Committee on Payment and Settlement Systems

General guidance for national payment system development

January 2006

BANK FOR INTERNATIONAL SETTLEMENTS

Copies of publications are available from:

Bank for International Settlements
Press & Communications
CH-4002 Basel, Switzerland

E-mail: publications@bis.org

Fax: +41 61 280 9100 and +41 61 280 8100

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

ISBN 92-9131-702-0 (print)

ISBN 92-9197-702-0 (online)

Foreword

There is no single recipe for effective development of a national payment system, but the questions countries undergoing a reform process ask themselves are largely similar. For example, who should be involved and who should initiate the process? What are the priorities in which to invest and are they based on a solid understanding of the payment system? What are the different infrastructures needed and what are their supporting institutional arrangements?

This report, which was initiated by the Committee on Payment and Settlement Systems (CPSS) under the leadership of its former Chairman, Tommaso Padoa-Schioppa, aims to give assistance and advice on the planning and implementation of reforms in national payment systems. It underlines that payment system development is a complex process that should be principally needs-based, not technology-based. Payment system reforms depend on parallel development of the banking system, institutional arrangements for payment services and payment infrastructures, and should therefore be a cooperative effort among the banking sector, regulatory agencies and other relevant stakeholders. The report includes 14 guidelines and accompanying explanatory text on payment system development. The report also includes implementation sections, which illustrate the guidelines with practical examples, issues and possible approaches to implementation. In preparing the report, the CPSS drew on the contribution of a working group, which consisted of a broad range of central bank experts from developed and developing countries around the world.

A consultation version of this report was published in May 2005 and was discussed in regional consultations with payment experts from central banks and the financial community around the world. The report benefited from the numerous comments received during a consultation process. Overall, the wide-ranging consultation confirmed that the framework and substance of the report can be useful to countries engaged in reforming and developing their national payment systems.

The CPSS is very grateful to Tommaso Padoa-Schioppa for supporting this project, and to the members of the Working Group, its Chairman, Sean O'Connor of the Bank of Canada, and the CPSS Secretariat at the BIS for their excellent work in preparing this report.

Timothy F Geithner, Chairman
Committee on Payment and Settlement Systems

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1. Executive summary

1.1 Introduction and overview

Developing a national payment system is an ongoing process. In all countries, there is always some element of the system in the process of reform or modification. In recent years, there has been a rapid acceleration in fundamental reforms in national payment systems worldwide. However, the successful implementation of similar reforms in different countries has been uneven. Planned outcomes have not always been achieved in terms of expected use, benefits or costs of payment system reform projects and many planned reforms have been unexpectedly slow to complete.

The planning and implementation of payment system development is a difficult task due to the complexity of, and the varying approaches to, reforms. The authorities that promote new initiatives in their national payment systems generally look to other countries and to the Committee on Payment and Settlement Systems (CPSS), the International Monetary Fund (IMF), the World Bank and other international financial institutions for information, advice and assistance regarding how best to plan and implement reforms in such a system. The purpose of this report is to assist them in building and further developing their national payment systems with practical guidance for development.

The report is directed particularly at central banks and their interactions with other stakeholders, most notably the banking system and other public authorities responsible for banking system development. Nevertheless, it is relevant for all public and private sector stakeholders since development of the national payment system is necessarily a collaborative process. The report is based on the experiences and previous work of a broad group of central banks from developed and developing countries around the world, and those of the World Bank and the IMF. However, unlike much of the earlier work, which often refers to specific instruments, procedures and interbank transfer mechanisms, this report takes a broad perspective on the composition of a national payment system. In this report, a national payment system comprises all institutional and infrastructure arrangements in a financial system for initiating and transferring monetary claims in the form of commercial bank and central bank liabilities.

The guidelines presented in this report are not a detailed "blueprint" or a checklist for national payment system development. There is no single construct that can meet all the specific needs of all countries. Instead, the guidelines focus on the main elements of a national payment system to be considered when initiating a process of reform, especially major structural reform. Moreover, the guidelines refer to the development of a payment system within a country or common currency area. The development of those specific aspects of a national payment system required to facilitate efficient and safe cross-currency and cross-border payments is not considered.

Central banks and payment system development

The development of a safe and efficient national payment system has relevance for the monetary policy, financial stability and overall economic development interests of a central bank. Central banks, therefore, monitor developments in the payment system to assess their impact on the demand for money, the influence of monetary policy transactions and the efficiency and stability of critically related financial markets.

The national payment system is central to the effective implementation of monetary policy using money market transactions to influence overall financial and economic activity. In addition, developments in the payment system can affect the speed and predictability of the turnover of monetary balances, which may influence the overall demand for money in the economy. However, by linking financial institutions together for the purpose of transferring monetary claims and settling payment obligations efficiently, a national payment system also becomes a channel through which financial risks can be transmitted across financial institutions and markets. In promoting a safe and efficient national payment system, central banks try to limit the prospect of financial contagion through this channel.

A central bank is a core contributor to national payment system development. It generally plays a variety of essential roles in the payment system. It is an operator, an overseer in core payment arrangements, a user of payment services and a catalyst for system reform. Through these roles, central banks acquire a broad perspective on the role of the payment system in the financial system and the economy, and an extensive expertise in specific payment systems. Central banks can thereby advise on payment and other financial system policy and act as an effective catalyst, together with private sector organisations, in initiating, promoting and contributing to payment system reforms.

Elements of a national payment system

In this report, a national payment system is broader in concept than the infrastructure for a particular payment system. It includes a country's entire matrix of institutional and infrastructure arrangements and processes for initiating and transferring monetary claims in the form of commercial bank and central bank liabilities. Although cash remains an important form of payment in all systems, the report focuses on non-cash payments from commercial bank and central bank deposits. The main elements of a national payment system include:

- payment instruments used to initiate and direct the transfer of funds between the accounts of payers and payees at financial institutions;
- payment infrastructures for transacting and clearing payment instruments, processing and communicating payment information, and transferring the funds between the paying and receiving institutions;
- financial institutions that provide payment accounts, instruments and services to consumers, and businesses and organisations that operate payment transaction, clearing and settlement service networks for those financial institutions;
- market arrangements such as conventions, regulations and contracts for producing, pricing, delivering and acquiring the various payment instruments and services;
- laws, standards, rules and procedures set by legislators, courts and regulators that define and govern the mechanics of the payment transfer process and the conduct of payment service markets.

The payment infrastructures include all the specific individual payment transaction, clearing and settlement systems operating in a country, even those headquartered elsewhere. Some infrastructures are designed specifically around particular types of payment instruments. The institutional arrangements include the market arrangements for various types of payment services and the financial institutions and other organisations that provide payment services to users. They also include a legal and regulatory framework for market organisation and conduct and mechanisms for consultation and coordination among the principal stakeholders. The institutional structure links infrastructure arrangements and stakeholders together functionally in the national payment system.

Factors, triggers and trends for national payment system reform

Reform initiatives in a national payment system strive for improvements in system-wide safety and efficiency. The success of these initiatives and the resulting pattern of development in a country's national payment system are influenced by environmental, economic, financial and public policy factors. Relevant aspects of these factors need to be considered when planning and implementing reforms in the national payment system, to help ensure a successful development process. They are critical for appropriately aligning the individual incentives for stakeholders to commit to payment system reform.

In general, reforms in the national payment system are triggered by: (i) new developments in the financial and non-financial sectors that present new needs and opportunities for cost-efficient payment instruments and services; (ii) an increasing awareness of payment system risks and concerns about financial stability; (iii) internal and external pressures for reform and a policy decision to comply with relevant international standards; or (iv) political-economic developments sometimes related to a country's entry into regional or global trade and financial markets.

The recent trends in national payment system development have usually involved initiatives to:

- broaden the range of payment instruments and services;
- improve cost efficiency, particularly in terms of operating costs and access to, and usage of, liquidity;
- enhance the interoperability and resiliency of banking, payment and securities infrastructures;

- better contain legal, operational, financial and systemic risks in payment infrastructures;
- create more suitable oversight and regulatory regimes for the national payment system; and
- enhance the efficiency and stability of payment service markets.

However, experience indicates that the development process for a national payment system is not always a smooth and efficient one. The most common problems for effective development are:

- inadequate knowledge about the overall breadth of the national payment system and limited vision and leadership;
- limited information about emerging payment needs and system capabilities;
- weak support and commitment from stakeholders due to inadequate consultation;
- limited development resources; and
- legal, regulatory, public policy and market barriers to ongoing development of the national payment system.

These are the main issues that the general guidance addresses.

1.2 General guidance for payment system development

In preparing this report, an analysis of experience and evidence related to a variety of recent reform programmes in countries from different parts of the world helped identify lessons for the development of national payment systems. These lessons are expressed in the form of general guidelines for effective development of a national payment system. There are 14 guidelines grouped together to reflect the four key dimensions of developing a system: (i) the role of the banking sector (including the central bank); (ii) effective planning and project implementation; (iii) developing the institutional framework required to sustain payment system reform; and (iv) designing a safe and efficient payment infrastructure to meet the particular emerging needs of a country's economy. Since some elements are always under reform or modification, the guidelines can be of use to all countries regardless of the present level of development of their national payment system.

Even though not all of them may be equally relevant to all countries in all specific situations, the guidelines need to be considered together as a unified set. At a given point in time, development may focus on a specific aspect in one dimension of a national payment system. Such development initiatives, however, need to reflect some awareness of other aspects and dimensions of the payment system that may require complementary reform at some future point.

The general guidance in the report is high-level. Since the development of a national payment system is highly country-specific and conditional on a variety of environmental, economic, financial and public policy factors, the specific implementation approach for a particular guideline should be considered in the context of each country's own environment. The high-level guidelines, while generally found to be effective, may therefore not necessarily be "best practice standards" for every country. Nevertheless, to illustrate how the high-level guidance may be translated to specific reform initiatives, the report also includes examples of analytical tools and implementation approaches for each guideline.

The guidelines are summarised below and the guideline statements are listed in Annex 1 for quick reference.

A. Banking system

Guideline 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.*

Summary: The specific tasks directly carried out by the central bank in the payment system area vary from country to country. However, the functioning of the national payment system is an essential element of the quality of a currency and is therefore to be regarded as an essential concern by the central bank. This naturally places the central bank at the centre of system development, with a number of possible roles: operator, catalyst, overseer and user. The payment system function should rank high on the agenda of central bank decision-making bodies and be followed at a senior executive level, for example by a deputy governor, with support from dedicated resources having clear responsibilities.

Guideline 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.*

Summary: The development of the national payment system involves an increase in the share of deposits in the total stock of money and hence an expansion of the role of banks and eligible financial institutions as providers of payment services. To adequately support many of the reform initiatives in the national payment system, these institutions need to develop their own internal facilities for payment services accordingly. In addition, banks and other similar financial institutions should compete in the provision of services to customers while at the same time cooperating to develop properly functioning arrangements for payments. While paying attention to systemic risk and efficiency, the central bank should welcome and facilitate these developments.

B. Planning

Guideline 3. Recognise complexity: *planning should be based on a comprehensive understanding of all the core elements of the national payment system and the principal factors influencing its development.*

Summary: A comprehensive understanding of a national payment system does not end with its technological aspects. The national payment system should be seen as a full set of instruments, networks, rules, procedures and institutions that ensure the circulation of money. The central bank and the banking community should take a broad view of the elements of a safe and efficient national payment system and the factors influencing its development. Core elements are the payment infrastructures - the principal arrangements for transaction, clearing and settlement of payment instruments and obligations - and the key institutional arrangements, including the legal framework, market arrangements and regulatory regime. The various factors influencing changes in the demand for and supply of various payment instruments and services - environmental, economic, financial and public policy - are also critical to a comprehensive view of the national payment system.

Guideline 4. Focus on needs: *identify, and be guided by, the payment needs of all users in the national payment system and by the capabilities of the economy.*

Summary: An efficient and sustainable payment system development process ought to be built around the current and foreseeable payment needs of the users in the economy, such as consumers, government and financial and non-financial businesses. These needs should be weighed against the current economic and technical capabilities of the economy to supply the required payment instruments and services in a cost-effective manner. In this regard, the development of skilled and knowledgeable human resources is as critical as the development of the physical infrastructure of the economy such as its telecommunications and transportation systems. It is also important to clarify the roles and interests of the key stakeholders in the system.

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

Summary: A strategic approach is one that defines the desired end state or vision for the national payment system and sets clear priorities, based on the needs of users and the capabilities of the economy. A strategic plan also includes a description of the roles of key players and a conceptual design of all relevant elements of the system. While the plan defines the characteristics of the future system, it is not possible to do everything at the same time. The plan should consider which elements of the existing system can be an avenue for future development. Payment system development is primarily an evolutionary process that often re-engineers existing payment and financial systems.

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

Summary: The success of payment system reforms depends crucially on the effective implementation of the strategic plan. Indeed, the implementation process should be considered as a critical part of the plan. Effective implementation involves commitment of relevant stakeholders, suitable project governance, well defined deliverables and progress milestones, a realistic resource management and financing strategy, and a well defined rollout strategy. Implementation cannot proceed effectively without focused attention and strong motivation in the top ranks of the central bank, banking system and other stakeholders.

C. Institutional framework

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

Summary: Since payment services involve service providers, users and cost, the development of the national payment system also involves development of its market arrangements. Competitive market arrangements are instrumental to efficient and reliable production, delivery and pricing of various new and existing payment instruments and services to users. However, the development of market arrangements also requires a degree of cooperation among market participants in such fields as the definition of standards, the organisation of payment networks, operational procedures and risk management. Indeed, particular market arrangements for payment instruments and services are characterised in part by their degree of cooperation and competition.

Guideline 8. Involve relevant stakeholders: *encourage the development of effective consultation among relevant stakeholders in the national payment system.*

Summary: Consultation is crucial for effective collaboration among stakeholder groups. It helps establish an understanding of the needs, capabilities and interests of the various parties involved in the system. The involvement of relevant stakeholders in information sharing, consultation and collaboration facilitates coordination between the central bank and other key players on emerging payment system changes and policy initiatives. Such involvement is especially required for cooperative initiatives, such as those for setting technical and operational standards. Structured consultation establishes trust and a level of commitment that is critical for payment system development and is indispensable for implementing plans and setting up effective market arrangements.

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

Summary: The central bank oversees the national payment system. For this function to be performed effectively, cooperation with other authorities and regulatory agencies influencing national payment system development is important. In its oversight and policy functions, a central bank monitors and evaluates key developments in the national payment system with regard to their implications for the system's safety and efficiency. However, other public sector agencies such as banking supervisors, securities regulators, competition authorities and consumer protection authorities may have policy and regulatory interests and influence on the development of the system. Arrangements between the central bank and these other agencies to exchange views, collaborate on relevant issues and, where needed, coordinate relevant policies can help to ensure safe and efficient development of the system.

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

Summary: To be effective, market and payment arrangements, oversight and regulatory regimes require a sound legal framework that provides legal certainty and reduces risk. A comprehensive legal framework for a national payment system consists of a body of laws as well as of the procedures and institutions to interpret and enforce them. Such a framework would include private property ownership and transfer laws, laws of association and business conduct, and contract laws relating to payment instruments, services and network participation. It would also include laws supporting the different payment system roles of central banks.

D. Infrastructures

Guideline 11. Expand availability of retail payment services: *extend availability and choice of efficient and secure non-cash payment instruments and services to consumers, businesses and governments by expanding and improving retail payment infrastructures.*

Summary: The development of a country's economy generally increases demand for greater diversity of non-cash retail payment instruments and services. The focus, therefore, should be on increasing the share of the population with access to payment instruments and services and on enhancing the availability of various retail payment instruments and services in a cost-effective way. This can only be achieved through safe and efficient infrastructures for the transaction, clearing and settlement of retail payments.

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

Summary: The best choice of a large-value payment system is the one that best meets interbank payment needs related to large-value and time-critical business, financial and monetary policy transactions. It need not be the one with the most sophisticated technology. As the volume of large-value and time-critical payments increases, intraday finality in central bank money as provided by a large-value payment system becomes necessary. These types of payments demand specialised infrastructure services to contain systemic risks to the transactors, which are predominately financial institutions. There is a choice among various types of large-value payment systems, but all designs should be fully compliant with the CPSS Core Principles for Systemically Important Payment Systems.

Guideline 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.*

Summary: Securities systems and large-value payment systems are mutually dependent. To achieve delivery versus payment, settlement of the securities leg in the securities settlement system is conditional on settlement of the cash leg, normally in a large-value payment system. In parallel, credit extensions in large-value payment systems are often dependent on the provision of collateral, normally through a securities settlement system. Therefore, the interaction between these infrastructures needs to be cost-efficient, reliable and secure. In addition, the timing of finality in one system should be consistent with that in the other system. As a result, the infrastructures for securities and large-value payments cannot be developed in isolation from one another, and the securities settlement system should be developed to be fully compliant with the CPSS-IOSCO Recommendations for Securities Settlement Systems and, if applicable, Recommendations for Central Counterparties.

Guideline 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.*

Summary: As the infrastructures for retail payment, securities settlement and large-value payment systems develop, the country's principal financial institutions generally become participants in all of them. Settlement in one system can, therefore, affect the safety and efficiency of settlement in the others. The institutions typically link and coordinate the settlement processes in the core infrastructures to better manage liquidity and settlement risks, which can further increase the interdependency among the systems. Although coordinated settlement processes for these systems can improve overall cost efficiency in interbank transfers and achieve settlement finality in central bank money, the potential cross-system risks of greater coordination and interconnectivity - the legal, operational, financial and systemic risks - need to be monitored and well managed.

1.3 Organisation of the report

The next section of the report considers the concepts and development factors that formulate the framework and context for the general guidance. Section 3 presents the general guidelines on payment system development in separate sections for banking, planning, institution-building and infrastructures. Each guideline includes a descriptive statement, an explanation of its primary role in the development of a national payment system and a discussion of some approaches for implementing the guideline. Each section ends with selected references, which provide more information relevant to the framework and guidelines in the report. The report ends with several annexes that contain details on some of the more critical parts of the report.

2. Development of a national payment system

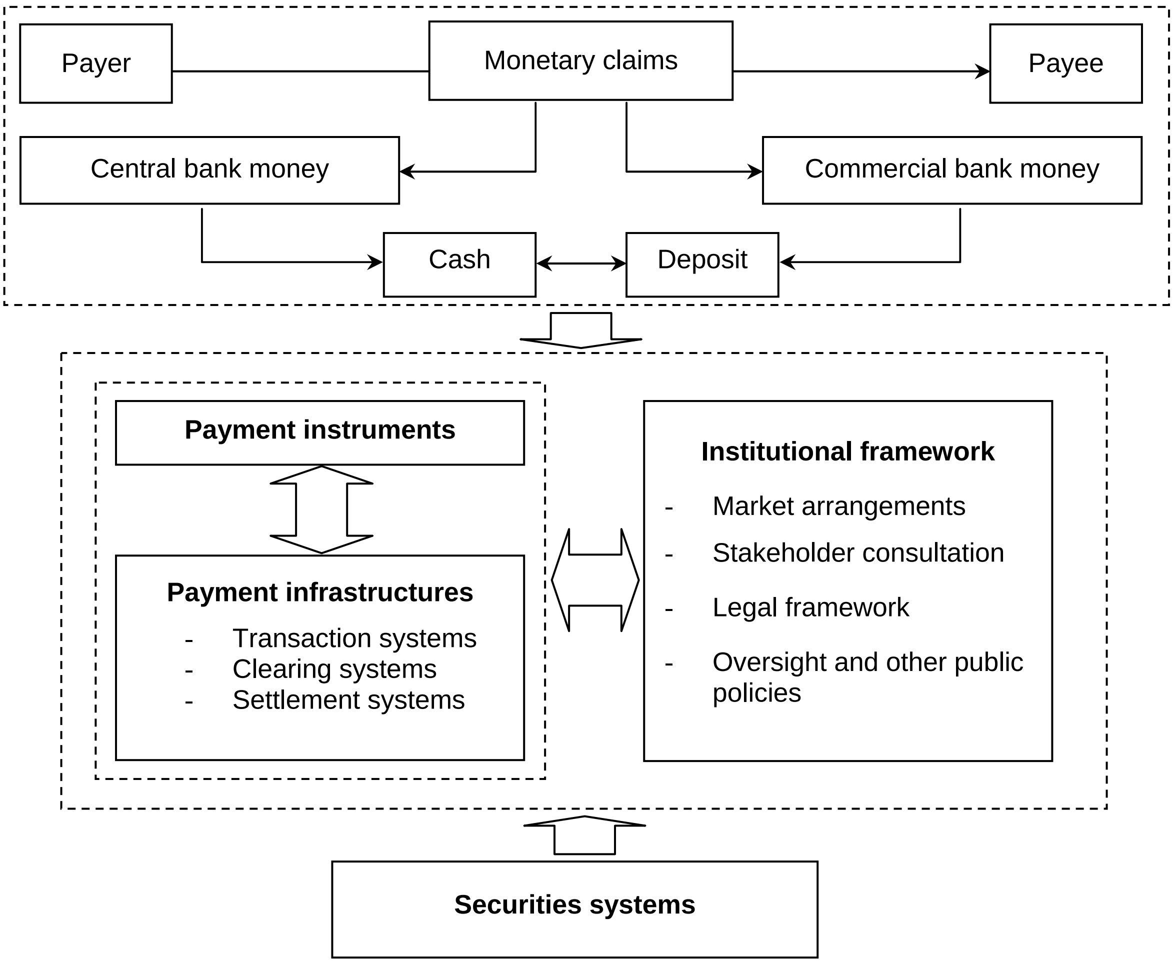
A national payment system is one of the principal components of a country's monetary and financial system and, therefore, crucial to a country's economic development. It is through the national payment system that money is transferred between buyers and sellers in commercial and financial transactions. If done well, the development of the national payment system can reduce overall transaction costs and expand the opportunities for commercial and financial transactions in an economy. This section discusses the role of a national payment system and recent trends in its development. It also highlights the principal factors that drive or influence development and provides the context for the general guidance presented later in the report.

2.1 Money and the national payment system

A principal role of money is its medium of exchange function. A payment is the process by which monetary instruments, typically cash and deposit claims, are transferred between two parties to finalise a transaction. A national payment system is the configuration of diverse institutional arrangements and infrastructures that facilitates the transfer of monetary value between the parties, as shown in Figure 1. This report focuses on non-cash payments. Such payments typically involve a complex process of money transfers from the deposit (or credit) account of the payer at one financial institution to the account of the payee at another financial institution. This process requires the development of an acceptable array of payment instruments, institutional and processing procedures, and money or "funds" transfer mechanisms to complete payments.

Figure 1

National payment system



In general, the complexity of payment instruments, organisations, standards, rules and procedures, and market arrangements increases as the development of the system progresses. It is, therefore, important to establish a basic unifying framework to facilitate the development of a safe and efficient national payment system. Once a framework is firmly in place and well understood, many of the subsequent developments in the system can originate from the interaction of the payment organisations and users.

2.2 National payment system development process

Experience indicates that there is no unique or universal development path for all countries. Past development of national payment systems was largely dependent on the historical pattern of communication technologies and national banking policies. Such paths or observed developmental stages would no longer be highly relevant under new information and communication technologies and financial sector policies. Indeed, each country will need to consider its own current stage of national payment system development relative to its own preferences. No arbitrarily defined template can substitute for this country-specific self-assessment.

Nevertheless, while different in specific detail from country to country, there are a number of common development factors, motives and trends in the payment system development process. Those outlined below are drawn from development experiences in different countries.

2.2.1 Factors influencing national payment system development

To understand the development process in a national payment system, the key development factors need to be identified. The main factors, as well as their influence on system development, are discussed below.

(i) Development factors

The four general factors influencing national payment system development could be grouped together as environmental factors, economic factors, financial factors and public policy factors.

The main *environmental factors* include: (i) demographic factors such as population size and urbanisation; (ii) geographic factors, including the level and distribution of resource endowments; and (iii) social and cultural values and norms. These factors can determine the likely acceptance of particular development initiatives.

The principal *economic factors* include: (i) the level and stability of overall economic growth; (ii) wealth distribution; (iii) the education and skill levels of, and availability of training facilities to, the labour force; (iv) the development of industrial infrastructure such as telecommunications and transportation systems; and (v) the pace of innovation and technological change. The core economic factors, and their influence on development in the commercial, industrial and financial sectors, are particularly relevant to the payment service needs and capabilities of the country.

The key *financial factors* refer to the financial costs, risks and benefits of payment service, institutional and infrastructure development initiatives to payment service users and providers. Improvements that reduce the user costs in payments for commercial and financial transactions and increase the opportunities for making these transactions can motivate the demand for and supply of new payment instruments and services. But the payment process also involves direct and indirect credit and liquidity risks that are shared, to varying degrees, between service providers and users. To be successful, payment system development initiatives need to identify these costs, risks and benefits and try to balance their allocation between providers and users.

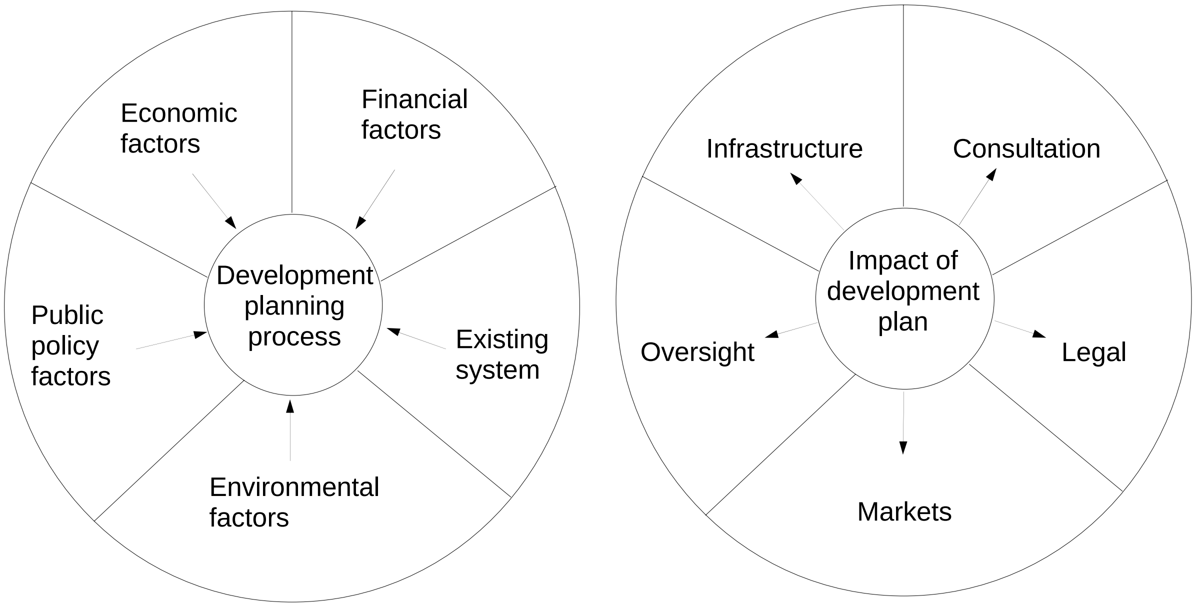
The important *public policy factors* include, inter alia, laws and policies affecting the conduct and performance of financial institutions, as well as the government's education, industry, trade, consumer protection and macroeconomic policies. The involvement of the country's authorities is a fundamental factor in system development, as this directly affects the institutional arrangements. These public policy factors interact with the environmental, economic and financial factors to condition and shape overall system development.

Knowing how these general factors can influence national payment system development is important for the planning process. Together, these general factors and other institutional factors specific to the payment system influence the direction in which the national payment system develops through their effects on the demand for, supply of and market arrangements for payment services. They reflect the interests of the various stakeholders that, when appropriately balanced, reflect the public interest. To be successful, the reform initiatives need to take all these factors into account, and consider the critical trade-offs among them. A combined measure of these factors helps establish the incentives for various stakeholders to improve the efficiency and safety of payment instruments, infrastructures and service markets.

Figure 2 illustrates how the development factors can contribute to the development planning process and how the plan itself is designed to reform some of the key elements of a national payment system.

Figure 2

Development planning process



(ii) Characteristics demanded of payment services

In the end user markets, the most common characteristics demanded of payment instruments and services are: (i) high availability and choice of instruments and services; (ii) information on the relative benefits, user costs and risks of different instruments and services; (iii) low user costs; (iv) interoperability among rival transaction networks for the same type of payment instrument; and (v) low legal risk and a high degree of information security. As the system develops, payment needs evolve and end users typically demand increasingly rapid and reliable payment execution from the financial institutions that provide payment instruments and services to them.

The characteristics of system reforms typically demanded by financial institutions from their infrastructure service providers are: (i) equitable access to services; (ii) low network participation costs; (iii) fast and predictable delivery of services; (iv) reliability of network operations; (v) low settlement risks; and (vi) settlement finality, particularly for large-value payments. These financial institutions are also now demanding greater transparency about the features and implications of these factors from their infrastructure service providers.

These demands for more transparency, greater efficiency and lower risk for users and providers promote improvements in the existing national payment system. They also lead to fundamentally new developments in non-cash payment instruments, such as the introduction of electronic credit transfer and card-based retail payment instruments.

(iii) Characteristics of supply in payment services

Payment service providers in end user markets aim to enhance their opportunities for revenue generation and to reduce their costs and risks. They achieve this through: (i) the introduction of new technologies for information processing, telecommunications and even intercity transportation for the transmission and transfer of payment instructions and instruments; (ii) the interoperability in transaction arrangements, such as ATM, EFTPOS and internet payment systems; and (iii) the expansion of financial and non-financial service providers into new payment services and markets.

Financial institutions aim for savings in operating, liquidity and risk management costs by reforming the arrangements and markets for infrastructure services. These savings are generally sought through: (i) nationwide integration of clearing and settlement systems; (ii) legal and regulatory reforms relating to the organisation, governance and operations of payment infrastructures; and (iii) reforms to enhance the resiliency of network operations in order to lower operational risk.

2.2.2 Motives for national payment system reform

Reforms are generally triggered by specific developments and events. Typically, these events relate to:

- developments in the financial and non-financial sectors that present new needs and opportunities for payment instruments and services;
- increased awareness about payment systems and their risks, including those related to the security of payment information, which have raised concerns about financial stability;
- internal and external pressures from national payment system reforms in other countries, the entry of foreign banks, or a policy to comply with regional and international standards for payment and securities systems;
- political-economic developments, such as the evolution of economic and monetary unions among countries, and the country's re-entry into global trade and financial markets.

In the wake of these events, the existing system is found to be inadequate for the emerging payment needs of the economy, and reform initiatives are therefore undertaken.

2.2.3 Trends in national payment system development

Development initiatives in a national payment system generally strive for improvements in system-wide safety and efficiency. In general, these development initiatives have been both demand-driven (eg new instruments and services) and supply-driven (eg new cost-reducing standards or technologies). They have focused recently on one or more of the following:

- the gradual emergence of a broader range of payment instruments and services;
- better access for financial institutions to low-cost settlement credit and better liquidity-saving mechanisms in payment settlement systems;
- the interoperability, interrelationships and resiliency of payment, securities, foreign exchange, telecommunications and the bank's internal infrastructures to facilitate straight through processing of payments;
- the design of payment infrastructure arrangements to better contain legal, operational and financial risks for participants and to improve the cost efficiency of providing infrastructure services to them;
- the development of a suitable regulatory regime for the national payment system and an effective oversight function in the central bank;
- more efficient, more stable and better organised markets for delivering and pricing various payment services to the users.

2.2.4 Issues in national payment system development

The past experience of many countries points to a number of issues that need to be addressed if the development process for a national payment system is to proceed smoothly and effectively. Among the most common are:

- inadequate knowledge about the overall breadth of the basic elements relevant to a national payment system, resulting in ad hoc changes in the system, and limited vision, leadership and trust among the principal stakeholders;

- limited information about the emerging payment needs and capabilities of the developing economy and the existing system's ability to meet them;
- weak support and commitment to reform from public and private stakeholder groups due largely to inadequate consultation;
- limited expertise and financial resources for developing and implementing reform initiatives;
- legal, regulatory and other public policy impediments to development that compound the natural risk aversion towards new and innovative payment arrangements.

The development guidelines presented in the report address these development issues.

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3. General guidance for national payment system development

The development of a national payment system requires a broad perspective on what constitutes its principal elements. These can be generally classified into institutional and infrastructure elements. Although each may influence payment system development differently, the key institutional and infrastructure elements in a national payment system are highly interactive and all play an important role in the development process.

The guidelines in the first Section below focus on the role of the banking system in payments. The next Section presents guidelines for planning the process of national payment system development. The third Section focuses on the reform of the institutional aspects (markets, consultation, oversight and legal developments) of the system. The last Section focuses on the infrastructures in the payment system.

3.1 Banking system and national payment system development

The development of its national payment system is closely intertwined with the development of a nation's banking system. The creation and delivery of payment accounts, instruments and services to consumers, businesses and even government agencies is a core business function of banks and similar financial institutions. The central bank promotes and facilitates this process through its public policy roles related to the payment system. Accordingly, the development of the national payment system is a shared responsibility of the central bank, the private banking system broadly-defined and other authorities contributing to the development of the banking and payment systems. The central bank should, however, be at the centre of this process, with the banking sector as an active partner.

Guideline 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.*

Explanation: The objectives of the central bank are to increase safety and efficiency in the national payment system. As highlighted in Box 1, the central bank has several means to do so - as operator, catalyst, overseer and user.

In terms of these roles, there are four main ways in which a central bank can contribute to the orderly development of the payment system. It can: (i) perform various payment activities and evolve its operating policies to better meet the emerging needs of the system; (ii) be a catalyst for change, drawing on its expertise about the payment system to help formulate realistic development initiatives; (iii) act through its policy and oversight function to promote and facilitate the development of a national payment system more efficient and stable than the present one; and (iv) where appropriate to meet its own transaction needs, use new efficient and secure payment services. Experience in many developing countries indicates that the central bank may sometimes need to take the lead in proposing, planning and implementing some fundamental payment system reforms, using all its roles in the payment system to move the development programme forward. In other cases, where privately led reform initiatives meet central bank development objectives, the central bank's main role would be to advise on, and facilitate, change through its various functions.

In many countries, the operational, catalyst, oversight and user roles of a central bank have evolved over time in response to the various development factors. Early in the development of a national payment system especially, markets can experience coordination difficulties among service providers and users. In addition, competing financial institutions may be reluctant to cooperate in the development of common standards and infrastructures or even to be the first to introduce innovative products and services. To deal with such situations, in some cases central banks have chosen to provide new infrastructure services directly. At the same time, to complement or help develop alternatives to some of their own operations, central banks have encouraged the development of private service providers and markets for some of the emerging payment service requirements and have developed their oversight functions to monitor them effectively.

Box 1

Roles of a central bank in payment system development

As **operator** or payment service provider, the central bank may provide and develop payment and credit services by:

- issuing cash as a direct payment instrument and deposit claims as the settlement asset for interbank payments;
- owning, operating or participating in the governance of systemically important clearing and settlement systems;
- owning or operating non-systemically important payment clearing and settlement arrangements, possibly participate in their governance arrangements; and
- managing settlement accounts and providing settlement credit, both intraday and end-of-day, for participants in the payment settlement system.

As a **catalyst**, the central bank may contribute to payment system reform and development by:

- initiating, coordinating, researching and consulting on payment system design, operation and policy; and
- advising, and on occasion even drafting, proposed legislation on the national payment system.

As the **overseer** in the national payment system, the central bank may:

- monitor existing and planned systems and assess them against safety and efficiency objectives;
- consult, advise and, if necessary, induce change to payment system design and operations; and
- publish its oversight principles, policies and guidelines.

As a **user** of payment services in its operational activities, the central bank may participate in clearing and settlement systems to:

- use systems owned and operated by external parties to make and receive payments on its own behalf or on behalf of its customers (such as the government and its agencies);
- use securities settlement and depository systems for its own operations; and
- use correspondent banking services for other central banks and financial institutions.

Oversight is the central bank function that promotes the objectives of safety and efficiency of payment and settlement systems by: (i) monitoring existing and planned systems; (ii) assessing them against these objectives; and, if necessary, (iii) inducing changes. As market conditions have improved and their oversight functions have developed, some central banks have chosen to outsource or even privatise some infrastructure services that they had initially provided directly, notably in retail payments, and continue to oversee their operations.[1] Annex 2 illustrates such an evolution in a brief case study of the 2001 reforms of the Central Bank of Sri Lanka with respect to its various functions in the national payment system.

Implementation: For the central bank to function as the central agency in payment system development, its principal challenge is to determine where to best use its limited resources. One key activity is education about the payment system. Educating its own senior management and staff, as well as other stakeholders, is the precondition for the central bank's effective use of its catalyst, oversight and operations functions in the system's development. Within the central bank itself, increasing knowledge of the role of the national payment system in the country's economic and financial development and its relevance to both the monetary and financial stability policies is critical.

Central banks should allocate resources to initiatives of substantive systemic and system-wide importance. The specific roles played by central banks in these initiatives - operations, oversight, catalyst or user - will depend on the specific initiative and the role of other stakeholders in it. Generally,

[1] As discussed in Guideline 10, some of these operations may be assigned to the central bank through legislation. Entering or exiting from the direct provision of some services is therefore not always a simple policy process.

however, the importance of central banks to the development of the national payment system has typically encouraged them to:

- organise their payment system activities as part of their core functions;
- invest in training and knowledge development to continue to enhance expertise;
- plan, prioritise and adequately develop their own payment system function to facilitate broader reforms in the system;
- allocate adequate resources to monitor critical payment system developments and for payment system research and analysis; and
- develop a communication strategy around their payment system functions to facilitate a dialogue with other stakeholders about ongoing development of the national payment system.

(i) Organise payment system functions

The payment system function of a central bank generally includes its payment operations, policy and oversight activities. The organisational units involved in the payment system function could be separate from other core functional units at the central bank, such as those dealing with monetary policy and corporate administration. This allows the units concerned to focus on the central bank's payment system objectives and tasks exclusively.

As a core central banking function, the payment system function should be directly accountable to the central bank's policy board through a senior official, such as a deputy governor. In addition, internal communication and coordination across the various units within the payment system function is critical. It allows new policy proposals and operational procedures to be considered from the different perspectives and expertise of the various units within the central bank's payment function, to help ensure their acceptability. These communication and coordination mechanisms could be either formally or informally organised. By way of an example, Box 2 outlines the mechanism used by the Bank of Canada.

Box 2

Country example: Bank of Canada's CLACSS

- The Committee on Liquidity and Clearing and Settlement Systems (CLACSS) is an internal committee, chaired by the Senior Regulatory Adviser to the Governor.
- CLACSS is designed to exchange views and coordinate policy recommendations on payment and securities clearing and settlement issues to the Bank of Canada's Financial System Committee, which is the Bank's policy committee for financial systems and is chaired by the Governor.
- CLACSS involves senior staff members from the departments for:
  - payment system operations and operational research;
  - monetary policy implementation and funds management;
  - payment clearing and settlement oversight and policy research; and
  - legal services.

(ii) Continue development of knowledge and expertise

To maintain its influence in system development, a central bank needs to continually deepen its knowledge and expertise about the emerging trends and issues for national payment systems. It must be able to assess the implications of proposed developments with respect to system-wide efficiency and safety and to determine how best it can contribute to those developments. For this, it needs to train resources and dedicate them to payment operations and to the analysis of payment service markets and infrastructures.

In addition, while the primary focus should always be on systems handling one's own currency, knowledge of the trends and developments elsewhere can help in formulating useful reform initiatives.

The central bank will also need, therefore, to dedicate resources to ongoing consultation and discussion with a range of stakeholders that influence development in the payment system. These consultations could also involve experts from international organisations such as the CPSS, the World Bank and the IMF, as well as those in other central banks.

(iii) Plan and prioritise development of payment system roles

A central bank needs to develop its operational, catalyst and oversight roles as a fundamental part of the overall development process of the national payment system. It could periodically review its roles in the system and assess if and how they should be changed to promote safe and efficient future system development. Depending on the immediate needs of the overall development plan, it may, however, be necessary to focus effort and resources on a particular role. For example, as the core institutions and infrastructures start to develop, the central bank may need to focus its resources on its own operational role and its catalyst role to help drive the planned reforms forwards.

Operational role

In terms of its operational role, possibly the most fundamental project for a central bank to undertake is the reform of its own settlement account processing and administration procedures. Developing, as a priority, the central bank's own national account administration and processing system can facilitate the nationwide development of new payment services and processes in the banking system. For example, regional banks and regional branches of nationwide banks often hold their settlement accounts at the regional branches of the central bank. If the central bank has only a decentralised account management structure, banks would be less able to manage their central bank liquidity effectively on a bankwide basis.

As the communication technologies develop nationally, the central bank would be able to upgrade its account management system into a single online account management system. The banks could still hold their settlement accounts at the regional branches of the central bank but they would be within a unified and common central bank account management system. This system would be integrated with their other internal accounting and processing systems used in providing payment settlement services. Banks that operate similar unified account management systems for their branches nationwide would have better information on their central bank funds positions, which would allow them to manage these positions more profitably. Moreover, the central bank would have better information on the aggregate demand for and supply of central bank funds, which would allow it to implement monetary policy more effectively.

Catalyst role

In its catalyst role, the central bank might wish to prompt and coordinate suitable actions by the relevant stakeholders to implement development initiatives. In this role, the central bank's general objective is to achieve a solution to a specific payment system development problem that may be a compromise but acceptable for the relevant individual stakeholders, including the central bank itself. This solution could help improve acceptance of development initiatives among stakeholders and encourage follow-up innovations and institutional reforms within the private sector. The central bank may also wish to focus the attention of other relevant authorities on policies and regulations that can impede payment system development. These could include public policies or regulations affecting: (i) access to payment service markets for different types of service providers and users; and (ii) usage or provision of payment accounts, instruments and transfer services. In the later case, tax and subsidy policies or pricing regulations in various banking or payment service markets could, for example, produce unintended negative consequences for the development of a safe and efficient national payment system.

Oversight role

Clearly defining the scope of a central bank's oversight activities is an essential step. The oversight objectives could be quite broad when there are no other public sector agencies dealing with critical aspects of the payment system such as consumer protection and payment service market conduct. Among other things, central bank oversight should assess the design of the core infrastructures, with particular attention paid to access conditions, settlement risk controls and management processes, and the implications for system-wide safety and efficiency. With new developments, the focus of oversight could shift to monitoring new arrangements and other key elements in the national payment system.

A central bank might wish to intervene in development initiatives through its oversight role if the private sector is unable to meet the challenge of appropriately balancing system-wide safety and efficiency. In order to induce changes credibly and effectively, it needs to have clear and appropriate powers for oversight.

The central bank also needs to organise its oversight activities cost-effectively to adequately support its responsibilities. Increasingly, for example, the oversight function in central banks is being organised as a unit separate from payment system and monetary policy operations to allow it to focus exclusively on oversight issues and policy. The 2005 CPSS report *Central bank oversight of payment and settlement systems* provides some useful detailed guidance on developing the oversight function.

(iv) Communicate the central bank's roles

The central bank's influence on payment system development is most valuable and effective if its objectives, policies and reform proposals are clearly and comprehensively communicated to the other key stakeholders in the system. The central bank must ensure that the information is communicated consistently to all relevant stakeholder groups through a variety of communication instruments - legislation, policy statements, consultation sessions, publications of its payments research, general publications and stakeholder agreements. The messages must also be consistent across the different divisions in the central bank and its senior management in their discussions with various stakeholders. Internal committees to coordinate payments policy, such as the one outlined in Box 2 for example, can be valuable in this regard. The communication policy of the Bank of Italy's oversight role is illustrated in Box 3.

Box 3

Country example: payment system transparency policy as promoted by the Bank of Italy

The Italian Banking Law officially assigned the payment system oversight function to the Bank of Italy in 1993.

In May 1997, the Bank of Italy published a *White paper on payment system oversight*, defining the institutional framework and the theoretical grounds for the oversight function. In November 1999, a second paper was published (*White paper on payment system oversight. Objectives, methods, areas of interest*), with a more detailed analysis of the function's areas of interest and methods of intervention. The aim of the two papers was to start discussions with market operators, service providers and academic experts on the role of the oversight function in increasing the efficiency and reliability of payment systems.

In February 2004, the Bank of Italy issued *Provisions on the oversight of payment systems* to present a clear and transparent oversight framework to the markets. Such provisions complement traditional oversight instruments such as stakeholder cooperation and moral suasion in influencing payment system development.

Guideline 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.*

Explanation: For the purposes of this report, a banking system involves all financial institutions that accept deposits, provide credit or offer payment services to end users as one of their principal business functions. This would include privately owned, community-owned and state-owned institutions. It also covers all non-bank institutions that provide key payment-related services to banks or on behalf of banks to end users. Some, such as post offices, microfinance institutions and private payment transfer providers are also users of bank services in the provision of their own specialised payment services to consumers or business customers.

Confidence in the banking system is a necessary condition for payment system development. To help build that confidence, individual institutions in the banking system should, as the principal suppliers of payment instruments and services to end users, develop: (i) national coverage and innovative technologies and procedures for service delivery; (ii) internal account management and payment processing systems; and (iii) connectivity arrangements vis-à-vis the networks for payment infrastructure services. At the same time, the banking system as a whole needs to cooperate and invest in the development of new institutional arrangements, especially market arrangements.

Box 4 summarises the roles of bank and non-bank payment service providers in end user markets.

Box 4

Banks and non-banks in end user markets

Payment system development is inextricably linked to the development of the bank and non-bank sectors with respect to the provision of instruments and services to end users.

- Banks and their associated institutions are generally the main suppliers of payment accounts, instruments and services to the customers in the end user markets for most countries.
- Non-bank payment service providers, such as postal payment offices and financial service kiosks in retail organisations, can also provide payment accounts and services to end user markets.

Non-bank providers often focus in particular on:

- market segments (eg low-income individuals and small businesses);
- locations (eg small or remote rural communities and regions); or
- infrastructure services, such as ATM networks, internet payment schemes and specific processing, clearing and settlement services.

Implementation: The principal responsibility for sound banking system development is with the banking community. For payment system development to succeed, the banking system should invest in the recruitment, training and retention of human resources knowledgeable in payment system operations and in market research and business development. Although the central bank may be able to catalyse developments in the banking system to support payment system development initiatives, it can do so effectively only in partnership with the banking industry.

(i) Extend payment service coverage

A priority initiative for the banking system would be to extend core payment services to all the regions of a country. Existing banks and newly emerging service providers could be encouraged to expand their branch networks to smaller urban areas and into rural areas, and to develop basic low-cost payment accounts and services for retail customers especially. Banks and non-bank service providers might also consider developing mobile banking and payment services in less populated regions, and participate and invest in innovative electronic banking and payment networks, such as those involving secure wireless technologies. Banking authorities might authorise the development of community and cooperative banks in rural centres, and permit banks to contract with non-bank institutions willing to provide payment instruments and transaction services to end users for accounts held at banking institutions. In this arrangement, payment accounts remain at banks, but access to those accounts for payment services is decentralised into local areas. An example of this approach used in Brazil is described in Box 5.

To expand access to banking and payment services nationwide effectively for users, individual banks could be encouraged to:

(i) extend access to payment accounts and services nationwide through branch, agency or electronic banking networks (eg ATMs and internet banking schemes);

(ii) invest in unified account management and information systems across their various customer access networks; and

(iii) connect or integrate their internal account management systems with their other systems for initiating and authorising payments by customers, and extend the range of retail payment instruments.

Where permitted by telecommunications infrastructures, a bank's access networks could be connected to an electronic account information and management system through a computerised online network. As telecommunications technologies develop and infrastructures extend their coverage, more access facilities can be integrated into the online system.

Box 5

Country example: enlarging access to banking services in Brazil

Of the 5,578 municipalities in Brazil, some 1,740 (30%) have no bank branches but receive banking services instead through *correspondentes bancários* (bank correspondents).[2] There are about 16,000 *correspondentes bancários* - almost the same number as bank branches. They act on behalf of banks as an agency under agreement and are authorised, among other things, to:

- receive deposits and general payments;
- make payments related to the accounts concerned; and
- receive applications related to loans and proposals related to credit cards.

The most important *correspondente bancário* is the Brazilian post office (ECT - Empresa Brasileira de Correios e Telégrafos). ECT acts on behalf of Bradesco, the major Brazilian private bank, and serves all but a few of the municipalities where there is no bank branch. Other *correspondentes bancários* include lottery houses, supermarkets, drugstores and other small retailers.

The activities of the *correspondentes bancários* are regulated by the National Monetary Council, a government body in which the Central Bank of Brazil participates. The rules set forth:

- the kinds of financial institutions that can contract to be *correspondentes bancários*;
- the types of services that they can execute;
- the payment settlement procedures between the *correspondente bancário* and the bank for which it acts; and
- the requirement that a *correspondente bancário* cannot use its own funds for its banking service activities.

(ii) Have the banking system develop standards

Financial institutions providing payment services should be encouraged to develop industry groups and forums that can propose and develop standards for payment instruments and services consistent with accepted international standards. Particularly important are standards for the security of customer information in various types of shared access and transaction networks and instrument standards to facilitate efficient and secure payment clearing.

The industry group would also be effective in developing market conventions and standards for payment services and in dealing with the central bank and banking authorities on policy issues of common interest. Banks might also be encouraged to cooperate in the development of common infrastructures for payments. These would include arrangements for clearing different payment instruments and the organisation of clearing houses. It would also allow banks to share the development and installation costs for the automation of clearing houses and for the development of shared electronic payment networks, such as those for debit card payments and ATMs.

(iii) Central bank contributions

Central banks are not the only source of payment system development initiatives. The banking system can also conceive of reforms that can improve the safety and efficiency of the national payment system. Nevertheless, the central bank can facilitate and even provide leadership, where necessary, on private sector initiatives through its operational and catalyst roles.

In its operational role, the central bank may cooperate with the banking system in developing key infrastructures. In many countries, the central bank operates a core settlement infrastructure, and where appropriate this could be linked with other infrastructures to achieve settlement in central bank money. As a payment service provider, the central bank can help influence the acceptability of industry standards by adopting those relevant for its own payment service arrangements.

[2] See Resolution 3.110 and amended Resolution 3.156 issued by the National Monetary Council, Central Bank of Brazil.

Through its network participation and service agreements, the central bank should also help ensure that banks and other similar financial institutions have direct or effective indirect access to any central bank clearing and settlement facilities. Banks in particular should be eligible for direct access to such services as long as they meet the financial and operational requirements. They could, however, have the option of accessing these indirectly through another bank if the business case so indicates. The central bank's account administration system should also be flexible enough in structure to meet the settlement account needs of newly emerging banks as well as existing banks in the system.

In its catalyst role, the central bank can promote and facilitate the expansion of accessible payment services by the banking system to end users in new market locations and customer groups. It may help the banking industry organise its industry group and consult with the group on payment policy issues that affect the banks directly. The central bank can also consult with banking authorities on legal and regulatory reform initiatives for coordinated development of countries' banking and payment systems. Such institutional reforms might be needed, for example, to facilitate the provision of payment instruments and services by similar non-bank institutions. Indeed, the appropriate regulation and supervision of the banking system is one of the key factors strengthening the confidence of consumers and businesses in the national payment system.

Suggested references for banking system and national payment system development

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3.2 Planning national payment system development

As noted, national payment system development is an ongoing process. Developments can range from substantive reforms to the institutional and infrastructure arrangements to simple modifications in existing arrangements. The developments themselves evolve as a set of parallel or sequential projects initiated by the central bank, private banks or non-bank payment service providers, either individually or collaboratively.

The guidelines for planning payment system development contribute to the formulation of specific initiatives to strengthen the system and guide the momentum for further development. The key messages of the guidelines are that: (i) the national payment system should be viewed from a broad perspective; (ii) development initiatives should be focused on the emerging payment needs and capabilities of the economy; (iii) development initiatives should be planned and prioritised strategically; and (iv) the implementation process for the development plan has to be well defined and organised for the plan to succeed. While all principal stakeholders need to be involved individually and collaboratively in planning development initiatives, central banks and the banking community share the interest and responsibility for leading the process.

Guideline 3. Recognise complexity: *planning should be based on a comprehensive understanding of all the core elements of the national payment system and the principal factors influencing its development.*

Explanation: As discussed in Section 2, when planning reforms in the national payment system, a broad range of elements and factors need to be considered. Unfortunately, payment system development is often too narrowly focused on instruments, technologies and infrastructure designs. Sustainable development of the payment system implies that all of the major elements of the system - market arrangements, legal and regulatory framework, banking system developments - and the principal development factors have to be considered when formulating reform initiatives.

A broad perspective on the payment system helps produce a comprehensive development plan. Such a plan would reflect the interrelationships between payment infrastructures and institutional arrangements. A broad perspective in the planning stage of development can also help avoid unanticipated and unintended outcomes from reforms in payment technologies and infrastructures that otherwise often arise.

Implementation: A comprehensive stocktaking of the present state of the core elements of a national payment system is the key instrument for implementing this guideline. It helps provide a common framework for use by all stakeholders. Annex 3 gives a general outline for a stocktaking exercise. This exercise is similar to the structural, institutional and statistical descriptions of country payment and settlement systems published by the CPSS and other regional and international organisations.

(i) Consult for stocktaking

The stocktaking exercise is the critical first step for any development programme. It should cover the payment instruments and the core payment, banking and other financial infrastructures and institutions of relevance in the national payment systems as well as trends in the critical development factors. The exercise is best conducted as a cooperative exercise involving relevant public sector and private sector stakeholders. Questionnaires, self-assessments, interviews and on-site visits with the relevant stakeholders can be used to collect information. These tools also help in assessing the current capability of the existing system to meet emerging payment needs and address emerging payment system issues.

The consultation process provides a mechanism that allows relevant stakeholders to improve their knowledge of the broad context of the national payment system. It is also a vehicle for “sensitising” stakeholders to the system-wide development needs, plans and policy approaches. The sensitisation process can be implemented through roundtable meetings or workshops with various public and private sector stakeholders. This process allows the stakeholders to discuss goals and priorities for development, which can help promote their “buy-in” and commitment to the payment system development programme.

(ii) Central bank contributions

A comprehensive stocktaking of the national payment system is an excellent reference base for evaluating its new developments. It can provide an up-to-date comprehensive framework for analysis.

Where needed, a country's central bank could be a principal contributor to and possibly catalyst for, the stocktaking exercise and consultative process. At a minimum, it should be an active participant. Its broad expertise and perspectives, including the relevant legal expertise, are valuable to this process. The central bank typically monitors developments and consults with the relevant stakeholders to update its stocktaking periodically, in order to assess the impact of significant new developments on the safety and efficiency of the national payment system.

Expertise in the development of national payment systems is often in limited supply. Experts from the World Bank, the IMF, other international financial institutions including the BIS, and other central banks can assist in this exercise. As an example, Box 6 outlines the type of assistance that the World Bank and the IMF can provide.

Box 6

World Bank and IMF: payment system development assistance

The **World Bank** provides support for payment system development through:

Technical assistance

- Comprehensive stocktaking reports
- Expert advice on payment system development needs and capabilities
- Strategic planning for payment system development
- Advice on implementation of the reform initiatives

Funding assistance

- Bank loans to finance payment system reforms

Other assistance

- Support for regional payments initiatives
- Participation in CPSS, IOSCO and other policy committees and task forces
- Support for Financial Sector Assessment Programs for payment and securities settlement systems
- Coordination for financial sector reforms for payment, securities, credit and other financial services and institutions
- Payment system research and training for member countries

The **IMF** is involved in the development and improvement of payment systems worldwide to promote financial stability, effective execution of monetary policy, the efficiency and effectiveness of financial markets, and economic development through:

Surveillance

- Assessments in both developing and developed countries of compliance with international standards, codes and best practices within the framework of the Financial Sector Assessment Program
- Article IV consultations on economic development and the stability of the financial system

Technical assistance

- Advice on planning and reform
- Development of infrastructure for financial markets and the implementation of monetary policy
- Role and organisation of the central bank's payments function
- Development of the legal basis for, and implementation of, central bank oversight
- Rebuilding national payment systems and institutions in post-conflict areas

Education and consultation

- Education and training (through, for example, HQ-based seminars and courses, the Joint Vienna Institute and the Joint Africa Institute), often in cooperation with the CPSS and the World Bank
- Development of standards and guidelines in working groups and task forces such as those of the CPSS and IOSCO
- Consultation through regional payment initiatives organised by the World Bank

In fact, several regional initiatives to exchange experiences in payment system issues have been set up by groups of central banks in neighbouring countries, often in collaboration with the World Bank or others.

Guideline 4. Focus on needs: *identify, and be guided by, the payment needs of all users in the national payment system and by the capabilities of the economy.*

Explanation: Payment systems generally develop to allow users greater choice among various payment instruments for a particular type of transaction. Particular payment instruments and services can be matched to particular types of transactions. For example, automated credit transfers are generally preferred for large-value payments, credit cards for remote internet payments and cash for face-to-face payments. The choice among the various instruments is then based on the specific characteristics demanded by users for that type of transaction. Existing payment infrastructures are rearranged and new ones introduced to transact, clear and settle these payment instruments more safely and efficiently.

Emerging payment needs are also typically associated with the trends and potential developments in the commercial, industrial and financial sectors of an economy. Information about private and public sector development initiatives in these sectors is useful for recognising and understanding the emerging payment needs of consumers, businesses, financial institutions, government agencies and the central bank. This information can indicate what types of new transactions involving these stakeholders are likely to develop in the foreseeable future, which can be relevant to planning payment system reforms.

The needs of particular stakeholders in the national payment system will depend on their roles in various payment service markets. Some key stakeholders play different roles, and thus have different interests, in the different service markets and organisations in a payment system. Banks, for example, provide payment instruments and services to retail customers but demand clearing and settlement services from infrastructure service providers. Central banks are providers of interbank settlement services but also users of infrastructure services for their monetary policy transactions, as well as being overseers of these systems. Consequently, it is not only the payments division within a banking firm or central bank which may have an interest and view on specific payment system needs and capabilities. Knowledge of these different roles is critical to understanding the different interests and concerns key stakeholders may have in specific development initiatives. It also helps indicate who may bear most of the risks and costs of, and who may benefit most from, particular reforms. Designing reforms to share these risks, costs and benefits appropriately among the stakeholders can contribute to the success of a reform initiative.

Implementation: The two focal points for implementation of this guideline are a realistic analysis of business requirements and a review of resource requirements and capabilities to meet them. Realistic solutions to payment system development problems usually involve some compromise between sophisticated institutional or infrastructure arrangements that may be of particular interest to some stakeholders and the ability of others to participate in the new arrangements.

(i) Analyse business requirements

A "business requirements" analysis is the principal tool for identifying the payment needs of stakeholders and the capabilities of an economy to meet them. Its purpose is to describe the forward-looking business case for possible reform initiatives. Together with the stocktaking exercise, it should help define: (i) the emerging trends in the demand for and supply of payment instruments and infrastructure services; (ii) the legal and financial risk for participants; and (iii) the specific roles of the key stakeholders as direct service providers, service users, and supervisors or regulators in various payment service arrangements. It should also consider the emerging trends and likely developments in the institutional framework for the payment system, such as service market arrangements and the legal and regulatory regimes that support ongoing development. The business requirements analysis could also indicate generally the incentives for users and service providers to participate in the system reforms and not just the "social" gains from reform. Box 7 illustrates some specific elements of the business requirements analysis that could prove relevant.

To complement and inform the business requirements analysis, consultation with relevant stakeholders is needed. To focus these consultations around development issues relevant to particular groups of stakeholders, the roles of stakeholders in the system can be mapped into the different payment service markets and infrastructures. With such a mapping, an agenda for follow-up focus surveys and discussions with the individual stakeholders can be established.

Box 7

Elements of a business requirements framework

- The supply conditions for payment instruments and infrastructure services, including requirements relating to:
  - flexibility and modularity in existing and available new IT and payment network technologies and designs for likely future payment system needs;
  - risk management mechanisms (eg legal, financial, operational) to limit participation and systemic risks in payment infrastructures;
  - the availability, terms and conditions of access to payment systems and interbank credit;
  - operating schedules and procedures; and
  - compliance with national and international standards.
- The demand conditions for payment instruments and services, including the identified needs and expectations for:
  - various payment instruments and their use in particular types of transactions;
  - instrument risks and processes for authentication and security of payment and account information; and
  - instrument and service demands particular to special transactions such as those related to monetary policy transactions, to government payment flows and to interbank credit transfers for foreign exchange and securities settlement.
- The market and other institutional arrangements, including the conditions for:
  - end user market availability and accessibility of instruments and services;
  - access to payment infrastructures and cross-network participation requirements;
  - the nature and conditions of indirect access to various payment infrastructures;
  - direct and indirect participation risks (ie legal, operational and financial);
  - relevance, appropriateness and transparency of legal rights and obligations of users and providers of payment instruments and infrastructures (including rules and procedures); and
  - instrument and service pricing methodologies and price levels.
- The regulation and oversight aspects, including transparency of:
  - system regulation and oversight (including the types of authorities and their responsibilities, and the rights and obligations of the entities they oversee and regulate);
  - regulatory and oversight dispute mechanisms; and
  - regulatory accountability.

(ii) Determine resource requirements and capabilities

Planning system reforms around users' needs could also require appropriate development of the country's technological capability and human resources. The current status and development programmes for key non-financial infrastructures, particularly those in the telecommunications and information technology sectors, are critical, for example, to the development of specific types of payment infrastructures, card payments and internet-based payments. Even development programmes for transportation systems are important for certain types of payments and payment instruments. Directly, transportation systems can affect the interregional physical transfer of paper-based instruments used in remote payments. Indirectly, they can affect the volume of such remote payments, and thus the need and business case for developing particular types of payment instruments.

The development of skilled and knowledgeable human resources is as critical to payment system development as the development of an economy's physical infrastructure. Programmes and facilities for training personnel in developing, operating and managing increasingly sophisticated payment technologies need to be part of the planned development of payment system capabilities. Similarly, ongoing education programmes about emerging payment instruments and services, and their related institutional and infrastructural arrangements, are useful to users as well as service providers.

Consultation with authorities involved in the development of critical non-financial infrastructures and relevant training and educational programmes can help formulate an informed business requirements analysis.

(iii) Central bank contributions

The central bank should be an active participant in the key consultations and critical educational sessions regarding business requirements and capabilities. It might even consider organising and facilitating the process where the private sector is unable to do so independently. Moreover, it can help encourage stakeholders with multiple roles and interest in the payment system to coordinate their own views internally to bring some consistency of view to the discussions.

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

Explanation: A strategic plan indicates the specific direction, scope and end point for a national payment system development programme. In doing so, it still takes a broad view of the payment system, encompassing its core institutional elements and infrastructures and the key factors influencing their development. It recognises the interplay among these elements and defines the concrete objectives and priorities for reform based on a comprehensive analysis of the country's specific payment needs and resource capabilities. The plan is formulated through broad consultation and consensus-building on particular reforms and initiatives, especially those involving fundamental and broad-based change.

A strategic plan is designed to be country-specific. However, particular aspects of payment systems elsewhere can provide useful models for planned reforms. For example, particular institutional arrangements or infrastructure designs in one country's payment system might be adaptable to the reform programme of another. It would, however, need to meet the particular payment needs, system capabilities and environmental circumstances of the country, as well as enhance the safety and efficiency of the country's national payment system. Box 8 highlights some key features of a strategic plan for payment system development.

Box 8

Components of a strategic development plan

- A vision of a desired end state over the planning horizon that articulates the consensus view of key stakeholder groups regarding the high-level objectives, guiding principles, properties, benefits, risks and costs of the future payment system.
- A statement of the roles, commitments and responsibilities of the key public and private sector stakeholders in the development process.
- Observable milestones that can be measured against critical and objective success factors.
- A presentation of the conceptual design of the planned infrastructure for payment and securities settlement, which could include the relation to the existing system with reference to its structure, key characteristics, functionality and potential for further expansion and re-engineering as future financial developments warrant.
- A statement of the implementation strategies, which includes the specific implementation priorities and procedures, and timelines, budgetary allocations and financing schemes, critical milestones and observable measures of achievement for public progress reports.
- A description of: the procedures for ongoing cooperation and coordination among the relevant stakeholders; the processes for resolving conflicts and disputes that arise during programme implementation and thereafter; and the procedures for communicating progress and achievement over the implementation period.

The strategic plan outlined above presumes a significant and wide-ranging reform programme and thus involves a substantial planning effort. It presumes as well that choices exist and that reforms are not dictated by a crisis where logic and practical problems would define very specific and necessary actions. As an illustration of a strategic plan, Box 9 outlines the reform plan for the South African national payment system implemented over the past decade.

Box 9

Country example: South African national payment system - framework and strategy

Principles

- The provision of payment system services is not the exclusive domain of banks.
- The evolution of payment infrastructures is a cooperative responsibility.
- Risks and exposures are visible.
- Participants are liable for the risks that they introduce into the payment system.
- A balance is maintained between risk reduction and cost.
- The central bank response to a problem in the payment system will be in the interest of the system, not individual participants.
- Oversight is necessary to ensure the safety and soundness of the payment system.

Vision

- The national payment system is easily accessible and cost-efficient.
- There is healthy competition amongst payment service providers.
- Appropriate infrastructures for retail and wholesale payments and for payments related to foreign exchange, commodities market, capital market and money market transactions are in place.
- Eligible participants access interbank clearing and settlement services on an equal footing.
- Settlement of domestic interbank obligations is effected on a same day basis.
- The payment system makes optimum use of available liquidity.
- The payment system supports electronic delivery versus payment (DVP) for securities transactions and payment versus payment (PVP) for foreign exchange transactions.
- Payment settlement time lags resulting from trading transactions are in line with international practice.
- The payment system is internationally compatible and the international community has an appreciation of the effectiveness of the system.

Critical success factors

- Adequate risk control measures and payment finality.
- Synchronisation of delivery and payment.
- Sound legal foundation and adherence to national rules, regulations and procedures.
- Confidentiality and security of payment information, and effective fraud prevention and detection measures in place.
- A suitable variety of payment instruments and services available to all the people in the country.
- The public is aware of payment system features.

Strategies

- Clarification of the roles and responsibilities of all participants in the payment system.
- Revision of the statutory powers of the central bank regarding payment systems.
- Establishment of payment system standards and review of cross-border/foreign currency market practices.
- Introduction of a regulatory framework for payment clearing service providers.
- Equitable and transparent access conditions.
- Creation of participation agreements for utilising common investments in infrastructure.
- Introduction of measures to limit credit exposures in bulk clearing processes.
- Liaison with banks and financial authorities in the region and creation of a payment system forum to discuss and resolve relevant issues.

The investment of time and financial resources in the planning process will depend on the scale and scope of the reform programme. However, even modifications to one specific element of the existing system can have a significant impact on the overall system because of the interrelationships among the elements. The basic principles for planning and prioritising payment system reform strategically, as identified in Guidelines 3 to 6, are essentially the same for modifying existing arrangements as for fundamental system reforms: (i) plan the specific initiatives with a broad view of the system in mind; (ii) create a vision for the future system where the planned changes are based on specific current and emerging payment needs and capabilities; and (iii) prioritise the specific projects based on the parallel or sequential requirements within the overall development programme and realistic estimates of their cost and long-term benefit to the overall system.

Implementation: The strategic development plan is essentially a vehicle for focusing and coordinating national payment system development on specific reform initiatives. While it may provide direction and focus to the development of the payment system for a number of years, it cannot be so rigid that it is insensitive to unanticipated material changes in key development factors and resources over the planning horizon. In this event, some rescheduling or reprioritisation of reform initiatives might be required, but the plan would have sufficient flexibility, based on its broad vision of the system's complexity and development needs, that it would still be able to move the national payment system in the planned direction.

(i) Analytical tools

There are two principal analytical tools - "gap" analysis and cost-risk-benefit analysis - that can help in identifying useful reform initiatives and prioritising them.

Gap analysis: identifying reform initiatives

A gap analysis is used to help identify the specific elements of the national payment system in need of reform. The first part of the analysis contrasts some of the key results of the business requirements analysis with the stocktaking analysis of the existing system discussed in the previous planning guidelines. The "gaps" identified by this comparative analysis point to the institutional and infrastructure elements of the system that will need to be reformed. The analysis also indicates which elements of the existing system might already meet some of the future payment needs.

The second part of the analysis assesses the "gaps" in the payment system against the emerging capability of the economy to help fill them with new payment products, technologies and services. The evaluation of specific capabilities would consider, for example, the human and capital resources required and available for implementing particular types of payment system reform and the cost-sharing possibilities for financing specific initiatives. The "gaps" between the prospective needs and capabilities help identify which reform initiatives are most efficient to pursue in a development programme.

Cost-risk-benefit analysis: prioritising initiatives

The gap analysis helps identify what reforms might need to be undertaken in the payment system, but not when they should be undertaken. In practice, not all possible initiatives can be developed simultaneously, especially if reforms are far-reaching. Where there are wide-ranging development plans but limited development resources, reform initiatives are specifically prioritised according to those needs broadly demanded, the capabilities of the payment system to meet them, and the estimated costs, benefits and risks to the system and its various stakeholder groups of doing so. A cost-risk-benefit analysis helps prioritise the potential reform initiatives identified by the gap analysis. It can also help define the time schedules, financial and other resource commitments, and other responsibilities of the various stakeholders for the implementation of priority initiatives.

While the gap analysis might well point to a need for fundamental reforms in the institutional or infrastructure arrangements of the system, the cost-risk-benefit analysis may point to highly visible and relatively low-cost changes as priority initiatives. Often, these involve modifications to particular institutions and infrastructures in the existing system. Such modification should not be immediately disregarded as an avenue for development. Payment system development is an evolutionary process that can build on the existing payment system to satisfy emerging payment needs efficiently.

However, the focus should not just be on cost. The benefits of more fundamental reforms in the institutions and infrastructures of the payment system and the risks of not doing so - especially systemic risks leading to financial system instability - should receive substantial weight in the analyses for payment system reform.

(ii) Achieve consensus through reasonable compromise

Achieving consensus on reform priorities among relevant stakeholders can be difficult because of the uncertainty about their individual shares of the projected costs, risks and benefits, and the differences in service needs and resource availability. Priority differences can exist even within a particular stakeholder group. In the banking community, for example, different banks may have very different priorities for payment system reform. They may serve very different types of customers and have quite different access to capital resources. For example, customers of some banks may be generally concentrated more on consumers and small local businesses than other banks, which may have an additional customer base of large, commercial, industrial and foreign enterprises. Consensus is usually achieved through the willingness of relevant stakeholders to find an acceptable compromise solution for all, which generally requires broad-based consultation.

The ranking and sequencing of specific reform initiatives can be critical to building and retaining commitment to the overall reform programme. Fixing critical problems in the existing system is clearly a useful priority for reform. Reforms that address demonstrable problems and produce efficiency gains to key individual stakeholders without adding risks are often the easiest on which to obtain consensus and can initiate momentum for future reforms. Initiatives such as the expansion of card payment systems and improvements in the automation and interconnectivity of clearing houses where benefits are broadly allocated among all stakeholders, including large and small banks, could be an attractive initial priority. Other projects may have substantially greater benefits that accrue principally to a narrower selection of stakeholder groups, however. As these other reform projects are subsequently undertaken, the alignment of the costs, risks and benefits for the different banking groups and their customers will need to be evaluated carefully.

(iii) Central bank contributions

Where expertise for payment system development is limited, the central bank is well placed to organise, direct or advise, and consult with the external experts engaged to formulate or help perform the gap and cost-risk-benefit analyses. The central bank and other relevant stakeholders in the system, not the consultants, should be responsible for decisions regarding the final development programme. They have the best knowledge of the country-specific needs and development factors relevant to their country's national payment system. Moreover, while central banks may need to exercise leadership and even authority where consensus on reform priorities is elusive among key stakeholders, arbitrary imposition of reforms without adequate consultation, consensus and commitment should be avoided whenever possible.

Where some of the reforms are industry-led, the central bank should, at a minimum, participate in the consultation among the stakeholders to advise on the planning and prioritisation of systemically important development initiatives. The final development proposals should, as much as possible, reflect a consensus agreement on current and future needs and capabilities.

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

Explanation: The success of planned projects for payment system reform requires a well organised and well managed implementation process. As the specifics of the development projects become clearer, the strategies for implementing these projects need to be incorporated into an explicit project implementation plan. Project implementation typically involves different stakeholder groups, and the implementation plan clarifies their roles and responsibilities in the project.

An effective implementation plan for a payment system reform project contains: (i) suitable project governance arrangements; (ii) measurable progress milestones; (iii) well defined deliverables; (iv) contingency and resolution procedures; (v) an effective "rollout" strategy; and (vi) a realistic resource and financial management strategy, including an investment recovery plan. Box 10 outlines the basic requirements for the governance and organisation of a major payment system reform project.

Box 10

Organisational requirements for project implementation

Depending on the scale and scope of the project, an effective organisation for project implementation could require:

- at least one influential high-level sponsor that will promote and facilitate the project;
- a project steering committee, which is the decision-making body for the project, involving a representative from each of the key stakeholder groups;
- a project director who will monitor the project, help resolve its problems and communicate its progress to the steering committee;
- a project manager who, like a general contractor, is responsible for the day-to-day management of the implementation plan;
- a well defined role, scope of responsibilities and range of authority for project directors and managers;
- acquisition of the necessary expertise from stakeholder groups, international organisations such as the BIS, the World Bank, the IMF, other central banks and possibly other private consulting organisations for the project teams;
- project team coordinators with some content and management capabilities regarding the specific initiatives for the team; and
- clear reporting, information sharing and accountability processes and schedules for everyone from project team coordinators to project managers through to the project director and the steering committee.

The project organisation outlined above refers primarily to a large-scale development project. However, the main elements of the implementation plan and the same functional requirements for implementation may be relevant for smaller-scale project initiatives as well. A main difference would be the scale of resources needed. An initiative focused on a very specific element of the payment system, for example, usually involves a single project team of very limited size. The project sponsor takes on the role of the steering committee, and the roles of the project director, manager and coordinator are combined in one individual. However, the roles, scope of responsibility and range of authority of the project group members still need to be clearly specified.

Implementation: Aside from project planning and organisation, effective project implementation depends critically on resource availability and project rollout.

(i) Acquire necessary resources

Project implementation for payment system reforms requires expertise in project management as well as in payment systems. One of the most important services demanded of these experts should be the transfer of knowledge and competence regarding payment systems, to help create internal expertise required for future development.

The financial, human and other resources available to meet specific project needs should be predetermined. Some of these expert resources could be mobilised from stakeholders in the reform project, such as legal, payment operations and project management experts from the banking community. It is important to obtain some resource commitment, and thus buy-in, from all principal beneficiaries. These commitments could reflect the relative availability of such resources and anticipated benefits from the reform. As much as possible, financing from key stakeholders, at least with respect to those elements of the project most directly related to their own operations, should be committed before the implementation process begins. Remaining financing requirements could be met through commitments from the government sector and external official organisations such as the World Bank.

(ii) Specify a rollout strategy

A project's rollout strategy depends on its nature. For some initiatives, such as those related to new payment instruments, technological changes and the reform of some types of infrastructure procedures, pilot testing may be feasible and useful. This would allow any technical problems to be identified and resolved before the reform is implemented system-wide. The actual system-wide implementation of such reforms can also be staged or sequenced over particular regions or stakeholder groups.

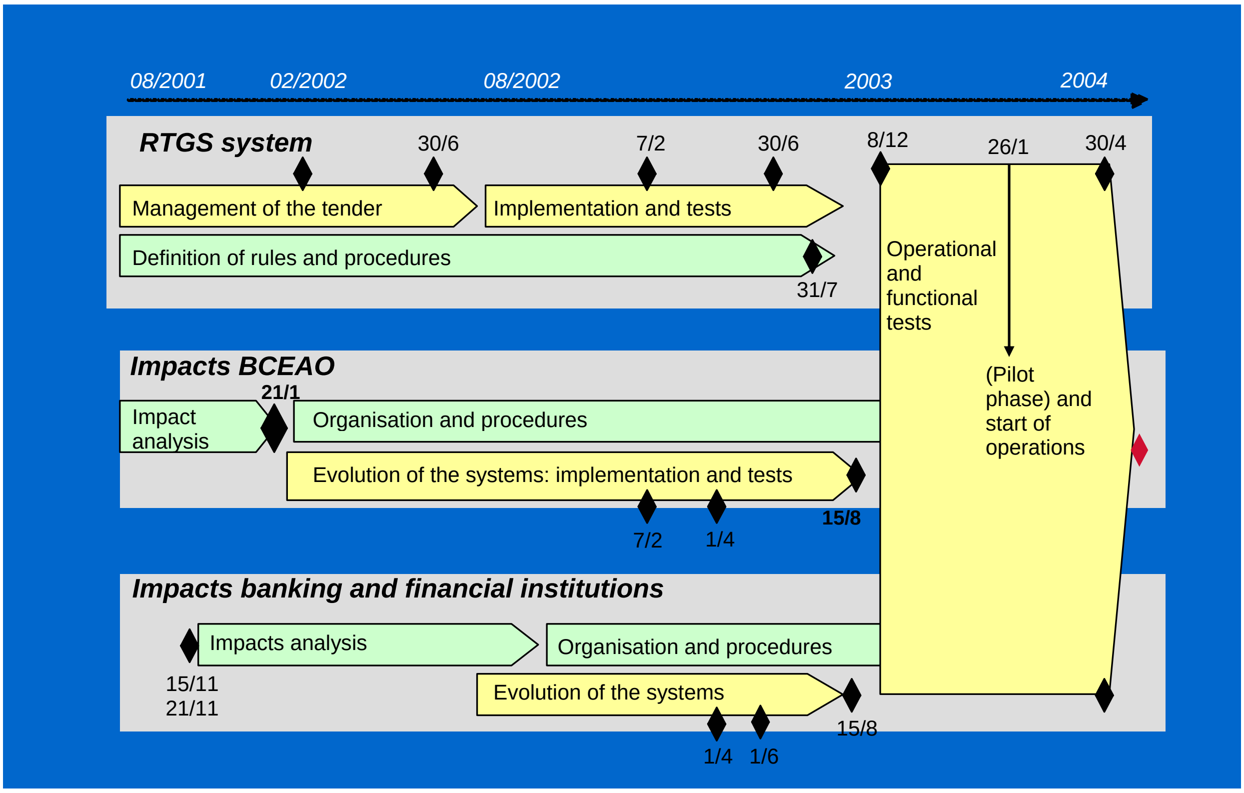
For projects related to legal, regulatory and market reforms, pilot testing and a sequenced rollout strategy are generally less feasible. Implementation of new laws, regulations and market conventions is usually simultaneous in all regions and relevant payment service markets, and is often required by a specific date to help maintain a level playing field for market participants. However, a transition interval or "grace period" before the new laws, rules or regulations finally become legally enforceable can facilitate on-schedule compliance. Individuals and organisations affected by these institutional changes will have time to adjust their own systems and procedures to the requirements of the new regime and, thus, minimise any potential operating and financial risks to the system.

Targeted marketing and product education are another critical part of the rollout strategy. Educating users about the specific value to them of a new payment instrument or service, its general benefits relative to user costs and risks and the procedures for directly acquiring and using related services help give a momentum to the rollout process.

Figure 3 illustrates a Gantt chart for the implementation of the RTGS development project involving the Central Bank of West African States (BCEAO).

Figure 3

Country example: schedule of RTGS implementation in the BCEAO



(iii) Central bank contributions

The central bank can be valuable as a leader and catalyst for project implementation. It can sponsor, organise, advise and participate in project groups as required. It can participate in the steering committee and organise expertise from within the country's financial sector and from international organisations. At a minimum, the central bank could facilitate the implementation of reform initiatives by planning and coordinating implementation of the required changes in its own operating procedures and policies with other aspects of the project plan.

The central bank need not, however, bear the entire cost of payment system reform. Even if the benefits are system-wide, they actually accrue to individual stakeholders. Relevant stakeholders may be more precise about setting priorities and budgeting resources when they bear a fair share of the costs and risks along with the benefits. Central banks should consider designing funding and pricing strategies that would allow them to recover an appropriate portion of their costs where they are directly involved in installing and operating new systems and services.

Box 11 illustrates the roles of the central bank in the planning and implementation of Indonesia's recent payment system reforms.

Box 11

Country example: Indonesia's national payment system Blue Print Project

The Indonesian Blue Print Project was an interdepartmental effort by the central bank initiated in 1998. The *INPS Blue Print* is the principal document specifying:

- the components of payment systems;
- the development issues within and around each component; and
- the methods and projects to tackle these issues within a certain period of time.

The strategic planning document dealing with these payment system development issues specified 22 projects to be deployed within the 10 years following the approval of the Blue Print. The 22 projects were aimed at:

- Payment instruments, including projects to develop an electronic payment instrument.
- The legal environment, including projects developing guidelines and regulations to ensure:
  - the legality of electronic payment instruments;
  - clarity regarding the contractual rights and responsibilities of all parties in a funds transfer; and
  - the legality of netting and other aspects of clearing and settlement arrangements.
- IT infrastructure, including projects on:
  - telecommunications infrastructure;
  - hardware and software upgrades; and
  - standards for information security in payment gateways.
- Payment and settlement risk, including projects to:
  - develop an RTGS system;
  - re-engineer clearing (netting) cycles; and
  - facilitate cross-border payments.
- Institutional issues, including the creation of a Payment System Department within Bank Indonesia, with a separate oversight unit, and a National Payments Forum.
- Efficiency issues, including projects to link various card payment operators.

Over the past six years, 18 projects have been completed and implemented.

Bank Indonesia is now in the process of developing the second national payment system Blue Print, which will combine the remaining projects from the first plan with a set of new projects aimed at developing an even safer and more efficient national payment system.

Suggested references for planning payment system development

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3.3 Developing the institutional framework of a national payment system

Reform programmes for the payment system often focus principally on infrastructure development. Experience indicates, however, that requirements for accompanying institutional reforms quickly arise. The responsibility for developing and reforming the critical institutional framework for the payment system is shared by the central bank, the banking community and the other authorities involved in the public policy framework for banking and payment system development.

Broadly defined, the institutional framework for the national payment system includes the laws, practices and organisational arrangements facilitating payment transfers. The guidance in this section focuses on: (i) the market arrangements for payment services; (ii) mechanisms for consultation with stakeholders; (iii) the coordination of oversight of the payment system and regulation affecting the system; and (iv) the structure of laws and legal arrangements for payments.

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

Explanation: Developing safe and efficient market arrangements for payment services is crucial for users and providers. Market arrangements coordinate the production and pricing of payment instruments and services and their delivery from payment service providers to users. They include the procedures, conventions, regulations and contracts governing the payment service relationships and transactions between the service providers and users. As the national payment system develops, the range of different payment instruments and services, as well as service providers and users, expands. As a result, the critical payment service market generally becomes more organisationally and functionally diversified. It relies increasingly on market arrangements for an expanding array of payment instruments and services.

(i) Market organisation and interdependency

Payment services and service markets are generally classified into two types: (i) "wholesale" market arrangements for payment infrastructures; and (ii) "retail" market arrangements for end users. Clearing and settlement services provided to financial institutions are examples of a wholesale payment service market. Retail or end user service markets can be illustrated by such examples as those for card payments, chequing accounts, or internet and mobile payments. Each of these contains different specific payment services, organisations and market characteristics.

These markets are highly interdependent. Many of the same financial institutions that are users in a particular payment service market are also service providers in another. In some cases, payment services and their markets are complementary to one another. The provision of debit card services by a bank to its customers in a retail market and the acquisition of interbank clearing services in another is one example. In other cases, the payment instruments and services are market substitutes. Different credit card brands or cheques and credit cards are examples. In addition, the pricing and service levels offered in the retail payment service markets are, for example, generally influenced by the costs of acquiring complementary services in wholesale markets and by the relative user demand and user fees for substitute payment services.

(ii) Market cooperation and competition

All payment service market arrangements involve some degree of cooperation and competition. For example, the financial institutions that use the clearing and settlement services provided in the wholesale market typically cooperate in setting service standards, operating rules and procedures, and acceptable pricing methodologies. They may also cooperate with payment system operators in setting interoperability standards between competing infrastructures. Conversely, these financial institutions compete with each other in providing payment instruments and services to end users in the retail market on price, risk-sharing and service agreements.

Individually, banks are generally unwilling, however, to unilaterally introduce new payment instruments and services, or make changes to rules and procedures that might cause them to lose customers to a competitor. This would be the case even if they could see some benefit to the system overall. At times, this competitive attitude can create a need for public intervention to facilitate coordinated and cooperative action. Consequently, a challenge in developing effective markets for payment services is finding and then promoting the right balance of cooperation and competition for each market. The various payment service markets have different features that can either enhance or limit their efficiency, stability and future development through their effects on the cooperation competition balance.

(iii) Market structure and conduct

Some markets that feature interdependencies characterised as "network externalities" for the participants in the market, are often the most challenging to develop. Debit card or shared ATM networks and large-value payment systems are examples. These network interdependencies create joint costs, risks and benefits to network participation beyond those directly accruing to the individual participants. As new participants join the network, the existing members share in new revenue opportunities and lower participation costs. However, other externalities may discourage individual participants from investing in new service technologies, service standards or interoperability arrangements for the network. For example, if individual participants consider their cost or financial risk of investing in a new technology or new risk control procedure excessive relative to the value of benefits they expect to receive, there may be little incentive to invest. Even if only some of the participants are unwilling to invest, others are often reluctant to proceed. The benefits from their investment would be shared system-wide and the investment could effectively subsidise the participants that compete in related service markets but did not themselves invest. In this case, cooperation regarding the appropriate allocation and recovery of capital and operating costs in relation to benefits is critical for all participants.

Some institutions, often those with relatively low payment volumes, acquire necessary payment infrastructure services indirectly through others that participate directly in an infrastructure network. Even though all these institutions may actually compete against each other in some retail markets for end user services, the institutions that choose to participate indirectly in the wholesale market usually do so for reasons of cost efficiency. These indirect participants accept the risk that the institution connecting it into the infrastructure may have mixed incentives in negotiating contract prices, service levels and risk-sharing arrangements, which might put the indirect participant at a competitive disadvantage in end user markets. Competition in providing indirect participants with access services to wholesale markets can help limit this market risk.

The consolidation of similar payment infrastructures into a single service provider is another example. This could cut operating costs for market participants over the near term but could also reduce incentives to invest in new cost-saving, risk-mitigating or service-enhancing technologies for the future. Competing providers in wholesale markets can help encourage innovation in service technologies and service quality for users. But infrastructures that are not linked to existing complementary arrangements, such as an interbank settlement network, or to similar arrangements in other regions, can sometimes fragment payment service markets. The convenience for users may be lower system-wide and, if market size is limited, the effects on user costs from competing systems might be offset by the higher operating costs for each individual system due to fragmentation.

Implementation: Practical strategies for implementing this guideline should focus on the four core properties of an effective market arrangement: (i) the coordination of activities among the service users and providers in individual and interrelated payment service markets; (ii) efficient market pricing conditions; (iii) transparency and market education about payment instruments and services; and (iv) fair and equitable opportunities and incentives for similar individuals and organisations to participate in the same payment service markets.

(i) Develop mechanisms for market coordination

Market coordination requires that service providers and users have the opportunity to accept, reject or negotiate the terms and conditions for payment services. In practice, this is done through representative banking, business and consumer groups and not just on an individual user and provider basis. Clear direction as to the acceptable balance between cooperation and competition within industry groups, such as a national banking association, and between industry and consumer groups would be required for retail and wholesale payment service markets. Together, the banking and other groups can help develop an effective operating framework for payment service markets by formulating the market conventions, standards and procedures for market transactions. An example of such a cooperative group is Germany's Central Credit Committee, described in Box 12.

Box 12

Country example: Germany's Central Credit Committee

The **Central Credit Committee** (CCC) of the banking industry is one of the most important forums for discussing banking and payment issues in Germany. Within the CCC:

- the Business Management Sub-Committee is responsible for legal issues, standards and regulations for payments and payment systems; and
- its Working Group on Automation (chaired by the Bundesbank) coordinates discussions on enhancing payment efficiency and safety.

The Bundesbank cooperates closely with banking industry groups on payment matters and relies on them to:

- initiate and implement payment system standards and state-of-the-art technologies; and
- establish industry-wide agreements relating to operational, technical and legal standards for payments and payment processing, which legally bind the Bundesbank and the banking associations' members.

Examples of specific contributions to market development through cooperation among these groups would be: (i) industry codes of business conduct and consumer protection for payment service providers; (ii) format standards for payment instruments; (iii) coordination of schedules among providers for the introduction of and changes to payment systems; and (iv) formulation of model contracts for payment services. Model contracts need not be mandatory but should propose which terms and conditions are standard and which are bank-specific and potentially negotiable, such as price and service levels. These groups can also be influential in the development of new laws governing payment service markets since they provide a forum for obtaining consensus among individual market participants and a focus group for consultation by the authorities.

(ii) Promote market-efficient pricing conditions

Market conditions that foster "fair" and "efficient" pricing in payment service markets are a key part of the foundation of a safe and efficient national payment system. Efficiency in pricing depends partly on the basic structural arrangements of a market and partly on producer costs. Generally, efficient pricing strategies for payment services would reflect:

- significant costs of organising, producing and delivering payment instruments or services to its users;
- the price of any existing near-substitutes, allowing for differences in user convenience and service quality;
- for payment infrastructure services, the effects of positive and negative network externalities on network participants and service providers.

In payment systems, different service markets have different structural arrangements and, therefore, efficient market pricing strategies can also differ across markets. For example, efficient pricing in markets with network services may involve pricing schemes that feature fixed access fees plus transaction or volume-based fees. It might also involve differential pricing for different participants - such as acquirers and card-issuers in card payment systems. As these markets mature, the value of external effects on different participants can also change. Thus, relative user prices in markets for network service may need to change to preserve efficient pricing. Where there is clear evidence of market failure in efficient pricing, authorities will have to consider feasible policy actions that, together with other market conditions described below, may help establish conditions for efficient pricing.

(iii) Develop mechanisms for market education and transparency

Markets do not simply emerge because new payment instruments or services become available. Potential users need to be attracted to the new instrument or service and be educated about its properties in relation to their needs. Market education and transparency promote effective market competition and discipline by making relevant information accessible and clear.

With regard to market education, banks as a group could develop and distribute basic educational materials on new instruments and services for customers. Individual banks could supplement this material with pamphlets or notices on their own brand version of this new service to their own customers, subject of course to "truth in advertising" regulations. In simple fashion, these would explain: (i) procedures for acquiring the service; (ii) improvements it brings in convenience, cost and security of payments; and (iii) responsibilities of users and their liabilities related to misuse of the service. Similarly, for new payment infrastructure services, educational and training programmes developed by the operator of the infrastructure and the banking association are critical to the development of user demand during the rollout of new services.

Also critical to market effectiveness is information on: (i) competition and consumer protection laws, including complaint and resolution procedures and costs; (ii) contract standards for payment services, especially with regard to consumer rights and provider obligations; (iii) clear disclosure of bank-specific contract terms and conditions, particularly user fees and service levels; and (iv) industry codes of conduct and practices. Other useful information for service providers and central banks especially is periodic data on payment volumes and values through the various infrastructures and on instrument usage in various financial and commercial transactions. Accompanying information on indicative user pricing for various payment instruments and services would also furnish valuable market benchmarks for service users and providers.

(iv) Develop conditions for appropriate market access

While effective payment service market organisation and transparency may involve cooperative group behaviour, market transactions are still between a single service provider and user. Individual users have choice and some degree of market sovereignty, and providers are subject to some degree of market discipline if similar participants have equitable access to the organised service markets. This implies that similar participants face the same market conditions for access, pricing and risk-sharing. Some of these conditions would be based on market regulation, others on market practices.

Access conditions are possibly the most influential factor determining the balance between cooperation and competition in the various markets. Broad access to markets with relatively few regulatory restrictions on participation generally promotes competitive efficiency. However, the appropriate degree of openness for direct participation could differ according to the specific type of payment service market. In certain systems, for example, some prudential restrictions on access are often needed. The cooperation required for safe and efficient payment systems is generally enhanced by the participation of institutions with similar prudential regulation since some form of financial risk-sharing is usually involved. Thus, only banks and similarly regulated financial institutions generally participate in payment clearing and settlement arrangements.

Market restrictions unrelated to risk containment and to regulatory barriers can exist in some cases. For example, existing participants in a payment infrastructure may propose system rules that deter entry by potential competitors. ”Fair competition” policies can help maintain an appropriate cooperative/competitive balance in these service markets.

(v) Central bank contributions

Market development can take time and involve substantial change and cost. Nevertheless, the central bank can play a useful role in all of the implementation approaches to market development. For example, the central bank may cooperate and even participate with the banking association and other industry groups as a catalyst for developing appropriate market conditions. It can ensure that issues related to the development of various payment service markets become part of the agenda for the relevant groups, including ”fair competition” policies between service providers. The central bank can promote market transparency, by proposing legal reforms or voluntary agreements that would require payment service providers to disclose the terms and conditions of their service agreements and that would develop effective resolution and enforcement mechanisms.

Within its oversight role and where relevant to its oversight objectives, the central bank can, for example, collaborate with other authorities to propose that general competition and consumer protection laws be extended to payment and related banking service markets in the absence of the relevant bank-specific laws. If it has specific authority, the central bank can extend competition and consumer protection regulations to payment service markets and could even encourage banking associations to set up their own consumer complaint and resolution facility to complement an industry code for consumer protection.

Where banks are reluctant to act individually because of competitive concerns, the central bank can promote voluntary system-wide agreements, or mandatory regulation, and coordinate action. Central banks need to recognise, however, that an absence of sufficient market demand for a particular instrument and service, or a willingness to provide them, is not always evidence of a market failure that would require them to intervene with market regulation or to become the direct service provider. Market conditions may simply not yet be sufficiently developed and market participants not yet sufficiently informed about the initiative. A central bank's catalyst role as an educator, coordinator and collaborator might be more suited to this type of problem.

With respect to market education and awareness, the central bank can, for example, publish and discuss policy research studies on safety and efficiency in the payment system. It can contribute to complementary publications by banking associations, infrastructures and relevant public agencies to help inform them and the general public about emerging developments in the payment system. The central bank can also help coordinate the gathering and processing of relevant market information and data by negotiating reporting formats and schedules. Since there are costs to gathering, processing and publishing this information, there is often reluctance on the part of industry groups and their members to provide it. Even so, industry-wide information on payment instrument and service usage allows individual payment service providers to assess their own competitiveness and plan their own particular business and market strategies. Where necessary, and in compliance with confidentiality agreements with individual institutions, the central bank might even process and publish the data on the industry's behalf.

Finally, a central bank can also promote market development through its other payment system roles. As a user of payment services, the central bank can, where appropriate to its own transactions, adapt its payment programmes and, if possible, those of its customers (including government agencies) to new products and services to provide some leadership in market development. The central bank can also take the lead on access to markets by ensuring that, as a service provider, its own service contracts are non-discriminatory for all eligible participants of the same class and as standardised as they can possibly be. It might also lead through example by publishing information on its own payment services and on the terms and conditions for access to its own payment systems and services, including cost recovery policies and schedules of service fees.

Guideline 8. Involve relevant stakeholders: *encourage the development of effective consultation among relevant stakeholders in the national payment system.*

Explanation: As indicated in the previous guidelines, consultation with stakeholders is an important tool for strategic planning and for the development of effective payment service markets. It fosters cooperation and commitment as a vehicle to inform central banks and other key stakeholders on policy issues, proposals and initiatives for payment system development. It is also an effective vehicle for acquiring information on emerging trends and developments.

The relevant stakeholders involved in a consultation process, besides the central bank, can include: (i) banking, securities and payment associations, as well as some of their principal industry participants; (ii) financial infrastructure organisations such as payment system operators and, for some topics, securities exchanges and securities settlement system operators, and (iii) consumer, retail, private and public sector cash management associations. Consultation with other public authorities is discussed in Guideline 9.

Consultations can take place in both structured groups and less formal arrangements. Structured bilateral and multilateral consultations are powerful tools for developing consensus on the common goals and broad directions of reforms. Organising consultation on a structured basis can also help develop the understanding and trust among the key stakeholder groups necessary for future development.

Implementation: An important goal for the consultation process is to keep the dialogue alive and relevant to the particular discussion forum involved. Consultation processes can involve more than one structural and organisational approach, depending on the specific purpose of consultation and types of participants. As the payment system evolves, the most effective arrangements for consultation often evolve as well.

(i) Organise consultation processes around purposes

Various types of payment advisory groups have been established in many countries. They usually function as a high-level, forward-looking, strategic group to: (i) organise background information and research on payment system issues; and (ii) advise on policy initiatives to resolve these issues and facilitate ongoing development in the national payment system. Participants in these advisory groups represent institutions that play multiple roles in the payment system. They can often bring to the discussion a comprehensive and coordinated view on critical issues in payment system development from the different perspectives of payment, treasury and securities operations and payment service development. Moreover, consultation with consumer and business groups can be important since they are the ultimate users of payment services.

Cooperative regional bodies of central banks, such as the World Bank/CEMLA group described in Box 13, are also being organised for similar purposes to those of the payment advisory groups.

Box 13

Regional example: cooperation in payment and securities settlement systems

In 1999, the World Bank, in partnership with the Centre for Latin American Monetary Studies (CEMLA), launched the Western Hemisphere Payments and Securities Clearance and Settlement Initiative (WHI). A core element of the initiative is the International Advisory Council (IAC) comprised of experts in the field from several institutions outside the region, including international organisations, central banks and securities commissions. In 2003, the WHI evolved into a permanent forum managed jointly by the Working Group on Payment System Issues of Latin America and the Caribbean (WGPS-LAC), created under the auspices of the WHI, CEMLA, the Council of Securities Regulators of the Americas (COSRA), the World Bank and the IAC.

The objective of the forum is to describe and assess the payment and securities settlement systems of the western hemisphere with a view to identifying possible measures for improving their safety, efficiency and integrity. To carry out this mandate and help ensure quality and effectiveness, all studies are conducted with the active participation of country officials and build on the existing work in the respective countries. In addition, through the IAC, international and national experts provide guidance, advice and alternatives to current practices.

Following this model, the World Bank and regional central banks launched, in 2004 the Commonwealth of Independent States Payments and Securities Settlement Initiative, and in 2005 the Arab Payments and Securities Settlement Initiative, in cooperation with the Arab Monetary Fund.

Other consultative groups can be established as specific forums with more focused interests in particular elements of payment system development. Such forums may cover: (i) strategic planning; (ii) payment technologies and standards; and (iii) market development and risk management. To be effective, all consultation arrangements need to balance sufficiently broad representation within the target group with a workable number of participants.

(*ii*) *Central bank contributions*

As the core institution in the payment system, the central bank is generally a participant in many payment system consultation vehicles. Indeed, the central bank is often the organiser of the payment advisory forum and one of the co-organisers of other structured consultation processes along with banking and other industry associations. The central bank, with its broad expertise, can help focus discussions on issues most relevant to the particular consultation group and promote a culture of vision, inclusiveness, and receptiveness and an orientation to action.

On development projects and policy reforms directly relevant to its various roles in the payment system, the central bank may also supplement its direct discussions in consultation groups with formal public consultation. In this process, the central bank publicly announces the proposed reform and sets a time limit over which it is willing to receive comments and suggestions from interested parties to help finalise its decision. This process helps ensure that central banks receive broad-based advice from a wider range of interested parties than just institutions participating in the system. It might also encourage payment and banking associations to follow the same process for significant reforms that they initiate in the payment system.

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

Explanation: Although the central bank has oversight responsibility for the national payment system, it may not be the only public agency with influence on the system. In many countries, other authorities and regulatory agencies can influence the efficiency and competitiveness of payment service markets and the risk management practices and customer relations of various financial institutions providing services in them. These agencies include:

- banking supervisors that assess and regulate the financial risk management practices of financial institutions participating in market arrangements and providing payment services to end users;
- securities regulators and self-regulatory organisations (SROs) that deal with the customer service and prudential risk management practices of securities brokers and fund managers and with some aspects of the business conduct of securities organisations;
- competition regulators that focus on anti-competitive business practices of various types of business organisations, including those that provide payment infrastructure services;
- Treasury or Finance Ministry departments that sponsor the legislation and other statutory instruments underpinning the legal and regulatory framework for the payment system; and
- consumer affairs agencies that influence contract terms for payment accounts and services and protect the contractual rights of customers of their financial institutions.

In some countries, these regulatory responsibilities for the financial system are spread over separate agencies. In others, many of these functions may be assigned solely to the central bank, although they are usually the responsibility of different divisions. Where the mandates of the central bank's overseers and other authorities have the greatest synergies, the collaborative arrangements could be structured for regular interaction.

The development of the national payment system can be more efficient when central banks and other regulatory authorities coordinate relevant policy initiatives. Combining the payment system-specific expertise of the central bank with the other authorities' expertise on other aspects of financial institutions' operations and market conduct can often improve the quality of public policy affecting payment systems. For example, other authorities may at times have prudential banking and fiscal policy objectives that they wish to pursue as part of payment system reforms. Some of these proposed reforms may, however, unintentionally diminish the safety and efficiency of the national payment system. Collaborative arrangements can help avoid this problem.

Implementation: The purposes of collaborative arrangements between central banks and other authorities could be to: (i) discuss payment system development trends, issues and initiatives; (ii) consider their interaction with existing laws and regulations and implications for new ones; and (iii) coordinate regulatory and payment system oversight policies to facilitate and influence system development. Collaborative arrangements exist in several countries, and also internationally between countries. They are most commonly organised around payment and settlement system overseers, banking supervisors and securities regulators. In some countries, they include competition or Treasury authorities, and consumer affairs agencies if their mandates can directly influence payment systems and their market arrangements.

(i) Structures for collaborative arrangements

Collaborative arrangements have different forms. The form may depend on the constitutional and administrative arrangements of the country's governance and on the preferences of the participating agencies. Some are formal - through statute or memoranda of understanding - and multilateral. Others are informal, ad hoc and bilateral. Box 14 outlines some basic elements of a structured collaborative arrangement.

(ii) Information sharing agreements

Since the purpose of policy coordination arrangements is to improve the consistency and quality of financial policy as it affects payment systems, this may require agreements to share information among the relevant agencies. Information disclosure and reporting agreements between the individual regulatory authorities and their regulated entities might need to be established or amended to allow the regulatory body to share confidential regulatory information relevant to the payment system.

Box 14
Basis for collaboration between authorities

Collaborative arrangements could:

- outline motivation and purpose (eg ad hoc or standing, mutual exchange of information, advisory or policy coordination) of the committee;
- state the organising principles:
  - autonomy with respect to individual statutory responsibilities;
  - compliance with generally accepted principles for cooperative oversight arrangements (eg Lamfalussy Report (1990), CPSS oversight principles (2005));
- detail its organisational structure and state its general practice guidelines, including:
  - primary organiser;
  - level of participation;
  - determination of agenda;
  - responsibilities and commitments of participants;
  - transparency of discussions and recommendations;
  - communication policy.

(iii) Central bank contributions

The central bank, focusing on the best policy interests of the payment system, would be expected to take a lead in promoting any necessary change in the public sector's inter-agency cooperation. Where bilateral or multilateral arrangements involving other agencies already exist for reasons other than payments policy, such as financial sector committees or financial system stability committees, central banks could propose incorporation of payment system policy discussions when required. If there are no such arrangements, the central bank could organise an arrangement for periodic meetings between payment system overseers, banking supervisors and other relevant agencies to coordinate policy for payment system developments. Where the central bank has responsibility for several of these functions, internal committees could be established for effective coordination of payment system policies.

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

Explanation: The legal framework for a national payment system is the body of law which determines the rights and obligations of parties in the system. It can be established by legislation or other statutory instruments, common law, administrative law, contracts (including system rules), or international treaties and regulations. It also deals with the transfer procedures and resolution of disputes regarding instruments, services, organisational arrangements and governance procedures for transferring and settling obligations with finality. A sound legal framework for the national payment system reduces the legal uncertainty and risk for the participants in payment infrastructures and service markets. Box 15 outlines a basic legal framework for the national payment system.

The legal framework involves laws of general applicability (such as property, contract, corporate and insolvency laws) that affect the payment system, as well as those that are specific to it (such as payment legislation, netting laws and clearing house rules). In addition, it includes the legislative and judicial arrangements for establishing, interpreting, adjudicating and enforcing those laws. Annex 4 lists the types of laws and regulations generally considered important in the legal framework of a national payment system and provides some examples of them.

Box 15

A basic legal framework

Laws of general application which support a payment system:

- Property and contract laws - established through common law (jurisprudence) or applicable legislation (including a civil code) that create legally enforceable rights and obligations to make and receive payment.
- Banking and finance laws - establishing the rights and obligations of financial institutions to take deposits, make loans, grant and take collateral security, and hold and deal in securities.
- Insolvency laws - establishing the rights and obligations of creditors of an insolvent entity.
- Laws on the use of credit and collateral - including credit terms (interest rates, duration, rights on default), debtor's rights, and the creation, realisation and priority ranking of rights in collateral.
- Laws for determining which jurisdiction's laws apply - including contractual choice of law clauses and conflict of laws rules.
- Laws on electronic documents and digital signatures.

Laws specific to payment systems:

- Laws specific to payment instruments - including currency laws, bill of exchange and cheque laws, electronic payments laws, regulations against unfair payment instruments and services, and rules establishing instrument standards (size, configuration, coding).
- Laws relating to the calculation and discharge of payment obligations - including netting, novation, finality of payment and settlement.
- Laws on default proceedings and disputes in payments - priority ranking of payment settlement claims, settlement guarantees and loss allocation agreements, priority rights to collateral for settlement credit, evidence laws regarding electronic payments, and dispute resolution mechanisms such as arbitration clauses.
- Laws related to central bank roles, responsibilities and authority in the national payment system.
- Laws relating to the formation and conduct of infrastructure service providers and markets - formation and operation of clearing and settlement arrangements, access and participation in infrastructure systems, pricing of infrastructure services, rules on the issuance and redemption of e-money, and protection of central counterparties from risk.
- Laws governing securities infrastructure services - addressing dematerialisation and immobilisation of securities, book-entry holding and transfer of securities, delivery versus payment, finality of transfer and settlement.

Implementation: At a minimum, a basic framework of laws of general applicability is necessary for safe and efficient payment system development. If not already in place, particular priorities for legal reform should be property and contract laws, banking and finance laws and insolvency laws. Some of the key issues that should be considered to guide these reforms are the following:

- the control of legal risk to users, participants and providers through general contract instruments;
- the recognition of basic contractual rights and obligations among participants in payment systems, and rights and obligations of creditors under insolvency laws; and
- the additional legal risks in using the same applications of general law to accomplish specific public policy objectives other than legal risk control in payments.

(i) Adapt the legal framework to system development

The type of legal instrument (private contract or public legislation) should be appropriate to the needs of the system. As the payment system develops, so too must the legal framework. Legal reform in the payment system could be based on relevant "model" laws developed by international legal organisations or comparable to laws of other countries, adapted to the particular legal regime in force. It is especially important that the legal framework effectively support a country's international agreements on payments-related issues. However, other institutional and infrastructure reform initiatives should not be delayed by slow-moving legal reforms. Legal instruments such as contractual agreements could be used to bridge the time intervals between the faster-paced completion of system reforms and more satisfactory legal reforms.

As the system develops, laws of general applicability may need to be supported by payment-specific laws. For example, for systemically important payment systems, legal risk control for the system and its participants may move beyond the capability of general contract law. In this case, specific payment legislation can provide a degree of certainty that contracts and the common law cannot.

An appropriate legal framework is particularly critical for systemically important payment systems and securities settlement systems. The exposure of the participants in these systems to extremely large potential losses relative to their liquidity and capital positions subjects them to the risk of systemic failures in the event of legal challenges. Such systems should have sound legal protection for finality, payment netting, settlement and collateral security to ensure the certainty of settlement and limit system-wide losses in the event of a default.

As the range of participants in the payment system expands, contractual rules among payment system participants may still be sufficient to govern their mutual rights and obligations in the event of the insolvency of a system participant. They cannot be relied on, however, to govern the rights and obligations of indirect participants or non-participants in the system that also may have competing claims on the estate of the bankrupt participant. If this becomes a concern, new legislation, either through amendment to existing laws or new statutes, may be required to deal with it.

(ii) Develop the legal framework through consultation

To be most effective, the legal framework should support positive payment practices and prohibit detrimental ones. It should be flexible enough to keep it relevant and enforceable as new developments arise without frequent and major amendments. Consultation both with the stakeholder groups (service providers, users, system participants) and with regulators and legislators is necessary for fundamental reform to the legal framework. Broad consultation limits the risk of legal initiatives producing unintended consequences. Political momentum for legislative reform related to the payment system also requires effective consultation between legislators and authorities such as the central bank and legal experts.

(iii) Make the legal framework transparent and accessible

In an effective legal framework, the relevant laws are transparent to stakeholders. This requires the clear drafting of legislation, regulations and system rules and the use of widely accepted standard form agreements. The laws and regulations should be publicly available and the critical information in them easily accessible to interested stakeholders. They also need to be well communicated to relevant judicial and enforcement personnel and backed by effective enforcement mechanisms and sanctions through civil, criminal or administrative proceedings.

(iv) Provide a legal basis for central bank functions

The legal framework is also important for the central bank's various functions in the national payment system, especially for its oversight role. Central banks can derive their oversight responsibilities and powers from explicit statutory or contractual instruments or from general agreements on their overall functional mandate. Whatever legal instruments are used, the legal framework for the payment system needs to support the central bank's oversight function. Laws or other legal instruments should be developed to: (i) authorise the central bank to oversee, and possibly regulate, the payment system, including the operations of global payment systems within their own borders; (ii) ensure that financial institutions and payment systems effectively manage their financial and operational risk; and (iii) require various payment systems and financial institutions to conduct operations consistent with applicable regulations.

(v) Central bank contributions

Where there is limited legal expertise on payment systems from other sources, the central bank could help monitor legal developments and identify critical legal issues that may have an impact on the payment system. Under some circumstances, it might even occasionally report publicly to stakeholders on the status of the legal framework for the payment system. In conducting this exercise, especially when the payment system is undergoing significant change in terms of new instruments, market arrangements, and infrastructures, the central bank can help assess whether a particular aspect of a payment system requires reforms or modifications to specific legislation or regulation, or if it can be left to the judicial system, private contract or market practice.

The central bank might need to contribute significantly to the development of the legal framework for its oversight authority in consultation with legislators and other relevant authorities. It might utilise written agreements on oversight objectives, scope and procedures, such as memoranda of understanding or protocols, between the authorities and the payment system operators. Such agreements can be more quickly amended than statutory instruments and can thus serve as an effective basis for new oversight protocols while the legal framework is still undergoing the lengthy process of reform. Where necessary, the central bank should also participate in consultation forums for the drafting of payment system laws or other statutory instruments that are particularly relevant to its oversight objectives. It might even organise ad hoc consultation groups for this purpose.

Suggested references for developing the institutional framework for a payment system

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3.4 Developing the infrastructures for a national payment system

The core infrastructures in a national payment system refer to its transaction, clearing and settlement arrangements. These infrastructures consist of service providers, network facilities, information and computer technologies, operating procedures and rules. They are developed to provide services directly to the financial institutions or, as is sometimes the case for transaction infrastructures, directly to the customers of the participating institutions. As owners, operators, service providers and users of these infrastructures, the central bank and the banking sector are usually the primary co-sponsors in developing the different arrangements outlined in Box 16.

Box 16

Payment infrastructure services

Transaction infrastructure provides services to create, validate and transmit payment instructions by:

- authenticating the identity of the parties involved in the transaction, sometimes using encryption technologies;
- validating the payment instrument against system standards;
- verifying the payer's ability to pay;
- authorising the transfer of funds between the payee's and the payer's financial institutions;
- recording and processing payment information; and
- communicating the information between the institutions.

Clearing infrastructure provides services to transmit, reconcile and in some cases confirm payment instructions between financial institutions and calculate interbank settlement positions by:

- sorting and matching payment instructions between institutions;
- collecting, processing and aggregating payment data for each institution;
- storing payment data reports and transmitting them to each institution; and
- calculating gross or net settlement positions (payables or receivables) for each institution.

Settlement infrastructure provides interbank funds transfer services by:

- collecting and checking the integrity of settlement claims;
- verifying the availability of funds for settlement in the participating institutions' accounts at the settlement bank;
- settling the claims through funds transfers on these accounts at the settlement bank; and
- recording settlement and communicating it to the participating institutions.

These infrastructure services are relevant to all types of payments. However, the specific nature of the services and the design of the infrastructures providing them can vary across national payment systems and even across payment instruments within a national system. The most notable differences in payment infrastructures are between retail payment and large-value payment systems. For example, in retail payment systems, transaction infrastructures are somewhat instrument-specific and, therefore, become more diverse as the system develops. In large-value payment systems, electronic credit transfers are typically the only payment instrument and the transaction infrastructure is generally proprietary to individual banks and highly computerised.

Infrastructure reforms usually involve changes in information processing and communication technologies. The reform process should not, however, be solely technology-driven. Although computer-based information and telecommunications solutions may be the technical core of modern payment system infrastructures, they are but a means and not the reason for development. Improvement in the safety and the efficiency of needed payment infrastructure services is the ultimate objective and the business case for reform should drive the process. Nevertheless, the adoption of available new payment technologies may be the best means of achieving this goal if existing technologies are unable to do so efficiently or reliably.

Reforming retail payment, large-value payment and securities infrastructures can all be critical for a country's financial and economic development. But with limited development resources, where to invest can be a difficult decision. For example, the priority could be either developing automated clearing houses in retail payment systems or developing a specialised large-value payment system.

The large-value payment system could be developed ahead of the securities settlement system, or they could be developed in parallel. Unfortunately, there are no simple, universal answers applicable to every country. Again, the answers depend on a realistic assessment of the current and emerging payment needs and capabilities of each country.

The infrastructure guidelines below focus on general conditions and approaches for:

- developing retail and large-value payment infrastructures;
- planning infrastructure development for securities and large-value payment systems; and
- coordinating the settlement processes of core systems.

Guideline 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.*

Explanation: The development of a country's commercial, industrial and even financial sector generally increases demand for greater diversity and use of non-cash retail payment instruments and services. Reform initiatives in retail payments would need to focus, therefore, on enhancing the availability to private and public users of various retail payment instruments and services and on promoting safe and efficient transaction, clearing and settlement service arrangements. These services can only be supplied through reliable, secure and efficient infrastructure arrangements.

Development initiatives for retail transaction systems might need to aim at:

- expanding availability of payment instruments, both through the day and over more locations;
- widening the range of standardised paper or electronic payment instruments, especially with respect to credit transfer instruments;
- improving the security and confidentiality in the transmission of payment information;
- establishing legally sound service agreements for providers and users with regard to payment accounts and instruments and system participation; and
- improving interoperability among point-of-sale transaction networks for specific types of payment instruments, notably payment card and ATM networks.

For clearing and settlement arrangements, useful development initiatives could involve:

- improving interregional payment clearing and settlement through interconnection of regional clearing houses and, if possible, national clearing facilities;
- integrated settlement account management systems for regional central bank branches and ultimately the development of a nationwide centralised account administration system; and
- setting common standards for particular types of payment instruments, and common clearing house standards and procedures for clearing different types of retail payment instruments.

Important reform initiatives common to all core infrastructures could relate to:

- specifying clear policies that ensure equitable access to infrastructure services, particularly with respect to institutions participating directly in the system;
- improving transparency of pricing policies, operating rules and procedures and operational and financial risks;
- strengthening, where required, risk control and risk-sharing arrangements and the resiliency levels and business contingency plans for network operations; and
- reviewing and, if necessary, strengthening governance to reflect the needs of all participating institutions.

Implementation: The banking sector and other relevant private sector service providers, such as those in the telecommunications industry, will be expected to play a major role in implementing many of these reforms. However, not all infrastructure reforms need to be organised by the banking system. Reforms in some infrastructures, most notably transaction systems, which provide individuals and businesses access to their banks' payment services, can be developed by independently owned third-party operators. These independent operators provide payment network services to individual institutions for common use by their particular individual and business customers. Regardless of who initiates and implements the reforms in retail payment infrastructures, these initiatives may also require institutional changes in: (i) operating rules and procedures for network arrangements; (ii) service market conventions, procedures, agreements and participation; and (iii) the legal framework for retail payment systems.

(i) Standardise, automate and interoperate

There are three general approaches to expanding user access to retail payment instruments through transaction systems and related clearing and settlement arrangements that can, at the same time, enhance the safety and efficiency of these arrangements. These are standardisation of instruments, automation through adoption of information technologies, and interoperability of networks. Box 17 outlines some techniques for implementing these approaches.

Box 17

Development initiatives in retail payment infrastructure

Automated and standardised payment transaction infrastructure: Electronic communication networks, such as those for various types of card payments and for telebank and internet payments, allow customers real-time initiation and authorisation of retail payments. Common initiatives for developing these networks include:

(i) the creation of standardised transaction processes for paper-based instruments;

(ii) the introduction of electronic payment transaction networks that lower user costs; and

(iii) the introduction of technologies and processes that digitise or electronically image paper instruments for electronic clearing and settlement.

Interoperability among transaction infrastructures: The interoperability or consolidation of transaction infrastructures can achieve scale and scope economies and reduce user cost with:

(i) the adoption of common standards for instruments, communication and transmission security for all networks to provide interoperable services;

(ii) the facilitation of interconnectivity among proprietary network arrangements, notably ATM and EFTPOS networks; and

(iii) the adoption of common equipment (eg hardware and switch) and software standards to allow interoperability at point of sale (ie ATMs, card readers, internet connectors) among competing networks.

Interoperable and automated retail payment clearing and settlement infrastructures: Achieved through common interconnected information technology and often through actual centralisation or consolidation of existing arrangements. Common initiatives for developing these infrastructure arrangements include:

(i) the establishment of national or regionally interconnected automated clearing houses to improve the speed and reliability of retail payments; and

(ii) interoperability or centralisation of interbranch and interbank clearing and settlement through regional and national centres.

(ii) Develop supportive institutional arrangements

While many of the reform initiatives for enhanced automation and interoperability seem largely technical and procedural in nature, they may in fact require legal or regulatory changes to proceed. Common examples would include a legal basis for electronic payments and authorisation of non-bank payment service providers. The stakeholder consultation and policy coordination mechanisms involving private and public sector organisations discussed in Guideline 8 should be used to initiate and facilitate the elimination of any legal and regulatory barriers to market access, automation and interoperability. This consultation and coordination can also provide a vehicle for training and education of system participants that use the new technologies and services.

Key legal and regulatory barriers that may need to be addressed include those that effectively prevent:

- the authorisation of non-bank providers of retail payment instruments and transaction services to end users or even their indirect access to clearing arrangements;
- the digitisation, imaging and migration of paper instruments into standardised electronic payments;
- the migration of some large-value payments, such as government payments, to safe and efficient instruments and infrastructure systems; and

- the full adoption of accepted international standards for electronic payments and infrastructure design.

New rules, procedures and marketing strategies could further encourage the demand for newly developed payment instruments and services and the migration of payments to these new arrangements. For example, some countries have developed clearing house rules that prohibit the clearing of large-value paper-based payment instruments to encourage banks and their customers to migrate large-value payments from retail clearing and settlement systems to more safe and efficient large-value payment systems. Other countries that have developed automated clearing houses for the electronic processing of direct debit and credit transfers prohibit the transfer of paper-based items, such as paper cheques, in the clearing process to encourage the development of cheque truncation and electronic presentment and the use of electronic debit and credit transfers.

(iii) Central bank contributions

The central bank may need to contribute to the process and, possibly, take a lead role in catalysing the private sector and the authorities to undertake certain reforms. For the appropriate types of payments (eg salary and commercial retail payments), central banks might become active users of new cost-efficient and secure retail payment instruments and infrastructures. Moreover, as a fiscal agent of the government, the central bank could advise it on the best procedures for transacting, clearing and settling its retail payments through these emerging systems. These government payments would not only transact, clear and settle more efficiently and securely but might also help establish new initiatives for improving infrastructures and even prompt further ones.

The central bank can also facilitate some of these reforms through its operational function. For example, the central bank should at least provide facilities to settle interbank obligations arising from the banking system's retail payment operations. Minimum facilities would include settlement accounts and appropriate arrangements for central bank credit. The central bank could also develop policies to allow access to its clearing and settlement facilities for new authorised providers of retail payment instruments and services. In some countries, such minimum actions may even be a mandatory responsibility of the central bank.

The central bank may also operate large-value payment or retail payment infrastructures independently or in conjunction with the banking system. The central bank could review its operational roles in retail payment systems periodically and assess the capability of private markets to perform these functions. Where appropriate, the central bank might consider developing a plan in conjunction with the banking system to outsource and possibly privatise its infrastructure operations in retail payments. At a minimum, it might review and, where necessary, revise its service policies to compete "fairly" with private sector arrangements that provide similar services.

The central bank might also contribute through its oversight and policy role. The central bank could help design and monitor the development of technology-neutral standards for the main retail payment instruments and retail payment infrastructures. To help insulate the retail payment system from systemic risks as the value and volume of large-value payments rise, and where there is a large-value payment system in place, the central bank might consider setting limits on the value of individual payments that are acceptable for retail payment clearing and settlement.

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

Explanation: As the development of financial markets progresses, a large-value payment system becomes the most appropriate infrastructure for interbank payment transfers. As financial markets develop, an increasing proportion of large-value interbank payments relates to financial transactions. Large-value payments are often time-critical for participants' ongoing financial transactions because of the impact on their intraday liquidity positions.

The value and volume of payment flows associated with financial and some business transactions can, however, be large enough to threaten the liquidity and capital positions of the financial institutions involved directly in the transactions or in the provision of large-value payment services. In a less specialised and more basic system, a default on a settlement obligation by a participant in the settlement network can cause other participants to default on their payment obligations. Such defaults are contagious since they might spill over to "contaminate" other payment networks and financial markets. This risk might become systemic in settlement arrangements not designed to mitigate system-wide and cross-system financial risk. A principal motive, therefore, for developing a system specifically for large-value payments is to control the participants' systemic exposure to potential liquidity and credit losses.

The business case for the type of large-value payment system should be carefully analysed. The design of the system will depend on the specific payment needs and capabilities of the economy. In many cases, large-value payment systems are designed to balance three objectives: (i) the rapid settlement of time-critical payments (regardless of value); (ii) minimisation of systemic risk; and (iii) achievement of the lowest possible operational and liquidity costs for participants.

Although not directly part of a large-value payment system, effective interbank loan markets redistribute central bank funds from those with excess balances to those in need of central bank funds. It can, therefore, facilitate efficient and timely interbank settlement. Moreover, since most financial transactions, not just payment transfers, involve intraday, overnight or short-term credit, an interbank loan market can help institutions to fund the payment liquidity needs of their customers and thus speed payment delivery in end user markets. Finally, as the financial system develops, its need for liquidity may increase. An interbank loan market can help lower each individual bank's need for central bank funds.

Implementation: The three key elements for the implementation of this guideline are: (i) the business case and other analyses during the planning phase; (ii) the appropriate design for a large-value payment system; and (iii) the role of the central bank.

(i) Keep the business case analyses realistic

When considering a new infrastructure, the business case analyses for a large-value payment system should be focused on whether there is an imminent need for developing a specialised large-value payment system or whether the existing clearing and settlement infrastructure can be adapted cost-effectively to clear and settle the current and foreseeable number of large-value payments in the system. In formulating realistic analyses, the following key factors would need to be considered:

- the current and expected volume and value of large-value and time-critical payments;
- the development initiatives for financial markets, including securities and other interbank loan markets, that could spur the demand for large-value payment settlement services;
- the likelihood of systemic risk arising from settlement of large-value payments in the existing settlement system;[3]
- the cost of modifying the existing system to settle both retail payments and large-value or time-critical payments in separate streams relative to the cost of a specialised large-value payment system;
- the nature and cost of the related infrastructure services and credit facilities provided by the central bank in other large-value systems; and
- the importance of a large-value payment system for entry into cross-border trade and financial arrangements and organisations.

The technology costs for installing a large-value payment system with a relatively simple design may not be prohibitive. More significant costs can arise from the required technology and procedural changes within the internal systems of participants and the less visible cost of developing and implementing the necessary institutional reforms.

[3] There are a variety of methods to measure liquidity, credit and systemic risks in a payment system. The simplest ones are backward-looking measures of loss exposure in absolute or relative terms rather than forward-looking measures of probable loss. More sophisticated measures of systemic risk utilise "simulation models" of payment settlement systems that consider the patterns of bilateral payment flows among network participants to evaluate their liquidity and credit loss exposures relative to their liquidity and capital positions and the potential for knock-on effects from participant failures.

(ii) Choose an infrastructure design appropriate for payment needs

The development of the large-value payment system need not always involve substantial changes in the current arrangements. Existing facilities and service technologies may, in some cases, be adapted to the specific requirements for the safe and efficient settlement of large-value payments, including those related to monetary policy transactions. For example, this might involve development of a multi-stream system with at least one of the streams dedicated to large-value and time-critical payments. However, if the large-value payment system were developed within an existing infrastructure, it would need to have separate rules and risk mitigation controls designed specifically for safe and efficient settlement of such payments.

A realistic analysis might, however, indicate the need for a separate specialised large-value payment system. The 2005 CPSS report entitled *New developments in large-value payment systems* describes various designs for specialised large-value payment systems. It examines different types of real-time gross settlement systems (RTGS) and other types of systems that combine the features of RTGS and deferred net settlement systems.

Regardless of the design chosen, risks in large-value payment systems should be managed to be fully compliant with the CPSS Core Principles for Systemically Important Payment Systems (CPSIPS (2001)).[4] The financial risk containment in all of these systems requires a well founded legal basis including: (i) finality of interbank settlement and the underlying individual payment; (ii) netting arrangements; and (iii) collateral security for credit, liquidity provision, loss-sharing and settlement guarantees. Operational risk containment would involve sound business continuity arrangements in accordance with emerging international "best practices" regarding backup facilities, maximum recovery times, physical site security, information security and cyber-security. Liquidity and credit risk should also be identified and effectively managed, and the settlement asset should be central bank money or other safe assets. Mechanisms, such as queuing algorithms or netting arrangements, should be consistent with the risk containment mechanisms and compatible with their legal basis.

When establishing a new system, start with what is most necessary to meet the specific needs of its users. The design should be flexible and scalable enough to meet developing future needs. But, participating financial institutions with limited resources may need some time to smooth their investment in more sophisticated modules and human resource training.

(iii) Central bank contributions

The central bank will need to contribute substantially to the development of a large-value payment system. For example, in terms of its operational role, the central bank should, at a minimum, develop its own facilities to provide: (i) deposit accounts to use as the settlement asset between participating institutions; (ii) intraday and overnight settlement credit to network participants; and (iii) expertise on the design of risk control and risk management procedures for the system. Typically, its operational role in large-value payment systems is even more extensive. Central banks could own or operate a large-value payment system. In many countries, there is one specialised large-value payment system, while some other countries have more than one.

Central banks choose to own and operate a large-value payment system for various reasons. In some cases, the design of the system - a real-time gross settlement system, for example - can be easily integrated with the central bank's internal systems for operating and managing the settlement and credit accounts that financial institutions hold with it. It may also be efficient for specifically preferred monetary policy implementation procedures if the central bank operates the large-value payment system. Indeed, whether or not the central bank operates the system, all its monetary policy transactions and other interbank transactions, as well as the large-value and bulk payments of government agencies, should settle through any existing safe and efficient large-value system. Finally, because of the systemic importance of a large-value payment system to the financial system generally, the central bank may choose to operate a large-value system directly to better ensure and enforce compliance of participants with the rules and procedures.

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4 Since the Core Principles outline minimum standards, the authorities in a national payment system may choose to adopt more stringent standards to limit operational and financial risks in their large-value payment infrastructure and other related critical systems.

Whether a large-value payment system is privately run, or owned and operated by the central bank, the central bank should oversee it. The central bank's oversight of a large-value payment system should utilise accepted international standards for the design and operation of these systems, such as the CPSS Core Principles. In doing so, a central bank could consider: (i) the legal basis supporting the system; (ii) technical, procedural and organisational design for managing credit, liquidity and operational risks; (iii) efficiency of the system, for example service levels for settlement participants and possibly the pricing policies and methodologies; (iv) the terms for access to settlement facilities; and (v) the system's governance arrangements.

In designing and reforming a large-value payment system, even one that it might not own or operate, the central bank can also perform effectively as a catalyst for necessary action by other organisations and authorities. For example, it could facilitate consultation with:

- banking organisations, to help identify and assess their specific needs and preferences for different cost-saving and risk mitigation features for a large-value payment system;
- IT experts and service providers, to develop specific IT solutions;
- legal experts and relevant regulatory agencies, to formulate a sound legal and regulatory framework for a large-value payment system; and
- securities authorities and organisations, to help integrate the large-value payment and securities system infrastructures to facilitate safe and efficient payment for financial transactions.

Although it is principally cooperation within the banking system that would be required for developing technologies, procedures, standardised contracts and market conventions for acquiring and transferring interbank funds, the central bank could also assist in the development of interbank credit markets. The central bank should also recognise the influence of its credit policies on the development of interbank credit markets. Where necessary, it could revise its policies and improve its internal operating systems to facilitate interbank funds transfers on settlement accounts related to interbank lending and other money market transactions.

Guideline 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.*

Explanation: As outlined in Box 18, the infrastructures for securities systems can involve separate organisations for the provision of the securities transaction, registration, custody, depository, clearing and settlement services.

Securities systems and large-value payment systems are mutually dependent. To achieve delivery versus payment (DVP), settlement of the securities leg in the securities settlement system is conditional on settlement of the cash leg, normally in a large-value payment system. In parallel, credit extensions in large-value payment systems are often dependent on the provision of collateralthrough a securities system. Therefore, the interaction between these infrastructures needs to be cost-efficient, reliable and secure.

The rules and procedures for securities settlement and large-value payment systems should be developed to satisfy their mutual objectives of safe and efficient settlement of securities and payments. In addition, the timing of finality in one system should be consistent with that in the other system. As a result, the infrastructures for securities and large-value payments cannot be developed in isolation from one another.

Box 18

Infrastructure for the securities system

Trading systems

- Retail trading systems link customers to dealers through a variety of dedicated telecommunications systems for order placement and confirmation, and link the dealers involved in the customer trades through a variety of centralised and decentralised transaction systems. They are accessible only to participating dealers and now usually involve electronic trading and trade administration systems.
- Wholesale trading systems are designed for large-volume-and-value inter-dealer transactions, often for the dealers' own account. The most basic systems are telephone or computer-based and screen-based broker systems.
- Other systems, sometimes called alternative trading systems, feature quote-driven, electronic order book and trade matching systems. Retail systems directly accessible to individual customers display customer trade bid-ask quotes and volumes and the bilateral trades are entered and confirmed through internet-based connections to the network's central facility. Similar systems are also used for inter-dealer trades.

Registration and custody

- Securities registration is a service provided to a securities issuer, for each security issued, to record the identity of securities owners and their positions for the purposes of distributing entitlements (interest and dividend payments, rights, warrants and options) to holders. Securities registrars may also issue the physical or electronic securities certificates to the registered holders or their registered agents (ie brokers, investment dealers or custodians acting as nominee holders).
- Securities custody is a service provided to securities holders (owners and collateral holders) or their agents to manage their securities inventory accounts and to provide physical or book-entry transfer services related to these holdings. Custody banks also provide securities account administration services to their customers.
- Banks providing custody services may also provide payment-related services to their customers.

Securities depositories

- A securities depository is an institution that holds securities for its members, which generally include custody banks and agents, brokers, investment dealers and investment fund managers. Each member may have securities accounts with the institution.
- Different securities depositories generally have correspondent accounts directly with one another, or through a common custody bank, to facilitate inter-institution delivery through book-entry transfers.
- All inter-member transfers are usually book-entry transfers (ie no physical delivery), and the securities issued may not only be immobilised within the depository but might also be "dematerialised" - issued in book-entry form rather than physical form by the issuer and its registrar.

Securities settlement system

- A securities settlement system (SSS) provides securities clearing and settlement services to its members. Settlement members may include the central bank, commercial and custody banks, brokers, investment dealers and managers. The settlement members hold securities accounts, and possibly a cash/collateral account, with the institution operating the securities settlement system or its settlement agent.
- Securities clearing and settlement involves the calculation of the mutual obligations of the transacting members for securities and cash delivery arising from confirmed trades in various securities. The securities may be settled on an individual transaction (trade-by-trade) basis or on a net basis for each security, with corresponding debits in the transacting members' securities and cash/collateral account in the system. The transfer of the securities obligations is against cash payment (now usually on a delivery-versus-payment basis) on the settlement date.
- In some systems, an entity called a central counterparty (CCP) becomes the legal counterparty for all settlement members in some types of system trades. The CCP typically holds a cash settlement account at the settlement agent - the system's settlement bank, often the central bank. It receives funds from settlement members delivering cash and pays out funds to those delivering securities on settlement day.

Implementation: Although the development of the securities settlement system and large-value payment system might preferably coincide, limited resources might well force intensive development of only one of the two. Since large-value payment systems are critical to a broader range of transactions than just those involving traded securities, notably interbank loans and monetary policy transactions, the initial focus for reform and development is generally on the large-value payment system. Even so, with the knowledge that securities system reforms will need to follow, the development of the large-value payment infrastructure and that of the core securities infrastructures need to be planned with each other in mind. Since the general guidance is focused on the development of the national payment system, the focus for the implementation strategies for this particular guideline is primarily on what a large-value payment system would require from the development of securities infrastructures to facilitate safe and efficient large-value payment settlement.

(i) *Promote secure interoperability of core securities infrastructures*

The efficiency, reliability and safety of operations in registration and custody arrangements are as important to the large-value payment system as to the securities clearing and settlement system. In some arrangements, the participant's securities and cash accounts are held in different systems - the securities account in a securities settlement system and the cash accounts in a large-value payment system. To permit delivery versus payment, the information technologies for the large-value payment system and the securities settlement system need to be highly interoperable.

If the various securities infrastructure services are provided by separate organisations, initiatives to improve efficiency between securities and payment systems might therefore include:

- information technologies for book-entry securities transfer rather than physical delivery, to facilitate efficient delivery versus payment and straight through processing, which can reduce processing errors;
- standardisation and interoperability of their information and communication technologies; or
- possibly centralisation of some services, such as securities depository, clearing, settlement and central counterparty services.

Technical integration or organisational centralisation of various services may help reduce those aspects of operating risk related to coordination over disparate systems. But it could also increase the concentration of financial and operating risk into a unified technology platform or a single operating entity. Consequently, the greater the degree of interoperability among core infrastructures for securities and large-value payment systems, the more important are the resiliency features and business continuity arrangements for the infrastructures.

(ii) *Design the securities settlement system for safe and efficient settlement of the payment leg*

There are a number of designs for securities settlement systems that could be interconnected efficiently and securely with large-value payment systems. In some securities settlement systems, the participant holds both securities and a cash account. DVP is simple in such a system for individual transactions but, without legal and financial protection for final settlement, the cash leg of settlement for individual transactions may be more risky than in a system where cash settlement is in central bank funds. Typically, the cash accounts in these systems are funded and defunded through payment transfers settled over large-value payment systems. Securities settlement systems that do not provide participants with a cash account would need to be closely interlinked with a large-value payment system to ensure securities settlement on a DVP basis.

As with large-value payment systems, there are various designs for securities settlement systems that balance safety and efficiency differently within the system. Which design is most suitable for a country depends again on its financial system needs and capabilities, the organisation of other securities infrastructure arrangements and, to some extent, the design of its large-value payment system.

Whatever design of securities settlement system best meets the country's financial system needs and capability, it should be developed to be fully compliant with the CPSS-IOSCO Recommendations for Securities Settlement Systems and Recommendations for Central Counterparties. All would need to provide some form of DVP and finality of securities and payment settlement. Certain designs might also involve a variety of risk management procedures such as: (i) net debit caps and bilateral credit limits; (ii) legally sound collateralisation of settlement obligations with appropriate margins on securities collateral; and (iii) loss allocation mechanisms and settlement guarantees. More elaborate systems could include real-time information on participants' securities and cash settlement positions, which helps participants to manage their securities and cash positions intraday, and operators to assess the availability of funds and securities for transaction settlement.

(iii) *Institutional arrangements needed to facilitate cash settlement of securities transactions*

The legal framework for a securities system should be a priority for institutional reform. It needs to be as sound as that for a large-value payment system, and the two need to be mutually consistent and supportive. A sound legal framework for book-entry securities transfers and registrations should be quickly established along with the legal basis for securities issuance, custody, pledging, and transfer and settlement of securities transactions. Just as for the large-value payment system, a sound legal basis for securities settlement involves: (i) securities settlement finality; (ii) netting and contract novation; (iii) enforceable risk controls, collateral rights and loss-sharing arrangements;

(iv) enforceable securities settlement rules and agreements; and (v) book-entry holding and transfer of securities, which might also involve the dematerialisation of securities.

With respect to relevant service market arrangements for a securities system, the legal, regulatory and policy frameworks for access to core securities settlement and large-value payment infrastructures by common participants need to be coordinated early in the reform process. Contractual arrangements between the service providers in the relevant securities and large-value payment infrastructures and the service users should also be reviewed for legal soundness and functional consistency. Legal and regulatory barriers to access and effective service provision to common participants in the securities and large-value payment systems can counteract the safety and efficiency gains from technical and procedural reforms to integrate them.

(iv) Central bank contributions

The central bank might either develop and operate, or be a significant force in helping the private sector develop and operate, a securities system that can interact efficiently and safely with a large-value payment system. At a minimum, it should be an active collaborator and adviser in the development of the securities clearing and settlement infrastructure and promote necessary reform in the legal and regulatory regime for the securities system. Many of the past reforms have focused initially on government securities, which can be useful in supporting the future use of the securities infrastructure for corporate issues.

Even if it does not operate securities infrastructures, the central bank would need to participate in them and provide services to them. In particular, it should: (i) use the services of the relevant securities infrastructures for its own transactions; (ii) act as settlement bank in the securities system; and (iii) where appropriate, provide credit facilities to financial institutions for securities settlement purposes.

Where relevant to its responsibilities, the central bank should formulate an oversight policy for securities settlement with the principal focus on system-wide risk control. It could also establish an accord with securities regulators regarding the oversight of the securities settlement systems.

Guideline 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.*

Explanation: As the infrastructures for retail payment, securities settlement and large-value payment systems develop, the country's principal financial institutions generally become participants in them all. Settlement in one system can, therefore, affect the safety and efficiency of settlement in the others. Effective coordination of the settlement processes in the core infrastructures can lower liquidity and operating costs, and reduce settlement risks for participating financial institutions. For example, individual retail payments are generally batched and usually settled on a deferred net basis to achieve cost-efficiency. The value of interbank obligations arising from these batched retail payments can be quite large and time-critical, and could be settled between banks in the large-value payment system. Similarly, interbank payment obligations arising from securities and foreign exchange transactions can also be efficiently and securely settled using a large-value payment system.

At the same time, coordination between systems can also increase (i) the interdependency among the systems; (ii) cross-system operational risk; and (iii) the potential for spillover of intraday spikes in liquidity requirements related to unpredictable payment flows in one of the systems. The potential cross-system risks - the legal, operational, financial and systemic risks - need to be monitored and well managed. This would involve appropriate coordination of procedures, designs for inter network connectivity, resiliency programmes and business continuity plans, so that systemic risk and cross-system contagion can be minimised.

Implementation: The two principal issues in implementing this guideline are coordinating settlement schedules and processes, and managing cross-system risk.

(i) Coordinate settlement schedules and processes

Connectivity and coordination of different settlement processes does not require that the separate infrastructures adopt a single technical platform. Systems may be directly connected through software interfaces. The coordination of designated times during the day for the settlement of retail payments and payments related to securities and foreign exchange transactions (eg CLS) using the large-value payment system would depend generally on the operating hours of liquidity markets and the intraday availability of funds. Participants in the large-value payment system need to have sufficient time to fund their intraday settlement requirements smoothly. For example, settlement times for CLS are largely predetermined by CLS based on its operational schedule for settling multiple currencies. Securities systems may need to settle late into the day to accommodate same day money market transactions and collateral transfers for intraday credit in large-value settlement systems. Consequently, interbank settlement of retail payments might need to be scheduled early enough in the day to permit easy access to financing and the opportunity for liquidity repositioning for participants. This suggests that:

- settlement times for various systems need to be carefully scheduled, especially when all settle over the large-value payment system;
- operating rules and procedures for the various systems need to be closely coordinated and, if possible, designed to facilitate straight through processing of payment instructions; and
- operating hours for the various systems and for liquidity markets need to be adjusted to facilitate the coordination of the individual settlement processes.

The reforms in the operating conventions and procedures for liquidity markets will probably need to rely on the institutional mechanisms developed for market coordination, transparency and access.

Figure 4 illustrates interconnectivity among core infrastructures with an example from France.

(ii) Manage the cross-system risk

Identifying the sources of cross-system risk and devising appropriate controls and procedures to manage them is crucial. At the very least, the strategies for managing cross-system risk would need to include:

- agreement on communications standards and formats, preferably through the adoption of recognised international standards;
- cost-effective, rapid and reliable communication links among interrelated systems;
- agreements among the interlinked systems regarding the allocation of legal and financial risks associated with spillover losses from disruption in one of the systems;
- procedures to deal coherently with outages of primary facilities in each system (typically involving backup arrangements), and full system outages (such as emergency use of retail payment systems); and
- procedures to deal with breakdowns in the internal computer systems of the major participants, which break their communications' connectivity to securities systems, the large-value payment system and possibly even retail payment systems.

In addition, the coordination of business continuity plans of all players involved could be organised. For example, this could involve testing of business continuity and contingency arrangements. One example of such testing is where participating institutions fall back on their backup facilities with the aim of assessing the adequacy of their recovery and resumption arrangements.

(iii) Central bank contributions

The responsibility for implementing this guideline would rest primarily with the infrastructure owners, operators and participants, of which the central bank may only be one. However, the central bank needs to accommodate the needs of the system for settlement using central bank services. The central bank could contribute, then, by coordinating its own procedures with those of the other core infrastructures and by providing expertise and advice on the integration initiatives. This could imply even greater flexibility in its existing operating procedures and hours of operation and in its willingness to adopt new service technologies and procedures to facilitate new settlement arrangements in the core infrastructures.

The central bank should also facilitate the discussions and actions among the operators of various infrastructures involved in coordinated settlement arrangements. Its principal focus could be the development of a coherent, system-wide strategy for managing integration and operational risk across the core infrastructures.

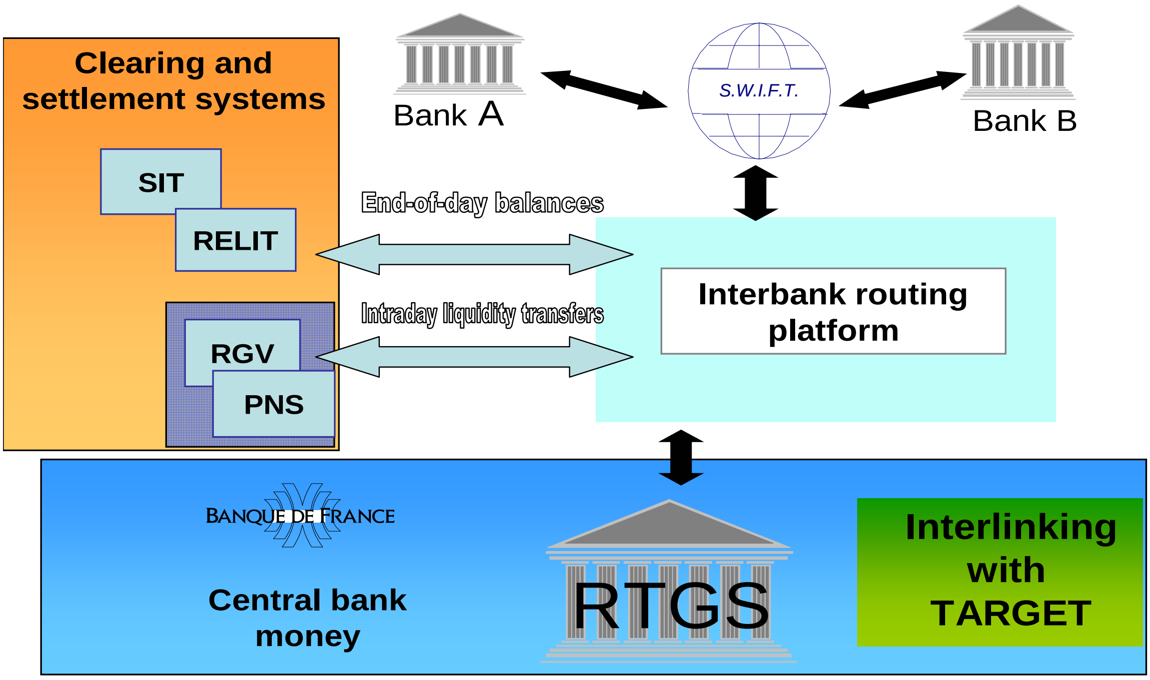
Figure 4

Country example: integration of infrastructures in France

Infrastructures

The French payment system architecture is currently comprised of four interbank settlement systems, all of them SIPS, each specialised according to the type and value of payment orders exchanged.

- Large-value payment transactions are settled either via the TBF (Transfert Banque de France) real-time gross settlement system, which is the French component of the European system TARGET, or via PNS (Paris Net Settlement), the real-time net settlement system. Both systems are accessed through a single platform operated by the CRI (Centrale des Règlements Interbancaires), the Centre for Interbank Funds Transfers.
- One single retail payment system exists for all retail payments (cheques, credit transfers under EUR 800,000, direct debits).
- There is a securities settlement system with two channels: one revocable (RELIT) for retail transactions and one irrevocable for monetary policy operations and large-value transactions, mainly on fixed income securities (RGV).



Integrated liquidity and collateral management

Operating days and operating hours are coordinated by means of a time schedule with clearing deadlines and ancillary systems settlement windows.

In addition, a real-time bridge exists between the main payment and securities systems (RGV, TBF and PNS) that involves common use of central bank money, allowing the irrevocable transfer of liquidity between these systems without constraint, at any time of day;

Coordinated contingency procedures

A Financial Crisis Steering Committee, comprised of representatives from the payment and securities settlement systems, ensures that**:**

- all systems have adequate, and overall consistent, contingency procedures; and
- industry-wide simultaneous migration to backup sites is regularly tested**.**

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Annexes

Annex 1:
Guideline statements

A. Banking system

Guideline 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.*

Guideline 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.*

B. Planning

Guideline 3. Recognise complexity: *planning should be based on a comprehensive understanding of all the core elements of the national payment system and the principal factors influencing its development.*

Guideline 4. Focus on needs: *identify, and be guided by, the payment needs of all users in the national payment system and by the capabilities of the economy.*

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

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

C. Institutional framework

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

Guideline 8. Involve relevant stakeholders: *encourage the development of effective consultation among relevant stakeholders in the national payment system.*

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

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

D. Infrastructures

Guideline 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.*

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

Guideline 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.*

Guideline 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.*

Annex 2:
Case study - Sri Lanka

The modernisation of the central bank and its impact on payment system development in Sri Lanka

1. Introduction

The ever increasing complexities in financial systems, the new thinking on economic policies and the role of a central bank in a changing world gave rise to the need for central banks the world over to change and enhance their capacity to perform effectively in their respective economies. Having realised these needs, the Central Bank of Sri Lanka (CBSL) embarked on a modernisation programme in late 2000 to transform itself into a modern central bank and enhance its ability to meet challenges.

The modernisation process, which was launched in 2001, was expected to create a lean, modernised and efficient central bank by focusing on its core objectives and functions, upgrading its systems, procedures and governance systems, enhancing the expertise of employees and establishing a core financial system infrastructure to satisfy the needs of an evolving economy in a manner that would strike a balance among different objectives, such as reducing operational costs, increasing efficiency, ensuring safety and reducing credit, liquidity and systemic risks. As an efficient central bank is crucial to establishing a competitive and prudently managed financial sector, the modernisation of the CBSL also formed an important part of the financial sector reforms of the country. Reforming the payment system was a critical component in the modernisation plan of the CBSL.

2. Changes to the core objectives

Under the modernisation programme, the CBSL redefined its objectives and adopted two new core objectives, viz: (a) economic and price stability; and (b) financial system stability with a view to encouraging and promoting the development of the productive resources of Sri Lanka through an amendment to the Monetary Law Act (MLA), effected in December 2002.

Along with the adoption of new core objectives, several other organisational and managerial reforms were undertaken by the Bank, including the development of infrastructure and payment system reforms and devolution of non-core functions, eg the retail cheque clearing process.

3. High-value and systemically important payment system and legislative amendments

To reduce settlement risks involved in the systemically important high-value payment system, to facilitate the settlement of securities in line with emerging best practices and to develop the government debt securities market, in 2001 the CBSL initiated action to introduce an integrated Real-Time Gross Settlement (RTGS) / Scripless Securities Settlement (SSS) System.

The introduction of the RTGS/SSS System required several amendments to legislation, such as the MLA (the governing law of the CBSL), the Local Treasury Bills Ordinance (LTBO) and the Registered Stocks and Securities Ordinance (RSSO).

Prior to December 2002, the CBSL provided settlement facilities for the transfer of funds among commercial banks and primary dealers through the current accounts maintained by such institutions with the CBSL. Given the need to introduce the RTGS/SSS System to effect high-value transactions and settlement on a real-time basis, amendments were introduced to the MLA to achieve the following:

- establish the system and provide for respective rights and responsibilities;
- enable the provision of intraday liquidity by the CBSL against collateral to ensure smooth functioning of the RTGS/SSS System;

- provide for finality and irrevocability of transactions;
- grant validity and enforceability to electronic records and transactions;
- outsource functions relating to payments and settlements; and
- grant protection to transactions effected in these systems from insolvency.

The RTGS System went live on 8 September 2003, and it has facilitated value transfers and reduced risks in high-value and time-critical payments. The Payments and Settlements Department (PSD), established in 2002, was assigned the responsibility of operating the RTGS/SSS System.

The government securities market has been functioning by issuing treasury bills and treasury bonds in paper form, which required endorsement and delivery to transfer ownership each time a bill/bond was traded. The paper certificates had to be endorsed by the holders and be countersigned by a primary dealer or a bank, thereafter requiring physical transportation to several places. At maturity, the payment of interest and redemption were effected manually after physical verification of each bill/bond. This involved a cumbersome administrative procedure, which has inhibited the development of the primary as well as the secondary markets for government securities. Moreover, the securities had to be printed on security paper and kept securely under a custodian. The primary dealers performed the custodian role for a fee. Yet there was no guarantee that securities would not be lost, misplaced or misused. The process was inefficient and increased transaction costs to primary dealers and investors and also kept foreign investors from investing in government securities.

To facilitate the introduction of the Scripless Securities Settlement System, the CBSL amended the LTBO and the RSSO. Amendments to these two Ordinances were passed in Parliament in late 2003, enabling the CBSL to issue, record, transfer, settle and redeem scripless (paperless) securities electronically by way of book entry and to maintain securities accounts for primary dealers and their customers (beneficial owners). When transactions take place in scripless securities, the securities are transferred to and from the respective holder's account in the central depository, which is maintained by the central bank, as a component of the SSS System. When securities are traded, such trades are matched and instantaneous payment of money is effected through the RTGS System on a DVP basis. The RTGS/SSS integrated system went live on 3 February 2004. Under the SSS System, all primary dealers maintain accounts in the central depository system for themselves and for their customers. Thus, the CBSL is the registry and the central depository for all the government securities, which records legal ownership of securities. The system also enables the dematerialisation of existing paper securities and their conversion into book-entry form. The system satisfies the DVP principle, where securities are delivered to investors against the payment of money. The system, as a whole, has reduced the risks involved in paper-based treasury bill/bond settlement and made value transfers and trades much faster, more secure and more efficient. The SSS System supports the entire life cycle of the security from issue through to its final redemption and also has the capacity to calculate and effect interest and maturity payments.

4. Devolution of non-core functions

As part of the devolution of non-core functions, among other things, the CBSL outsourced the operations of the retail payment system largely effected through cheques (the second most systemically important payment system). Accordingly, the Sri Lanka Automated Clearing House, which had been operated by a division in the Information Technology Department of the CBSL since 1988, was divested in April 2002 to LankaClear (Pvt) Limited - an organisation jointly owned by the CBSL and commercial banks. The objective of this divestiture was to improve the efficiency of the clearing and electronic funds transfer system operated by the Clearing House through new management, technology and cost-efficient solutions. Since the outsourcing, LankaClear has performed very well and has reduced the cost of its services and clearing times as well as increased efficiency.

The CBSL is still concerned by some of the inefficiencies and risks involved in the retail and low-value cheque clearing process relating to regional cheques, which are cleared on t+3 to t+7. The central bank and LankaClear have jointly initiated action to introduce a cheque imaging system to eliminate risks and improve efficiency. This initiative requires amendments to the Bills of Exchange Ordinance and the Evidence Ordinance to enable electronic cheque presentment and admission of electronic evidence. The CBSL has made arrangements to enact a separate payments and settlement law, which would govern payment transactions and securities settlement and is expected to be passed by Parliament during 2005.

5. Focus on supervisory role

The Monetary Law Act Amendment of 2002 granted the CBSL the responsibility for the administration, supervision and regulation of the monetary, financial and payment systems of Sri Lanka, including oversight of the payment systems. Having introduced a robust and efficient payment and settlement system and outsourced some of the operational responsibilities relating to the payment systems, the CBSL is now focusing on its task of payment system oversight. Currently, as the overseer, the Bank wishes to ensure smooth, safe and efficient operations in all payment and settlement systems, maintain customer confidence, and protect the transmission channels and value transfer instruments relating to monetary policy. Given the need to attain the financial system stability objective of which payments form a critical component, the CBSL relies on rules, regulations, laws, directives, guidelines and, informally, moral suasion in overseeing the payment systems.

The rules and regulations for oversight activities are based on the oversight standards announced by the CPSS in 10 Core Principles and by CPSS-IOSCO for securities settlement. Accordingly, oversight methods include off-site surveillance of different payment systems and payment instruments through collection of statistics and regular discussions with system operators and participants.

The PSD oversees the domestic clearing of rupee cheques and the US dollar cheque clearing process operated by LankaClear. The on-site responsibility for overseeing the activities lies with a unit of the Bank Supervision Department (BSD), to ensure that the RTGS/SSS System owned and operated by the CBSL complies with the rules and regulations. The CBSL has also published rules and procedures for governing the market, and a “Red Book” for Sri Lanka in cooperation with the BIS, which sets out the country’s current payment and settlement arrangements.

Annex 3:
Elements of a stocktaking exercise

This annex provides a general overview of the elements relevant to a stocktaking exercise. Not all the elements are relevant in all cases.

1. Payment instruments and media

- Cash
- Cheque payments and other paper instruments (eg money orders, bank drafts)
- Automated credit and debit transfers
- Payment cards (credit, debit and stored value)
- Other

2. Payment system infrastructures

Infrastructures

- Transaction systems
  - Proprietary bank systems (branches, ATMs, e-banking)
  - Shared network systems (EFTPOS, ATMs, e-payment)
- Clearing and settlement systems (central bank and privately operated)
  - Retail payment clearing and settlement
  - Large-value payment settlement systems

Key properties

- Participants in the system
- Types of transactions handled
- Operations and operating rules of the transfer system
- Backup solutions
- Settlement procedures
- Credit and liquidity risk
- Pricing policies

Key non-financial infrastructures

- Telecommunications
- Transportation (road, rail, air and maritime)
- Energy (electrical, oil, gas, coal)

3. Institutional aspects

- The various roles of financial and non-financial institutions providing payment services
  - Central bank (eg settlement facilities and services, user needs, oversight)
  - Commercial banks
  - Building societies
  - Post office
  - Credit card companies
  - Other non-financial payment or payment-related service providers (eg SWIFT, third-party consolidators, third-party payment processors, IT network service providers)
- Network and service market interconnections
  - Common participation
  - Service or contractual links - direct or through third-party providers
  - Pricing policies
- The role of other private sector and public sector bodies
  - Council of bankers
  - Clearing house operators
  - Payment associations
  - SWIFT users' association
  - Treasury operators' forum
  - Association of Bank Card Issuers
- Legal and regulatory framework
  - Principal payment legislation and regulations

4. Use of the payment system for financial transactions

Overview of financial (interbank credit, forex, money market and securities) transactions

- Trading systems for securities transactions
  - Securities (stock and bond) exchanges
  - Futures and derivatives exchanges
  - Over-the-counter and automated trading systems
- Clearing and settlement systems for securities transactions
  - Securities depositories and clearing organisations
  - Registration and custody arrangements
  - Securities settlement systems
- Key properties
  - Participants in the system
  - Types of transactions handled
  - Operations and operating rules of the systems

- Backup solutions
- Settlement procedures
- Credit and liquidity risk
- Pricing policies

Infrastructures for cross-currency and cross-border payment and financial transactions

- Transaction, clearing and settlement for international retail and large-value transactions
- Key properties
  - Participants in the system
  - Types of transactions handled
  - Operations and operating rules of the systems
  - Backup solutions
  - Settlement procedures
  - Credit and liquidity risk
  - Pricing policies

5. Recent developments affecting the payment system

- Establishment of payment system governance and consultative arrangements
- National and regional development initiatives with respect to transaction, clearing and settlement infrastructures and service markets for retail and large-value payment and securities systems
- Legal and regulatory reforms affecting the payment and securities systems

6. Statistical data on the payment system

- Where available, utilise data to provide information on trends and developments in key elements of the national payment system that can help direct and support effective reforms

Annex 4:
Legal framework and model laws on payments

1. Legal framework for payment instruments

Currency laws to:

- establish official currency issued or backed by the central bank;
- regulate the acceptance of currency for payment with regard to denominations relative to transaction value and eligible transactions (ie legal tender laws); and
- prohibit and penalise counterfeiting of the official currency and money laundering, and authorise monitoring and reporting of suspicious payments.

All of these aspects are better governed by legislation than by contract.

Cheque (negotiable instrument) laws to:

- govern the issuance, acceptance and negotiation of cheques (may initially be governed by common law or contract but should eventually be governed by legislation);
- determine the rights and obligations of payers and payees in situations of fraud as part of the criminal code or the cheque law; and
- enable electronic cheque presentment, truncation and imaging (because of the need to modernise existing law, legislation is usually the preferable mechanism).

Credit transfer laws to:

- authorise paper-based credit transfers and electronic wire transfers; and
- govern such aspects as finality of payment, misdirected payments, payment fraud and availability of funds to the customer (may be governed by contract and common law to some extent but legislation is desirable).

Card instrument laws to:

- govern the rights and obligations of the issuer, cardholder and merchant if not covered by existing contract law.

May be left entirely to contract and common law or subjected to legislation to govern some aspects of the relationships (such as consumer protection).

Electronic payments and commerce laws to:

- govern the issuance and use of e-money; and
- ensure the legal discharge of payment obligations through settlement by e-money if not covered under currency laws.

Would ordinarily require legislation, since existing laws do not usually cover e-money.

Evidence laws:

- provide evidentiary proof of authentication of electronic payments using digital signatures or other instruments for electronic payment authorisation.

Example laws and regulations:

- Uniform Commercial Code (UCC): Article 4A (re automated funds transfers) (United States)
- EU Directive 97/5/EC on cross-border credit transfers
- Currency Act, (re official currency) (Canada)
- Bills of Exchange Act (re cheques) (Canada, United Kingdom)
- Check 21 Act (re electronic cheques) (United States)

2. Legal framework for settlement of payment obligations

Netting and novation laws, preferably through specific legislation rather than contract law, to:

- permit payment netting in clearing and settlement systems and in bilateral financial contracts (including close-out netting) and ensure that the net amounts are enforceable against unwinds, especially in insolvency situations (preferably through legislation rather than contract or precedent);
- govern netting and unwind procedures, and define the rights and obligations of participants in the netting scheme (through either contract or legislation); and
- protect the settlement account at the central bank or commercial banks from stays of execution (“freezes”) upon the insolvency of a participant in a payment system.

Where novation is used, laws ensuring the legal enforceability of novation (preferably through legislation) could be introduced.

Settlement laws, preferably through legislation rather than contracts, to:

- establish settlement finality;
- establish payment finality and irrevocability except under specified conditions; and
- protect the risk-free settlement facility at the central bank from being frozen or attached by creditors of institutions holding the settlement accounts.

Example laws and regulations:

- Payment Systems and Netting Act (Australia)
- Payment System Law (10, 214) (Brazil)
- Payment, Clearing and Settlement Act (Canada)
- Uniform Commercial Code (UCC): Article 4A (United States)
- Regulation J, Federal Reserve System (United States)
- Regulation 15/2002/CM/UEMOA Regarding Payment Systems in the Member States (West African Economic and Monetary Union)
- EU Directive 98/26/EC on settlement finality in payment and securities settlement systems

3. Legal framework for collateral and credit

Credit laws to:

- govern creditor-debtor relationships in commercial transactions.

May be established by common law, contract law, civil codes or specific legislation (eg usury laws, banking statutes, creditor-debtor statutes).

Pledging and collateral laws to:

- create and enforce rights in collateral security, preferably through legislation of specific or general application, rather than through contract or common law; and
- establish priority ranking among various secured and unsecured claims in the same assets in situations of default or insolvency (requires legislation of specific or general application).

Example laws and regulations:

- Uniform Commercial Code (UCC): Article 9 (United States)
- EU Directive 2002/47/EC on financial collateral arrangements
- 1997 OHADA Uniform Law on Security Rights
- 1994 EBRD Model Law on Secured Transactions

- UNCITRAL Legislative Guide on Secured Transactions
- Cape Town Convention on International Interests in Mobile Equipment
- Regulation 15/2002/CM/UEMOA Regarding Payment Systems in the Member States (West African Economic and Monetary Union)

4. Legal framework for payment network organisation and participation

Laws (legislation, regulation or contracts) governing:

- organisation (ie as a legal entity) and corporate governance of the operator of the system or network;
- the mutual rights and obligations of participants and operators in respect of the network (eg liability, indemnity and confidentiality);
- network participation;
- network operations (hours, fees, sanctions, delivery of items, formats, etc);
- default by participants or central counterparties;
- operational and financial risk controls and business continuity; and
- financial loss-sharing.

Example laws and regulations:

- system rules governing CHIPS, Fedwire, CHAPS, Clearstream and other clearing and settlement systems
- master repo agreements (International Securities Dealers Association)

5. Legal framework for securities settlement systems

In addition to the types of laws mentioned in (2), (3) and (4) above:

- legislation to support the immobilisation, ownership, transfer and pledging of securities (or interests in securities) in book-entry form in a securities depository or other securities intermediaries;
- legislation to support the issuance, ownership and transfer of "dematerialised" or "non-certificated" securities embodied in electronic media rather than paper; and
- legislation or contracts that validate the underlying transactions in securities, such as financial derivatives, repurchase agreements, securities loans and other transactions with regard to custody, transfer and pledge of the underlying securities.

Example laws and regulations:

- Uniform Commercial Code (UCC): Article 8, Revised (United States)
- UNIDROIT Study Group on Harmonisation of Substantive Law Rules Regarding Indirectly Held Securities
- Uniform Securities Transfer Act (re draft from Canadian Securities Administrators) (Canada)

6. Conflict of laws

- Rules for determining which jurisdiction's laws will apply to various cross-border aspects of payment systems (eg foreign participants, cross-border payments, cross-border collateral, foreign securities).
- Contractual or common law choice of law rules may suffice but legislation may be preferable.

Example rules:

- Uniform Commercial Code (UCC): Article 8, Revised (United States)

International conventions:

- Hague Convention on the Law Applicable to Certain Rights in Respect of Securities Held with an Intermediary

7. Legal basis for central bank oversight

Legal instruments supporting oversight authority: legislation; regulation; contract; memorandum of understanding.

Legal instruments supporting the exercise of oversight authority: regulation; directive, order or ruling; non-binding guidelines and interpretations.

Example laws:

- Payment Systems Regulation Act (Australia)
- Payment, Clearing and Settlement Act (Canada)

8. International legal standards relevant to payment systems

Rules on the criminal use of currency:

- FATF Forty Recommendations (to counter money laundering)
- FATF Special Recommendations on Terrorist Financing
- United Nations International Convention for the Suppression of Financing of Terrorism

Rules and model laws on contracts:

- UNIDROIT Principles of International Commercial Contracts
- Commission on European Contract Law: Principles of European Contract Law
- ISDA master agreements for interest rate swaps, currency swaps, commodity derivatives and other swaps and derivatives transactions
- Bond Market Association model contracts

Rules and model laws on payment instruments:

- UNCITRAL Convention on International Bills of Exchange and Promissory Notes
- UNCITRAL Model Law on International Credit Transfers
- UNCITRAL Model Law on Electronic Commerce (addressing issues of authorisation, signature and evidence in electronic commercial transactions)
- EU Directive 97/5/EC on cross-border credit transfers
- EU Directive 2000/31/EC on electronic commerce
- EU Directive 99/93/EC on community framework for electronic signatures

Rules and model laws on clearing and settlement:

- EU Directive 98/26/EC on settlement finality in payment and securities settlement systems
- UNIDROIT Study Group on Harmonisation of Substantive Law Rules Regarding Indirectly Held Securities

Rules and model laws on collateral security:

- Cape Town Convention on International Interests in Mobile Equipment

- EU Directive 2002/47/EC on financial collateral arrangements
- 1997 OHADA Uniform Law on Security Rights
- 1994 EBRD Model Law on Secured Transactions
- 2002 Model Inter-American Law on Secured Transactions
- UNCITRAL legislative guide on secured transactions

Rules on conflict of law:

- Hague Convention on the Law Applicable to Certain Rights in Respect of Securities Held with an Intermediary

Annex 5: Glossary

Term	Definition
access	the right of or opportunity for an institution to use the services of a particular payment system to settle payments on its own account or for customers.
automated clearing house (ACH)	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. See also *clearing/clearance*.
automated teller machine (ATM)	an electromechanical device that permits authorised users, typically using machine-readable plastic cards, to withdraw cash from their accounts and/or access other services, such as balance enquiries, transfer of funds or acceptance of deposits. ATMs may be operated either online with real-time access to an authorisation database or offline.
banking system	all financial institutions that in particular accept deposits, provide credit and/or offer payment services directly to users as one of their core business functions. This includes the central bank.
batch	the transmission or processing of a group of payment orders and/or securities transfer instructions as a set at discrete time intervals.
business continuity	a payment system's arrangements which aim to ensure that it meets agreed service levels even if one or more components of the system fail or if it is affected by an abnormal external event. Include both preventative measures and arrangements to deal with contingencies.
central bank credit (liquidity) facility	a standing credit facility that can be drawn upon by certain designated account holders (eg banks) at the central bank. In some cases the facility can be used automatically on the initiative of the account holder, while in other cases the central bank may retain some degree of discretion. The loans typically take the form either of advances or overdrafts on an account holder's current account which may be secured by a pledge of securities (also known as lombard loans in some European countries), or of traditional rediscounting of bills.
central counterparty (CCP)	an entity that is the buyer to every seller and seller to every buyer of a specified set of contracts, eg those executed on a particular exchange or exchanges.
central securities depository (CSD)	a facility (or an institution) for holding securities, which enables securities transactions to be processed by book entry. Physical securities may be immobilised by the depository or securities may be dematerialised (ie so that they exist only as electronic records). In addition to safekeeping, a CSD may incorporate comparison, clearing and settlement functions.
clearing/clearance	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 term is used (imprecisely) to include settlement.

collateral	an asset or third-party commitment that is accepted by the collateral taker to secure an obligation of the collateral provider vis-à-vis the collateral taker.
confirmation	a process whereby a market participant notifies its counterparties or customers of the details of a trade and, typically, allows them time to affirm or to question the trade.
correspondent banking	an arrangement under which one bank (correspondent) holds deposits owned by other banks (respondents) and provides payment and other services to those respondent banks. Such arrangements may also be known as agency relationships in some domestic contexts. In international banking, balances held for a foreign respondent bank may be used to settle foreign exchange transactions. Reciprocal correspondent banking relationships may involve the use of so-called nostro and vostro accounts to settle foreign exchange transactions.
counterparty	the opposite party to a financial transaction such as a securities trade or swap agreement.
credit risk	the risk that a counterparty will not settle an obligation for full value, either when due or at any time thereafter. In exchange-for-value systems, the risk is generally defined to include replacement cost risk and principal risk.
custody	the safekeeping and administration of securities and financial instruments on behalf of others.
delivery versus payment	a link between a securities transfer system and a funds transfer system that ensures that delivery occurs if, and only if, payment occurs.
dematerialisation	the elimination of physical certificates or documents of title which represent ownership of securities so that securities exist only as accounting records.
depository	an agent with the primary role of recording securities either physically or electronically and keeping records of the ownership of these securities.
end user	a customer of a financial institution to which the financial institution provides payment instruments and services to facilitate the completion of their commercial or financial transactions.
finality	irrevocable and unconditional.
gross settlement system	a transfer system in which the settlement of funds or securities transfer instructions occurs individually (on an instruction-by-instruction basis).
immobilisation	placement of physical certificates of securities and financial instruments in a central securities depository so that subsequent transfers can be made by book entry.
institutional arrangements	practices and organisational arrangements to provide various types of payment services from financial institutions and other organisations to users. They include market arrangements, the legal and regulatory framework, and mechanisms for consultation and coordination among stakeholders in the national payment system.
interoperability	a situation in which payment instruments belonging to a given scheme may be used 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.

intraday credit	credit extended for a period of less than one business day; in a credit transfer system with end-of-day final settlement, intraday credit is tacitly extended by a receiving institution if it accepts and acts on a payment order even though it will not receive final funds until the end of the business day. Also called daylight overdraft, daylight exposure and daylight credit.
intraday liquidity	funds which can be accessed during the business day, usually to enable financial institutions to make payments in real time.
large-value payment	a payment, generally involving a very large amount, which is mainly exchanged between banks or between participants in the financial markets and usually requires urgent and timely settlement. They are often related to important financial market transactions such as money market or foreign exchange transactions as well as many commercial transactions.
large-value payment system	a system which processes mainly large-value payments.
legal risk	the risk of loss because of the unexpected application of a law or regulation or because a contract cannot be enforced.
liquidity risk	the risk that a counterparty (or participant in a settlement system) will not settle an obligation for full value when due. Liquidity risk does not imply that a counterparty or participant is insolvent since it may be able to settle the required debt obligations at some unspecified time thereafter.
loss-sharing (or loss allocation) agreement	an agreement among participants in a clearing or settlement system regarding the allocation of any losses arising from the default of a participant in the system or of the system itself.
national payment system	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.
net settlement system	a settlement system in which final interbank settlement of individual transfer instructions occurs on a net basis at one or more discrete, specified times during the processing day.
netting	an agreed offsetting of positions or obligations by trading partners or participants. The netting reduces a large number of individual positions or obligations to a smaller number of obligations or positions. Netting may take several forms, which have varying degrees of legal enforceability in the event of default of one of the participants.
network operations	all the processes and arrangements related to the functioning of a network (such as those related to operating hours, fees, sanctions, delivery of items, formats, etc).
novation	the replacement of existing obligations by new obligations between the existing or substitute parties that satisfactorily and legally discharges the original obligation.
operational risk	the risk that deficiencies in information systems or internal controls could result in unexpected losses.
oversight	a central bank function whereby the objectives of safety and efficiency in payment and settlement systems are promoted by monitoring existing and planned systems, assessing them against these objectives and, where necessary, inducing change.
payment	the payer's transfer of a monetary claim on a party acceptable to the payee. Typically, monetary claims take the form of banknotes or deposit balances held at a financial institution or at a central bank.

payment infrastructure	the entirety of network facilities, technologies and procedures for accessing and transacting payment instruments and for processing, clearing and settling related payments.
payment infrastructure services	services provided through the payment infrastructure for accessing and transacting payment instruments and for processing, clearing and settling the related payments.
payment order (instruction)	an order or message requesting the transfer of funds (in the form of a monetary claim on a party) to the order of the payee. The order may relate either to a credit transfer or to a debit transfer. Also called payment instruction.
payment service markets	arrangements that coordinate the production and pricing of payment instruments and services and their delivery from payment service providers to users. Particular markets are characterised by their specific market practices, service providers and users, and factors influencing the demand for and supply of that specific service.
payment system	a specific set of instruments, banking procedures and interbank funds transfer (eg clearing and settlement) systems that ensures the circulation of money.
principal risk	the risk that the seller of a security delivers a security but does not receive payment or that the buyer of a security makes payment but does not receive delivery. In this event, the full principal value of the securities or funds transferred is at risk.
real-time transfer	the transmission, processing and settlement of a funds or securities transfer instruction at the time that it is initiated.
retail payment	a payment between various consumers, businesses and governments of relatively low value and urgency. It is a payment which is not captured in the definition of a large-value payment (see large-value payment)
retail payment infrastructures	mechanisms used for transaction, clearing and settlement of relatively low-value non-urgent payments initiated through payment instruments such as cheques, credit transfers, direct debits and payment cards.
securities infrastructures	full set of arrangements for the trading, registration and custody of securities and for the confirmation, clearance and settlement of securities transactions.
securities system	the institutional arrangements and infrastructures for issuing and administering securities liabilities, administering and safekeeping holdings of securities issues, and initiating, confirming, matching, transferring and settling securities transactions.
settlement	an act that discharges obligations in respect of funds or securities transfers between two or more parties.
settlement risk	general term used to designate the risk that settlement in a transfer system will not take place as expected. This risk may comprise both credit risk and liquidity risk.
stakeholder	in a payment system, stakeholders are those parties whose interests are affected by the operation of the system.
straight through processing (STP)	the automated end-to-end processing of trades/payment transfers including the automated completion of confirmation, matching, generation, clearing and settlement orders.

systemic risk	the risk that the failure of one participant in a transfer system, or in financial markets generally, to meet its required obligations will cause other participants or financial institutions to be unable to meet their obligations (including settlement obligations in a transfer system) when due. Such a failure may cause significant liquidity or credit problems and, as a result, might threaten the stability of financial markets.
systemically important payment system	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.
user	payment system users are entities, comprised of both institutional participants in infrastructure networks and their customers in end user markets, that acquire and use various payment services.

Annex 6:
Members of the Working Group

In producing this report, the Committee on Payment and Settlement Systems was greatly assisted by the working group it set up, whose members are listed below.

Chairman (Bank of Canada)	Sean O'Connor
Central Bank of Brazil	Luciano Andrade Frois
Bank of Canada	Monique Ménard Robert Turnbull
People's Bank of China	Song Pan
Bank of the Republic (Colombia)	Joaquín Bernal
European Central Bank	Tom Kokkola Jean-Michel Godeffroy (until September 2004)
Bank of France	Christine Sampic Jaqueline Lacoste (until July 2004)
Deutsche Bundesbank	Markus Gross
Bank Indonesia	Dyah N K Makhijani
Bank of Italy	Paola Giucca
Bank of Japan	Akiko Kobayashi Tomohiro Usui (until July 2004)
Kazakhstan Interbank Settlement Centre of the National Bank of the Republic of Kazakhstan	Alexander Shishlov
Central Bank of the Russian Federation	Nikolay Geronin
South African Reserve Bank	David Mitchell
Central Bank of Sri Lanka	Ranee Jayamaha
Central Bank of Trinidad and Tobago	Caramae Farmer
Federal Reserve Bank of New York	Lawrence M Sweet
Board of Governors of the Federal Reserve System	Jennifer Lucier Yao-Chin Chao (until June 2005) Manuel Rubiralta (until March 2004)
Central Bank of West African States (BCEAO)	Fatimatou Zahra Diop
International Monetary Fund	Jan Woltjer
World Bank	Massimo Cirasino Mario Guadamillas
Secretariat (Bank for International Settlements)	Benjamin Hanssens

Significant contributions were also made by the participants in the African Association of Central Banks' Payment Systems Seminar, Arab Central Banks Payments Week, CIS Payments Week, CPSS/SADC Payments Conference, CMCA (Consejo Monetario CentroAmericano) Consultative Working Group meeting, CPSS/Black Sea Regional Payments Workshop, ICCI Payments Conference, SEACEN Payment Directors meeting and Western Hemisphere Payments Week. Individual central banks, payments organisations and other interested parties also provided useful comments during the consultation period.