutions and then reconciled to determine the obligations of each participant to the other. Clearing may be done in real time, close to real time or once several sets of instructions have accumulated (called batch mode).

**Step 6 — Settlement:** Value is finally transferred between the participants. This process may take place simultaneously with clearing. This is generally the case with a Real Time Gross Settlement System (explained below). More commonly with today’s payments systems, settlement occurs later on the same day or up to a day or more later.

At each stage of the payment process, third party service providers may be helping the payer or payee or their respective financial institutions to process transactions or communicate securely. And at each stage, there are different risks involved. However, the last two steps — clearing and settlement — are of particular interest and potential concern in the NPS because they involve exchanges of value between financial institutions. On a large enough scale, an interruption of the processes of clearing and settlement could cause individual financial institutions to fail; and the failure of a large enough institution may bring risk to the whole financial system. Systemically important payments systems (SIPS) are so called because their failure would cause serious consequences for the stability of the economy as a whole.

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**Distinguishing payments by size: wholesale vs. retail**

Payments can also be classified into wholesale and retail transactions, usually based on one or both of these two criteria:

(i) The type of party that initiates the transaction — whether a natural person, a small business or a corporate entity; and

(ii) The value of the transaction.

Wholesale payments are generally large payments made by corporations, including banks, whereas retail payments are most commonly made by individuals and are each of low value. Although few countries define a retail payment specifically, the distinction between wholesale and retail corresponds to a more important distinction between payments systems that are determined to be systemically important and those that are not. Wholesale payments systems are much more likely than retail payments systems to be considered SIPS: with high values passing through wholesale payments systems, the failure of any one participant, or of the system itself, could cause a ripple effect of other failures throughout the financial system.

One way countries address this risk is by using a Real Time Gross Settlement System (RTGS System) to process high value payments. An RTGS System debits and credits the accounts of financial institutions at the central bank on a real time or near real time basis for each transaction, allowing financial institutions to settle large amounts between themselves quickly, securely and finally. Most but not all countries have an operational RTGS: 83% of countries use an RTGS as the main payments system for large value payments and 109 out of 119 regulators from countries with an RTGS (in some cases, multiple regulators from the same country) said that their RTGS is operated by the central bank.7
In contrast, because the total values exchanged are much lower, retail payments systems have traditionally not been considered systemically important. This does not mean that their failure would go unnoticed. They may touch the lives of millions of people.

Figure 3 shows the comparison of total payment values and volumes exchanged through Kenya’s various payments systems. Whereas by far the biggest value passes through the RTGS (top bar of the chart), the most electronic transactions by number in Kenya now happen through mobile payments (the lower bar), which are used by two thirds of adults.

As the usage of electronic payments systems has grown, retail payments systems have become more prominent. Large retail payments systems are often regarded as having system-wide importance or being socially important, owing to their widespread use. This is because interruption of the payment service would have consequences felt by many consumers and firms throughout the economy. However, many electronic retail payments systems remain small and are used by relatively few people.

Figure 3: Payment values and volumes in Kenya

Source: Central Bank of Kenya Annual Report 2010/11
Through reading this chapter, you will be introduced to:

- Why the health of the NPS matters for the economy;
- Common policy objectives for the NPS;
- The payment grid; and
- NPS implications for consumers, governments and providers.

Chapter 3

Why the NPS matters

This chapter addresses how the NPS affects the economy and key sectors within it — consumers, government and business. It sets the stage for understanding the development of the rules of the NPS and the role and incentives of each actor involved.

Why does the health of the NPS matter for the economy?

Payments are the lifeblood of any economy. Like the circulatory system in the human body, when the payments system functions well, it contributes to the health of the whole economy, but it is barely noticed; when it fails, there may be severe consequences. The health of the NPS impacts the economy in four key ways:

First, the NPS affects the overall level of transaction costs in an economy. Transaction costs associated with payment typically comprise 1 - 2% of GDP in an economy. Reducing transaction costs frees resources for more productive uses, making the economy more efficient. The Central Bank of Brazil estimated that if there were a full transition from paper-based payments to electronic payments, the Brazilian economy would save 0.7% of GDP per year — worth $17.5 billion in 2011. That is more than the 0.5% of GDP the Brazilian government spends on its main cash transfer program for poor people, Bolsa Familia.

In practice, it is not easy to measure and compare the full costs of different payment instruments for all the parties involved — considering the payer and payee, as well as the financial institutions involved (Box C).
Box C: Measuring the costs of payment instruments

It is not easy to calculate the total costs of all payment instruments in a comparable manner. A number of methodological questions have to be addressed:

- **Which measurement of cost**: Marginal or total? Which indirect costs, and on what basis?
- **Whose costs to include**: Payer and payee, as well as payment processor? And what about the net cost to society, taking out the fees that are costs to some parties and income to other parties in the payment chain?
- **Which costs to include**: Whether to consider opportunity costs of holding cash or the time costs of fetching cash or setting up the payment instrument to use. And is the risk of loss or theft to be factored in? And the cost of providing rewards on cards?
- **On which type and sizes of transactions**: The cost of using cash for a typical grocery transaction ($11.52 in the US in 2005, less than $1 in Kenya in 2011) may be very different than the cost, and risk, of carrying large amounts of cash to buy a durable good such as a stove or television.

One study used a marginal cost approach to consider the cost to each party for a typical grocery store purchase size using four common payment instruments: cash, cheque, credit and debit card (Figure 4). For this size transaction, the credit card is most expensive for the merchant, and cash is cheapest. For consumers, the credit card was the cheapest means of payment and cash and cheque most expensive. For the society overall (not double counting the cost when it is revenue to another party), debit card was cheapest, followed by credit card and cash and then cheque. These cost rankings are highly sensitive not only to the value but also to the volumes processed in the country.

**Figure 4: Marginal cost of selected payment instruments for an average grocery store transaction**

![Figure 4: Marginal cost of selected payment instruments for an average grocery store transaction](image)

*Note: ‘Cheque’ refers to non-verified cheque; ‘Credit card’ to credit/charge and ‘Debit card’ to PIN debit*

*Source: Drawn from BFA (2012) The Journey to Cash Lite. The data in the figure above is drawn from Table 3, Garcia-Swartz et al (2006a).*
On the consumer side, lower transaction costs may translate into more payments and higher consumer expenditure, a driver of economic growth in many economies. A cross-country study in 2003 found that a 10% increase in the share of electronic payments was correlated with an increase in consumer spending of 0.5%. In addition, if there is uncertainty about how a payment system works, this creates friction in the transactional system of the country, which can affect the real economy.

Second, the NPS affects the degree of financial inclusion in the economy. Financial providers’ business models are shaped by the NPS’s allocation of costs and risks. And if the NPS makes it too costly or risky to offer services to the very poor, financial providers won’t do it. One result of financial inclusion: as more deposits are intermediated, more money is available for on-lending. The financial system grows in depth. Greater financial depth has been linked to faster economic growth.

Third, failures to payments systems or individual actors may bring severe risk of economic dislocation if payment obligations cannot be settled as expected. In large value payments systems, if one bank cannot meet its obligations, others could follow, leading to a banking crisis or systemic collapse. During periods of general economic stress, payment regulators watch the large value systems closely: In his autobiography, former US Federal Reserve Chairman Alan Greenspan relates how after reports arrived of the 9/11 attacks, which shut down air travel and the New York Stock Exchange, one of his main concerns was the continued functioning of the US payments system.

Fourth, new payment instruments can enable new business models. As more businesses rely on e-commerce, there is a market opportunity for e-payment instruments. In developing countries, the availability of reliable, convenient pre-payment instruments has reduced electricity providers’ collection costs and risks, enabling them to offer services to more users. The elimination of cash — with its risk of theft, loss and fraud — is even enabling new business models for mass private schooling.

Public policy objectives for the NPS

Safety and efficiency are the most common public policy objectives for payments systems, according to a World Bank survey of payment regulators.

Safety refers to the operation of payments systems in a way that does not bring risk of severe loss to participants or to the society; in other words, in safe payments systems, risks, especially systemic risk, are understood and well managed. Sometimes, soundness is also added as a related objective, referring to the robustness of the system to a severe shock.

Efficiency usually means at least productive efficiency — that the system produces outputs (payments) for the least possible input cost. Dynamic efficiency would consider whether the best technology is used over time, so that costs are kept low. It is for this objective that payment regulators take a particular interest in innovations. This concept is sometimes linked to effectiveness, which refers to whether the system’s outcomes are in line with its purpose.

Though these are the main objectives, others are increasingly found in countries’ NPS legal frameworks (Box D overleaf). For example, the Australian Payment System Board must also consider the competitiveness of the payments system, which is related to the concept of dynamic efficiency. Promoting financial inclusion is also now a formal objective of several NPS regulators. This has spurred the acceptance of the concept of socially important payments systems.
Box D: Examples of common policy objectives in NPS laws

Kenya: The central bank is required to “formulate and implement such policies as best promote the establishment, regulation and supervision of efficient and effective payment, clearing and settlement systems.” (Central Bank of Kenya Act, Section 4A (1)(d), Kenya)

Malaysia: In the preamble to the Payment System Act, the objective is stated as: “Whereas the Bank is the authority responsible for promoting the reliable, efficient and smooth operation of the national payment and settlement systems and for ensuring that the national payment and settlement systems policy is directed to the advantage of Malaysia.” (Payment System Act 2003, Malaysia)

Australia: The Reserve Bank is responsible for ensuring that payments systems operate in line with the public interest, which is defined as being:
(i) financially safe for use by participants; and
(ii) efficient; and
(iii) competitive; and not materially causing or contributing to increased risk to the financial system. (Section 8, Payment Systems (Regulation) Act of 1998, Australia)

These policy objectives may be in tension. On the one hand, participants in the NPS need certainty — that the rules are predictable and can be relied upon (discussed in greater detail in Chapter 4). On the other hand, participants also want openness — so that new, innovative, worthwhile approaches will be accommodated by the system rather than rejected.

Understanding payment flows: the national payment grid

One way of understanding and tracking payment flows in an economy is aggregating payments by volume and value according to the sector of the user: government, business or individuals. One may of course be much more specific within these sectors, such as levels of government (national, state or local, for example) or types of business (large vs. small, or tourist sector vs. domestic consumption, which will have an effect on the means of payment). Figure 5 overleaf shows the possible combinations of the three main types of payer and payee. In each cell of the grid, there may be multiple payment use cases; and the degree of choice of the payer and payee may differ considerably. For example, in the government-to-person (G2P) cell, governments may decide to pay all their employees or beneficiaries in a certain way, and those people would generally be required to accept payment this way or lose out. In the person-to-business (P2B) space, where people are buying goods or settling bills, there is generally more choice — businesses want to be paid — but some options are more costly than others.
It is not easy to populate the entire grid since it requires the collection of data through different methods. While the volume and value of electronic payments may be easy to get for payments systems that automatically collect such data, it is much harder when cash is a substantially used instrument in any cell — such as for small P2B purchases in most countries.

We now briefly consider how the development of the NPS affects each major category of user, as well as the payment providers involved.

**NPS implications for consumers and businesses**
The NPS shapes the choice of payment instruments available in an economy. Consumers in all countries use cash, and some combination of other instruments depending on their availability and attributes, such as convenience, price, security and acceptance. The attributes of payments valued by consumers have been studied in depth in developed countries, but not much yet in developing countries. This is because collecting reliable data on payment behavior can be time consuming and expensive.

In one study by Boston Federal Reserve Bank researchers Scott Schuh and Joanna Stavins, US consumers ranked cash the cheapest, fastest, easiest and most widely accepted payment method. But cash lost out to electronic instruments in terms of its perceived security and record keeping ability.

In the developing countries Ghana and the Philippines, where the choice of electronic payment instruments is more restricted and less widely accepted, surveys by BFA consultants of senders of domestic remittances and bill payers have shown a consistent preference for speed, reliability and convenience — and then cost.
Businesses’ preferences for payment instruments are generally poorly understood and little studied. One of the few recent studies, a survey in Canada, found that small businesses still make wide use of cheques because cheques are widely accepted and enable effective record keeping. The NPS shapes whether the range of payment instruments is suited to the needs of businesses of different types and sizes.

NPS implications for governments
The use of electronic payment instruments carries numerous advantages for entities that make and receive many payments, such as governments: governments make payments to businesses as suppliers, and to individuals both as employees and as recipients of pensions and social benefits. The costs of making these payments in cash or with paper instruments like cheques or vouchers can be substantial. In addition, cash-based payments carry the risk of leakage — a substantial proportion does not reach the intended payee as a result of theft and corruption. This loss can be as high as 10-20% of the amount paid in the case of some benefit schemes.

Much of the business case for governments to shift to more secure electronic methods comes from the potential of eliminating these losses. In the case of the Indian government, 80% of the estimated savings from a full transition to electronic payments came from reducing leakage.\textsuperscript{17}

In addition to reducing leakage, it may be possible for governments to reduce transaction costs. The US Treasury estimates that it costs $1 per cheque payment, compared to 10c for an electronic transfer. For this reason, the US Treasury has a special agency responsible for supporting and overseeing the transition to 100% electronic payments; it is currently at 86%.\textsuperscript{18} A 2011 study of developing countries with large social transfer schemes found that governments could reduce the cost per transaction 30-60%, although the savings were predicated on the payment infrastructure being adequate for the purpose.\textsuperscript{19}

As governments worldwide assess the case for transitioning to electronic payments, it is important that they involve payment regulators so the NPS as a whole develops, and waste and delay are minimized.
NPS implications for banks and payment providers

According to one study, the payments business contributes up to a third of the revenue of banks. Payment-related revenue comes from various sources:

- The interest income earned on balances held at a depository institution for transactional process (often called the float);
- Fees charged to banks’ own payers for transactions; and
- Fees charged to other entities in the payment process such as interchange (Box E below).

The proportion of payments revenue derived from each source varies considerably according to different rules and norms across markets.

In addition to generating revenue for banks, the way in which a payments system operates can affect the costs of other system participants.

Box E: Interchange fees in payments systems

In most payments systems, the fees for the end users of payment instruments are set by the financial institutions that participate in the system. But it is often illegal, in terms of competition policy, for a group of providers to coordinate to set prices for end users — as a group of Pakistani banks found out when they were fined by the Pakistan Competition Commission in 2012.

Interchange is an important part of the cost of using a payment instrument. It is a fee paid by one participant in a payments system to another. Interchange originated in the payment card environment: Merchants gain sales when their customers can use cards. To compensate the acquiring banks, which sign up merchants and provide POS devices, these banks charge merchants what is called the merchant discount fee. But issuing banks (those providing cards to customers) do not charge for their services, so they have less incentive to see cards used more widely. To balance these incentives and encourage the growth of the market, acquiring banks pay part of the merchant discount fee to issuing banks. These payments are called interchange.

In the case of ATM transactions, the interchange is sometimes called a carriage fee or reverse interchange, since it is paid by the card holder’s bank to the entity which operates the ATM to compensate for the costs of deploying and managing the device. However, in some countries, interchange fees apply in a much wider variety of payment instruments including electronic transfers (debits and credits).

Because of the way it is set and its importance in the nature and level of price competition in payment instruments, the subject of interchange has received increasing attention from competition authorities around the world. In the US, the maximum level of interchange on debit cards transactions at point-of-sale was capped by the Federal Reserve Board following passage of new legislation which required that “interchange be reasonable and proportional to the cost incurred by the issuer in respect of the transaction.”

In Pakistan, the Pakistan Competition Commission recently reviewed the fees set by One-Link, an ATM switch, and concluded that setting a multilateral interchange fee between banks (in the case of ATMs, paid from the issuer bank to the ATM owner) was a permissible practice that could be exempted from general prohibitions on price fixing.

How to set interchange is a complex topic beyond the scope of this book. Understanding trends in how interchange is set is important for the current and future strategy of banks and other payment providers.

Why the NPS matters
Chapter 4
Legal foundations of the NPS

The legal foundations that define the scope and functioning of the NPS are found in a range of domestic laws. These laws reflect international principles for payments system oversight and development. And they are updated (or not) in accordance with national visions.

Key legal principles
Of all the legal principles supporting the development of payments systems, the need for legal certainty is perhaps the most important. Certainty means that all parties to a transaction know what their rights and obligations are, and can enforce them if need be. Without certainty, the risks of using a particular payments system would be too high. For example, if a merchant is not sure that the customer cannot unilaterally revoke a payment, the merchant will be unlikely to hand over the goods.

A World Bank paper lists five “golden” rules of modern payments system law, which together help provide certainty:
• **Scope rule**: defines which parties and which instruments are covered;
• **Trigger event rule**: defines the moment when a party to a transfer gains rights and incurs liability;
• **Receiver finality rule**: defines when credit to an account becomes irrevocable;
• **Money back guarantee rule**: defines the rights of the payer and/or payment originator if a payment is not completed; and
• **Anti-fraud rule**: allocates liability for fraudulent transactions, often based on whether a defined security procedure was followed or not.

Unfortunately, these golden rules are not always followed.
The national legal framework for the NPS

In most countries, a range of laws define payments and affect how they operate. Some laws go back a long way, such as acts that govern the use of cheques. And not all of the laws are specifically about payments — consumer protection laws might be relevant to purchasing behaviour, and remittance agents’ fiduciary duty or liability may be relevant to their business decisions. Other possibilities: competition law and the regulation of electronic communications.

However, a foundational principle is to keep the central bank at the centre of the NPS. This is because in most countries the central bank is charged with oversight of the money supply, which may include its value and integrity, and the operations of the NPS have a profound effect on this. The powers of the central bank are usually defined in a Central Bank Act, which, for a majority of countries, includes at least general powers over payments systems. As Figure 6 shows, a majority of both high income and non-high income countries has legislation explicitly providing the power of oversight of the payments systems. Only in a small minority of countries does the central bank have no formal oversight powers.

In most countries, other legislation touches on the operation of payments systems. Banks Acts define the banking business, which entities may undertake this business and what is required to become a bank. This is important because banks are usually major participants in the NPS, and in some cases, they are the only participants allowed in public payments systems.

Figure 6: Source of mandate for payments system oversight

International principles

In addition to national legislation, most regulators acknowledge the authority of sets of principles relating to payments systems that have been drawn up by international standard setting agencies, such as the Committee on Payment and Settlement Systems (CPSS) (Box F). These principles are generally not legally binding on regulators, but most payment regulators use them to guide their approach to policy and regulation.

Box F: International standard setting authorities in payments and their sources of power

In the area of payments, the pre-eminent standard setter is the CPSS. The CPSS (bis.org/cpss) is a standing committee of the Bank for International Settlements (BIS), which is based in Basel, Switzerland. The BIS seeks to increase transparency in monetary policy throughout the world, and to apply international standards where it is believed they are appropriate. The BIS regulates capital adequacy and encourages transparency in reserve requirements.

The CPSS also serves as a forum for central banks to monitor and analyse developments in domestic payment, settlement and clearing systems, as well as in cross-border and multicurrency settlement schemes. The CPSS has expanded its focus and its membership over time. It now has 25 members, most of which are the central banks of developed countries, but since 2009, developing countries like Brazil, India, Mexico and South Africa have also become members.

Alongside the CPSS, the Financial Action Task Force (FATF) (www.fatf-gafi.org) sets intergovernmental standards for fighting money laundering and the financing of terrorism, both of which have a major influence on payments systems.

At a more technical level, the International Standards Organization (ISO) (www.iso.org/iso/) sets standards for payment messages, including the ISO 8583 messaging standard for card payments and the new standard message ISO 20022, which contains more fields and richer information, and has been adopted in some jurisdictions. The Society for Worldwide Interbank Financial Telecommunication (SWIFT), an international association of banks, also sets standards important for (electronic) wire transfers among member banks worldwide.

Finally, there are private standard setting bodies created and funded by participants to develop and promote particular standards. For example, EMVCo was established by the major card associations to develop and apply the EMV standard for card payments internationally. And PCI sets standards for information security in a card environment, defining what information can be stored and what
Three sets of international payment-related principles deserve particular attention. In the event of failure by a bank, adherence to the principles is supposed to prevent a domino effect, not by eliminating all risks, but by allowing them to be understood and mitigated. First, the Core Principles for Systemically Important Payment Systems, issued in 2001 by the CPSS (Box G), focus on the public policy objectives of safety and efficiency in systemically important payments systems. These principles were combined in 2011 with CPSS guidance on securities settlement systems and central counterparties to create a consolidated set of Principles for Financial Market Infrastructures.

### Box G: 10 Core Principles for Systemically Important Payment Systems (SIPS)

1. The system should have a well founded legal basis under all relevant jurisdictions.
2. The system’s rules and procedures should enable participants to have a clear understanding of the system’s impact on each of the financial risks they incur through participation in it.
3. The system should have clearly defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operator and the participants and which provide appropriate incentives to manage and contain these risks.
4. The system should provide prompt final settlement on the day of value, preferably during the day and at a minimum at the end of the day.
5. A system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation.
6. Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.
7. The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.
8. The system should provide a means of making payments which is practical for its users and efficient for the economy.
9. The system should have objective and publicly disclosed criteria for participation, which permits fair and open access.
10. The system’s governance arrangements should be effective, accountable and transparent.

Source: [http://bis.org/publ/cpss43.htm](http://bis.org/publ/cpss43.htm)
Second, the CPSS also has recommendations for the process of payments system development. The 2006 Fourteen Guiding Principles for National Payments System Development (Box H) are general statements and encourage needs-driven development of the NPS. Note that while most sets of principles focus heavily on the development of large value systems, Principle 11 refers explicitly to retail: “Expand the availability of retail payment services.”

**Box H: CPSS General guidance for national payment system development**

1. *Keep the central bank at the centre*: Due to its overall responsibility for a sound currency, the central bank has a central role in the development of the use of money as an effective means of payment.

2. *Promote the role of a sound banking system*: Payment accounts, instruments and services available to end users are provided by banks and other similar financial institutions, which compete individually but often need to act cooperatively as a system.

3. *Recognise complexity*: Planning should be based on a comprehensive understanding of all the core elements of the NPS and the principal factors influencing its development.

4. *Focus on needs*: Identify, and be guided by, the payment needs of all users in the NPS and by the capabilities of the economy.

5. *Set clear priorities*: Plan and prioritise development of the national payment system strategically.

6. *Implementation is key*: Ensure effective implementation of the strategic plan.

7. *Promote market development*: The expansion and strengthening of market arrangements for payment services are key aspects of the evolution of the NPS.

8. *Involve relevant stakeholders*: Encourage the development of effective consultation among relevant stakeholders in the NPS.

9. *Collaborate for effective oversight*: Effective payment system oversight by the central bank often requires collaborative arrangements with other authorities.

10. *Promote legal certainty*: Develop a transparent, comprehensive and sound legal framework for the national payment system.

11. *Expand availability of retail payment services*: Extend the availability and choice of efficient and secure non-cash payment instruments and services available to consumers, businesses and government by expanding and improving retail payment infrastructures.

12. *Let the business case guide the large-value payment system*: Develop a large value payment system based primarily on the needs of the financial markets and the growth in time-critical interbank payments.

13. *Align development of payment and securities systems*: Coordinate the development of securities and large value payment systems for safety and efficiency in the financial system.

14. *Coordinate settlement of retail, large-value and securities systems*: The settlement processes for the core systems should be operationally coordinated to efficiently manage the interrelated liquidity needs and settlement risks among them.

Source: http://www.bis.org/publ/cpss70.pdf
In 2007, the CPSS followed these general principles with the release, together with the World Bank, of a set of principles for international remittances (Box I). Worker remittances are a retail payment product (P2P in the terms of the payment grid); therefore, a number of the principles may be viewed as relevant for retail payments in general, although retail payments cover many more types of payments than remittances alone. The principles echo the general themes of the need for legal certainty and appropriate risk management and oversight, but they also refer to the need for competitive market conditions.

Box I: CPSS/ World Bank General Principles for Remittances

1. The market for remittance services should be transparent and have adequate consumer protection.
2. Improvements to payment system infrastructure that have the potential to increase the efficiency of remittance services should be encouraged.
3. Remittance services should be supported by a sound, predictable, nondiscriminatory and proportionate legal and regulatory framework in relevant jurisdictions.
4. Competitive market conditions, including appropriate access to domestic payment infrastructures, should be fostered in the remittance industry.
5. Remittance services should be supported by appropriate governance and risk management practices.

Source: http://www.bis.org/publ/cpss76.htm

CPSS has not issued any further standards for retail payments systems to complement the Core Principles, nor is it expected to, in part because of the enormous diversity of retail payments systems. However, the World Bank has continued to be active in promoting the development of retail payments systems and plans to issue comprehensive, cross-country guidance. In new areas like mobile payments, global standards have not yet emerged.

Payments system development processes

Based on its 2008 Global Payment Systems (GPS) Survey, the World Bank has proposed a way of rating levels of NPS development across countries. The ratings include five attributes:

- The extent to which legal foundations are in place;
- The existence and functioning of large value payment systems;
- Retail payment systems (RPS) — infrastructure and policy for their use;
- RPS — usage of non-paper instruments; and
- Extent of payment system oversight.

The map in Figure 8 shows the results for the first of the two RPS components. Not surprisingly, the map shows a strong correlation between the levels of RPS development and economic development.
Figure 8: Levels of retail payment system development

Source: Cirasino and Garcia (2008).
The process of developing or reforming an NPS has many potential triggers. The 2008 GPS Survey identified 79 countries that prioritized reforming the retail payments system. The 2010 GPS survey, though, highlighted increasing efficiency, technological innovation, and reducing systemic risk as triggers for NPS reform (Figure 9).

**Figure 9: Triggers for NPS reform reported by payment regulators**

![Bar chart showing triggers for NPS reform](image)


The development of the NPS typically follows a set path (Figure 10). It starts with a focus on large value payments, building an RTGS and establishing legal clarity — that has now occurred in most countries. This is normally followed by establishing a dedicated payments system unit, usually in the central bank if it is the main regulator, and then focusing that unit on improving risk management practices. Only once these foundations are in place is the regulator able to consider ‘next generation’ issues such as financial inclusion or competition. This often leads back to the need to reconsider the legal foundations and how new payments systems can connect to the RTGS.

**Figure 10: Typical sequence of NPS development**

1. Build RTGS
2. Clear legislative framework
3. Set up dedicated oversight capacity
4. Oversee to reduce risk
5. Next generation issues (inclusion, competition)
Since the NPS is a complex system with many moving parts and interested parties, and there is a need to sequence issues over long time horizons, it is often helpful for the lead regulator to set out a clear vision for the NPS. If the vision is compelling, it can guide the actions of private decision makers, reinforcing the lead regulator’s objectives. NPS vision documents differ in their scope and depth (Box J).

**Box J: Namibia publishes an NPS vision**

Namibia is a middle income African country with a relatively developed payments system. The Bank of Namibia recently published a vision for the development of the NPS. The vision identifies the following focus areas:

1. **Oversight of the National Payments System**: Regulations and other arrangements to ensure that oversight is carried out effectively and efficiently.
2. **Access and participation in the NPS**: Enable access to the payments system, thereby promoting financial inclusion, and ensure that fees and charges are fair and competitive in the NPS.
3. **Interoperability and standards in the NPS**: Encourage interaction between systems and minimize card fraud in the NPS.
4. **NPS infrastructure and technology**: Put in place the necessary infrastructure to ensure that payments continue to be initiated, processed, switched, cleared and settled. The NPS infrastructure should cater to the needs of the unbanked and provide basic payment services to a majority of Namibians.
5. **Cross-border remittances**: Require the Bank and the payment industry to improve the remittance market in Namibia.
6. **Regional participation in Southern African Development Community (SADC) and Common Monetary Area (CMA)**: Participate in SADC/CMA payment, clearing and settlement initiatives with the view to facilitate regional trade and economic development. In this regard, the Bank will directly participate in SADC/CMA payment, clearing and settlement system regulatory oversight initiatives to achieve regional aspirations.

In addition to more common payments system priorities (1, 3 and 5 above), it is worth noting how national policy priorities enter and how much emphasis there is on retail payments systems issues. Financial inclusion/serving the unbanked is mentioned twice (in 2 and 4), and cross-border issues enter both through remittances (5) and participation in regional efforts to link payment, clearing and settlement infrastructures.


The process of consultation between the central bank and the payment industry, leading to the publication of such a national vision, is an important one: It can help to clarify the chosen objectives and also to test their feasibility and priority. Central banks vary widely in whether and how often they consult, and with whom (Figure 11 overleaf). A minority of central banks has a formal advisory structure, such as a National Payment Council, although more central banks report having meetings to discuss strategic issues. Most consult only on particular issues, which may lead to the formation of an ad hoc working group.
Figure 11: Mode of consultation by payment regulators

Chapter 5
Regulation and oversight of the NPS

Rules for payments systems
As discussed in Chapter 4, the legal foundations for control over the NPS lie in laws passed by legislatures. These laws are often quite brief and vest power to make specific rules in another entity, often the NPS department of the central bank. The rules fall into three categories: regulations, directives and guidance. Some rules are formally binding, others affect payments system participants' incentives in other ways. Some rules go into immediate effect, others require ministerial approval. The three types of rules are summarized in Figure 12.

Figure 12: Types and attributes of NPS rules

<table>
<thead>
<tr>
<th>Regulations</th>
<th>Directives</th>
<th>Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generally applicable</td>
<td>Have a specific application: may be directed at a participant or group, e.g. card issuers</td>
<td>Amplifies regulation or sets standards</td>
</tr>
<tr>
<td>Legally binding and sanctions often apply if they are not followed</td>
<td>Have force of law for the entity so directed</td>
<td>No explicit sanctions, but violation may lead to a directive</td>
</tr>
<tr>
<td>May require an external validation process (e.g. Minister of Finance or Attorney General)</td>
<td></td>
<td>May signal regulatory intent; in areas of legal uncertainty, participants follow guidance out of ‘safe harbor’</td>
</tr>
</tbody>
</table>
Together, the acts, regulations, directives and guidance should form a consistent hierarchy that provides certainty to the NPS.

The NPS Act may also provide for the central bank to delegate certain powers to a national Payment System Management Body (PSMB), which will be introduced in Chapter 6. Even if a PSMB is not recognized or required by law, there may be no legal restriction on industry participants forming a body that functions like a PSMB (or on setting best practice guidelines). However, without delegated legal authority from the official regulator, the PSMB would have only powers agreed to by its members, usually limited to the power to discipline members (such as through a fine) or to declare them to be not in good standing.

Scope of regulation
Regulation will usually define:
- What constitutes a payments system, and under which conditions it must be licensed;
- Which payment instruments may (or may not) be issued; and
- Who can issue payment instruments and participate in payments systems.

Regulating payments systems
Traditionally, payment law made a distinction between systemically important payments systems (SIPS), which were regulated, and the rest, including retail payments systems, which were usually not (as payments systems, at least).

A payments system usually became subject to regulation as a result of the regulator designating it. The effect of designation was to bring the system under a set of regulations that gave regulators the power:
- To vet the payments system’s rules and procedures to ensure they were adequate, and to review any changes in advance;
- To require that governance structures, including the identity of owners or individuals on the board or governing committees of payments systems, met appropriate standards;
- To review risk procedures, including disaster recovery, and to require changes if necessary; and
- To require that regular reports be submitted.

The designation approach was based on an understanding that the key function of regulation was to manage systemic risk; and that excess regulation of lower risk systems would hamper the ability of payments systems to innovate. The concept of designation remains important, giving payment regulators the power to subject a designated system to additional scrutiny and control. All SIPSs are subject to this heightened level of regulation.

However, as the reach of payments systems has extended to touch more people, a recent trend has been to cast the net of regulation more broadly over payments systems, whether systemically important or not. In general, two approaches are increasingly common:
- All payments systems must be licensed and therefore subject to oversight (Rwanda and India’s acts, passed in 2007 and 2010 respectively, require this); or
- All payments systems must be registered, but only designated systems are subject to direct oversight.

Note that licensing per se does not subject a system to high intensity oversight, as designation does, but it does at least mean that the regulator will oversee the system. In addition, most payment acts will give the regulator negative powers — i.e. the ability to prohibit
Regulating payment instruments
In addition to regulating payments systems, payment acts usually define the term ‘payment instrument.’ Some laws may then give regulators the power to set conditions for the issuance of a particular class or type of payment instrument, such as which entities may issue the instrument and on which terms. More commonly, the conditions for instrument issuance are left to the rules of the individual payments systems. However, it is common for payment acts to give regulators the power to prohibit a class of instruments to protect the NPS where deemed necessary.

Regulating payment participants
Payment law may also define which entities may participate in which payments systems and in which roles.

Traditionally, participation in RTGS systems was limited to banks (or at least large financial institutions). This is because RTGS systems provide for final settlement. They require both liquidity and active liquidity management for the system to work. Banks specialize in this function and have these skills. Note, however, that banks may not be alone in meeting these criteria; some countries have opened up their RTGS systems to non-bank participants, though on restricted terms.

The special features that require final settlement be restricted to banks do not necessarily apply to clearing: non-banks may specialize in clearing payment instructions more efficiently than many banks, and they may be able to manage the risks of clearing better. However, they would require a settlement bank to manage settlement risk on their behalf. This type of arrangement has been implemented worldwide, such as for post office banks that clear but settle through a sponsoring bank.

If a non-bank clearing participant failed, the risk would usually be borne and managed by the bank sponsor in the settlement arena. In anticipation of such a case, regulators would wish to oversee settlement sponsorship arrangements to limit concentration risk — that a single sponsoring bank has undertaken the settlement obligations of many other participants. Another way to manage the risk is to require that non-bank clearing participants post sufficient upfront collateral. In many countries, while clearing happens through ACHs, settlement of resulting obligations happens through the inner core systems (both concepts explained in Chapter 6).

Apart from participating directly in a payments system, entities may specialize in managing payment transactions for the public. Entities that do this are known as payment service providers (PSPs), or payment institutions in EU law. Retail banks are PSPs, but so are a range of non-bank entities including:

- Remittance Service Providers (RSPs);
- Bank agents performing cash-in or out services for bank clients; and
- Processors that submit payment instructions on behalf of payer or payee.
Because payments are so pervasive, it is difficult to define a PSP clearly in practice. In an annex, the European Union Payment Services Directive distinguishes seven types of payment services:

1. Services enabling cash to be placed on a payment account as well as all the operations required for operating a payment account.
2. Services enabling cash withdrawals from a payment account as well as all the operations required for operating a payment account.
3. Execution of payment transactions, including transfers of funds on a payment account with the user's payment service provider or with another payment service provider (including direct debits, payment card transactions and credit transfers).
4. Execution of payment transactions where the funds are covered by a credit line for a payment service user:
5. Issuing and/or acquiring of payment instruments.
6. Money remittance.
7. Execution of payment transactions where the consent of the payer to execute a payment transaction is given by means of any telecommunication, digital or IT device and the payment is made to the telecommunication, IT system or network operator, acting only as an intermediary between the payment service user and the supplier of the goods and services.

And then it provides numerous exceptions or exemptions from this definition to ensure that the scope of the law is not too wide, catching unintended entities, or too narrow, missing important ones.

When banks act as PSPs, they are already regulated and supervised. Therefore, they are subject only to the market conduct aspects of laws for payments, such as transparency, disclosure and recourse practices. However, non-bank PSPs may be brought within the ambit of the law and required to register and in some cases be licensed. A licensing requirement for all PSPs may be a heavy burden to payment regulators. For other participants in the NPS — merchants, closed loop operators, beneficiary service providers — there are usually rules for participation, from broad guidelines to strict licensing requirements.

Paradigm of payments system oversight

The term ‘oversight’ is commonly used to describe the role of the entity responsible for the NPS. Oversight exists to ensure that systems perform in the intended manner and enable corrective action if necessary. There are five key responsibilities of the payment regulator28:

- Develop principles and rules;
- Assess/enforce rule compliance;
- Promote/coordinate individual and collective action to manage risk;
- Ensure system functioning; and
- Promote system development.

The oversight role therefore includes rule making (regulation) together with enforcement. However, as Figure 13 shows, based on responses of payment regulators worldwide to the 2010 Global Payment Systems Survey, the rule making role is in fact practiced by just over half of regulators, and on-site enforcement by an even lower proportion. Much more common is the role of monitoring the system (more than 70%), which leads to the publication of payment statistics. Moral suasion is used as a tool of oversight in a high degree of cases — reflecting both the consensual nature of the oversight paradigm in general, and, in many cases, the lack of exact legal authority over rapidly changing systems.
Oversight vs. supervision

Oversight is a term linked to payments systems, whereas supervision is more commonly used for banks. The terms are similar, but there are four main distinctions (Figure 14):

<table>
<thead>
<tr>
<th>Oversight</th>
<th>Supervision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concerned with the health of the system as a whole</td>
<td>Concerned with the enforcement of regulation on individual participants</td>
</tr>
<tr>
<td>Usually focuses on off-site methods (though on-site is increasing in importance)</td>
<td>Usually requires some on-site methods</td>
</tr>
<tr>
<td>Often delegates the power to intervene, but in vague terms</td>
<td>Clear and specific powers to intervene, triggered by specific circumstances (e.g. curatorship of a bank, breach of a law)</td>
</tr>
<tr>
<td>Application of a broad range of tools and approaches to promote development of the system</td>
<td>Narrow application of defined approaches</td>
</tr>
</tbody>
</table>
In practice, since the dominant members of most payments systems are banks, payment regulators need to work closely with bank supervisors to understand risk in the system and to monitor developments. This is especially the case for emerging issues such as e-money (recall Box A). Figure 15 compares the legal treatment of e-money to that of deposits and payments.

**Figure 15: Comparing e-money to deposits and payments**

<table>
<thead>
<tr>
<th></th>
<th>Deposit</th>
<th>E-Money</th>
<th>Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Generic definition</strong></td>
<td>“Repayable funds” (AND intermediated)</td>
<td>Value that is stored electronically; issued in exchange for currency and accepted by persons other than the issuer</td>
<td>“Act of depositing, withdrawing or transferring funds from payer to payee, irrespective of underlying obligations” (so broad that exclusions and examples are needed to clarify)</td>
</tr>
<tr>
<td><strong>Source of law</strong></td>
<td>Banks or Credit Institutions Act</td>
<td>Payment System Act or specific act; guidance circulars</td>
<td>Payment System Act; Retail Payment Services Directive</td>
</tr>
<tr>
<td><strong>Able to issue</strong></td>
<td>Regulated deposit taking entities only</td>
<td>Banks AND others as allowed or not prohibited</td>
<td>Banks AND payment institutions/PSPs</td>
</tr>
<tr>
<td><strong>Country examples</strong></td>
<td>All countries</td>
<td>Malaysia (2008)</td>
<td>EU : PSD (2007)</td>
</tr>
</tbody>
</table>

Figure 16 sets out the main risks perceived by payment regulators and how regulators define them. While most of the risks, such as operational, credit, liquidity and legal risks, are shared by payment regulators and bank supervisors, settlement risk is a particular risk for payments systems. It incorporates aspects of credit, operational and liquidity risk that may lead to a counterparty to a transaction not being able to settle on time or at all.
The structure of payment regulators

The overwhelming majority of countries (85% in 2010) now has a specific department responsible for the NPS. This department is usually a unit of the central bank. In many countries, the NPS department is relatively new; in some cases, its mandate has barely been extended beyond the operation of the RTGS — a key function, requiring operational staff, even if the IT infrastructure is outsourced or managed by a separate division of the central bank. The monitoring and oversight of other systems also require some staff capacity, although in small NPS departments this role may be performed by only a few people. In larger central banks, the operational functions are split from the oversight or policy functions, since they involve different specialized skills.

NPS departments also differ in how they are placed within the central bank. In some cases, they report to the same deputy governor (or equivalent senior executive) responsible for bank supervision, and in others to the deputy governor responsible for operations or infrastructure in the central bank. Figure 17 shows a typical structure, modeled on the South African Reserve Bank.

The NPS reporting line may well reflect how the NPS department is seen within the bank — is it primarily about operations or about policy and oversight? — and what its focus is. As NPSs worldwide grow in scope and scale, the need for resources on the policy and oversight side is growing rapidly. NPS regulators are increasingly asking a range of questions, including those in Box K.

<table>
<thead>
<tr>
<th>Risk</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systematic</td>
<td>Risk that the failure of one party will cause another to fail.</td>
</tr>
<tr>
<td>Credit</td>
<td>Risk that the counterparty will not meet an obligation when due</td>
</tr>
<tr>
<td>Liquidity</td>
<td>Risk that the counterparty will not settle an obligation for full value</td>
</tr>
<tr>
<td>Settlement</td>
<td>Risk that the completion of settlement will not happen as expected (comprises credit and liquidity risk)</td>
</tr>
<tr>
<td>Operational</td>
<td>Risk that hardware or software problems, or human error or malicious attack, will cause a system to break down or malfunction, giving rise to financial exposures and possible losses.</td>
</tr>
<tr>
<td>Legal</td>
<td>Risk that the unexpected interpretation of the law or legal uncertainty will leave the payments system or its members with unforeseen financial exposures and possible losses.</td>
</tr>
</tbody>
</table>
Box K: Questions on the minds of NPS regulators

- Which payment standards are relevant to follow, and should they be required?
- How intensive should our oversight be?
- Which payment technologies can be regarded as safe and secure?
- How should we compare different technologies?
- What influences consumer payment adoption?

For some:
- How should we deal with a regional convergence of payments systems?
Chapter 6
Building blocks of the NPS — participants and layers

The NPS has many participants that play different roles in connecting payers, or senders of funds, with payees, or recipients of funds. The need for connectors differs by payment instrument: in the case of cash, as shown in Figure 18, there may be no connectors required for a transaction, though the central bank has a role in maintaining adequate volumes and quality of cash in circulation, and a variety of channels like ATMs are used to provide easy access to cash. Other transactions are routed between the payer’s financial institution and the recipient’s via automated clearing houses. A high-level ‘wiring diagram’ shows how all of these instruments are routed. This chapter explores the framework created by the connections among participants in the NPS.

Figure 18: Connectors in the NPS

Source: Derived from Deloitte (2010).
NPS direct and indirect participants

Direct participants in the NPS bear the risk of a transaction and take responsibility for overseeing or handling payment instructions at some stage in the routing from payer to payee. Indirect participants may support a direct participant at a particular link in the process.

Payment System Management Body

Best practice NPS frameworks make use of a Payment System Management Body (PSMB), appointed by the main payment regulator if allowed in the NPS Act. A PSMB is an industry-led body of designated participants that has rule-making and enforcement powers. A PSMB gives regulators a central point of contact with the industry for regulating and addressing payment-related issues. A PSMB may be referred to as a Payments Council, although this should not be confused with the body with only advisory powers mentioned earlier. A PSMB involves the delegation of powers from the payment regulator to the PSMB, allowing participants in the NPS to create rules for themselves under appropriate oversight by the regulator.

Few developing countries yet have a formal PSMB in place. As a result, the payment regulator has to deal with each separate automated clearing house or a conglomeration of payment instruments and channels merged under one ACH. In some countries without a PSMB, bankers’ associations may fill the gap to some extent, but:

- The association would not have delegated authority;
- The payment-specific issues may not be given adequate focus; and
- The association may be unable to recruit staff with the necessary skills for the specialist governance structures.

As shown in Figure 19, a PSMB typically is governed by a council appointed by its members. The council sets rules for how the PSMB operates. The rules framework of a PSMB includes:

- The ACH agreement for each payment stream (discussed in the next section);
- The clearing rules for each ACH;
- The NPS payments system operator agreement;
- Risk management policies; and
- Monitoring policies, in accordance with which the PSMB or its members carry out audits to ensure compliance.

The council also oversees the PSMB budget (funded by membership levies or fees) and the executive officer, who is responsible for hiring of staff. The PSMB usually needs a small executive office for the day-to-day coordination of the NPS. The office assists with the management of the various ACHs, as well as oversight of the ACH operators. And the PSMB staff is responsible for assessing applications for membership and supporting new members.
Because of its role as a disinterested rule maker and coordinator, a PSMB should ideally be an “association not for gain” or some equivalent. The structure of a PSMB requires careful deliberation and monitoring to ensure national interests are adequately considered and managed. For this reason, the central bank may hold a non-voting seat on the council, and it also has ultimate powers to sanction PSMB rules.

**Automated Clearing Houses (ACHs)**

Automated clearing houses (ACHs), also referred to as payment clearing houses (PCHs), are critical nodes of each payment stream in the NPS. ACHs were first established to exchange paper cheques, with members literally meeting to pass cheques across a table, from payee’s bank to payer’s bank. ACHs are simply the modern way of describing the rules and agreements governing clearing and settlement determination. Best practice requires that there be a separate ACH for each cluster of use cases relating to the same channel or instrument type. For example, debit cards operate under different rules from credit cards; each may have its own ACH. There may even be more than one ACH for a given stream involving different sets of participants, though this means forsaking some economies of scale.

An ACH is an agreement that formally binds a group of participants. Under the agreement, the participants may appoint representatives to a governance structure, typically a committee known as the ACH participant group (ACH PG). The members are responsible for drawing up and ensuring adherence to the rules of the ACH. These rules cover:
Eligibility for membership; Processes; Operational issues; and Operator and member management.

Eighty-eight percent of countries reporting to the 2010 Global Payment Systems Survey do have at least an ACH that processes electronic credits and/or debits. Two thirds also reported having at least one domestic payment card switch, even though international card brands were considered dominant in almost three quarters of countries.

National Payments System Operator
National Payments System Operators (NPSOs) are entities assigned to provide clearing services between participants in an ACH and to determine settlement obligations between them. NPSOs forward settlement obligations on a regular schedule to the settlement agent to discharge obligations among participants. If settlement happens through the RTGS in the accounts of participants held at the central bank, NPSOs send settlement obligations directly to the central bank.

NPSOs are appointed by the ACH participants and have a service level agreement with each participant. NPSOs assist with achieving interoperability and economies of scale across participants. Without an NPSO, there could be a variety of payment system operators providing particular functions to participants by aggregating different payment streams and settling outside the central bank.

Some countries mandate the use of a single national switch, run by a single NPSO. These countries are still a minority (19% of respondents), although a further 19% use moral suasion rather than regulation to achieve the same result (Figure 20). NPSOs have to at least cover the costs of operation through charging participants ‘switching fees’ for their services.

Figure 20: Does the central bank mandate use of a national switch?

Participants in a payments system face various costs. First, they have to install and operate IT systems enabling them to connect to other participants. Second, they usually are required to pay the following fees associated with their membership in the PSMB where applicable and/or the ACH or card association:

- Entry fees (in addition to the other costs associated with undergoing any certification, training or auditing); and
- Annual or recurring membership fees.

These direct charges are in addition to the costs of meeting ongoing requirements such as holding certain balances as collateral.

There are likely other fees, too:

- Switching fees — usually charged per transaction by the switch operator, depending on the switching agreement; and
- Licensing fees — usually charged by a payment scheme operator such as a card association for the use of its brand, and may be on a per instrument (card) issued or per transaction basis.

The business model for the operator — whether for profit or not for profit — and the operator’s scale and efficiency will make a big difference on the amount of these fees. Further, the fees may be subject to volume discounts, so the cost per transaction of larger participants could be reduced.

In the 2010 Global Payment Systems Survey, many regulators reported that their payment switches were run on the basis of making a surplus (which may not mean for profit in the sense of profit distributing to owners), while about two-thirds operated at least on a cost recovery basis, like a utility (Figure 21). Note that this data is not limited to national switches since in many countries there are multiple switches.

**Figure 21: On what basis are payment switches run?**

![Pie chart showing the distribution of payment switch operation bases.]

- 31% Free of charge
- 4% Partial cost recovery
- 13% Full cost recovery
- 15% Full cost recovery + a surplus
- 37% Other

**Note:** Respondents were asked to describe up to three payment switches in their country separately; the data above describes the percentage of all reported payment switches that operate on each basis, and should not be taken to represent percentages of countries globally that operate switches on these bases.

**Source:** Derived from World Bank Global Payment Systems Survey (2010) Appendix Table III.15.
There is usually a strong case for an NPSO to operate on a utility basis, owned by ACH participants. This ensures that a natural monopoly in domestic switching is not abused, resulting in fees in excess of what is needed to maintain and sustain efficient operations. Note that a utility approach does not preclude the NPSO, as a utility holding company, from outsourcing its operations to a private switch operator under contract. ACHs should adhere to global interoperable standards, rather than proprietary standards, to ensure ease of transactions between providers (called interoperability).

**Clearing and settlement participants**
Generally only clearing and settlement banks are allowed to be clearing and settlement participants in the core of the NPS: 68% of countries do not allow direct non-bank participants in their ACH for electronic credits and debits. However, trends such as the entrance to payments of mobile operators are causing a review of these rules and regulations.

Banks are often classified into first, second or third tier banks based on the amount and types of collateral they are required to hold with the central bank. This classification determines the type of payment services they may offer. In an NPS, banks are normally further classified as:

- Clearing and settlement banks;
- Clearing only banks;
- Mentored clearing banks;
- Operationally assisted clearing banks; or
- Sponsored clearing banks.

**Clearing and settlement** banks may fully participate in the clearing and settlement processes. Only settlement banks hold accounts at the central bank for NPS settlement.

**Clearing banks** issue, acquire and clear instructions on behalf of their customers with other banks. They are members of the PSMB if such a structure exists in the country. They sign ACH agreements with other participants and enter into service level agreements with the ACH operator.

**Mentored clearing participants** normally include new entrants that may be required to be mentored by existing clearing members for a period of time.

**Operationally assisted clearers** outsource their operational needs to a clearing bank, but may still stand good for their own risk in the NPS.

Participants may also be **sponsored** by an existing clearing bank, generally in the form of a ‘financial stand in’ agreement — in the event of the failure of the sponsored bank, the sponsoring bank is designated to clear or settle its obligations.

Sponsored participants are all generally subject to less intensive regulation and oversight than the sponsors themselves, which are full participants. A key payments maxim is “The party who introduces the risk, bears the risk.” All participants in an ACH need to be assured that other participants are following the agreed processes and risk management procedures to prevent risks being introduced to the system. This assurance is underpinned by law (through an NPS Act) and by the framework of agreements between participants, such as ACH agreements, clearing rules, operator agreements and commercial agreements.

In some cases, in addition to its role as regulator, the central bank may itself participate in an ACH as a clearing and settlement participant on behalf of government departments.
Box M: Should membership of the NPS be limited to banks?

Payment regulators manage both the safety and efficiency of the payments system. In doing this, they face at least a perceived tradeoff between safety and competition. Payments systems in which only regulated entities like banks can be members may appear to be safer, since these entities are already subject to supervision and to strong influence by central banks. Introducing new non-bank members, especially if they are not subject to oversight, may appear to introduce risks to the system. However, some payments systems are dominated by a small number of large banks; while efficient, they may not be competitive in pricing payment instruments. Introducing new competitors may make the system more dynamically efficient.

Access to payments systems and the previously severe restrictions are coming under scrutiny. The EU Payment Services Directive states in Section 28 that “rules on access… shall be objective, non-discriminatory, and proportionate … do not inhibit access more than is necessary to safeguard against specific risks.”

Enablers/indirect participants

In addition to the direct participants, numerous indirect participants may play a role as enablers as:

- Payment service providers, including beneficiary and payer service providers;
- Technology providers; or
- Payment service bureaus.

Because these enablers do not have direct access, they are often not subject to direct regulation. But they are subject to contractual agreements with their clients. An increasing exception to this is payment service providers (PSPs), discussed in Chapter 5.

Inner and outer cores of the NPS

The different levels of risk each participant introduces into the NPS have already been covered. While the risks may be a matter of degree, the concept of an inner and outer core of the NPS helps to distinguish a step change in risk attached to types of participants. The inner core has been the predominant focus of regulators and guiding bodies, with the outer core primarily left to develop of its own accord.

Inner core of the NPS

Settlement lies at the heart of the NPS, which then radiates outwards through layers of entities and functions. The inner core of the NPS includes the functions of settlement and clearing for inner core participants. Generally, only banks authorized or designated to do so may participate. The intensity of regulation increases the closer one moves to the core (Figure 22 overleaf).
Outer core of the NPS

The outer layers of the NPS contain open and closed loop systems and the various intermediaries such as PSPs operating within this domain (Figure 23). The outer core includes the end-customer as payer and payee. This area is currently receiving a large amount of focus from guiding bodies and regulators due to the emerging complexity and nature of some systems, such as e-money.

Figure 23: Outer core of the NPS
Figure 24 summarizes the different roles played by the different parties in the NPS:

**Figure 24: Bringing it together**

- **Bank of International Settlements**
  - G10 CBs
  - CPSS 10 Core principles for Systemically Important Payment Systems
  - 14 Guiding Principles for the Development of a Payment System

- **Central Bank**
  - The Central Bank:
    - Ensures overall effectiveness and integrity of the Interbank Payment and Settlement System (IPSS), through:
      - Central Bank Act/NPS Act
      - Financial Institutions Act
      - BIS Core Principles

- **National Payment System Operator**
  - Clearing and Calculation of Settlement Obligations
  - Standards
  - BCP/DRP
  - Forward clearing obligations

- **Clearing and Settlement Banks**
  - Adherence to standards set by the Central Bank and Payment System Management Body (PSMB) and Automated Clearing Houses
  - Carries risk of transactions introduced into the payment system (client relationship)
  - Fulfilment of obligations arising from payment instructions cleared
  - Operational efficiency in interfacing with Payments System Operator and Central Bank
  - DRP and BCP according to Payment System Management Body / Payment Council / Bankers Association & ACH requirements.

- **PSMB**
  - Payment System Management Body / Bankers Association - Manages risks in the Payment System and Self-Regulation of its member banks, through:
    - Regulatory Framework
    - Constitution & rules
    - Risk monitoring
    - Audit and compliance
    - Legal framework of Payment Clearing House (PCH) Agreements

- **ACHs**
  - Manages clearing and settlement obligation determination practices of banks through:
    - ACH Agreements (all payment streams)
    - Clearing rules
    - Set standards
    - Manage risk in the ACH
    - Manage Payment System Operator in each ACH

- **Forward clearing obligations**

- **Nominates a single NPSO**

- **Regulation**

- **Oversight (possibly required by law)**

- **Performs settlement**

- **Form industry body**
This book has introduced definitions and concepts that are foundational for understanding the role of the NPS. But in most countries, the NPS is not static — a variety of emerging trends and issues are bringing change at a pace that is likely to intensify. This final chapter highlights some of the trends and introduces one in particular: the subject of interoperability.

** Emerging trends in retail payments systems worldwide  
**

Retail payments systems are developing quickly worldwide in volumes, coverage and sophistication. While the level of electronic instrument usage in developing countries remains low relative to developed countries, the rates of increase are dramatic.

Figure 25 overleaf compares the number of non-bank payments per capita, as reported to CPSS, aggregated by high income countries versus three of the BRIC countries and South Africa. While China and India’s levels of 5 payments per capita in 2010 were very low compared to 265 in developed countries, or even 114 in Brazil, these levels had more or less doubled in the preceding four years.

According to the World Bank’s Global Financial Inclusion Database (Global Findex), in middle income countries, 43% of adults have formal financial accounts, but only 5% of them report making electronic payments (compared to 90% and 55%, respectively, in high income countries). This percentage excludes using ATM cards for either cash withdrawals or payments. In low income countries, the proportions are lower still: 24% banked and less than 2% report making electronic payments. But these aggregated numbers mask pockets of dramatic growth: in Kenya, more than 60% of adults report using mobile phones to make and/or receive payments, the highest proportion in the world. In fact, mobile phones are more widely used for payment by people in low income countries than by those in middle income countries.
Figure 25: Non-bank payments per capita per year

Source: CPSS Data.
A 2012 report on innovations in retail payments systems by CPSS, highlights a number of additional trends expected over the next five years. Among them:

• Technical developments are blurring product categories since access devices and access channels are becoming interchangeable;

• Near Field Communications (NFC) has potential for future growth (especially in developed countries that can afford the roll out of new devices such as smart phones);

• E-commerce will further boost demand for internet payments, especially since existing payment methods are not always efficient and safe; and

• Globally active players may have an advantage to leverage their coverage and market power when offering innovative solutions across borders.

These trends mean opportunities for payment providers and consumers, as well as new risks for payment regulators to understand and manage.

**Interoperability**

A key emerging issue is the degree of interoperability of payments systems. According to the CPSS definition, interoperability is the situation in which payment instruments belonging to one scheme may be used in systems installed by other schemes and in other countries. It is the application of appropriate standards so that payment messages can be exchanged and payment devices can read and accept the messages. Interoperability requires technical compatibility between systems — but it can only take effect where commercial agreements have been concluded between the schemes concerned. Interoperability can help ensure widespread availability of payment services and reduce costs. But it is hard to measure and may be hard to achieve in certain circumstances (Box N).

**Box N: Interoperability**

In general, the level of interoperability is correlated with the level of development of an economy and payments system. Regulators were asked to self-assess the interoperability of ATM and POS systems in their countries (Figure 26). And high income country regulators reported more interoperability. But while interoperability is considered an important goal, it should not be pursued at all costs; it is one part, albeit an important one, of making NPS systems more efficient, accessible and effective. Different countries have taken different approaches to reach this goal. Measuring interoperability requires defining the payment use case precisely (see BFA 2012a where a proposed approach is applied to Pakistan).
Increasingly, payment standards are set by consortia of industry bodies. Standards are generally well defined in established payment categories like payment cards, where there are standards for messages (ISO 8583), the cards themselves (ISO 7810) and for devices (EMV). However, in new areas like mobile payments, global standards have not yet emerged.

**Continuing the learning journey**

Payments systems are evolving quickly — especially with the rapid increase in the number of electronic payment technologies and in transaction volumes. Understanding the NPS as the framework within which individual payments systems operate and payment instruments are issued and acquired helps all participants to see “the forest for the trees.”

For **payment regulators**, this means understanding how their oversight powers can best be directed to the healthy development of the NPS so that it achieves national objectives. Financial inclusion is an objective of rising importance in many places and payment regulators need to consider how to make their payments systems more inclusive. An increasing number of other regulatory agencies, such as competition authorities, are also showing interest in the functioning of the NPS.

For **payment providers**, robust strategy to participate in and profit from the payment business will depend on having a keen understanding of how the NPS works as a whole; both the opportunities and competitors of tomorrow may come from different parts of the NPS.

For **donors and investors** wishing to promote payments system development, each funding intervention in a payments system will have an effect on the NPS as a whole. The social impact or financial value of an investment will ultimately depend on how the intervention fits into the evolving system.

This book introduces a common foundation of knowledge, including a common vocabulary, for all three groups. On this foundation, further knowledge can be added over time. The NPS-Institute intends to support the ongoing learning journey through adding new modules to address new issues.
Useful References


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CPSS (2003) “A glossary of terms used in payments and settlement systems,” available at http://www.bis.org/publ/cpss00b.htm


CPSS (2012a) “Innovations in Retail Payments systems,” CPSS Publications No. 102, available via http://www.bis.org/publ/cpss102.pdf


The World Bank (n.d.) World Development Indicators.


## Glossary

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<td>ACH</td>
<td>See automated clearing house.</td>
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<tr>
<td>ACH Operator</td>
<td>The entity which manages the functioning of an ACH.</td>
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<tr>
<td>Acquirer</td>
<td>The entity or entities that hold(s) deposit accounts for card acceptors (merchants) and to which the card acceptor transmits the data relating to the transaction. The acquirer is responsible for the collection of transaction information and settlement with the acceptors.</td>
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<tr>
<td>ATM</td>
<td>Automated teller machine.</td>
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<tr>
<td>Automated Clearing House</td>
<td>An electronic clearing system in which payment orders are exchanged among financial institutions, primarily via magnetic media or telecommunications networks, and handled by a data processing centre.</td>
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<tr>
<td>Batch</td>
<td>The transmission or processing of a group of payment orders and/or securities transfer instructions as a set at discrete intervals of time.</td>
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<tr>
<td>Bank for international Settlement (BIS)</td>
<td>An international organisation which fosters international monetary and financial co-operation and serves as a bank for central banks.</td>
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<tr>
<td>Cash merchant</td>
<td>An agent of a financial institution, often a retail store or retail chain, which offers cash in and cash out services to clients of that financial institution.</td>
</tr>
<tr>
<td><strong>Channel</strong></td>
<td>The means by which a payment instruction is introduced, including bank branch, ATM, internet, mobile, call center, point of sale at a merchant. Channels often use specific devices with specific pricing and risks involved.</td>
</tr>
<tr>
<td><strong>Clearing</strong></td>
<td>The process of transmitting, reconciling and, in some cases, confirming payment orders or security transfer instructions prior to settlement, possibly including the netting of instructions and the establishment of final positions for settlement. Sometimes the word is used (imprecisely) to include settlement.</td>
</tr>
<tr>
<td><strong>Clearing House</strong></td>
<td>A central location or central processing mechanism through which financial institutions agree to exchange payment instructions or other financial obligations e.g. securities. The institutions settle for items exchanged at a designated time based on the rules and procedures of the clearing house.</td>
</tr>
<tr>
<td><strong>Clearing System</strong></td>
<td>A set of procedures whereby financial institutions present and exchange data and/or documents relating to funds or securities transfers to other financial institutions at a single location (clearing house). The procedures often also include a mechanism for the calculation of participants’ bilateral and/or multilateral net positions with a view to facilitating the settlement of their obligations on a net or net net basis.</td>
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<tr>
<td><strong>Committee on Payment &amp; Settlement Systems (CPSS)</strong></td>
<td>A standing committee of BIS which also serves as the standard setting body for payments and securities settlement systems. It also serves as a forum for central banks to monitor and analyse developments in domestic payment, settlement and clearing systems as well as in cross border and multi currency settlement schemes.</td>
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<tr>
<td><strong>Credit risk / exposure</strong></td>
<td>The risk that a counterparty will not settle an obligation for full value, either when due or at any time thereafter.</td>
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<td><strong>Electronic Money</strong></td>
<td>Value stored electronically which is accepted by users other than the issuer.</td>
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<tr>
<td><strong>EMV</strong></td>
<td>The standards used for chip card payments (named after the consortium of Europay, Mastercard and Visa which developed and supports the standard).</td>
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<td><strong>FATF</strong></td>
<td>Financial Action Task Force, the international body which sets Anti Money Laundering and Combating the Financing of Terrorism standards.</td>
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<tr>
<td><strong>Final Settlement</strong></td>
<td>Settlement which is irrevocable and unconditional.</td>
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<tr>
<td><strong>Gross Settlement System</strong></td>
<td>A transfer system in which the settlement of funds or securities transfer instructions occurs individually (on an instruction by instruction basis).</td>
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<tr>
<td><strong>Inner Core</strong></td>
<td>A term used to describe participants in a NPS that are the key players in clearing and settlement of the payment systems.</td>
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<tr>
<td><strong>Interchange</strong></td>
<td>The fee paid by one participant in a payments system to another, for example, from acquirer to issuer on a card transaction of the issuer’s client at a point-of-sale.</td>
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<tr>
<td><strong>Interconnection</strong></td>
<td>The ability of systems (or providers) to provide services to send to and accept from other systems (or) providers and to use the services exchanged to enable them to operate effectively together. The exchange of services is normally underpinned by business rules such as price of connection and clearing and settlement process.</td>
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<tr>
<td><strong>Interoperability</strong></td>
<td>A situation in which payment instruments belonging to a given scheme may be used in other countries and in systems installed by other schemes. Interoperability requires technical compatibility between systems, but can only take effect where commercial agreements have been concluded between the schemes concerned. The condition achieved among communications-electronic systems or items of communications-electronics equipment when information or services can be exchanged directly between them and/or their users, normally based on common messaging standards.</td>
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<tr>
<td>Term</td>
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<tr>
<td>ISO</td>
<td>International Standards Organization.</td>
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<td>IVR</td>
<td>Integrated voice recognition.</td>
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<td>Large Value Payments</td>
<td>Payments, generally of large amounts, which are mainly exchanged between banks or between participants in the financial markets and usually require urgent and timely settlement.</td>
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<tr>
<td>Legal risk</td>
<td>The risk of loss because of the unexpected application of a law or regulation or because the contract cannot be enforced.</td>
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<tr>
<td>Liquidity Risk</td>
<td>The risk that a counterparty (or participant in the settlement system) will not settle an obligation for full value when due.</td>
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<td></td>
<td>Liquidity risk does not imply that a counterparty or participant is insolvent since it may be able to settle the required debit obligations at some unspecified time thereafter.</td>
</tr>
<tr>
<td>National Payments System (NPS)</td>
<td>A system and process to facilitate interbank clearing and settlement, resulting from various economic transactions within a country or between countries and ensures the circulation of money within a country. Therefore a NPS is composed of service providers, mainly but not exclusively, the financial institutions, a set of payment instruments, such as credit cards, cheques, and systems and procedures that enable people to move funds and make payments. The NPS supports the full spectrum of financial activity both within the country and from businesses transacting globally in the international markets.</td>
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<tr>
<td>National Payments System Operator</td>
<td>See Automated Clearing House. Same, but provides the service for all participants on a national basis.</td>
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<td>(NPSO)</td>
<td></td>
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<tr>
<td>“Off-us” &amp; “On us”</td>
<td>Payment terms which refer to whether a payment is made in the accounts of the same financial institution (on us) or across financial institutions (off us).</td>
</tr>
<tr>
<td>Operational Risk</td>
<td>The risk that deficiencies in information systems or internal controls could result in unexpected losses.</td>
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<td>Term</td>
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<tr>
<td>Outer Core</td>
<td>A term used to describe participants in a NPS that are on the periphery in clearing and settlement of the payment systems and generally provide value added services to payment instruments e.g. 3rd Party Processors.</td>
</tr>
<tr>
<td>Oversight</td>
<td>A public policy activity principally intended to promote the safety and efficiency of payment and securities settlement systems and in particular to reduce systemic risk.</td>
</tr>
<tr>
<td>Payment</td>
<td>The payer’s transfer of a monetary claim on a party acceptable to the payee. Typically, claims take the form of banknotes or deposit balances held at a financial institution or at a central bank.</td>
</tr>
<tr>
<td>Payment Instrument</td>
<td>Any instrument enabling the holder/user to transfer funds.</td>
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<tr>
<td>Payment scheme</td>
<td>A term used for a payment system which includes a brand and set of rules licensed by the owners to the participants, such as the international card association schemes</td>
</tr>
<tr>
<td>Payment service provider (PSP)</td>
<td>Entity that does not participate directly in a payments system but specializes in managing payment transactions for the public.</td>
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<tr>
<td>Payment stream</td>
<td>A cluster of payment use cases.</td>
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<tr>
<td>Payments system</td>
<td>A payments system consists of a set of instruments, banking procedures and, typically, interbank funds transfer systems that ensure the circulation of money.</td>
</tr>
<tr>
<td>Payment System Management Body (PSMB)</td>
<td>An association to which powers are delegated by the central bank to manage risk in the Interbank payments arena and to self regulate it’s member banks.</td>
</tr>
<tr>
<td>Payment System Operators (PSO)</td>
<td>Entities assigned to provide switching services between participants and to determine settlement obligations between the participants.</td>
</tr>
<tr>
<td><strong>Payment use case</strong></td>
<td>A description of an individual payment that identifies the payment’s store of value, the payment instrument used, and the channel through which payment instructions are issued.</td>
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<tr>
<td><strong>PCI</strong></td>
<td>Payment Cards Industry.</td>
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<tr>
<td><strong>POS</strong></td>
<td>Point-of-Sale</td>
</tr>
<tr>
<td><strong>Real Time Gross Settlement (RTGS) System</strong></td>
<td>The system used to effect continuous (real time) settlement of funds or securities transfers individually on an order by order basis (without netting)</td>
</tr>
<tr>
<td><strong>Retail payments</strong></td>
<td>A payment of low value but usually high volume, utilised by consumers or businesses to enable transfer and payments of value</td>
</tr>
<tr>
<td><strong>Retail funds transfer system</strong></td>
<td>A funds transfer system which handles a large volume of payments of relatively low value in such forms as cheques, credit transfers, direct debits, ATM and EFTPOS transactions.</td>
</tr>
<tr>
<td><strong>Settlement</strong></td>
<td>The completion of a transaction, wherein the seller transfers securities or financial instruments to the buyer and the buyer transfers money to the seller. A settlement may be final or provisional.</td>
</tr>
<tr>
<td><strong>Settlement Risk</strong></td>
<td>General term used to designate the risk that settlement in a transfer system will not take place as expected. This may comprise both credit and liquidity risk.</td>
</tr>
<tr>
<td><strong>Socially important payment system</strong></td>
<td>A retail payment system which is used by a large number of people in a country such that any disruption would have widely felt effects on the society. See system wide.</td>
</tr>
<tr>
<td><strong>SWIFT</strong></td>
<td>Society for Worldwide Interbank Financial Telecommunication.</td>
</tr>
<tr>
<td><strong>Systemic risk</strong></td>
<td>Risk that the failure of one party will cause another to fail. Also, risk that failure of one party will cause credit and liquidity risks that threaten stability.</td>
</tr>
<tr>
<td><strong>Systemically Important</strong> Payment System (SIPS)</td>
<td>A payment system is systemically important where, if the system were insufficiently protected against risk, disruption within it could trigger or transmit further disruptions amongst participants or systemic disruptions in the financial area more widely.</td>
</tr>
<tr>
<td><strong>Switch</strong></td>
<td>In payment context: an electronic software program which enabled different devices and financial operating systems to connect for the purpose of exchanging information</td>
</tr>
<tr>
<td><strong>Wholesale Payments</strong></td>
<td>See Large Value Payments</td>
</tr>
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End Notes

1Schuh and Stavins (2012).
3The Committee for Payment and Settlement Systems (CPSS) defines the National Payments System (NPS) as “the institutional and infrastructure arrangements in a financial system for initiating and transferring monetary claims in the form of commercial bank and central bank liabilities.”
4This is a typical definition in NPS laws—see for example, South Africa’s NPS Act.
5See Bezuidenhoudt and Porteous (2008).
6An exception is Colombia, which has a regulation specifically covering retail payment systems. A retail payment system is defined as one in which the total value exchanged is less than a defined value threshold. See Hacienda Decreto 1400, 4 May 2005.
7The World Bank (2010) Table II.2.
8Global Insight (2003); BCB (2007)
9BCB (2007).
12Global Insight (2003).
15The World Bank (2010) Table VII.2
16Schuh & Stavins (2012).
17Ehrbeck, et al. (2010).
18See Box E in Bankable Frontier Associates (2012b).
20Denecker et al. (2009).
25See http://www.bis.org/cpss/index.htm
34CPSS (2012a).