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GUIDELINES FOR THE SUCCESSFUL REGIONAL INTEGRATION OF FINANCIAL INFRASTRUCTURES

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FOREWORD

Cross-border financial activities continue to intensify worldwide, keeping pace with the liberalization of trade and finance and with the growth of regional economic communities and free-trade zones. This scenario has prompted authorities and private sector stakeholders in various countries to pursue the integration of their financial infrastructures. Operators, participants and customers of financial systems, along with regulators and oversight bodies, are all aware that such initiatives have the potential to produce significant benefits such as cost reduction, improved risk-management, and extended reach of services. Financial infrastructure integration supports the expansion of trade and investment flows and ultimately contributes to the deepening and broadening of regional financial and capital markets.

Yet, several efforts to integrate financial infrastructures across borders have failed to provide many of their expected benefits and other projects remain non-operational despite the significant amount of time and money invested in them. Observing that flawed projects are often repeated, even in vastly different country contexts, led the World Bank to convene an international group of regulators and practitioners - the “G25 Panel of Experts” - to share and help codify the lessons learned from many experiences of regional, cross-regional, and global integration of financial infrastructures.

Their first-hand insights are reflected in this report, complemented by the observations of World Bank staff and others. We hope that they will provide valuable factual and anecdotal input for addressing the challenges to achieve successful regional integration. The Guidelines for the Successful Regional Integration of Financial Infrastructures presented in this report have been derived directly from those experiences and insights. They provide a set of practical steps to assist stakeholders who are considering the merits of regional financial infrastructure integration, as well as those who are already involved in such efforts.

In publishing this report, I would like to thank the Payment Systems Development Group team led by Massimo Cirasino, part of the World Bank's Financial Inclusion and Infrastructure Global Practice. I would particularly like to recognize the efforts of World Bank staff members Jose Antonio Garcia, Marco Nicoli and Ceu Pereira. Special thanks go to Gertrude Tumpel-Gugerell, the Chairperson of the G25 Panel of Experts, and to each of the members of that panel for their efforts in putting together these guidelines.

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ABBREVIATIONS

ABMI	Asian Bond Market Initiative	CPSS	Committee on Payment and Settlement Systems (www.bis.org/cpss/)
ACH	Automated Clearing House	CSD	Central Securities Depository
ALADI	Latin American Integration Association (<i>Asociación Latinoamericana de Integración</i>) (www.aladi.org)	CSM	Clearing and Settlement Mechanism
AMF	Arab Monetary Fund	DNS	Deferred Net Settlement
ASEAN	Association of Southeast Asian Nations (www.asean.org)	DTC	Depository Trust Company
ATM	Automated Teller Machine	DTCC	Depository Trust & Clearing Corporation (www.dtcc.com)
BCBS	Basel Committee on Banking Supervision (www.bis.org/bcbs/)	DVP	Delivery versus Payment
BCEAO	Central Bank of the Western African States (www.bceao.int)	EACH	European Association of CCP Clearing Houses (www.eachorg.com)
BNM	Bank Negara Malaysia (www.bnm.gov.my)	EACHA	European Automated Clearing House Association (www.eacha.org)
CCP	Central Counterparty	EAPS	East African Cross-Border Payments System
CDS	Canadian Depository for Securities (www.cds.ca)	EAPS	Euro Alliance of Payment Schemes (www.card-alliance.eu/)
CEESEG	Central and Eastern Europe Securities Exchange Group (www.ceeseg.com)	EBA	Euro Banking Association (www.ab-e-ea.eu)
CHATS	Clearing House Automated Transfer System	ECB	European Central Bank (www.ecb.int)
CLS	CLS Bank International (www.cls-group.com)	ECCB	Eastern Caribbean Central Bank (www.eccb-centralbank.org)
CMU	HKMA's Central Money management Unit (www.cmu.org.hk)	ECSDA	European Central Securities Depositories Association (www.ecsda.eu)
		EEA	European Economic Area
		EMCF	European Multilateral Clearing Facility (www.emcf.com)
		EMU	European Monetary Union

EPC	European Payments Council (www.europeanpaymentscouncil.eu)	MILA	Latin American Integrated Market (<i>Mercado Integrado Latinoamericano</i>) (www.mercadointegrado.com)
ESCB	European System of Central Banks	MTO	Money Transfer Operator
EU	European Union (www.europa.eu)	NACHA	National Automated Clearing House Association (www.nacha.org)
FESE	Federation of European Stock Exchanges (www.fese.eu)	NCB	National Central Bank
FI	Financial Infrastructure	NSCC	National Securities Clearing Corporation (www.nsccl.com)
FIX	Financial Information Exchange (www.fixprotocol.org)	OTC	Over-the-Counter
FMI	Financial Market Infrastructure	PE-ACH	Pan-European Automated Clearing House
FPML	Financial Products Markup Language (www.fpml.org)	PVP	Payment versus Payment
FX	Foreign Exchange	RFI	Request for Information
GCC	Gulf Cooperation Council (www.gcc-sg.org)	RTGS	Real Time Gross Settlement
GTR	Global Trade Repository	SADC	Southern African Development Community (www.sadc.int)
HKMA	Hong Kong Monetary Authority (www.hkma.gov.hk)	SCT	SEPA Credit Transfer
IAN	Intra-ASEAN Network	SDD	SEPA Direct Debit
IAT	International ACH Transaction	SEPA	Single Euro Payments Area (www.sepa.eu)
IBAN	International Bank Account Number	SICA-	Automated Interbank Clearing
ICSD	International Central Securities Depository	UEMOA	System of the UEMOA (<i>Système Interbancaire de Compensation Automatisé dans l'UEMOA</i>) (www.bceao.int)
IMF	International Monetary Fund (www.imf.org)	SIP	Payments Interconnection System (Sistema de Interconexión de Pagos) (www.secmca.org)
IOSCO	International Organization of Securities Commission (www.iosco.org)	SML	Local Currency Payments System (Sistema de Pagos en Moneda Local) (www.bcb.gov.br/?SMLEFAQ)
IPF	International Payments Framework (www.ipf-a.org)	SSS	Securities Settlement System
IPFA	International Payments Framework Association (www.ipf-a.org)	STAR-	Automated Transfer and Payment
ISDA	International Swaps and Derivatives Association (www.isda.org)	UEMOA	System of the UEMOA (<i>Système de Transfert Automatisé et de Règlement dans l'UEMOA</i>) (www.bceao.int)
ISIN	International Securities Identification Number (www.isin.org)	STP	Straight Through Processing
ISO	International Organization for Standardization (www.iso.org)	SWOT	Strengths, Weaknesses, Opportunities, Threats
LSE	London Stock Exchange (www.londonstockexchange.com)		



T2S	Target 2 Securities (www.t2s.eu)
TARGET2	Trans-European Automated Real-Time Gross Settlement Express Transfer System (www.target2.eu)
TR	Trade Repository
UEMOA	Western Africa Monetary Union (<i>Union Economique et Monétaire Ouest Africaine</i>)



SECTION I

INTRODUCTION AND SUMMARY



1. Over the past decade or so, the prospects of long-term economic, institutional and social gains from regional and global financial and trade liberalization have become more appealing to public and private stakeholders. Indeed, since the late 1980's both developing and advanced economies have seen greater levels of cross-border banking and the cross-border trading, issuance and investment in securities and financial derivatives.

2. At the same time, recent events like the global financial crisis that emerged in 2008 have prompted market participants, their supervisors and other national authorities, international organizations and standard-setting bodies to support more robust and ultimately effective mechanisms to enable cross-border financial market connectivity and liquidity, for the benefit of overall financial stability and also of the final users of cross-border financial services.

3. Greater attention is therefore being given to the potential benefits of regional and cross-regional integration of infrastructures for payments, securities, listed futures and options, and, lately, over-the-counter (OTC) derivatives. The fact that no critical financial infrastructure (FI)¹ failed or needed to be resolved

during the 2008 crisis has reinforced their reputation, even while raising the bar on their stability roles and risk-management responsibilities as defined in subsequent rule-making reforms, regulations and principles. Moreover, successful integration of FIs may help address cross-border and even some local challenges.

4. The objective of this report is to offer a framework for policy makers, authorities, and market players involved in regional integration of FIs by offering insights from practitioners, in particular those of a "G25" panel of experts (see Annex 1) who have been directly involved in a range of regional and cross-regional FI integration projects. For this purpose, the report first provides an overview of specific experiences of regional and cross-regional financial infrastructure integration, identifying and typifying the main models and trends. Then, on the basis of the lessons learned from those integration experiences, a set of practical guidelines is produced to assist stakeholders considering the merits of regional FI integration as well as those already involved in an effort of this kind.

5. The guidelines are designed to correspond to the main public and private sector objectives for financial market and infrastructure integration, and to facilitate stakeholder realization of the main benefits that are typically associated with FI integration. The guidelines also address commonly experienced barriers and chal-

¹ See Box 1 for an explanation of the term "financial infrastructure" as used throughout this report and how it differs from the term "financial market infrastructures", as per CPSS-IOSCO.

lenges to efficient, effective and safe regional FI integration, in order to improve accessibility and reachability for customers and to help minimize the various costs and risks often associated with integration efforts like these.

6. None of the guidelines in this report refer exclusively to any particular functional infrastructure, nor does the report specifically endorse any of the specific initiatives mentioned above other initiatives. Moreover, the guidelines are intended to be widely applicable to the various types of regionally integrated infrastructures, whether large value or retail payment mechanisms and networks, securities trading venues or post-trade securities or derivatives infrastructures, and whether public or private sector initiatives.

7. In including trading mechanisms and retail payment systems this report goes somewhat beyond the definition of financial market infrastructures (FMIs) as per the CPSS-IOSCO Principles for Financial Markets Infrastructures (see Box 1).

1.1 KEY ELEMENTS IN RELATION TO REGIONAL FI INTEGRATION

8. Regional integration of FIs typically aims at enabling cross-border transactions for financial market participants or for their customers, often between the countries within a region. In some cases FI integration spreads across regions and even globally.

9. Regional integration is not just about linking or integrating technological platforms (i.e. “systems”) from a technical standpoint. It is equally about defining a common framework for transacting, clearing and settling cross-border transactions, including operating rules, business practices and standards, participation requirements and funding schemes, among others. For the purposes of this report, this set of non-technolog-

BOX 1: DEFINITION OF FINANCIAL INFRASTRUCTURES

The practical definition of a financial infrastructure (FI) used in this report corresponds to a legal or functional entity organized to provide multilateral transaction and post-transaction services for payments, securities, derivatives and other financial transactions.

This definition of a FI is conceptually similar to a financial market infrastructure (FMI) as per the CPSS-IOSCO *Principles for Financial Market Infrastructures* (2012), but is functionally broader in scope. According to these *Principles*, the definition of an FMI includes payment systems (only those that are systemically important are within the scope of the *Principles*), central securities depositories, securities settlement systems, central counterparties and trade repositories. Functionally, FIs refer additionally to other types of infrastructures, notably trading systems for securities, derivatives and foreign exchange as well as shared transaction systems for payments, such as traditional ATM and POS card payment networks and more modern on-line payment and mobile-payment networks.

ical elements is referred to collectively as the “scheme” of a FI integration model or initiative.

10. The forms of integration at the regional or cross-regional level can range from relatively simple agreements among FIs to facilitate direct or indirect cross-participation among the participants in each of the FIs, to interoperability arrangements involving technical interfaces between the separate operating platforms of the FIs involved, to full harmonization of the operating schemes and integration of the technical platforms into a common unified system for dealing with cross-border transactions - and at times even supporting domestic transactions.

11. While this report intends to cover the various types of integration forms, it focuses mainly on more advanced integration mechanisms which, as earlier described, are characterized by common multilateral schemes (i.e., common rulebooks, protocols, procedures and technical standards), agreements, and communication and processing interfaces and interoperability among technical systems operated by regionally participating FIs or by single FIs operating regionally or even cross-regionally.

12. Moreover, the focus of this report, and especially of the guidelines, is on the integration of FIs at the regional level, rather than on cross-regional integration and/or global solutions. Nonetheless, some of the most relevant experiences of the latter types are described in Chapter 3, underscoring the fact that some FI integration initiatives are global by design. Lessons learned from these cross-regional and global experiences have also been taken into account for the development of the guidelines.

1.1.1 Drivers of Regional FI Integration

13. There are three main drivers of regional FI integration that have to do with realizing the full potential of a broad economic integration effort, responding to customer demands, and the existing FI's own business objectives. These three drivers are depicted in more detail in Box 2.

1.1.2 Potential Benefits of Regional FI Integration

14. Quantifying and valuing the benefits specific to regional FI integration can be extremely difficult and is usually based on highly assumptive scenario analysis. Even so, several actual regional FI integration initiatives around the world provide direct evidence that such integration can help unleash certain “external” macro benefits, and at the same time also lead to several “internal” or direct micro benefits.

BOX 2: MAIN DRIVERS FOR REGIONAL FI INTEGRATION

- Political agreements (and possibly mandates) among countries in a region for FI integration in the context of a broader economic and financial plan for wider trade and to attract investment.
- Demands of customers and/or participants of national FIs for cost-effective cross-border access to regional and cross-regional markets and services
- Growth orientation and imperatives of existing FIs for expansion into new market areas within or across regions.

15. The indirect benefits arise where regional FI integration contributes to the economic and financial benefits broadly associated with the:

- Expansion of trade and investment flows among market participants in the region to enable deeper regional economic and financial integration;
- Attraction of external investment capital to the region, which deepens and broadens regional financial and capital markets;
- Diversification of trade concentration and capital exposure of countries within the region across more and larger market areas; and
- Deepening and broadening of regional financial and capital markets.

16. Direct benefits are easier to identify and measure. In developing a regional integration strategy for FIs, market players and other key stakeholders will gener-

ally seek to design a model that will maximize the direct benefits. The potential direct benefits are greater and more widely shared when there is a focus on the long-term gains not only for the financial institutions that are direct participants in the FIs, but also to the end-users (i.e. financial and non-financial businesses, public administrations and individuals). In this context, the most commonly cited potential direct benefits are shown in Box 3.

1.1.3 Barriers, Risks and Other Challenges that Can Prevent the Successful Regional FI Integration

17. Barriers relate to differences or incompatibilities across the various countries that want to participate in the common regional arrangement. These may cause severe delays or otherwise impair or even impede successful regional FI integration in terms of the efficiency, safety and overall effectiveness of the regional solution. The barriers will need to be addressed as prerequisites of the regional FI integration program. The main barriers center on two themes: i) Insufficient compatibility of the national legal, regulatory, supervisory and oversight regimes, and/or laws that may impede or otherwise disfavor regional FI integration projects (e.g. some provisions in competition laws); and, ii) Inadequate harmonization of national FI operating schemes, rules and technical standards, and of the underlying market practices or conventions.

18. The planning, development and rollout of the actual regional FI integration project will typically face numerous challenges, most of which are rooted in the difficulty to align the expected individual benefits and costs over the various classes of participants, and also in the inherent difficulties to manage a complex project involving numerous stakeholders with different backgrounds (e.g. private versus public sector) and/or from different jurisdictions.

BOX 3: POTENTIAL DIRECT BENEFITS OF REGIONAL FI INTEGRATION

- Lower user-costs for individuals, businesses and public administrations as end-users of the regional FI arrangement.
- Lower end-to-end transaction costs for the financial firms participating in the regional FI arrangement.
- Improved cross-border access and reach to all market participants to financial services, with faster, more reliable, and simpler transaction services.
- Lower FI development costs and operating costs for individual participating members through broader cost-sharing in regional FI arrangements than in fragmented national FI arrangements for regional cross-border transactions and, depending on the regional FI architecture, possibly even for domestic transactions.
- Improved risk management, greater risk reduction and stronger financial stability resulting from widespread utilization of consistent and up-to-date international policy, legal and technical standards, as well as best-practice risk-management designs and procedures.

19. In this regard, the major challenges are: i) Developing a strong business case for the regional FI integration proposal to cope with the natural uncertainties and skepticism about the viability of the project as a whole and for the various individual participants; ii) Avoiding that cost considerations create a disincentive to participate in the project, since many costs are often immediate and certain, whereas benefits are more diffuse and will likely be obtained in the medium and long term; iii) Ensuring there is effective leadership throughout the project life cycle so that the various stakeholder groups cooperate effectively and

remain committed to the project; and, iv) Ensuring there is sufficient expertise and adequate financial and human resources to develop and implement the regional FI integration program and, once launched, maintain an efficient and safe operation of the new arrangement on an ongoing basis.

20. In terms of risks, once the new regionally integrated FI is rolled out it will be subject, together with its participants, to cross-border and cross-FI extensions of the standard FI network risks, i.e. legal risks, credit and liquidity risks, and operational risks - which can be finely graded into numerous specific risks. Precisely because of the cross-border nature of the regional arrangement, these risks may take on new dimensions that may be more difficult to understand and manage in an effective manner than in a single country arrangement.

21. Regional FIs can also be more interdependent, and these interdependencies can significantly influence the risks affecting them. While this is also relevant for FIs that operate at the national level only, in certain cases interdependencies might be more difficult to manage when it comes to regional FI arrangements. For example, national FIs that are already integrated horizontally and/or vertically at the national level and further decide to integrate across borders will add layers of operational interdependencies and potential sources of risk. In other instances, interdependencies in a regional, cross-regional or global FI can reduce or even eliminate other sources of risk.

22. Just as the nature and scale of the potential net benefits of regional integration of FIs will depend in large part on the type and complexity of the FI integration model, so too will the potential barriers, challenges and risks. Moreover, the specific risks that may arise once the new regional FI becomes operational will depend on its business, procedural and operational

schemes and systems, and of the regional political, legal and regulatory environment in which it operates.

1.2 THE GUIDELINES FOR SUCCESSFUL REGIONAL INTEGRATION OF FINANCIAL INFRASTRUCTURES

23. While some of the key stakeholder groups and the business frameworks, technical issues and specific design features of regional integration may vary to some extent with regard to the specific types of FIs proposed for integration, the general institutional requirements and the underlying approach to planning, designing, implementing and operating a regionally integrated FI arrangement are essentially the same for all.

24. This report focuses on “process” guidelines to facilitate a best practice approach toward dealing with the many specific business, technical, and design and/or implementation issues that need to be resolved for efficient, secure and reliable regional FI integration.

25. The headlines of the guidelines are presented below and are then discussed in detail in Chapter 5. The guidelines are intended both for initiatives that are in the early stages of discussion, as well as for projects already underway, possibly in the design or implementation stages. Hence, some guideline categories may be more useful at a certain point in time for some projects than for others.

26. The first set of guidelines consists of enabling and institutional guidelines. Their purpose is to outline the set of institutional arrangements that enable a regional FI integration proposal to move forward from its preliminary vision to an actual operational arrangement in an effective fashion.

27. These guidelines stress that both public and private stakeholders have particular roles and responsibilities in moving forward a regional FI arrangement in an effective manner. The principles underlying this first set of guidelines are therefore: (i) inclusiveness of all key stakeholders – existing FIs, financial service providers, end-users (individuals, businesses, public administrations), and policy-makers and regulators - in the development of the initiative, through representative bodies, in a broad consultative effort; and, (ii) cooperation and coordination throughout the life of the project, from planning and design to the implementation, launch and ongoing operation of the regional FI integration model.

28. The *planning guidelines* then refer to the basis for determining if regional FI integration is necessary and justifiable for the stakeholders in the region at that particular time. This is the “make or break” stage at which regional FI integration initiatives either move forward or are postponed.

29. Through completion of the planning exercise itself, it should be possible to estimate when participation in regional FI integration may be most feasible for the various countries and parties involved. Most importantly, this provides the background information as to what type of regional integration model may be most beneficial and can help determine whether the ultimate integration plan might best involve a multi-stage process for FI integration. It might start, for example, with a decentralized model involving network arrangements among existing FIs as an intermediate step toward the future establishment of a centralized regional FI.

30. The underlying principles for this set of guidelines are: (i) understand what you already have; (ii) identify needs and opportunities on which to proceed; and (iii) recognize what needs to be changed to make FI integration work effectively, efficiently and safely.

ENABLING AND INSTITUTIONAL GUIDELINES

1. **Define and promulgate a clear vision and general proposal as to the purpose, scope, form and need for regional FI integration that encompass a rationale for participation by all key stakeholders. The vision and proposal are open, flexible and living concepts at the initial stage.**
2. **Locate the vision within the national policies of the participating countries to crystallize and attract an initially acceptable and potentially growing level of political support for regional FI integration.**
3. **Co-opt, or if necessary set up, regional fora for key stakeholders appropriate to the scope and needs of the FI integration vision to help identify the public and private sector roles and responsibilities and facilitate the necessary communication, cooperation and coordination among and within the stakeholder groups.**
4. **Establish the necessary leadership from within the representatives of the public and private sectors stakeholder groups that will actively commit to the regional FI integration program and will help secure the financial and human resources needed for the initiative.**

31. The *design guidelines* and the *implementation guidelines* deal with the heart of the regional FI integration program. It is at these stages of the integration initiative that leadership, commitment, consultation and effective management become most crucial.

32. The design stage is often much more complex than initially anticipated. For example, even with firm intentions to proceed with regional FI integration, the initiative often falters when the model design is too narrowly focused on technical aspects or other spe-

PLANNING GUIDELINES

5. Devise specific governance and planning frameworks, including creating and empowering an effective project team to lead the planning, design and implementation stages.
6. Conduct a comprehensive stock-taking of the economic and financial profile, institutional environment, overall financial structure and the FIs of the countries interested in participating in the regional integration initiative. A review of previous initiatives elsewhere should be conducted before or as part of this exercise to understand what has worked and what not and why, and form a view of what might be appropriate locally.
7. Identify the gaps and key divergences in existing national, and if applicable regional, arrangements and assess the strengths, weaknesses, opportunities and threats (i.e. a SWOT analysis) with respect to effective, efficient and safe regional FI integration. Pay close attention to the legal, regulatory and other relevant public policy characteristics of the participating countries (and/or the stakeholders involved) to assess their compatibility and the alignment of national regulatory frameworks with international legal and technical standards and best practices.
8. Set a clear plan to address all pending gaps in a reasonable timeframe to minimize barriers for integration. Propose mechanisms and realistic schedules for any required changes by participating countries. The rollout strategy might nevertheless need to be flexible to allow sufficient time for some entities intending to join to meet the participation requirements.
9. Develop a strong business case that considers not only the information from the stock-taking exercise and subsequent analyses, but also the benefits and costs of various types of schemes, systems and structural models for FI integration as well as potential future developments and opportunities of integration. Deciding who will finance the costs of the initiative is a key part of establishing the business case.

DESIGN GUIDELINES

10. Devise a broadly acceptable feasible model for FI integration, based on consultations and discussions among all stakeholders around the stock-taking and business case analyses.
11. Outline the selected integration model as comprehensively as possible with due regard to the results of the studies and analyses performed during the planning stage. This should include the structural architecture, operating schemes, regulatory and normative aspects, and technical design and operating systems.
12. Specify the business framework for the new regional FI arrangement, including its organization, management and governance, business management functions, operational scope and core business functions, business practices and controls, rules and procedures, and technical conditions and standards, among the main features.
13. Establish effective cooperative public governance, regulatory and oversight mechanisms in line with Responsibility E of the CPSS-IOSCO Principles for FMI to allow effective monitoring of the proposed regional FI arrangement.

cific operating features, and not well thought through ahead of the push for implementation.

33. The principles underlying the design guidelines are: (i) as the proverb warns, do not let the “perfect” become the enemy of the “good”; (ii) the complexity of a task should be confronted with pragmatism when designing a solution; and, (iii) the institutional foundations (e.g. the key legal, regulatory, contractual and organizational arrangements) are at least equally im-

IMPLEMENTATION GUIDELINES

14. Establish proper project management procedures and processes under the supervision of a designated project manager, who needs to be supported by sufficient and scalable human and financial resources. Include an effective and strictly enforced project control function that interacts closely with project governance and oversees on progress and issues of the regional FI integration program.
15. Set up an effective communication function to inform all relevant stakeholders properly and the general public throughout the implementation process of the project. The regional FI integration plan and its proposed business practices, organization, and operations should be comprehensively documented and made public to create awareness on the new arrangement and its benefits, and build support for using it.

SUSTAINABILITY GUIDELINES

16. Regularize the consultative arrangements among key public and private sector stakeholders to ensure that the evolution of the regional FI arrangement in terms of new business functions, services, and operating procedures is broadly responsive to, beneficial for, and accepted by stakeholders.
17. Regularize regulatory and oversight arrangements of public sector authorities to ensure ongoing compliance of the regional FI arrangement with the legal and regulatory requirements and any other relevant policy standards that apply to it.
18. Maintain sound and committed organizational governance and senior managerial leadership for the regional FI arrangement and ensure that staff dedicated to the regional FI organization are well-informed and well-trained in the goals, functions and operations of the regional FI arrangements.
19. Institute a regular program of self-evaluation and reporting on the regional FI arrangement's organizational structure, business functions and performance.

portant for FI integration as are its operational and technical solutions.

34. The implementation stage can also be challenging, even if the previous stages of the project have proceeded smoothly and an agreement has been reached as to the optimal type of regional FI arrangement and the commitment to that solution (and the overall project) appears to be strong. Some changes to the originally agreed proposals might still be necessary and will need to be managed effectively and in a cost-efficient

manner to minimize delays in the rollout schedule so as not to compromise the overall project.

35. Not only do the implementation guidelines promote the efficient management of project resources; they also foster ongoing commitment to the project, effective consultation as project implementation progresses, and awareness on the regionally integrated FI arrangement. The underlying principles for these guidelines are therefore: (i) accountability; (ii) adequacy of resources; and, (iii) effective communication.

36. Finally, the sustainability guidelines are needed to help establish a strategic direction and sound business culture for the regional FI arrangement that, together with the continuous oversight from public sector authorities, will help ensure that it will continue to evolve and develop to meet future stakeholder needs and legal and regulatory requirements and policy standards affecting its operations, and do so in a transparent and credible fashion.

37. The underlying principles for sustainability are therefore: (i) transparency; and, (ii) sound business management of the regional FI organization and underlying arrangements under the overall oversight and supervisory framework.

1.3 ORGANIZATION OF THE REPORT

38. The remainder of the report expands upon the basic elements and issues covered in this introductory chapter with regard to the key elements of regional FI integration and the approaches used in practice to deal with them. Chapter 2 describes in further detail the drivers for FI integration and the potential benefits that may stem from an effort of this kind. Chapter 3 provides an overview and a basic taxonomy of different types of regional FI models and actual projects and initiatives undertaken worldwide. Chapter 4 discusses the lessons learned from a variety of actual regional and cross-regional FI integration experiences as to the barriers, challenges and risks to effective, efficient and safe FI integration. These lessons form the basis of the *Guidelines for Successful Regional Integration of Financial Infrastructures*, which are then presented and discussed in detail in Chapter 5. The main report is supported by a number of annexes providing more details on several FI projects and initiatives, global harmonization efforts with regard to the legal and regulatory framework, an overview of technical standards relevant for regional FI integration, and a glossary of selected terms.

SECTION II

DRIVERS AND BENEFITS OF THE REGIONAL INTEGRATION OF FINANCIAL INFRASTRUCTURES



2.1 WHAT DRIVES REGIONAL FINANCIAL INFRASTRUCTURE INTEGRATION?

39. One of the main underlying motivations for regional and cross-regional integration of FIs is the potential for increasing and/or improving regional and inter-regional trade and investment activity. In this context, a first driver of regional FI integration is constituted by *the political agreements (and possibly mandates) among countries in a region for FI integration in the context of a broad regional economic and financial integration effort*. FI integration efforts of this kind are typically supported actively by a core group of countries in organized regional development policy and planning forums.²

40. A second driver is the *demand of customers and/or participants of national FIs for cost-effective cross-border access to regional and cross-regional markets and services*. The cross-border expansion and conglomeration of private sector FIs is motivated in many cases by the demand by market participants (and/or their customers, including asset managers, other securities servicers, other types of businesses) for accessing for-

eign financial markets and services. Alternatively they may wish to expand and improve existing access channels and means, for example by using new technologies and/or common platforms that increase speed, reduce costs or reduce risks, among other desirable features. Regional integration of public sector-owned FIs can also be driven by this type of participant/customer demands.

41. For existing privately-operated FIs there are also market incentives to expand their operations across borders. Such “supply-side-led” initiatives will most likely be based on competitive, commercial, operational, risk management and legal considerations. Hence, a third driver of regional FI integration is the *growth orientation and imperatives of existing FIs for expansion into new market areas within or across regions*.

42. Although in specific cases one of these drivers may be more dominant than the others, some combination of political willingness and market incentives is typically required to create the basic conditions for a regional FI integration initiative. Even supply-side-led initiatives must count on at least minimal political and regulatory acceptance as well as potential demand for their products and services as a motivator for expansion into a new cross-border market.

² For example, the FI integration projects of the Association of Southeast Asian Nations (ASEAN), Central America and the Dominican Republic, the European Union (EU) and the Southern African Development Community (SADC), among others, are prime examples of this driver. All these projects are discussed in further detail in Chapter 3.

43. It should also be noted that, for all three drivers identified, financial sector regulators and overseers may be an additional force pressing for a regional solution.³ They may do so based on certain public policy considerations like reducing systemic risk, enhancing efficiency and/or ensuring an adequate level of competition in the provision of the underlying services.

2.2 POTENTIAL BENEFITS OF REGIONAL FINANCIAL INFRASTRUCTURE INTEGRATION

44. Quantifying and valuing the benefits specific to regional FI integration is usually based on highly assumptive scenario analysis, dependent on the proposed FI integration model, and used mainly for illustrative purposes with no pretense to offer accurate forecasts. Post-integration assessment of the benefits has also proven difficult since the various benefits of regional FI integration accrue over time, typically in the long-term, and are difficult to isolate from other events that occur along with regional FI integration - some possibly as an indirect consequence.

45. Even so, indicative empirical evidence from several actual FI integration projects suggests that successful regional FI integration has the potential to help achieve certain broad benefits and also assists directly in achieving other more concrete ones.⁴ Indeed, the primary drivers discussed earlier suggest there are two broad classes of benefits to consider: (i) the “external”, macro-incentives or benefits that motivate the public sector’s push for regionalization of FIs such as regional commercial and financial development opportunities shared by the participating countries and their consumers and businesses; and, (ii) the

“internal” micro-benefits for FI operators and their direct and indirect participants, including end-users, that relate directly to the FI integration project.

46. In the first case, regional FI integration can contribute significantly to the economic and financial benefits broadly associated with the:

- Expansion of trade and investment flows among market participants in the region to enable deeper regional economic and financial integration;
- Attraction of investment capital, for example, investments both from within the region and even from outside for new securities offerings and money markets;
- Diversification of trade concentration and capital exposure of countries within the region across more and larger market areas; and
- Deepening and broadening of financial and capital markets in the region, for example through enhanced market liquidity as a result of higher trading volumes.

47. With regard to the direct benefits of regional (and even cross-regional and global) integration of FIs, the ones most commonly cited as potentially achievable are the following:

- Reduction of end-to-end transaction costs;
- Lower costs for end-users;
- Improved accessibility and reach to all market participants to cross-border transactions and other services, including an expansion of investment assets;

³ Other types of statutory regulators may also be involved, like anti-trust or competition authorities.

⁴ Several actual projects and case studies are presented and discussed in Annex 2 and Annex 3 of this report.

- Resource and skill/capabilities sharing, and
- Systemic risk reduction.

These direct benefits and the way in which they are associated with regional FI integration are explained in more detail below.

Reduction of end-to-end transaction costs for cross-border transactions

48. The potential reduction of transaction costs may come from two different sources: i) a reduction in the direct operational cost of a transaction, achieved at one or more of the processing stages; ii) reduction in one or more of the indirect costs associated with performing the transaction.

49. Operational or direct cost reductions are possible due to: (i) end-to-end straight-through processing (STP) of cross-border transactions, achievable through harmonization and standardization in regional payments, securities or derivatives schemes, as well as through interoperability among core systems operated by the inter-linked FIs or the use of a single technological platform⁵; and, (ii) the potential scale economies from more business activity, the adoption of common processes, business solutions and even operational software for integrated schemes and systems. Potential cost savings from scale economies, which are highly associated with the volume of transactions and processing capacity of the FIs' operating systems, are considered to be most achievable in centralized single platform systems that process not only cross-border but also domestic transactions. Even so, scale economies are also considered achievable to some extent in other arrangements that centralize a large share of the cross-border transactions now flowing through highly fragmented

schemes like basic cross-border correspondent banking arrangements.

50. Two of the most relevant indirect costs are liquidity costs and the costs associated with collateral requirements. Reductions in these and other indirect costs are attributable more to the efficient unification of the regional FI's scheme (i.e. the business, organizational and other institutional arrangements) than to the efficiencies achieved through purely technological upgrades and other similar improvements.

51. Essentially, liquidity-cost savings are related to the settlement asset for cross-border transactions and the settlement mechanisms and resources used. The basic finding has been that the fewer final settlement currencies are involved, the better. In addition, the more effective are the suite of mechanisms used to reduce the need for using those currencies and to re-cycle them promptly and safely among the participants in the settlement scheme as needed, the greater will be the liquidity-cost savings for settling cross-border transactions.

52. Arguably, other things being equal, potential liquidity saving is greater where there is a single regional currency used to settle all domestic and cross-border regional payments. For example, where funding and asset trading and management are region-wide, the markets for the regional currency and assets denominated in it are potentially broader and deeper, making the settlement assets more available at a lower transaction cost than otherwise. Where there is no single regional currency, liquidity-cost savings depend on the use of a settlement currency that is highly available throughout the region and that has relatively deep and active markets accessible to the financial institutions participating in the regional FI. Typically, global reserve assets – the US dollar and the Euro, in particular⁶ – satisfy this requirement.

⁵ Harmonization/standardization and systems integration tend to reinforce each other.

⁶ These currencies are the two dominant counterpart currencies in foreign exchange transactions settled through CLS Bank International, indicating that most major financial institutions have ready access to both.

53. Liquidity recycling schemes for payment and securities settlement are generally built around one or more of the following mechanisms: i) immediate crediting of funds/securities received, and, when applicable, requirements for immediate crediting of such funds/securities received to participant accounts; ii) in the case of central bank-operated FIs, the use of liquid reserve requirements for intra-day settlements; iii) funds and/or securities lending for both intra-day real-time settlement and for end-of-day overnight settlement of final account positions;⁷ iv) use of optimization algorithms to maximize settlements throughout the day;⁸ v) in schemes with cash and/or securities netting, multilateral netting to reduce end-of-day settlement requirements system-wide for cash and/or traded securities, compared to cumulative end-of-day settlement requirements.⁹

54. For regional cross-border transactions, the liquidity saving and recycling mechanisms mentioned above are most efficiently operated at a centralized regional level, either in a single platform or in a hub organization integrating national platforms.¹⁰ For the latter to be effective in this area, however, the participating FIs need to have very similar schemes and systems for liquidity efficiency that can easily become interoperable.

55. A regional FI arrangement may help optimize collateral requirements, where required when undertaking any form of cross-border financial activity, by, for ex-

ample, allowing assets held in one jurisdiction to serve as collateral for a transaction in another jurisdiction.¹¹ In the case of CCP arrangements, collateral requirements may also be optimized through so-called cross-margining, i.e. an agreement among the CCPs to consider positions and supporting collateral at their respective organizations as a common portfolio for individual participants that are members of two or more of the organizations. The aggregate collateral requirements for their positions held in cross-margined accounts may be reduced if the assets are correlated, transactions are offsetting and the value of the positions held at the separate CCPs moves inversely in a significant and reliable hedging effect.¹² The possibility to optimize collateral requirements in this way will depend on certain organizational arrangements and agreements at the level of the participating FIs.¹³ For example, open inventory sourcing, where collateral users can keep their collateral with whatever service provider they like but can move it through an open FI to its place of use (e.g. a CCP), provides a model to use collateral efficiently.¹⁴

Lower costs for end-users

56. When regional integration of FIs leads to a reduction of transaction costs, there is the presumption that most of those savings in the production of the services by the FIs involved will be passed through to FI participants and on to the end-users that are their cli-

⁷ For example, in many real-time payment settlement schemes, central banks are usually designated as intra-day and overnight lenders of settlement funds. In others, the scheme participants are active lenders and borrowers in an overnight funds market that operates continuously through the day, or as the final end-of-cycle transactions at the end-of-day, for same-day settlement. Likewise, securities lending schemes may be operated by stock exchanges or central securities depositories (CSDs) to facilitate delivery of securities on settlement date.

⁸ This typically involves some form of position offsetting prior to settlement.

⁹ Multilateral netting schemes in regional securities FIs are typically associated with CCP settlement services.

¹⁰ The different architectures and models for regional FI integration are discussed in detail in Chapter 3.

¹¹ This will need to be accompanied by a technical-operational arrangement to ensure that collateral can be transferred safely and efficiently if needed.

¹² CPSS-IOSCO, “*Principles for Financial Market Infrastructures*”, Basel, April 2012. See pages 54-55.

¹³ For example, agreeing on a haircut methodology for the various assets held in different jurisdictions (possibly denominated in different currencies), and in the case of regionally integrated CCPs even the harmonization of their risk management methodologies. It would also require a relatively high level of interoperability of the relevant technical platforms (e.g. collateral management systems, risk management systems) to allow for the safe and efficient posting of collateral and/or the transfer of the underlying asset, if and when required.

¹⁴ An example of such a model is the “margin transit” cooperation between DTCC and Euroclear’s Collateral Highway. For additional information on this initiative see paragraph 129 of this report.

ents. In the case of regional (and national) FIs that are member-owned and governed, or other not-for-profit FIs such as those operated by central banks which usually price their services on a cost-recovery basis, most cost savings from regional integration will indeed be passed to participants.¹⁵ In this case, the additional pass-through to end-users depends in large part on the nature and the degree of market competition among the entities providing financial services to end-users. In general, where access to the FIs is reasonably open and competition in end-user financial service markets adequate, it is likely that a substantial portion of the transaction costs savings will be passed on to the end-users, whether in the form of lower fees or rebates.

57. Other elements, such as administrative restrictions on end-user pricing of cross-border services, can also limit the possibility of passing on the cost savings resulting from regional FI integration to end-users.

Improved accessibility and reach to cross-border transactions and other services

58. Although some FI participants and their customers may already be able to access foreign financial markets and related services in one way or another, it may well be that such access is highly inefficient. This may mean not only higher cost of transactions but also opportunity costs such as lost business opportunities, and maybe even increased financial and non-financial risks. For example, when intra-regional cross-border payments are denominated in a foreign (international reserve) currency and are operated through unsophisticated banking correspondent arrangements, there are usually implications in terms of time and complexity. Payments from one country in the region to another country in the same region will likely need to be sent through one or more third parties (typically cor-

respondent banks) located in the country issuing the foreign currency. Apart from the delays (and additional costs) that may be expected from the involvement of multiple parties, time to complete the transaction may also be further affected by differences in time zones and business calendars.

59. FI participants and their customers (e.g. many non-bank payment service providers, corporate treasurers, asset managers, pension and mutual fund managers, to mention just a few) often demand greater transaction speed, increased connectivity and reliability, and at the same time enhanced procedural simplicity for their transactions in foreign jurisdictions (and domestically as well) than presently available to them.

60. More advanced regional FI integration arrangements can help materialize these demands, mainly through thoughtful and carefully designed schemes as well as through technical solutions that optimize transactional processes in whole or at least for some of the crucial steps. As with the other potential benefits discussed so far, these specific benefits seem more likely to be achievable in a highly integrated solution enabling seamless access to multiple jurisdictions and markets.

Resource and skills/capabilities sharing

61. It is not uncommon that some countries within a particular region have at least some financial markets and FIs that are less developed than those of other countries in the region. In some cases, only a few of the countries within a region may have markets and FIs that can meet international design, operating and regulatory standards for financial efficiency and stability. These countries often have some difficulty, individually, in mobilizing the capabilities, structures and other resources needed to reach their own national development goals. In this situation, there can be significant benefit in developing their core banking and capital

¹⁵ Often, private for-profit FIs need to compete with other not-for-profit FIs that provide similar services, although not necessarily perfect substitutes, and must price accordingly.

markets and associated FIs on a broader regional basis, rather than on individual national basis, even where intra-regional trade and capital flows may not yet be a significant driver.

62. In this context, regionalization of FIs allows public and private sector stakeholders in the region to share expertise and to share in the development and set-up costs of new FIs. The typical process for regionally integrating FIs involves discussions by a regional group of the national policy authorities who rely on their domestic experts from the private and public sectors to help inform the policy discussion, to gauge the feasibility of the business case, and if so, determine the regional integration model. These experts also usually form their own particular expert groups, such as regional banking associations, regional central bank fora and regional FI associations to concentrate expertise and mobilize working resources around the initiative – resources that may be limited in each of the member countries alone.¹⁶ Leveraging of such expertise provides deeper and broader perspectives on potential practical solutions for the regional integration initiative and its ongoing operations and development.

63. Lower FI development costs and set-up costs – and possibly even on-going operating costs – for individual participating members/existing FIs are also more likely to be achieved through broader cost-sharing in a coordinated regional FI integration initiative than in fragmented arrangements for cross-border transactions. Depending on the regional FI architecture, risk management and other features, such regional infrastructure may be able to support also domestic transactions and thereby gain greater capabilities and savings.

¹⁶ For example, the European Payments Council (EPC) and the Southern African Development Community (SADC) Banking Association were initially established to bring their combined expertise to their regional FI initiatives.

Systemic risk reduction

64. Some of the earlier and usually less sophisticated arrangements designed to enable cross-border transactions have, in parallel, increased the exposure of the participants in those arrangements to some financial risks. A typical example is an arrangement whereby financial market participants (e.g. two banks) use foreign correspondent banks to settle a foreign exchange transaction between them. As it is unlikely that the settlement of this transaction will be done on a payment-versus-payment (PvP) basis¹⁷, the participants engaging in this transaction will expose themselves to credit risk, as well as to liquidity and possibly other risks¹⁸. In certain scenarios, these risks can lead to increased systemic risk.

65. As mentioned in sub-section 2.1 about the drivers of regional FI integration, regulators and overseers will likely press financial market participants for a better solution to a situation like the one described immediately above. Regional (and eventually cross-regional or global) FI integration arrangements may be able to reduce systemic risk, starting from the design of the FI itself and then through the development of specific services/solutions, or the specific risk management techniques and procedures used on a day-to-day basis at the operational level.

66. More generally, systemic risk reduction is explicitly or implicitly conditioned on the requirement that the relevant FIs meet the accepted international policy standards for financial market infrastructures – notably, the CPSS-IOSCO Principles for FMIs. This includes a sound legal and regulatory framework that is compatible region-wide, together with uniform risk management practices and rules that apply to all par-

¹⁷ An exception to this would be the foreign exchange settlement transactions by CLS Bank International.

¹⁸ For additional information on these risks see BCBS, “*Supervisory guidance for managing risks associated with the settlement of foreign exchange transactions*”, Basel, February 2013.

ticipants in the arrangement and that can be effectively enforced. For both vertically and horizontally integrated FIs, highly consistent and compatible risk management programs that effectively address the interdependencies among the various integrated national FIs (and of other relevant components) are also required. So are arrangements to cover risks specific to integration, like those related to the currency or currencies used for settlement, cross-border tax considerations and others. Some of these issues are explained in further detail in chapters 3 and 4.

SECTION III

GENERAL MODELS AND TRENDS OF REGIONAL INTEGRATION OF FINANCIAL INFRASTRUCTURES



3.1 FORMS OF INTEGRATION

67. The forms of integration can range from simple agreements among FIs to facilitate direct or indirect cross-participation among the participants in each of the FIs, to interoperability arrangements, to full harmonization of the operating schemes and integration of the technical platforms into a common system for dealing with cross-border transactions. Integration can therefore be achieved with varying levels of depth and sophistication. Nonetheless, all forms of regional FI integration aim at the same basic purpose which is to enable, or further facilitate or improve, the cross-border transactions of the participants of the FIs of the countries in a region, as well as those of the customers of such participants.¹⁹

68. In basic integration agreements, the relevant FIs usually sign contracts that allow the participants of each of the FIs to participate in some form – i.e. directly, or indirectly through the FI to which each of them belongs or through another intermediary – in the other FI. The FI(s) whose services are now accessible will typically seek to apply its same rulebook and risk management approach to those portions of the cross-border transaction that run parallel to a regular do-

mestic transaction; for the cross-border elements, including cross-currency arrangements, supplementary rules may need to be developed.

69. A link is a set of contractual and operational arrangements between two or more FIs that connects them directly or through an intermediary.²⁰ A link can therefore be seen as a more evolved form of integration. While technical interfaces generally are developed to allow some degree of automation to support certain information and data exchanges, links generally also require some degree of harmonization of operating rules and other scheme features as a prerequisite. More elaborated and sophisticated links allow for the partial or even full interoperability and STP at a transactional level of the underlying technical operating platforms.

70. A regional FI with a common, unified scheme and operating system represents the deepest and widest form of integration,²¹ at least for the purposes of this report, since it facilitates STP in pre-to-post transaction services for cross-border transactions – and in some cases also for purely domestic transactions.

¹⁹ By extension, cross-regional integration projects would aim at enabling and/or facilitating cross-border transactions also across regions.

²⁰ CPSS-IOSCO (2012), pp. 109.

²¹ This statement is clearly also applicable to cross-regional FIs, and by definition also to global FIs.

71. The main models of regional FI integration are described in further detail in the remainder of this chapter. Each sub-section initially describes FI integration at the horizontal level, i.e. integration of FIs that provide similar services to their participant group. This is then complemented with descriptions and examples of vertical integration, i.e. integration of FIs that provide different types of services along the value chain, for example, a private payments clearinghouse with a central bank-operated payment settlement system, or a securities trading platform with a clearing and settlement system and a CSD. Some of the most relevant actual regional (or global) FIs and some ongoing and planned projects are mentioned under the relevant model(s). Several of these examples are described in detail in Annexes 2-5.

72. It should be noted that some initiatives and some FIs are global by design.²² In this regard, a thorough review of the scope and the design of any regional project in order to align it with global initiatives and/or global FIs is crucial to avoid additional costs for the participants of the planned FI (e.g. adjustment and/or reconciliations costs, among others).

3.2 MODELS OF REGIONAL INTEGRATION OF FIS FOR PAYMENTS

3.2.1 Payment Settlement Infrastructures

73. Bilateral links between national payment settlement infrastructures typically aim at supporting the settlement of certain types of transactions between their respective jurisdictions. Perhaps the simplest

²² Main examples include CLS Bank International (foreign exchange), DTCC's Global Trade Repository (OTC derivatives), the International Swaps and Derivatives Association (ISDA) Master Agreement (OTC derivatives), the SWIFT rulebooks (messaging of financial transactions) and the rulebooks of the international card schemes. These services are delivered by one or a multitude of operating units.

form is when two central banks agree on a scheme to support or facilitate such transactions. This is likely to also require linking their RTGS systems (or similar immediate-funds transfer systems) to a certain extent by developing less or more sophisticated technical interfaces between them. One example of this kind is the linking of the Hong Kong Monetary Authority's (HKMA) U.S. dollar RTGS system²³ with the RTGS systems of other central banks in the region, specifically Bank Negara Malaysia's RENTAS and Bank Indonesia's BI-RTGS. These links, which are independent from each other, allow PvP settlement between the national currencies of those countries and the U.S. dollar.²⁴

74. Some other models involving only a few participating member countries are basically linked through the holding of bilateral accounts among central banks. Participating central banks may hold settlement accounts with one another or with a common commercial bank. The case of the East African Payments System (EAPS) illustrates the former, while the *Sistema de Pagos en Moneda Local* (SML) involving the national RTGS systems of Argentina and Brazil is an example of the latter. In cases like these, there is generally little or no interoperability between the respective national payment settlement systems.²⁵

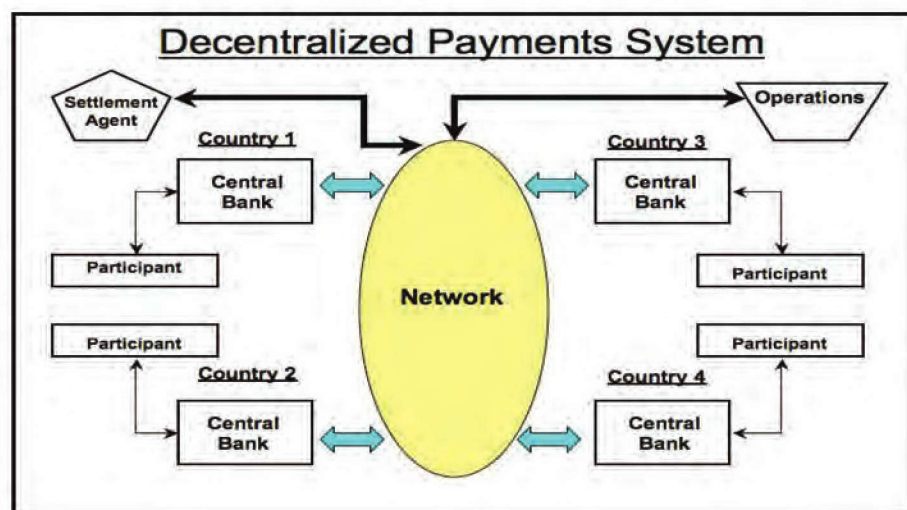
75. More advanced regional integration of payment settlement systems are characterized by the adoption of a unified scheme and a common technical-operational facility to process the transactions defined under the scheme. In turn, the common regional technical-operational facility will follow one of two generic ar-

²³ The HKMA operates RTGS systems that settle in Hong Kong dollars, U.S. dollars, Euro and Renminbi Yuan (RMB). These systems operate on a common operating platform.

²⁴ The payment systems operated by the HKMA also have linkages with several other payment systems, including those of the Chinese mainland. The systems are described in further detail in Annex 2.

²⁵ Members of the EAPS have nevertheless harmonized the scheme requirements in terms of rules and protocols for clearing and settling eligible cross-border payments and some key properties of their national RTGS systems.

FIGURE 1



Source: Own elaboration.

chitectures: the decentralized payments system (Figure 1) or the single or fully centralized payments system (Figure 2).

76. Arrangements using a decentralized (though common) payments system for regional, cross-regional and/or global payments link existing national settlement systems with varying degrees of sophistication and complexity. Most decentralized regional FIs are designed in a “hub-spoke” structure, in which there is a central administrative and technical-operational facility that links the participating RTGS (or similar) systems.²⁶ The integrating mechanism is usually a standardized messaging and connectivity technology that links account management and the various national

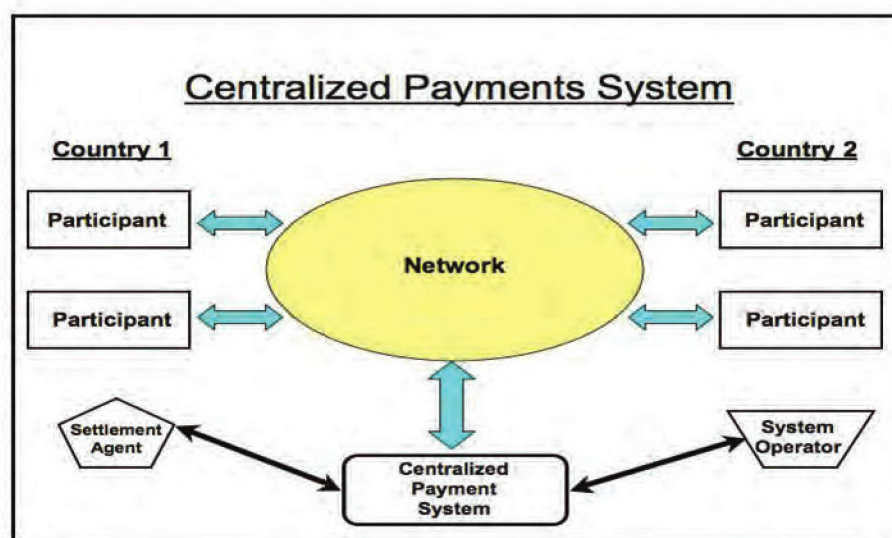
operating systems together.²⁷ Participants will normally access the regional FI through the national settlement infrastructure of their jurisdiction.

77. Schemes with a decentralized settlement system involving multiple parties have been developed in regions where there is a regional currency, as well as for settling cross-border payments denominated in a single foreign currency. Perhaps the most well-known example of a unified scheme with a decentralized settlement system for a regional currency was the original TARGET in Europe, which linked the Euro RTGS systems of EU national central banks. In turn, the *Sistema de Interconexión de Pagos* (SIP) in Central

²⁶ The operator or “hub entity” can be one of the participating FIs, an entity that is independent of the FIs linked through, or it can also be an operating unit within a participating FI.

²⁷ For example, messaging formats between participating members and their national FIs are often standardized with those required for cross-border messaging, or are readily translatable through mapping interfaces to allow straight-through message processing between connected FIs.

FIGURE 2



Source: Own elaboration.

America and the Dominican Republic exemplifies an arrangement using a decentralized architecture for settling cross-border payments in U.S. dollars.²⁸

78. In the centralized platform model, the national payment settlement systems have been replaced by a single regional FI which participants access directly through the relevant telecommunications network (see Figure 2). Centralized platforms are mostly identified with regional integration projects that have evolved into a monetary union and the use of a regional currency which, by minimizing or even eliminating the distinction between cross-border and domestic payments, opens the possibility to process both types of payments in the same FI seamlessly. Some

relevant examples in this regard are TARGET 2²⁹ and EURO 1 supporting settlements in Euro in Europe, the STAR-UEMOA for the West African CFA Franc throughout the West African Economic and Monetary Union, and the RTGS system of the Eastern Caribbean Central Bank (ECCB) for the EC dollar in the Eastern Caribbean Currency Union.

79. The proposed path for the SADC Regional Payment Integration project is similar to that of the Eurosystem in that it started as a decentralized model, and is now moving into a centralized one. The SADC project now includes a dedicated common technical-operational facility for cross-border payments settling in the South African Rand.³⁰

²⁸ See, European Central Bank, Overview on Target, July 2005, and Dubon, E. G. and G. Heinrich, *The development of a regional payment system in Central America: A step towards further integration and economic development*, Journal of Payments Strategy & Systems, Vol. 5, No. 3, 2011.

²⁹ TARGET2 was launched by the Eurosystem in 2008, replacing TARGET. It is a centralized platform that settles payments directly between participants – rather than through the infrastructure of the national central banks.

³⁰ At least four countries in the region – Lesotho, Namibia, Swaziland and South Africa – are participating in the regional network at start-up. The currencies of the first three countries have fixed exchange rates with the South Africa Rand, which also circulates as payment currency in these countries.

The architecture involves a centralized network structure that handles intra-SADC cross-border transactions while the individual countries maintain their RTGS systems and domestic market infrastructures. However, once the planned monetary union is achieved and implemented, the project intends to develop a single regional payment settlement infrastructure that would support cross-border as well as domestic payments.³¹ The latter system will therefore be conceptually similar to TARGET 2 and STAR-UEMOA.

80. A unified scheme and system for settlements denominated in multiple currencies is also possible. The prime example in this case is CLS Bank International, which emerged as a global solution – rather than regional or cross-regional – to eliminate principal risk in foreign exchange settlements.³² CLS links the national RTGS systems of the participating jurisdictions/currencies, with a strong reliance on the legal agreement of the rulebook and the technical standards.

81. One aspect that emanates from the various models and examples presented above is that the issue of the currency (or currencies) used for final settlement and the underlying rules for currency conversions are a vital element of any cross-border FI integration project.³³ Box 4 presents a discussion on some of the most relevant aspects on this regard.³⁴

³¹ A SADC Central Bank is planned to be established by the end of 2016 and a single SADC currency would be introduced by the end of 2018.

³² CLS Bank virtually eliminates principal risk by settling all payments on a payment-versus-payment basis. Additional details on CLS Bank and its continuous linked settlement solution are provided in Annex 2.

³³ This aspect might be also relatively straightforward in projects where the participating countries have pegged their currencies to the final settlement currency.

³⁴ The discussion in Box 4 does not intend to be exhaustive. For additional details, readers can refer to the discussion on liquidity in Chapter 2 of this report, and the work of the BCBS, “*Supervisory guidance for managing risks associated with the settlement of foreign exchange transactions*”, Basel, February 2013, among others.

3.2.2 Payment Clearing Infrastructures

82. Regional and cross-regional linkages between national payment clearing infrastructures such as automated clearing houses (ACHs) are a fairly recent development. In general terms, the various integration models are similar to those of payment settlement infrastructures earlier discussed, i.e. they range from horizontal bilateral structures to more advanced arrangements using a common technical-operational platform for cross-border payments, or even centralized FIs covering a region or sub-region.

83. Even if some ACH linkages do not aim at achieving a deep integration of the underlying technical platforms, they do need to satisfy specific technical, messaging and operating standards to permit a minimum level of efficient and secure regional – and eventually also cross-regional – interoperability. In this regard, for example, the SEPA Rulebooks developed by the European Payment Council (EPC) for credit transfers and direct debits in euros provide a highly detailed compendium of retail instrument design, operating schemes and even technical standards for clearing and settlement. Likewise, the SEPA Pan-European Automated Clearing House (PE-ACH) Clearing and Settlement Mechanisms (CSM) Framework sets out the principles and standards for CSMs’ interoperability in credit transfer and direct debit schemes.³⁵

84. It is worth noting that even though the SEPA PE-ACH CSM Framework facilitates and ultimately promotes consolidation of clearing and settlement organizations, it does not require full technical integration of CSM platforms, nor a single regional ACH infrastructure. For example, the SEPA-compliant Interoperability Framework for the European Automated Clearing House Association (EACHA) provides technical in-

³⁵ European Payments Council, PE-ACH/CSM Framework, v1.2, EPC Secretariat, June 2008 and Kokkola, T. (ed.), *The Payment System: Payments, Securities and Derivatives and the Role of the Eurosystem*, ECB, 2010.

BOX 4: A CURRENCY FOR FINAL SETTLEMENT IN CROSS-BORDER FI ARRANGEMENTS

In cross-border FI arrangements, the choice of the settlement currency or currencies is crucial for at least two reasons: liquidity management and foreign exchange (FX) risk management.

In general terms, using a single currency for final settlement facilitates the management of these two elements. In a monetary union, potential liquidity savings in the cross-border FI arrangement are the greatest as the same currency is used to settle all domestic and cross-border regional payments - and even more so if the same FI is used to settle both payment types. Clearly, for all intra-regional payments there are no FX risks or FX conversions costs.

Where there is no single regional currency, a global reserve currency like the US dollar or the Euro will normally be chosen as the currency for final settlement, mainly because at least one of these two currencies is highly available in most world regions. FX risk and the cost of conversion are typically borne by the originating and beneficiary end-users in the transaction rather than by the direct participants in the FI(s) which act as their agents in the value transfer.

In a somewhat similar arrangement, the settlement scheme of the regional FI can involve a single settlement currency, but that of one of the participating countries. Usually, this currency is significantly involved in cross-border trade and financial flows within the region and may also be often used as a parallel currency to the local currency in these countries. FX risk and conversion costs tend to be borne also by end-user originators and beneficiaries of the cross-border payments – except those domiciled in the country that issues the settlement currency.

In other cases, settlement is denominated in U.S. dollars and/or other global reserve currencies, but it is actually performed in the local currencies of the member countries of the cross-border FI. The U.S. dollar (or other) is used only to define the local currency value sent from one participating country and the local currency value received in the other member country. FX risks in relation to the cross-border FI are minimized where there is a “hard peg” between the local currencies and the reference currency. Where the exchange rates are variable, sometimes an applicable rate is announced prior to the opening of settlement and prevails through the day. In other cases, real-time or near real-time market-based exchange rates can be assigned to each transaction upon intra-day submission and acceptance for settlement. FX risk and conversion costs are still generally passed through to the originating and beneficiary end-users.¹

¹ It should be noted that some national payment settlement systems accommodate settlements in one or more foreign currencies under the same platform used for settlements in the domestic currency. However, this feature is not related to regional FI integration unless it is associated with the settlement of cross-border transactions. Indeed, in some countries this feature has been developed solely for settling purely domestic payments.

teroperability standards for STP (at the infrastructure level) for cross-border payments among its 25 member ACHs in 21 participating countries in a distributed bilateral network (although not all EACHA member ACHs are actually linked to each other).

85. The International Payments Framework (IPF), introduced in late 2009 also provides a framework to enable the efficient cross-border clearing and settlement of payments in multiple currencies or in a single currency.³⁶ Like the SEPA Credit Transfer Rulebook, the

³⁶ The IPF is developed and managed by an association, IPFA, of banks and clearing systems from Europe, Africa, North America, and Central and South America. The IPF was introduced in late 2009.

IPF is designed around accepted international operating and technical standards for credit transfers, most notably ISO 20022 messaging standards. In terms of regional linkages, the IPF supports three basic models for credit transfer payments:

- Model 1 provides an IPF rulebook, standards and technical architecture for ACH-to-ACH links, also covering operating and technical standards and file exchange protocols for each national ACH with its participating banks. National ACHs in turn are linked to a single regional settlement agent, either a commercial or central bank.
- Model 2, more centralized, substitutes a single regional ACH for national ACHs in situations where certain countries' national ACHs may be inadequately developed.
- Model 3 eliminates both regional and national ACH in favor of standards and procedures for bilateral file exchange between participating banks, so that each of them links directly to the regional settlement facility. This model creates, in effect, a regional immediate-funds transfer and settlement system.

86. A relevant example where IPF standards have been adapted to enable regional and cross-regional credit transfers is the FedGlobal ACH Service, which links bilaterally with other participating ACHs through gateway operators, offering a means to send cross-border ACH credit transfers to 35 countries around the world.³⁷ In this mechanism, the International ACH Transaction (IAT) standard developed by the National Automated Clearing House Association (NACHA) and used by the FedGlobal ACH Services as well as the SEPA Credit Transfer messaging formats have been mapped into the IPF formats to enable cross-border payments.

³⁷ Plus debit payments to Canada only.

87. As with payment settlement systems, in addition to a common scheme, more advanced regional integration projects for payment clearing infrastructures are also characterized by a common technical-operational facility to enable interoperability between the participating ACHs. The common technical facility can also be either a decentralized structure (similar to Figure 1) or a centralized operating platform (similar to Figure 2).³⁸

88. In this regard, for example, the EBA Clearing STEP 2 is a PE-ACH for bulk payments in euro based on a single processing platform. The West African Economic and Monetary Union's SICA-UEMOA, on the other hand, is composed of a regional clearing facility and 9 national clearing systems – one for each of the Union members – for payments in the West African CFA franc. Both STEP 2 and SICA-UEMOA clear intra-regional cross-border payments as well as domestic payments denominated in the respective regional currencies.³⁹

89. ACH linkages and other regional or cross-regional ACH integration arrangements will also need to link vertically to a settlement mechanism for completion of payment settlement.⁴⁰ This is sometimes accomplished via a private commercial bank, through one of the participating central banks or through a regional settlement infrastructure.

90. Vertical integration requires common participation links between the members of the relevant FIs: for example, some or all ACH participants having also a settlement account with the entity operating the regional settlement infrastructure. At the same time, vertical

³⁸ In these figures, the payment settlement system component would need to be replaced by the single ACH or the various ACHs integrated through a common communications network, respectively. The settlement mechanism would need to be added as well.

³⁹ EBA Clearing, STEP2, at www.ebaclearing.eu and BCEAO, *The New Payment Systems within the West African Economic and Payment Union*, at www.bceao.int. See also, Musuku, T.B. et al, *Lowering the Cost of Payments and Money Transfer in UEMOA*, Note #23, Africa Trade Policy Notes, World Bank, July 2011.

⁴⁰ This need of a vertical linkage to a settlement mechanism is clearly also applicable to a single national ACH.

integration is generally independent of the form(s) in which horizontal FI integration has been achieved. In other words, vertical integration does not require that the same integration model for one type of FI service (e.g. payments clearing) be used for other types of services provided by other FIs (e.g. payment settlement), even if they are all regionally integrated on a horizontal service level. This translates into greater flexibility for the regional FI arrangement.

91. More advanced models of regionally integrated ACHs will typically discharge their underlying payment obligations in a regional settlement infrastructure. For example, STEP 2 in the EU is a case of a single regional ACH that settles its final balances in a single regional payment settlement system (i.e. TARGET2). In turn, the EACHA scheme illustrates the case of interoperable national ACHs whereby the payment obligations resulting from the clearing of cross-border payment transactions in Euro are also settled in TARGET2.⁴¹ SICA-UEMOA exemplifies the case of both a regional ACH and regionally networked national ACHs settling in a single regional settlement system (i.e. STAR-UEMOA).

92. A common feature of the examples described immediately above is that the various FIs involved support both domestic as well as cross-border payments. In the SADC Regional Payment Integration project mentioned earlier, in a first stage only cross-border payments denominated in South African Rand will clear and settle using the common scheme and technical-operational facilities that will integrate the national ACHs as well as the national RTGS systems. In this case, therefore, regionally integrated national ACHs will further integrate vertically with regionally integrated national RTGS systems.

⁴¹ As mentioned earlier, the EACHA scheme involves an interoperability framework between national ACHs rather than full technical integration between them.

3.2.3 Retail Payment Transaction Services

93. In the retail payments sector, cross-border transaction schemes organized by or for banks were designed initially along the lines of traditional correspondent banking arrangements in which certain banking firms in each national jurisdiction acted as gateway service providers to their respective national clearing and settlement systems for participating member banks in other countries. However, unlike typical cross-border correspondent banking arrangements, which are bilateral arrangements between banks in various countries, these cross-border transaction schemes were multilateral arrangements governed by service agreements and operational protocols featuring a basic level of standardization between participating banks in different countries. Such schemes provided participating members with somewhat less costly and faster payment delivery than the usual correspondent banking arrangements of that time. An actual example of this kind is TIPANET, which was designed as a cross-border retail payment service for credit transfers among cooperative European and Canadian banks.⁴²

94. The widespread growth of credit and debit card payments since the late 1980s provided a second wave of regional and cross-regional integration efforts for cross-border payment transaction FIs. Participants in the underlying card payment schemes are primarily banks, and regional cross-border arrangements include direct linkages among FIs operating national payment card schemes and processing platforms. Some are horizontal, bilateral arrangements among the national networks, such as the linkage between Interac debit card system in Canada, NYCE Payments Network and PULSE systems in the United States, and Union Pay in China enabling access by the schemes' cardholders to cross-border debit payments and ATM

⁴² TIPANET was organized twenty years ago before the emergence of global banks that today operate in multiple national payment infrastructures and focus on correspondent banking services as a core business line.

withdrawals. As another example, the Euro Alliance of Payment Schemes is based on bilateral links among five national and regional card payment schemes in the Euro zone.⁴³ In each of these examples, the schemes achieve interoperability through interconnected network switches accessed via point-of-sale transaction devices or ATMs. Routing via gateway service providers enables the cross-border payments to clear and settle in the appropriate national payments infrastructure.

95. Global card payment schemes such as VISA and MasterCard provide for cross-border interoperability in transaction systems for payments with credit and debit card and ATM cash withdrawals for cardholders. Interoperability is achieved within each scheme across countries, and also, at least in certain countries and regions, between schemes through national network switches or portals of web merchants.

96. Moreover, for cross-border transactions the transaction systems are vertically integrated with the proprietary clearing and settlement system of each of those two schemes.^{44 45} The latter involve proprietary messaging and processing systems for inter-member-bank clearing and settlement, with decentralized authorization and processing at the member-bank level for cardholders and merchants. Cross-border/cross-currency payments normally involve either member-banks in one country operating via one or more correspondents, with the correspondent providing a gateway to the ultimate settlement bank or infrastructure for the relevant currency. Indeed, for each eligible settlement currency, the global payment card organization opens a settlement account with a member bank that participates in the national settlement system for that cur-

rency.⁴⁶ Members owing funds in that currency send payments to the account of the payment card organization at its settlement bank, which then distributes the funds owed to the other member banks.⁴⁷ Thus, even some highly integrated schemes and platforms, such as those for global card payments, link to national and regional interbank payment settlement infrastructures, through local banks, to settle cross-border/cross-currency inter-member payments.

97. In addition to the bank-based account-to-account cross-border payment transaction and money transfer schemes and systems, several non-bank payment transaction and money arrangements offered through money transfer operators (MTOs),⁴⁸ and on-line payment service providers focusing on payments to e-merchants,⁴⁹ provide cross-border payment transaction and settlement services. While these organizations operate proprietary money transfer systems that focus primarily on person-to-person, person-to-business payments and, now, business-to-business payments for both domestic and cross-border payments, they each require service relationships with local banking firms to manage their own cash and foreign exchange positions and to facilitate the in-payments and out-payments between their local customers and their own payment transfer scheme.⁵⁰

98. At the same time, banks in many countries are now forming service relationships with MTOs in which the participating banks send and receive payments on behalf of their own customers through

⁴³ See, *Euro Alliance of Payment Schemes*, at www.card-alliance.eu/about-eaps, accessed June 25, 2012.

⁴⁴ In some countries, the proprietary clearing and settlement system is also used for purely domestic transactions.

⁴⁵ For a more detailed description, see, CPSS, *Payment and Settlement Systems in Selected Countries*, April 2003.

⁴⁶ In some cases, this “correspondent” or “gateway” bank is even that country’s central bank.

⁴⁷ The settlement between the card-issuing bank and the merchant is facilitated through the payment card organization’s settlement bank account.

⁴⁸ Such as Western Union, MoneyGram and many others.

⁴⁹ For example, PayPal, Payoneer and Google Checkout.

⁵⁰ The settlement of the payment obligation between the payment sending and receiving individual or merchant is normally on the books of the operator of the scheme. This often involves in-payments and out-payments to and from its account at its settlement bank from and to accounts at the senders’ and receivers’ banks.

the MTO's money transfer system. Likewise, banks may act as paying and collecting agents for customers of MTOs. Such relationships extend the reach of the individual physical networks to areas in their own and other countries in which they have no other branch or other form of physical presence.⁵¹

99. As for on-line payments, banks have also very recently begun to develop competing schemes with those of non-banks. One example is MyBank in Europe. It is operated by EBA Clearing on behalf of its member banks. The rollout of the service started in 2013. MyBank provides a regional e-authentication scheme for initiating euro payments from customers to web merchants, with its operating system vertically integrated into EBA Clearing's interbank payment processing systems.

3.3 MODELS OF REGIONAL INTEGRATION OF FIS FOR SECURITIES AND DERIVATIVES

100. While there are superficial parallels in the generic architectures of the infrastructure linkages for regional and cross-regional payments and securities transactions, there are also several key differences related to the particularities of securities and derivatives transactions - and their respective industries. Most obvious are the need for solutions to link the settlement of the securities and of the underlying funds, the use of actual or virtual securities listings and trading platforms and/or electronic brokerage systems for initiating securities trades, or the use of custodians and depository organizations for providing a variety of custody, trans-

fer and account management services for individual securities issues.

101. The typical integration process for securities and derivatives FIs has actually been different from payments FIs. For payments FIs, advanced regional integration has been achieved in most cases by linking national infrastructures while ownership of the latter remains unaltered.⁵² For securities and derivatives FIs acquisitions have been a prime means to achieve conformity across two or more jurisdictions. There are many reasons for this difference, including the ownership structure of the securities or derivatives FIs compared to that of payments FIs (e.g. private rather than public, the latter being notably the case for RTGS systems and for some ACHs). In addition, an important difference is the apparent higher complexity in achieving a regional FI for securities providing end-to-end services (i.e. from pre-trade, trading and all the way to clearing and settlement) in an integrated, efficient manner, which is a key demand from major users like pension fund and other asset managers.

3.3.1 Trading Infrastructures

102. Historically, cross-membership by securities-dealers and cross-listing of securities have been the principal mechanisms for cross-border linkages between stock exchanges and electronic trading facilities. In general, arrangements like these provide only limited access to cross-border capital markets to major institutional investors and to global issuers. More sophisticated forms of regional and cross-regional integration among exchanges emerged in the last two decades or so.⁵³

103. In some cases, the trading systems of the exchanges in the participating jurisdictions are linked

⁵¹ Although mobile payment schemes have developed rapidly in some parts of Africa and Asia in particular as payment and money transfer operations, most are not yet interoperable domestically, let alone across borders. Also, many have partnership or service arrangements with local banks similar to MTOs that provide them with access to inter-bank payment infrastructures.

⁵² One notable exception is Equens, which is the result of a merger between the German Transaktionsinstitut and Dutch Interpay and has integrated Italian Seceti. A number of acquisitions and mergers among specialized card processors have also taken place. For further details see "The future of EU card processing revisited: 2004 compared to 2010" (www.psel.co.uk/pdf/articles/processing/future_eu_card_processing_revisited_v2.pdf).

⁵³ Linkages, mergers and eventually platform integration in trading platforms actually began on a national basis during the 1990s in countries with stock and derivatives exchanges that prior to that operated only regionally within the country.

bilaterally through a telecommunications network. One example is the Latin American Integrated Market (*Mercado Integrado Latinoamericano*, MILA), in which the trading infrastructures for equities of Chile, Colombia and Peru are networked together at the infrastructure level via FIX gateway message routers and automated price displays covering the three markets. However, these infrastructures do not operate as yet on a common or even uniform platform or scheme.⁵⁴ A similar case is that of the CME Group in the United States and BM&F Bovespa, the Brazilian securities and derivatives exchange, in which there is an automated order routing link between the derivatives trading platforms. CME Group has also developed a similar link with MexDer, the Mexican derivatives exchange.

104. The ASEAN Trading Link, in contrast, is an electronic hub-spoke arrangement linking stock exchanges in Singapore, Malaysia and Thailand, and in the future also those of Indonesia, the Philippines and Vietnam. There is a central operating facility, the Intra-ASEAN Network (IAN). Like MILA, the ASEAN Trading Link uses a FIX gateway protocol and correspondent relationships between the originating and sponsoring brokers. Each member exchange links to a local electronic gateway into the IAN to route trade orders and relevant pre-and-post trade and market data.⁵⁵ Unlike MILA, the ASEAN does not yet include integrated accounts at the depository level.

105. In Europe, mergers among stock exchanges in various EU member countries have ultimately led or may lead to the integration of the various trading schemes and of the operating systems into common

platforms for both domestic and cross-border transactions – and potentially to expansion in other trade and post-trade services. It should be noted, however, that legal requirements to register and hold on deposit some securities locally are still an impediment to the full consolidation of the existing trading FIs into a single regional FI.

106. The Central and Eastern Europe Stock Exchange Group (CEESEG) is a holding company owned jointly by the Vienna Stock Exchange and Austrian banks that, in turn, owns equity in the Budapest, Ljubljana, Prague and Vienna stock exchanges.⁵⁶ Currently, each of these exchanges operates separately within its own jurisdiction, although migration of all trading to the Deutsche Börse's Xetra platform will be completed in December 2013, and data vendor operations will be consolidated in Vienna. The vision for the medium term is to provide cross-membership among all member exchanges, and introduce a common CCP/clearing system.

107. In an example where deeper integration has already materialized, the four European stock exchanges that are part of NYSE Euronext are separate legal entities within their respective countries, but have adopted a common electronic trading platform.⁵⁷ NYSE Euronext also allows “cross-membership”, enabling participants in any of the exchanges in the group to access securities listed on the others. In addition, the derivatives business of NYSE Euronext in Europe has been centralized on the trading platform of Euronext. Liffe. NYSE Euronext also has links with the New York Stock Exchange and with the NYSE ARCA electronic exchange.

⁵⁴ See Mercado Integrado Latinoamericano (MILA), Regional Equity Market Integration, Power Point Presentation, 2011, from www.instruct.uwo.ca, and Hogue, J., *MILA integration report: Detailed Analysis on Exchange Integration of Chile, Colombia and Peru*, Efficient Alpha, July 2011.

⁵⁵ See ASEAN Exchanges, Sungard ASEAN Link – Technical Solution, July 2011, Ravindran, M. and G. Dommen, “ASEAN Exchanges Unite”, in *Markets in Motion*, Vol.3, No. 26, Financial Technologies Knowledge Management Co. Ltd., Mumbai India, September 2012.

⁵⁶ CEESEG also has links to exchanges in Bosnia-Herzegovina, Macedonia and Romania.

⁵⁷ Euronext was created initially through the merger of the stock exchanges in Amsterdam, Brussels and Paris in 2000. Later on it acquired the stock exchange in Portugal and the LIFFE derivatives exchange in London. In 2007 it was acquired by the New York Stock Exchange to create NYSE Euronext. NYSE Euronext is at the time of writing, being acquired by the ICE (Intercontinental Exchange)

108. Similarly, the European exchanges controlled by NasdaqOMX – seven trading exchanges for equities, fixed income securities, exchange traded funds, and structured products in the Nordic and Baltic countries in Europe- operate on a common multi-asset trading platform.⁵⁸ Cross-membership is also allowed. Moreover, participants in NasdaqOMX exchanges can also access trade services for U.S. securities listed on Nasdaq, and other US trading markets.

109. Another relevant example of this kind is the Eurex Group, which is an amalgamation of companies in the derivatives business, including three exchanges and two electronic trading systems.⁵⁹ By working together, these companies aim at providing improved trading opportunities (and other post-trading services) regionally and cross-regionally across numerous products, with processes based on a common platform.

110. Horizontally interlinked or integrated trading systems also need to link or integrate vertically to other infrastructures or agents for clearing and settlement purposes. An entity or group that integrates vertically and horizontally at the regional or cross-regional level is perhaps the most complex model. Other models in which, by design, the various FIs involved throughout the transaction processing chain remain discrete also exist, however.

111. With regard to vertical integration, in Europe a Code of Conduct was signed in November 2006 by the Federation of European Securities Exchanges (FESE), the European Association of CCP Clearing Houses (EACH) and the European Central Securities Depositories Association (ECSDA). The Code con-

tained three main deliverables: i) Price transparency of the FI services; ii) Access and Interoperability Guidelines; and, iii) Unbundling and Accounting Segregation of some FI services. The detailed Access and Interoperability Guidelines were published in July 2007. They deliver a set of public guidelines that contain detailed definitions and principles which trading platforms, CCPs and settlement systems have agreed to apply to the way in which they will seek access to, and interoperability with each other.

3.3.2 Central Securities Depositories and Securities Settlement Systems

112. Cross-border links between CSDs have to date largely consisted of direct bilateral arrangements or distributed bilateral network arrangements involving three or more countries. For example, in Canada and the United States direct bilateral arrangements have been operating at high volumes for more than 30 years. The Canadian Depository for Securities (CDS) has a series of clearing, settlement and depository accounts with DTCC's National Securities Clearing Corporation (NSCC) and The Depository Trust Company (DTC). This link provides dealer participants in CDS with access to the NSCC, which is a CCP, as well as with accounts in DTC, the related SSS, to support their cross-border investment in DTC's US and dually-eligible Canadian issues. CDS and DTC also have a reciprocal depository link providing advanced functionality to facilitate cross-border settlement and asset servicing for US and Canadian securities.^{60 61}

⁵⁸ OMX was a Swedish-Finnish financial company that controlled 7 Nordic and Baltic stock exchanges. It was then acquired by Nasdaq to form the NasdaqOMX Group. The Armenian Stock Exchange was also acquired recently and integrated to the Group.

⁵⁹ Plus Eurex Clearing, a clearinghouse for its traded products. Deutsche Börse is the parent company of Eurex.

⁶⁰ For CDS's through CDS-sponsored individual accounts in DTC, and DTC omnibus accounts in CDS on behalf of its participants.

⁶¹ DTC also has similar bilateral custody and securities transfer links through omnibus account relationships with 16 CSDs in other regions, notably Europe, Asia, Latin America and the Middle East. See www.dtcc.com/customer/dtc_international.php.

113. Similar types of bilateral account-based linkages exist within regional CSD alliances in Europe and Asia.⁶² The bilateral peer-to-peer account-based links involve each CSD opening (omnibus) accounts with other selected CSDs in the region. Each CSD acts as the agent for its members for cross-border transactions involving the other CSD(s). For example, the HKMA's Central Moneymarkets Unit (CMU) CSD is a participant in a number of these bilateral CSD linkages in the region. Such bilateral links do not, however, involve extensive integration of CSDs or of the underlying clearing and settlement schemes or platforms.

114. In early 2012 the HKMA launched a "pilot platform" with the Euroclear Group and the Bank Negara Malaysia (BNM) to create a hub-spoke network structure linking Euroclear, the HKMA's CMU, and BNM's RENTAS CSD.⁶³ The scheme creates a common centralized securities database operated by Euroclear and technical operating links among the three systems through Euroclear as the connectivity hub. One of the purposes of this pilot platform is to provide the Asian Bond Market Initiative (ABMI) Steering Group with insights into the pros and cons of a regional CSD hub-spoke network model for the region.⁶⁴ In parallel, the ABMI Steering Group has also established a task force to analyze alternative models and architectures.⁶⁵

⁶² The regional CSD organizations are the ACG (www.acgcsd.org), ACSDA (www.acsda.org), AECSA (www.aecsd.com), AMEDA (www.ameda.org.eg), ECSDA (www.ecsda.eu). The World Forum of CSDs site is www.worldcsds.wordpress.com.

⁶³ BNM's RENTAS encompasses an RTGS system and a debt securities depository and settlement system.

⁶⁴ This project has been undertaken in the context of the Asian Bond Market Initiative (ABMI) and under the auspices of the Pan-Asian CSD Alliance formed under the ASEAN + 3 Initiative.

⁶⁵ In this regard, one variant could be a distributed network model with a centralized regional operations hub linking national CSDs of participating countries, which would not involve regionally centralized settlement of cross-border bond transactions. The other model is similar to the HKMA's pilot platform but would involve a regional Asian CSD interlinking the various national CSDs in a common platform, to provide common pre-trade, trade, post-trade and settlement services. Yet another variant would be a single regional CSD in which custody banks and broker-dealers participate directly rather than through their national CSDs.

115. As with trading systems, CSD acquisitions have been a relevant means to interlink and eventually achieve a deeper form of integration of CSDs.⁶⁶ For example, the Euroclear Group owns and operates national CSDs in several European countries, as well as Euroclear Bank (see below).⁶⁷ Each of these national CSDs is a separate legal entity in its own country. Three of these (Belgium, France and the Netherlands) operate on a common technical platform, ESES, while the others (Finland, Ireland, Sweden and the UK) only partly share the platform, mainly because of specific local business demands that need to be dealt with separately. Through these arrangements, Euroclear provides STP for domestic and cross-border securities transactions in affiliated CSDs for trade confirmation, custody, and settlement services, as well as new issue services.

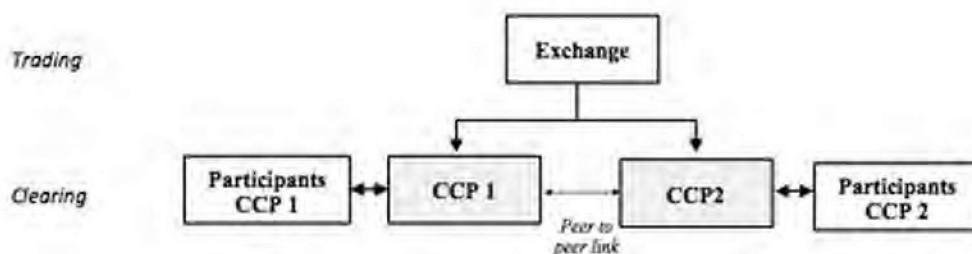
116. NasdaqOMX owns (indirectly, through its holdings in the relevant stock exchanges) a large part of most of the national CSDs in the Nordic and Baltic countries in Europe. Similar to Euroclear, the various national CSDs still exist as separate legal entities in their respective jurisdictions as all securities listed on the Nordic and Baltic exchanges must be registered in the respective national CSD. NasdaqOMX has a variety of technical clearing and settlement solutions, schemes and systems for its own network of exchanges as well as for other markets, and also has accounts at Clearstream for depository and settlement services and to the European Multilateral Clearing Facility (EMCF) for pan-European CCP services.

117. Clearstream Banking Frankfurt and 10 other CSDs launched Link Up Markets to improve efficiency and reduce costs of post-trade processing of cross-

⁶⁶ Many CSD acquisitions were a direct consequence of mergers/acquisitions of exchanges/trading systems.

⁶⁷ Euroclear Bank has also assumed responsibility for the settlement of Irish government bonds following the decision of the Irish government and the Central Bank of Ireland to delegate this activity to Euroclear Bank.

FIGURE 3: INTEGRATION OF CCPs: PEER-TO-PEER MODEL



Source: Own elaboration.

border securities transactions, and reduce the cost gap for end-customers between settling and safekeeping domestic and foreign securities.⁶⁸ Link Up Markets has therefore established a common infrastructure allowing for streamlined interoperability between the participating CSDs and introducing improved cross-border processing capabilities.

118. In addition to the various arrangements for integrating CSDs regionally described so far, there are at least two examples of a global solution to provide certain securities services. These are the so-called International Central Securities Depositories (ICSDs) and the two widely recognized ones are Euroclear Bank and Clearstream Banking Luxembourg.⁶⁹ ICSDs fill two main roles: i) they jointly act as depository (effectively the CSD) for Eurobonds;⁷⁰ and, ii) they act as global custodians for domes-

tic securities in multiple markets.⁷¹ Whereas CSDs are primarily created to serve their domestic market, ICSDs were created in the 1960s and 1970s to settle Eurobonds. Under their banking licenses the ICSDs provide credit lines to their participants to facilitate settlement and increase settlement efficiency.⁷²

119. Euroclear Bank and Clearstream Banking Luxembourg have a bilateral link (called “the bridge”) as well as a number of unilateral links with other CSDs. The bridge allows Euroclear Bank and Clearstream Banking Luxembourg to settle a wide range of Eurobonds issued jointly in these two ICSDs. Links with other CSDs allow the settlement of a number of foreign securities (e.g. foreign bonds, money market instruments, domestic bonds, government and corporate, including convertibles, equities and depository receipts, warrants, and investment funds). For example, both Euroclear Bank and Clearstream Banking Luxembourg have bilateral links with DTC in the United States and the HKMA CMU CSD.⁷³

⁶⁸ Participating CSDs are Clearstream Banking AG Frankfurt (Germany), Cyprus Stock Exchange (Cyprus), Hellenic Exchanges S.A. (Greece), IBERCLEAR (Spain), MCDR (Egypt), Oesterreichische Kontrollbank AG (Austria), SIX SIS AG (Switzerland), STRATE (South Africa), VPS Lux (Luxembourg), VP SECURITIES (Denmark) and VPS (Norway). SIX SIS also has some of the characteristics of a specialist ICSD for the Swiss market.

⁶⁹ SIX SIS also has some of the characteristics of a specialist ICSD for the Swiss market.

⁷⁰ Eurobonds are bonds denominated in a different currency from that of the country in which they are issued.

⁷¹ Since 2010, Eurobonds intended to be eligible as collateral at the Eurosystem must be issued into one of the ICSDs, which acts as Common Safekeeper for both ICSDs

⁷² ICSDs also provide additional services such as FX, intraday credit, securities lending and borrowing, tri-party repo (i.e. a service under which one party administers a repo arrangement between two other parties) and collateral management (see also paragraph 129).

⁷³ In the case of the latter, for example, inbound links from the ICSDs allow foreign investors to hold and settle transactions in securities lodged in the HKMA CMU, while the outbound link allows Hong Kong investors to do the same for foreign and domestic securities lodged in the ICSDs.

120. As can be seen in several of the examples outlined above, SSSs are often operated directly by a CSD, or as part of another legal entity within the same group that includes the CSD and, in some cases, also stock exchanges and other trading systems. In these cases, regional and cross-regional integration of CSDs (directly or indirectly through integration of the stock exchanges that own these CSDs) also creates links between their clearing and settlement schemes and systems.

121. The regionally integrated CSDs and SSSs will also need to connect in some form with one or more cash settlement agents (e.g. commercial banks) or national or regional payment settlement infrastructures, depending on how many currencies are accepted for settling the cash leg of cross-border securities trades.⁷⁴ An entity or group that integrates trading systems-CSDs-SSSs at the regional or cross-regional level both horizontally and vertically may also add the money settlements layer to its functions. Annex 5 presents in graphical form the horizontal and vertical integrations achieved by three such groups based in Europe: CEESEG, Euroclear group and NasdaqOMX.

122. Other models where not all the different FIs or layers are operated by the same entity or group are also possible, as noted in the previous sub-section. For example, a privately-operated regional CSD can be linked technically (and/or through a cross-participation account arrangement of the CSD or its members) to independently operated regional SSS and payment settlement systems. This general model is presently under development in Europe with the introduction of TARGET 2 Securities (T2S) planned for 2015. T2S is a project of the Eurosystem aimed at creating a single securities settlement platform in Europe and providing European CSDs and custodian banks with a centralized service for delivery-versus-payment (DVP) settle-

ment of transactions in central bank money. T2S will operate as an integrated model, thereby holding on the same platform both cash and securities accounts.⁷⁵

3.3.3 Central Counterparties

123. Integration of CCPs can also be achieved through different means. It can sometimes occur through mergers and acquisitions aiming at enabling the clearing of different types of products, or connecting products on different trading venues. In Europe, for example, the French CCP Clearnet merged with those of Belgium and the Netherlands in 2001 and of Portugal in 2004 to form a single legal entity. This merger was driven by parallel developments at the trading level between the stock exchanges of these countries into Euronext, as described in previous sub-sections. As a consequence, the new CCP provides clearing services for the French, Belgian, Dutch and Portuguese markets.⁷⁶

124. Eurex Clearing also followed the integration of derivatives exchanges and trading systems into the Eurex Group. Eurex Clearing provides CCP services for market participants on its own exchanges and electronic trading platforms as well as for market participants of exchanges in Frankfurt and Dublin.

125. Horizontal integration can also be achieved by developing CCP links.⁷⁷ A CCP link is an arrangement between two CCPs that allows the provision of central counterparty services for trades performed by the participants of those two CCPs,

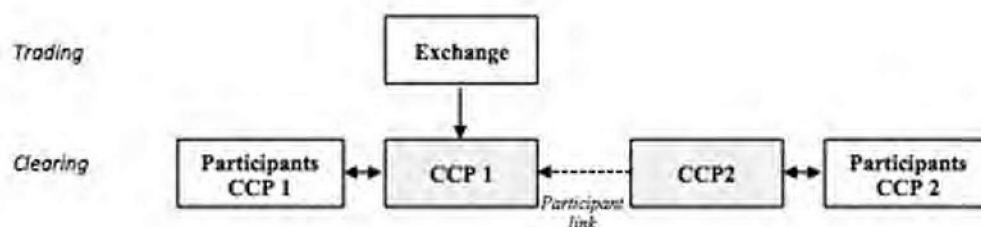
⁷⁴ Performing money settlements in central bank money is usually a preferred option among regulators, although in some cases it may not be practical or available for cross-border transactions.

⁷⁵ While initiated by the Eurosystem, T2S will be a multicurrency system, and hence is capable of being linked to CSDs and RTGS systems of other countries in the European Economic Area and Switzerland to permit settlement of securities transactions denominated in their respective currencies.

⁷⁶ Clearnet SA and the London Clearing House (LCH) merged in 2003 to form the LCH.Clearnet Group. The two original companies remained two distinct legal entities within the LCH.Clearnet Group, each with its own operational and risk management arrangements. The LCH.Clearnet Group is now becoming part of the LSE.

⁷⁷ This analysis draws on some of the work conducted for the preparation of the CPSS-IOSCO Principles for FMIs.

FIGURE 4: INTEGRATION OF CCPS – PARTICIPANT CCP MODEL



Source: Own elaboration.

without requiring those participants to become members of both CCPs. Looking at the existing links arrangements, two main models can be distinguished: peer-to-peer links and participant links.⁷⁸

126. In a peer-to-peer link, two or more CCPs will be linked together on an equal basis (i.e. recognize each other as CCPs) and will generally not connect to each other using the standard service offerings for clearing participants, but rather develop dedicated operational links with specific risk management arrangements (see Figure 3). Creating such links requires a high level of cooperation and harmonization between the linked CCPs, the need for inter-CCP change management and dispute resolution mechanisms and, where CCPs are based in different jurisdictions, the need for the CCPs to have access to and the ability to interact directly with a foreign regime and/or market. Extensive consultations with each CCP's membership are also important to ensure that the new risk scenario created by the inter-CCP link is well understood, and that adequate risk management measures are developed in consequence.

127. In a participant model, one CCP is a standard clearing participant in another CCP, where the rule-book of the “parent” or host CCP applies in full to the CCP that becomes a standard participant (see Figure 4). The parent CCP will be entitled to apply risk mitigation measures to its exposures to the subordinate CCP (e.g. require margin, though usually no participation in the clearing fund).

128. The optimal choice of a model on which to base an inter-CCP link depends on the objectives intended to be achieved by implementation of the link such as increased competition between CCPs, allowing for multilateral netting for business traded on different venues or addressing access issues, but also on the barriers to integration.⁷⁹ As an example, in Europe a peer-to-peer link was established between LCH.Clearnet SA and the Italian CCP, CC&G, to provide clearing services for Italian government bonds transactions executed on MTS SpA, EuroMTS ltd and later BrokerTec. As another example, interoperability between the CCPs EMCF, EuroCCP, LCH.Clearnet Limited and SIX X-Clear allows for access to various trading platforms via one CCP. Positions will be netted across trading

⁷⁸ See for example Joint Regulatory Authorities of LCH.Clearnet Group, “Investigation of risks arising from the emergence of multi-cleared trading platforms”, July 2008.

⁷⁹ See Section 4.1 of this Report.

platforms and clearing members no longer need to deposit collateral at more than one institution.⁸⁰

129. Also on the collateral management side, DTCC and Euroclear Bank recently announced an integrated “margin transit” approach that will benefit their respective and dual members by jointly addressing the fulfillment of margin calls across the entire chain of margin calls for centrally cleared and bilateral over-the-counter (OTC) derivatives. DTCC and Euroclear will also pool their inventories, to enable their participants to mitigate the demand for collateral that is expected to result from dealers’ and clients’ move to centralized OTC clearing.

130. Although not yet applied in practice, two additional links models could be the “meta-CCP” and the “subsidiary CCP”. The “meta-CCP” would be a construction where a third-party acts as a CCP and netting agent to all inter-CCP positions created by the interoperable link. This model could fit in situations where there are already more than two CCPs serving a single market. The “subsidiary CCP” would be an arrangement in which a CCP sets up a subsidiary unit to operate as a CCP in a jurisdiction in which the CCP would not otherwise have access. The two CCPs would then be linked on a peer-to-peer basis. The implementation of this model may have the potential to reduce costs for establishing a CCP in a region that is currently not served, and a reduction of the complexity of setting up the link since, by definition, many of the key features between the two CCPs would be harmonized from the start.

3.3.4 Trade Repositories

131. In a FI development relating to OTC derivatives, contracts that have always been global in nature, DTCC is operating a global infrastructure, its Global

Trade Repository (GTR) for OTC derivatives.⁸¹ GTR was created to support global reporting on all different asset classes of OTC derivatives. With the implementation of new derivatives reforms taking shape, the GTR receives and aggregates trade data and supplies relevant access to data to regulators. In creating a new infrastructure, the GTR offers the derivatives industry an opportunity to reduce the industry investment in capability and contingency arrangements by establishing a global utility.⁸²

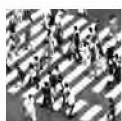
⁸⁰ See further background at www.euroccp.co.uk/interoperability/index.php

⁸¹ See www.dtcc.com/products/derivserv/suite/global_trade_repository_for_otc_derivs.php

⁸² The GTR, which already operates in compliance with specific regulations in Japan, United Kingdom and the United States, will also be regulated shortly on relevant transactions by supervisors in Australia, Canada, Europe, Hong Kong, Singapore, South Africa and others. It also is guided by the OTC Derivatives Regulators Forum, an open, global group comprised by over forty regulators.

SECTION IV

LESSONS LEARNED: BARRIERS, RISKS, AND OTHER CHALLENGES FOR EFFECTIVE REGIONAL FI INTEGRATION



132. Chapter 2 presented a discussion on the drivers of regional FI integration and the benefits that can generally be expected from this kind of effort. Actual cases of regional FI integration were then described in Chapter 3 as part of the discussion on the general models of regional integration for the various types of FIs. The experiences from those cases clearly show that any regional FI integration project will almost inevitably face a number of barriers and many other challenges that may prevent it from achieving the expected objectives and benefits, and/or that may cause severe delays and other problems to the rollout of the new arrangement. In other cases, the projected regional FI may not become operational at all.

133. This chapter identifies the main barriers, project management problems and risks in operating a cross-border FI arrangement that have been encountered in practice and that may represent significant problems to successful regional FI integration, based on the individual and collective experiences of the G25 Panel of Experts.

4.1 BARRIERS TO EFFICIENT AND SAFE REGIONAL FINANCIAL INTEGRATION

134. The principal barriers experienced most commonly in regional FI integration projects are related to differences or incompatibilities across the various countries that want to participate in a common arrangement. These can be grouped into two general classes:⁸³ (i) legal and regulatory; and, (ii) differences in financial market organization, practices, and technical standards. Some of these barriers can be removed by market participants, but others may need a strong lead or direct intervention by public authorities.

135. In general terms, where harmonization is high, a lot of beneficial integration can occur. Where it is not, less integration will be achievable. Some regional FI integration initiatives have nevertheless been launched even when the national schemes and systems are inadequately harmonized and standardized. This generally ends up being counter-productive, either because the only integration model that is feasible is so basic that the benefits are minimal, or because of project imple-

⁸³ The Giovannini Group, "Barriers to efficient cross-border clearing and settlement in the EU", in *Cross-Border Clearing and Settlement Arrangements in the European Union* (Section 5), Brussels, 2001; Earle, D.M. and M. L. Koontz, *Linking the Capital Markets of Transitional Economies*, National Securities Clearing Corporation, 1999.

mentation becoming extremely lengthy, having to wait until the minimum required level of compatibility is achieved,⁸⁴ with the risk of losing support and commitment from stakeholder groups.

4.1.1 Legal and Regulatory Barriers

136. Some degree of harmonization in the legal and regulatory environment is typically required of the participating countries. This will help ensure not only that a sound legal and regulatory framework for cross-border activity is in place to reduce legal risks (see section 4.3), but that the differences, inconsistencies and incompatibilities in this area do not become an insurmountable obstacle to efficient regional integration.

137. Some of the most difficult barriers to overcome relate to the legal and regulatory framework that is directly applicable to payments and to securities and derivatives trading, clearing and settlement, including issues such as: (i) access of foreign institutions to domestic financial markets (beyond licensing and registration) and to direct participation in domestic FIs; (ii) securities listing requirements; (iii) custody arrangements and beneficial ownership structure of custody accounts, particularly for cross-border traded securities; (iv) choice of law restrictions; (v) enforceability of collateral agreements and transfer of collateral ownership in the event of default, (vi) enforceability of netting and of novation for the purposes of final settlement; (vii) securities lending; and (viii) irrevocability and finality of settlement, and applicable resolution and bankruptcy laws and wind-up procedures, especially for financial institutions. Several global and regional harmonization efforts are already in place. The most relevant ones are presented in Annex 6.

138. The potential that a regional FI's rules, procedures and contractual arrangements may not be fully enforceable with participants located in various countries is another major cause for concern. The organizers of the regional arrangement will need to ensure, most often through expert legal opinion, that the regional FI's protocols, agreements and rules will have legal recognition and standing under the legal framework of each of the participating countries. Highly integrated regions like the EU have used other approaches, such as the issuance of directly binding legal acts, or of common directives and regional agreements that are to be incorporated into the legal and regulatory framework of each of the member countries.⁸⁵

139. Cooperation and coordination failures among overseers and regulators can also become an important impediment to efficient and effective regional integration. FIs and their participants that are attempting to integrate regionally may need to deal frequently with various different national financial regulators, each with their own specific mandates, regulations, procedures and practices that in some critical aspects may be duplicative and even inconsistent.

140. Another common regulatory coordination failure that may be especially important in integration projects is the lack of policy consistency and a clear scope of authority between financial sector regulators and competition authorities. Horizontal and vertical mergers among FIs, or even service alliances among FIs, will typically attract the attention of competition authorities. This is because these authorities are typically concerned with market conduct and performance implications of alliances, mergers and acquisitions of potentially competing organizations or orga-

⁸⁴ In some projects a phased approach is adopted, whereby countries that are ready for integration can proceed while others will do so when required criteria are met. This issue is discussed further as part of guideline 8.

⁸⁵ The "Horizontal Guidelines of 2010" of the European Commission state that standards (legal or technical) cannot be imposed on market participants. For that a public law is required as was done with the "End-date Regulation" 260/2012 that made ISO 20022 and IBAN mandatory for all euro credit and debit transfers within the EU.

nizations involved in a vertical service supply chain as this may limit upstream or downstream competition. However, competition authorities may not have extensive experience in dealing with financial utilities, and their perspectives on the correct balancing of cooperation and competition in FIs and their network schemes frequently differ from those of central banks and other financial sector regulators.⁸⁶

141. Competition authorities of the jurisdictions involved in a regional integration project may also have diverging mandates among themselves to assess a multi-jurisdiction cooperation of competitors. In the case of the EU, the national competition authorities cooperate and align their policies in the European Competition Network.⁸⁷

142. Barriers can also arise from differences in more general laws or regulations, such as those referring to taxes and other macro-economic aspects. For example, countries within the same region may have controls on foreign direct and portfolio investment, including controls and limits on FX holdings of domestic residents and probably even on FX convertibility. Such measures may reduce the business case for regional FI integration in those countries.

4.1.2 Differences in Financial Market Organization, Practices and Technical Standards

143. To a large extent the benefits of regional FI integration arise from the centralized processing of cross-border transactions that were previously scattered in

other, usually somewhat basic, arrangements. For this centralization to be efficient and effective, it requires the harmonization of operating rules and procedures, and the standardization of critical technical processes to facilitate STP and other efficiencies.

144. Some of the likely market-based differences may be rooted in the broader legal system (e.g. the organizational and institutional structure of financial institutions, FIs and other financial services markets), while others are due to historical practices and the technical standards used in the various domestic markets. The degree of homogeneity and compatibility will often limit the choice of integration architecture for the regional arrangement. At the same time, market participants and policy makers need always to take into account the impact of the choice of the various types of standards for regional FI integration projects: several global standards are already available, and it is generally desirable that the same be utilized. Box 5 outlines three main categories of standards that are relevant for this kind of projects.

4.2 PROJECT PLANNING AND PROJECT MANAGEMENT CHALLENGES

4.2.1 Developing a Strong Business Case

145. Putting together a strong business case is probably the most crucial step in early project development as it specifically aims at identifying and substantiating the (net) benefits of a project and the elements and factors that will generate those benefits.

146. A business case is also useful for other related purposes and activities, however. For example, it gives a baseline that sets out what has to be achieved, by whom and at what cost. It prevents scope drift, and at a general level sets the roles and responsibilities go-

⁸⁶ In any case, it is highly important that the competition authorities are informed right after the scope of the project has been approved by the FIs involved - and by their financial authorities, if applicable - to avoid that during the design or implementation phase of the project unexpected additional requirements will arise.

⁸⁷ The Horizontal Guidelines 2010 of the European Commission mentioned earlier also provide guidance on how to assess the cooperation to create, choose or implement (legal and technical) standards of regional integration projects of competitors in the EU.

BOX 5: MAIN TYPES OF STANDARDS RELEVANT FOR REGIONAL FI INTEGRATION

The *policy standards* that promote and facilitate the strengthening of the clearing, settlement and recording mechanisms of monetary and other financial transactions. A prime example of global policy standards are the CPSS-IOSCO Principles for FMIs.

The *legal/regulatory standards* or *regime* between the scheme participants covering the multi-lateral or bilateral relations of the scheme participants. All trading, clearing and settlement platforms use a rulebook, owned by a scheme management organization or by the platform involved. Examples of the rulebooks for payments are the SEPA Credit Transfer Rulebook, the SEPA Direct Debit Rulebook, NACHA Rulebook, IPF Rulebook and CLS Rulebook, and for securities the LCHClearnet Rulebooks for their clearing arrangements. In addition to rulebooks, also master agreements are available, like the ISDA Master Agreement for derivatives transactions. In most regional integration projects it is possible to re-use available rulebooks or master agreements.

The *technical standards* between the scheme participants and/or the customers of the scheme participants (in the case of end-to-end standards), or for the reporting to the public authorities.¹ The choice of the technical standards is important to ensure the efficiency of processing between the FI and its participants, and with the customers of those participants. Many vendors already have technology solutions available based on global standards.² The choice of a (global) technical standard that suits the purpose of the new FI avoids that technical barriers are created for an amendment of the scope or number of participating countries in the FI. In some regional integration projects an upgraded (or additional) standard may be required.

¹ An overview on the relevant technical standards is presented in Annex 7 of this report.

² Product and service solutions are often coordinated around core standards such as ISO 20022, ISO15022, International Bank Account Numbers - IBAN (ISO 13636), and International Securities Identification Numbers – ISIN (ISO 6166). Mapping interfaces have been created between their service products, allowing, for example, for STP between FIs that use different messaging solutions. Mapping interfaces between proprietary messaging systems into standardized international formats can provide similar benefits.

ing forward. It can also be helpful in situations where arriving at a shared vision of a regional FI has been particularly difficult due to skepticism or very different expectations.

147. Broad support from private sector stakeholders will usually follow from a strong business case. There are at least three general elements that the business case analysis for regional FI integration will need to substantiate. These are described in Box 6.

148. Even if *ex ante* the business case has been successful and the various stakeholders have decided to move forward with the project, its soundness will still need

to be confirmed once the new regional FI arrangement is operational. At this stage, the business case might be proven faulty for a variety of reasons and events such as an erroneous estimation of the net benefits or the non-materialization of the expected support from public sector authorities.

149. While the benefits (and costs) of regional FI integration can be qualitatively listed, their quantitative valuation and estimation is extraordinarily difficult and is subject to considerable forecast error.⁸⁸ For example, regional FI integration involves structural

⁸⁸ This is especially true for the macro or indirect benefits of regional FI integration. However, these difficulties should not be interpreted in the sense that attempts to quantify a business case are a waste of time. For information on some actual cases see Capgemini Consulting, “SEPA potential benefits at stake: Researching the impact of SEPA on the payments market and its stakeholders”, prepared for the European Commission (2007), and Commission of the European Communities, *Impact Assessment: Annex to the proposal for a directive [...] on payment services in the internal market*, Commission Staff Working Document (2005).

change, even for decentralized network models, that has no region-specific precedent and thus must be evaluated counter-factually to the existing regionally fragmented FI architecture. The valuation exercise will also most likely face methodological difficulties and data availability problems.⁸⁹

150. With regard to public sector support, as noted, the elimination of legal, regulatory and other policy barriers can influence the business case for FI integration quite substantially. It might also influence the viability of a particular type of regional linkage or integration architecture for FIs. In addition, as a participant or end-user of the new regional FI the public sector can also play a key role in helping achieve the necessary volume for the expected benefits of the new arrangement to be able to materialize. There is therefore a risk to the business case for integration that the public sector is insufficiently supportive. According to actual experiences, in general the relevant public sector authorities will be more supportive when the regional FI integration project, even if market-led, is situated as part of a broader program for regional economic and financial integration and development.

4.2.2. Costs and Funding

151. Most attention is paid to the costs and benefits of regional integration of FIs since it is these factors that will largely determine the long-term viability of the project. A key problem is that the costs of any regional FI integration project will tend to be unevenly spread. This may become a barrier for project development and also for the operation of the regional arrangement as a going concern unless the national FIs involved (and/or the resulting regional FI) find a way of serving their market fairly, balancing the interests of all different types of stakeholders.

⁸⁹ For example, the required critical data for valuation is often unavailable. Imperfectly representative proxy data or indicator data will most likely be used instead, adding measurement error to the valuation process.

BOX 6: KEY ELEMENTS TO BE SUBSTANTIATED BY THE BUSINESS CASE ANALYSIS

- Sufficient intra-regional transaction volume to ensure that the economies of scale that underlie potential cost reductions will be achieved. Transaction volume depends on the successful migration of intra-regional transactions from other (fragmented) platforms and on the future growth of these transactions.
- Broad dispersion of net gains among key stakeholders: the FI operators, FI participants, end-users (i.e. consumers, investors, businesses, public administrations), and the public sector authorities in the participating countries. Regional integration of FIs should provide some potential net gain to each of them to secure their buy-in to the initiative.¹
- The existence of appropriate regional infrastructure and institutions that will facilitate the development of the regional markets and services, so as to improve the possibility that the net benefits from regional FI integration will be realized as expected.

¹ In practice, the net gain of regional FI integration will not be *equally* disbursed to all stakeholder groups, nor may it be realized as quickly, nor as directly, by some stakeholder groups as for others.

152. There are two general types of costs beyond ongoing operational costs that are borne directly or indirectly by participants and other stakeholders: (i) development and set-up costs, which in general terms include project planning costs, legal costs, software and hardware costs (including deployment and testing), and other vendor costs for business solutions and technologies; and (ii) migration, marketing and training costs resulting from the need to switch operations, clients and internal costs from the existing arrangement to the new regional FI.

153. The development and set-up costs of regional integration of FIs raise the issue of funding, considering that these costs are borne over the up-front planning and implementation stages of the initiative. The costs and also the funding schemes will vary according to the pre-existing core infrastructure, the architecture of the regionally integrated FI and the level of services the latter is intended to provide.⁹⁰ For example, public sector authorities such as central banks will need to decide whether the initial cost of establishing core infrastructure (e.g. a regional payment settlement system) is to be covered initially out of public funds, and, based on some agreed cost-recovery policy, recovered through access and transaction fees.⁹¹ Private stakeholders will likely only be willing to absorb the development and set-up costs of market-led payment, securities and derivatives initiatives, if there is the expectation that those costs will be recovered through a combination of costs savings and user fees.⁹²

154. With regard to migration, marketing and training costs, participation and use of the new regional FI does not typically evolve quickly since it involves switching costs from the pre-existing arrangements.⁹³ ⁹⁴ This consideration is even more important if the net ben-

efits of switching are not self-evident or certain to all stakeholder groups.⁹⁵ Due to this slow migration, the expected cost-savings for participants and end-users and/or any additional revenues will also emerge only slowly. This is a common feature of most innovation and particularly evident for those involving network infrastructures that require minimum participation and volume thresholds.

155. The migration of transactions to the new regionally integrated FI system will require active management, including some marketing effort and incurring some extra costs over the transition period to counter-balance the switching costs from the legacy arrangements. The marketing should aim to build demand for the regional FI services from end-users and therefore their financial institutions. Extra costs include presentations at stakeholder meetings, training for all relevant business stakeholders on the supply and buy side, literature on the services and benefits to particular stakeholders, and websites with organizational, service, membership, sponsor and regulatory accreditation information. In some cases where central banks are directly involved in the regional FI, temporary subsidies have been used as a tool to diffuse the switching cost of early participants in the arrangement and to build the threshold volume necessary to achieve lower cost-recovery participation and user costs.

4.2.3 Inadequate or Diminishing Commitment of Key Stakeholder Groups

156. Commitment to a regional integration project is likely if key individual stakeholder groups are persuaded that the project will generate some net benefit for them within a reasonable time frame. They signal their

⁹⁰ The broader and deeper the degree of integration, the greater are the likely development and set-up costs since this will require establishing new schemes and systems to supplement or replace the existing ones at the national level. Thus, a fully centralized regional FI is often perceived to cost more from this specific perspective.

⁹¹ Some of the cost may be funded through loans provided through the participating countries investment in the regional program or, in some cases, through international development agencies such as the World Bank.

⁹² Some of the set-up costs will actually be “internalized”, however. For example, entities participating in the regional FI will need to adjust their back-office procedures and systems and possibly incorporate new technologies. Public sector authorities will need to invest time and effort in establishing the required legal and regulatory framework for regional FI integration and for any necessary reforms in their own national frameworks.

⁹³ These costs are already embedded in the operating and back-office procedures and systems of the various FI participants and even many end-users. This is true even for infrastructure arrangements that can bring a new level of efficient and secure service to its users, as was the case with CLS Bank, for example.

⁹⁴ It should also be considered that at least some potential participants might prefer to continue using the legacy system/mechanisms rather than upgrade their technological infrastructures and interfaces to the new regional FI.

⁹⁵ Innovations involving new infrastructure arrangements are not the same as bringing forward new services to participants in an existing FI. In the latter case, the innovation is frequently demand-driven and developed within existing schemes and systems so that there is an immediate volume of use and pay-back periods are shorter.

commitment with an agreement to provide time, effort and also, in some cases, funding to move the project forward. However, not all stakeholder groups may commit at the same time, nor may their commitment for each stage of the project be the same.⁹⁶

157. Stakeholder commitment to any project is difficult to observe and to measure externally and objectively at a group level. Moreover, it tends to vary at both an individual and group level as the project unfolds. As earlier discussed, some risks to stakeholder commitment have their roots in a business case that is deemed weak (ex-ante) or proven faulty (ex-post), and in rising development and/or ongoing operating costs due to inadequate project planning and change management. Other risks worth noting are: development “fatigue”, “project creep”, and non-transparency.

158. Development fatigue is most apparent when broader regional structural and policy reforms have already been proceeding at so rapid a pace that the outcomes of these changes are still uncertain. Hence, further reforms such as the regional integration of FIs, even if a logical extension in the sequence of reforms, can be challenged by over-extended and dwindling resources, or an uncertain environment.

159. “Project creep” occurs when the scale and the complexity of the FI integration program expands throughout the project planning stage, usually as a result of over-estimation of marginal net benefits of add-ons and in general poor planning and vision.⁹⁷ The project becomes too big and complex to persuade key stakeholders of the potential benefits for them and others, given the lengthier (and more uncertain) pay-back periods and expanded costs.

⁹⁶ Commitment will also be required beyond the planning and set-up stages to ensure that the new regional FI arrangement will grow and develop as hoped, for example by actively promoting its use and the future development of value-added services, technical upgrades and organizational and procedural enhancements.

⁹⁷ In some cases the fear of waning future stakeholder commitment is a reason behind the growing complexity and scale of the project.

160. Transparency throughout project planning and its initial deployment and ongoing stages of development also helps in ensuring continuing buy-in and commitment. For example, in the FI consolidation process in Europe the various private and public sector regional integration planning and regulatory groups (e.g. the EPC, ECB, the European Commission and some national agencies) ensured that project planning and implementation principles and progress reports were widely available to the interested parties for comment and in their final form. The transparency effort per se contributed to continued commitment by the various stakeholder groups, but also because the feedback from a very broad set of interested parties led to improvements in the framework for the various regional FI integration projects that helped ensure a wider dispersion of net benefits.

4.3 RISKS IN REGIONAL FINANCIAL INTEGRATION

161. For the purposes of this report, risks of regional FI integration refer to the risks derived from the operation of a regionally integrated FI as a going concern. Networks, such as FIs, inter-link the individual participants to provide the services demanded so that their individual well-being depends in large part on the performance of other participants in the network arrangement. This leads to network risks – that is, risks that arise from the non-performance of other participants and from the design of network schemes and operating solutions that may be incompatible with market conventions or with institutional, legal and/or regulatory requirements.

162. A regional FI will naturally be exposed to cross-border and cross-FI extensions of the standard FI network risks, i.e. legal risks, credit and liquidity risks, and operational risks, which can be finely graded into numerous specific risks that generally share a legal, fi-

nancial or operational foundation.⁹⁸ Moreover, just like national FIs that are interconnected horizontally or vertically with other national FIs, regional FIs will likely be interdependent with other domestic, regional or even global FIs.⁹⁹ In general, the specific risks that may arise because of, or that might be mitigated through, the new regional FI will depend on its business, procedural and operational schemes and systems, and of the regional political, legal and regulatory environment in which they operate.

163. In any regional arrangement, some of the risks mentioned earlier may take on new dimensions because of the cross-border nature of the transactions being processed under the arrangement, which tends to add complexity. For example, where FIs are regionally integrated horizontally or vertically on a functional basis with legal acquiescence, they will still be exposed to cross-border and cross-FI events involving legal and regulatory regimes that may be quite different from that of the jurisdiction in which each of them are incorporated.¹⁰⁰ Unknown inconsistencies among legal and regulatory requirements across countries, or even where differences in legal regimes may be known but the implication of this for unforeseen events are not clear before the event, generally involves some greater legal and regulatory risk.

164. Credit risk and liquidity risks can also be more complex in a regional FI arrangement. For example, regionally interlinked CCPs may face credit exposures vis-à-vis each other if as part of the (peer-to-peer) arrangement they each net the trades cleared between their participants so as to create novated positions between the CCPs. Risk management in this case would

be based on a bilaterally approved framework, which is different from that applied to a normal participant. In other cases, the requirements that govern participation in the (interconnected) local FIs may vary across countries, which may amplify any credit risks that exist in the regional arrangement if entities with weak risk management practices and/or a poor financial standing are allowed as direct participants in the latter arrangement.

165. Liquidity risk can also take a new dimension. For example, a central bank-operated intraday liquidity facility for the regional arrangement might not be available if none of the central banks of the countries involved is the issuer of the currency used for settlements. Or, if settlement in central bank money is not possible, a comparable facility may not be available from the private settlement agent. Managing liquidity risks may also be especially challenging in arrangements involving settlement in multiple currencies.

⁹⁸ For example, in securities markets, custody risks and securities transfer risks are typical operational risks associated with poor account and risk management schemes and systems.

⁹⁹ CPSS, *The interdependencies of payment and settlement systems*, Basel, 2008; and, OECD, *Systemic Risks in Securities Markets*, Paris, 1991.

¹⁰⁰ This is could even be the case for a single regional FI that operates across several sovereign countries.



THE GUIDELINES FOR SUCCESSFUL REGIONAL INTEGRATION OF FINANCIAL INFRASTRUCTURES

166. The guidelines for successful regional FI integration that are presented below codify the lessons learned from many experiences of regional, cross-regional and global integration of financial infrastructures throughout the world.

167. The guidelines can be regarded as essential methodological rules or approaches based on a collection of practical solutions that have been adopted to face and overcome the various challenges and other problems associated with a regional FI integration project. This report focuses on this type of “process” guidelines to facilitate a best practice approach toward dealing with the myriad of specific business, technical, and design and/or implementation issues that will need to be resolved for efficient, safe and reliable regional FI integration.

5.1 ENABLING AND INSTITUTIONAL GUIDELINES

Guideline 1: Define and promulgate a clear vision and general proposal as to the purpose, scope, form and need for regional FI integration that encompass a rationale for participation by all key stakeholders. The vision and proposal are open, flexible and living concepts at the initial stage.

Guideline 2: Locate the vision within the national policies of the participating countries to crystallize and attract an initially acceptable and potentially growing level of political support for regional FI integration.

Guideline 3: Co-opt, or if necessary set up, regional fora for key stakeholders appropriate to the scope and needs of the FI integration vision to help identify the public and private sector roles and responsibilities and facilitate the necessary communication, cooperation and coordination among and within the stakeholder groups.

Guideline 4: Establish the necessary leadership from within the representatives of the public and private sectors stakeholder groups that will actively commit to the regional FI integration program and will help secure the financial and human resources needed for the initiative.

168. The purpose of this first set of guidelines is to outline the institutional arrangements that are necessary to enable a regional FI integration proposal to move forward in an effective fashion from its preliminary vision to an actual operating regional arrangement.

169. The feasibility of any regional FI integration project is clearly dependent on a macro-economic and political environment that lends itself to, or even provides specific opportunities, for such integration. For example, there needs to be a strong economic and financial

interaction among the countries within the region, sufficient in magnitude and scope to provide a rationale for regional FI integration. For the most part, conditions like these will need to be met prior to the start of a specific regional FI integration initiative.

170. Regional FI integration typically needs to be a component or be done in the context of a broader regional integration program for growth and development that has clear political support from major participating countries in the region, even if some or most of the principal elements of the FI integration initiative are largely directed by private sector stakeholders. Countries within the region that do not support this kind of programs are not usually strong candidates for inclusion in the regional FI integration initiative.

171. Regional FI integration requires a clear vision and a robust rationale for the initiative. A general proposal should be prepared in this regard, preferably under the sponsorship of a regional public-sector policy forum and in collaboration with key regional bodies such as regional banking and/or securities market associations. The proposal should: i) outline a clear “vision” (e.g., purpose, objectives) for regional FI integration, including specifying the scope of the integration effort; ii) provide a high-level overview of the existing and projected intra-regional economic and financial sector environment in support of the FI integration initiative; and, iii) include a preliminary and high-level (qualitative) benefit-cost analysis of the initiative for the region and for the individual countries and specific stakeholder groups.

172. This document serves essentially as a “request for information” (RFI) for countries and key stakeholders within the region and is not meant to be in itself an elaborated project plan or project development document. Instead, once finalized it should be able to provide a high-level framework for the subsequent planning and development documents.

173. It is desirable that countries (and/or national FIs) that express an interest in pursuing regional FI integration formally approve the vision-proposal document. However, firm commitments to participation in the various stages of the project and resulting FI arrangements do not necessarily need to be required at this point.

174. National (and/or regional, if applicable) public sector authorities indicating their support to the regional FI project should be legally empowered and have the resources to establish the necessary legal, policy and regulatory requirements for regional FI integration.

175. Endorsing and effecting a cooperative approach toward planning, designing, developing and operating the regional FI arrangement is a crucial step. Effecting such an approach typically involves the creation of representative key stakeholder groups with well-defined and organized consultative and cooperative mechanisms and processes. A key objective of these structures is to promote and facilitate effective communication throughout the various stages of the project.

176. One organizational arrangement that has proven effective consists of a senior steering committee for regional FI integration led by either national (and/or regional, if applicable) public sector authorities or private sector participants, depending on the nature of the project. However, both the public and private sectors need to be adequately represented at this senior level. In some cases, the steering committee may need to report to a high-level political forum intended for sponsoring the approval of any agreements and protocols that will involve legal and regulatory changes and that will draw on public sector resources.¹⁰¹

¹⁰¹ ASEAN, the Central American Monetary Council and the EU Council of Finance Ministers are examples of this high-level political forum.

177. While all public and private sector stakeholder groups should have some ownership in the regional FI arrangement, each of these groups needs to establish a leadership team for the various aspects of development and on-going operations of the project. Moreover, each team needs a specific leader that is committed to the success of the project and has sufficient influence within the general stakeholder group to establish formal commitments, including securing the required financial and human resources.

5.2 PLANNING GUIDELINES

Guideline 5: Devise specific governance and planning frameworks, including creating and empowering an effective project team to lead the planning, design and implementation stages.

Guideline 6: Conduct a comprehensive stock-taking of the economic and financial profile, institutional environment, overall financial structure and the FIs of the countries interested in participating in the regional integration initiative. A review of previous initiatives elsewhere should be conducted before or as part of this exercise to understand what has worked and what not and why, and form a view of what might be appropriate locally.

Guideline 7: Identify the gaps and key divergences in existing national, and if applicable regional, arrangements and assess the strengths, weaknesses, opportunities and threats (i.e. a SWOT analysis) with respect to effective, efficient and safe regional FI integration. Pay close attention to the legal, regulatory and other relevant public policy characteristics of the participating countries (and/or the stakeholders involved) to assess their compatibility and the alignment of national regulatory frameworks with international legal and technical standards and best practices.

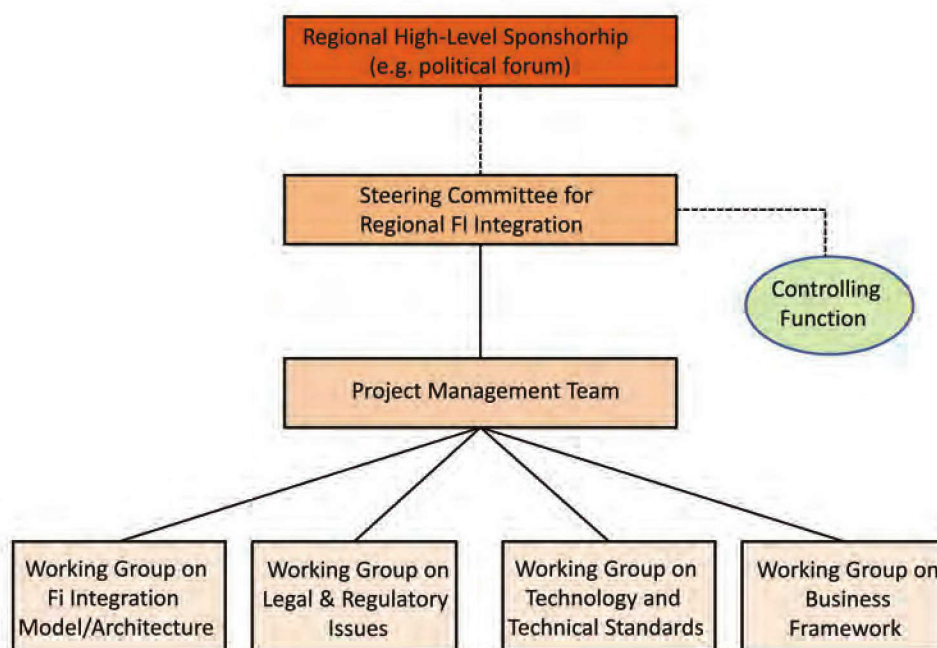
Guideline 8: Set a clear plan to address all pending gaps in a reasonable timeframe to minimize barriers for integration. Propose mechanisms and realistic schedules for any required changes by participating countries. The rollout strategy might nevertheless need to be flexible to allow sufficient time for some entities intending to join to meet the participation requirements.

Guideline 9: Develop a strong business case that considers not only the information from the stock-taking exercise and subsequent analyses, but also the benefits and costs of various types of schemes, systems and structural models for FI integration as well as potential future developments and opportunities of integration. Deciding who will finance the costs of the initiative is a key part of establishing the business case.

178. The planning guidelines refer to the structured and systematic work that is necessary for determining if regional FI integration is necessary and justifiable for the stakeholders at that particular time. This is the “make or break” stage at which regional FI integration initiatives either move forward or are postponed.

179. The governance and planning framework for the project should underpin the cooperative and consultative arrangements and processes that were already established for the preliminary and exploratory discussions and consultations. It is crucial that all relevant stakeholder groups remain involved as needed throughout the project life cycle.

180. The steering committee envisioned as part of the planning and institutional guidelines is essentially a senior planning committee focusing on the strategic issues surrounding the regional FI integration project, and vested with decision-making authority at the highest level in connection with the project. As noted, the steering committee should include project decision-makers from the private and public sectors, such as senior representatives from key FI operators, mar-

FIGURE 5: A GOVERNANCE AND PLANNING FRAMEWORK FOR REGIONAL FI INTEGRATION

Source: Own elaboration.

Note: the dotted lines represent a reporting line.

ket players, and end-users, as well as from the relevant FI oversight, regulatory and supervisory authorities, among others.

181. Moreover, the steering committee will need to rely on groups of domestic experts also from the private and public sectors to help inform the policy discussion, shape the decisions and, design the regional architecture for FI integration. In addition, a controlling function that reports directly to the steering committee on key factors as the project evolves (e.g. delays, budget overruns, overall performance of management) may further contribute to effective progress, especially during the implementation and rollout stages.

182. A robust project management team for the day-to-day administration of the regional integration proj-

ect must be created at an early stage. This will ensure better coordination of and professional support to the various stakeholder groups from the very beginning, and also that the management team members are adequately informed from project inception.

183. Once it has been agreed to move forward with project design and implementation, the project management team will take on an increasing leadership role. In this regard, it is of utmost importance that the management team be effectively empowered to make and implement decisions to move the project forward until it becomes fully operational.

184. The overall governance and management arrangements discussed so far are summarized graphically in Figure 5. This specific framework is commonly used in

the planning and development of public-sector driven regional FI initiatives. Private-sector initiatives are generally less formalized, though still follow a similar structure.

185. A stock-taking exercise is a critical first-stage document that provides a comprehensive picture of the relevant environment.¹⁰² It is the basic document from which most of the preliminary analysis on the type of FI integration model, legal and regulatory harmonization requirements, technical standards and participation requirements, among other things, is drawn.¹⁰³ The document is typically prepared by the project team in cooperation with national working groups involving central banks and FI operators in the participating countries.

186. To increase its usefulness, the stock-taking should be wide in terms of scope and at the same time sufficiently detailed. It should cover national FI arrangements, the key payment and financial instruments used, the types of financial institutions and other institutions that participate in the national FIs and the service providers for those FIs, the relevant financial sector legislation and regulations, and the relevant private sector industry associations and public sector regulatory and oversight bodies. At the same time it should have a strong focus on the organization, operations and technical capabilities of national FIs (especially those directly affected by integration); the organization, market structure and market practices and conventions in key financial markets that will benefit from regional FI integration; and the fundamental legal and regulatory environment in which they operate. It should also cover in detail the lessons and best practices from regional FI integration initiatives elsewhere.

¹⁰² Before starting with the actual stocktaking of local capabilities, however, it might be advisable to start with a review of previous initiatives elsewhere and understand the lessons from those undertakings.

¹⁰³ Publication of the stock-taking reports upon their completion also provides useful background documents for more broadly-based consultations at the regional level.

187. A gap analysis or a SWOT analysis is highly recommended as a follow-up to the stock-taking exercise.¹⁰⁴ In the gap analysis, the major differences in the key aspects of the national FI organizational structures, schemes and systems and the general financial sector organizational, legal and regulatory frameworks are identified and described in detail. Then, the relative strengths, weaknesses, opportunities and threats (i.e. SWOT) for successful regional FI integration need to be assessed. Comparators or benchmarks for the gap and/or SWOT exercises should be developed considering not only the regional reality, but also taking into account relevant international standards such as the CPSS-IOSCO Principles for FMIs, applicable technical standards, and best practices derived from other regional FI integration experiences.

188. This detailed understanding of the critical gaps should clearly highlight the necessary changes that national public sector authorities, national FIs, their direct participants and key end-users and the operators of the new scheme will need to undertake in order to ensure successful regional FI integration. The project steering committee and management team should develop a plan for all such gaps to be addressed effectively, and ensure that this plan be supported and adopted by the various stakeholder groups.¹⁰⁵

189. Many of the required changes will involve changes in laws and regulations, which should be harmonized to the level of the best practice available at least regionally and preferably internationally. Harmonization does not require that all the relevant laws and regulations be identical in all aspects and in all the participating countries, but that they meet the minimum standards to avoid being barriers and to minimize legal risks in the FI integration arrangement.

¹⁰⁴ “SWOT” is an acronym that stands for strengths, weaknesses, opportunities and threats.

¹⁰⁵ A realistic timeframe is often a condition to obtain support from some of the key stakeholder groups.

190. Often the creation of an entirely new law and set of regulations that countries in the region can adopt in a form that readily integrates into the existing legal and regulatory framework is the only feasible approach to effective harmonization. In some specific cases, creating and adopting a regional treaty has been a faster and more effective solution as it avoids the need to make adaptations to national “legacy” legislation. However, procedurally and sometimes politically, new laws and regulations are difficult to enact quickly and typically require a phase-in period for the participating countries. In some cases, ensuring “national treatment” (i.e. non-discrimination between foreign and domestic investors, borrowers, financial institutions and FIs under domestic laws) will be a more easily achievable goal.

191. It is acceptable, and in some cases it might even be the best solution available, that an integration project be undertaken in a phased approach rather than an “all at once” approach. This implies that countries that are ready for integration can proceed while others can integrate when required criteria are met. This could have the benefit of a less complicated initial implementation, including maintaining the design and operating integrity of the regional FI model, and an opportunity for the anticipated benefits to be demonstrated at an early stage.

192. The planning stage usually concludes with the development of a detailed business case analysis to assess the viability of the regional FI integration project at the most realistic level possible. In essence, the business case analysis is a construction of scenarios of expected quantified future use, cost-savings and net benefit allocation over one or more future intervals (e.g., 1, 3 and 5 years). The stock-taking exercise and the gap and/or SWOT analyses will provide many of the key inputs for this purpose, like the model(s) deemed most feasible for regional FI integration on which the scenarios earlier described will be based.

193. As earlier noted, scenario analysis is neither a definitive nor accurate measure of the actual volumes, benefits or costs. But, as long as the basic evaluation framework and analytical approach is maintained for the various scenario evaluations across all model options under consideration, it provides a useful relative ranking of net benefits for the integration models. Even the thought-process of developing these scenario evaluation models is useful in focusing attention of the key costs and benefits. All of this is critical business case information.

194. Through completion of the business case analysis, the project’s planning and governance framework should be able to visualize more definitively the type of FI integration model that might best suit the regional initiative.

5.3 DESIGN GUIDELINES

Guideline 10: Devise a broadly acceptable feasible model for FI integration, based on consultations and discussions among all stakeholders around the stock-taking and business case analyses.

Guideline 11: Outline the selected integration model as comprehensively as possible with due regard to the results of the studies and analyses performed during the planning stage. This should include the structural architecture, operating schemes, regulatory and normative aspects, and technical design and operating systems.

Guideline 12: Specify the business framework for the new regional FI arrangement, including its organization, management and governance, business management functions, operational scope and core business functions, business practices and controls, rules and procedures, and technical conditions and standards, among the main features.

Guideline 13: Establish effective cooperative public governance, regulatory and oversight mechanisms in line with Responsibility E of the CPSS-IOSCO Principles for FMs to allow effective monitoring of the proposed regional FI arrangement.

195. The regional FI integration model refers primarily to the schemes and systems and the organizational architecture of the integration arrangement (i.e., decentralized hub-spoke network, centralized regional FI, etc.). Final model selection should be based on a methodology that is well-defined and transparent. Usually, criteria drawing on elements of the vision-proposal document for regional FI integration, the stock-taking exercise, gap and SWOT analyses, the business case analysis and also project development constraints and timelines will need to be combined for model selection purposes. Moreover, since it is possible that more than one of the feasible integration models meet in some form the stated requirements and standards, there also needs to be an agreed-upon priority ranking on the selection criteria that are perceived as most closely aligned with maximizing the net benefits and mitigating the risks of regional FI integration.

196. It should be noted that, in most cases, achieving unanimity with respect to the best integration model will not be possible. Indeed, selection of an integration model will usually need to be based on acceptance by a plurality of stakeholders.

197. Achieving the necessary buy-in for an integration model can also be impaired when the model is too narrowly described in terms of detailed technical aspects or other specific operating features. Making efforts to agree on all such particular features may conceal from decision-makers' sight the project's broader and long-lasting benefits. Hence, it is highly beneficial that the integration model is outlined as comprehensively as possible, including among other broad elements: i) the structural architecture, including linkages and interop-

erability with other FIs and the role and functions of key service providers; ii) the operating schemes (rules, protocols, procedures and technical standards) based on international standards and best practices; iii) the technical design and operating systems based on internationally accepted operational and technical standards such as ISO (identifier and message standards), EMV (for payment cards), FpMl (for derivatives), FIX (for securities);¹⁰⁶ iv) any additional legal and/or regulatory developments that are needed; and, v) how the model might facilitate transaction uptake once the new arrangement is launched.

198. Once there is a final agreement to move forward with the project and the integration model has been selected, a well-defined and documented business framework for the entity or organization that will operate the regional FI arrangement should be created based on international best practices and principles and with due approval from FI overseers (see below), and then be published. Depending on the model adopted, some of the functions and requirements might be the responsibility of the national FIs linked into the integration model rather than of the entity operating the centralized operational facility, if any. The most relevant elements of the business framework are depicted in Box 7.

199. A cooperative oversight body or mechanism for the regional FI arrangement(s) will need to be established with senior representatives from the national FI oversight, supervisory and/or regulatory authorities that are relevant to the type of FIs in the arrangement(s).¹⁰⁷ The body should be developed along the lines of Responsibility E of the CPSS-IOSCO

¹⁰⁶ See Annex 7 for a more complete list of relevant technical standards.

¹⁰⁷ Other relevant authorities may also include competition authorities and possibly also any other authorities that are responsible for the resolution of financial institutions.

BOX 7: KEY ELEMENTS OF THE BUSINESS FRAMEWORK FOR THE NEW REGIONAL FI ARRANGEMENT

- The organizational and the enterprise governance and management structure of the regional FI arrangement with particular reference to any new centralized operational facilities, its ownership arrangements and its financial return objectives (e.g. non-profit full or partial cost-recovery vs. for-profit).
- The business management functions including for example service agreements with direct participants and service providers, financing (capital, budgeting, user fee schemes), and auditing and reporting procedures.
- The core business functions and operations of the new FI arrangement with descriptions of the roles and functions of the various components such as the role of national FIs (if any), key third-party service providers and any links with other types of FIs (e.g. for the final settlement of funds).
- Business practices, including eligible participants, transactions and instruments, the risk management framework and specific programs, and dispute and resolution mechanisms, among others.
- The underlying operational rules and requirements, and procedural manuals.
- Technical standards for core operations and for participant connectivity, including operational design, hardware/software requirements.

Principles for FMIs,¹⁰⁸ and should be given a mandate to monitor and evaluate the regional FI arrangement to ensure it operates safely and efficiently, and if necessary to propose or even undertake regulatory action.¹⁰⁹

200. Nevertheless, local regulatory authorities should be able to keep exerting regulatory, supervisory and oversight control over certain aspects of the regional FI arrangement that affect their jurisdictions, if so desired.¹¹⁰ For example, two public aims typical of securities regulators' actions are the prevention of market abuse and investor protection. Aspects like these may not fall under the purview of a cooperative oversight group or mechanism intended to focus on the overall safety and efficiency of the regional FI arrangement. Hence, as part of the framework document that outlines its overall mandate, powers and functions, the cooperative oversight group should describe the division of responsibilities and the forms of interaction with national oversight and regulatory authorities.

5.4 IMPLEMENTATION GUIDELINES

Guideline 14: *Establish proper project management procedures and processes under the supervision of a designated project manager, who needs to be supported by sufficient and scalable human and financial resources. Include an effective and strictly enforced project control function that interacts closely with project governance and oversees on progress and issues of the regional FI integration program.*

¹⁰⁸ Other relevant documents on cooperative oversight include CPSS, "Central bank oversight of payment and settlement systems", Basel, 2005, and IOSCO, "Objectives and principles of securities regulation", 2008.

¹⁰⁹ The latter will depend on the division of responsibilities between the appropriate national oversight/regulatory authorities and the regional oversight group. For example, for cross-border transactions national authorities might delegate some of their oversight functions over national FIs or FI participants to the regional body.

¹¹⁰ In this regard, key consideration 10 of Responsibility E of the CPSS-IOSCO Principles for FMIs states that "Cooperative arrangements between authorities in no way prejudice the statutory or legal or other powers of each participating authority, nor do these arrangements constrain in any way an authority's powers to fulfil its statutory or legislative mandate or its discretion to act in accordance with those powers".

Guideline 15: Set up an effective communication function to inform all relevant stakeholders properly and the general public throughout the implementation process of the project. The regional FI integration plan and its proposed business practices, organization, and operations should be comprehensively documented and made public to create awareness on the new arrangement and its benefits, and build support for using it.

201. Effective leadership is crucial to ensure all the potential risks that the project will face in the implementation stage will be adequately managed and mitigated. Risks include managing changes to the FI integration model originally accepted, delays, some budget overruns and faltering commitment of some individual participants. Other potential risks are “development fatigue” and “project creep”.¹¹¹

202. The Project Management Team is directly responsible for the development, construction, implementation and final rollout of the new arrangement. It is also responsible for enforcing project time-schedules and budgets approved by the steering committee, for consultation activities with key stakeholders and for the documentation of the integration model. In order for this team to be able to perform all these duties effectively, it will need: i) sufficient expertise and overall project management experience; ii) adequate empowerment; iii) adequate financial and human resources; and, iv) open and effective communication with project governance and with oversight, regulatory and supervisory authorities.

203. Transparency throughout project deployment (e.g. progress reports) also helps in ensuring continuing buy-in and commitment from all relevant stakeholders, and might also lead to improvements throughout implementation if a proper feedback mechanism is developed for this purpose. Progress reports should have

a broad scope, though still with a certain level of detail. More detailed technical annexes may be produced and attached to the main reports.

204. Progress reports should also be made available to broader audiences, though probably in a simplified format. This will serve a crucial purpose, which is creating awareness of the new regional FI arrangement and the benefits of using it. Indeed, building demand and participation from the early stages is a key part of the project development and implementation process. Adequate financial and human resources should be allocated for this type of marketing efforts.

5.5 SUSTAINABILITY GUIDELINES

Guideline 16: Regularize the consultative arrangements among key public and private sector stakeholders to ensure that the evolution of the regional FI arrangement in terms of new business functions, services, and operating procedures is broadly responsive to, beneficial for, and accepted by stakeholders.

Guideline 17: Regularize regulatory and oversight arrangements of public sector authorities to ensure ongoing compliance of the regional FI arrangement with the legal and regulatory requirements and any other relevant policy standards that apply to it.

Guideline 18: Maintain sound and committed organizational governance and senior managerial leadership for the regional FI arrangement and ensure that staff dedicated to the regional FI organization are well-informed and well-trained in the goals, functions and operations of the regional FI arrangements.

Guideline 19: Institute a regular program of self-evaluation and reporting on the regional FI arrangement's organizational structure, business functions and performance.

¹¹¹ Refer to section 4.2.3 for details on these potential risks.

205. The sustainability guidelines aim at establishing a strategic direction and a sound business culture for the regional FI arrangement that, together with the ongoing oversight from public sector authorities, will help ensure that the new regional FI will continue to evolve and develop to meet future stakeholder needs, satisfy any new legal and regulatory requirements affecting its operations and remain sustainable and relevant over the years.

206. The consultative arrangements that were created for the project planning, design and implementation stages should not be intended to disappear once the regional FI arrangement has been rolled out. On the contrary, maintaining such arrangements – though probably with some changes in mandate and form to account for the new situation of the initiative as a going concern – is crucial for achieving continuous buy-in and commitment that will accelerate the initial migration of transactions and promote future volume growth.

207. Likewise, public sector authorities' cooperative regulatory and oversight arrangements that were devised and established in the design phase are clearly meant to operate on an ongoing basis once the regional FI becomes operational. To ensure the effectiveness and transparency of the oversight arrangement, the regulatory standards and the detailed oversight policies and procedures that will be applied to the new regional FI should be developed and published.

208. A reasonably detailed information communication program for broader audiences should also be maintained after implementation. The program should inform those audiences not only on achievements and milestones, but also on future plans and developments intended to better meet the needs of participants and other market players and end-users.

209. Business management of the new regional FI arrangement should aim at ensuring that the latter will remain efficient, safe and relevant for its participants and the relevant cross-border markets as a whole. For this purpose, the governance and senior management structure of the entity (or other arrangement) responsible for the operation of the regional FI needs to be robust and be strengthened continuously. The Steering Committee will likely need to evolve into a board or similar arrangement reflecting the nature of the new FI as a going concern. Under its direction, management should continuously ensure that the regional FI's activities are consistent with its objectives, strategy and risk tolerance.

210. In this last regard, the board (or similar) should ensure that the organization provides the right incentives to attract qualified senior and mid-level professionals that will act diligently and on the best interests of the regional FI arrangement.

211. The board and management should also ensure that all staff are adequately trained and understand the goals, functions and operations of the regional FI arrangement and can apply that knowledge in practice in a variety of circumstances.

212. Moreover, the board should institute a regular program of periodical self-evaluation and reporting on the regional FI's organizational structure, its strategy business functions and performance according to the stated objectives and vis-à-vis the needs of the FI's members/participants and other relevant stakeholders. Together with actions from overseers, this will help ensure that the FI is managed effectively and efficiently and that necessary changes are addressed in a timely manner. Such self-evaluation reports should be available and accessible to all interested parties.

ANNEX 1: MEMBERS OF THE G25 PANEL OF EXPERTS

MEMBER	INSTITUTION	TITLE
Gertrude Tumpel-Gugerell (Chair)	European Central Bank (former)	Former Member of the Executive Board
Ali Alhomidan	Saudi Arabia Monetary Agency	Director, Payment System Oversight Department
Joaquin Bernal	Banco de la República, Colombia	Chief Payment Systems and Banking Operations Officer
Mary Ann Callahan	Depository Trust & Clearing Corp and Americas' Central Securities Depositories Association (former)	Former Managing Director, DTCC, and former President, ACSDA
Massimo Cirasino	The World Bank	Head of Payment Systems Development Group
Rob Close	CLS Bank International (former)	CEO (retired)
Daso Coimbra	Banco Central do Brasil	Director, Department of Banking Operations and Payments System
Arthur Cousins	SADC Banking Association	Payments Project Coordinator
Mario Guadamillas	The World Bank	Manager, Financial Systems Service Line
Gerard Hartsink	CLS Bank International ISO 20022 Registration Management Group	Chairman Convenor
Daniel Heller	Swiss National Bank	Director, International Monetary Cooperation
Fabiola Herrera	Central Bank of the Dominican Republic	Director, Payment Systems Department
Marc Hollanders	Bank for International Settlements	Special Adviser on Financial Infrastructure
Bwaki Kwassi	BCEAO	Payment System Director
Esmond Lee	Hong Kong Monetary Authority	Executive Director
Klaus Löber	Committee on Payment and Settlement Systems, Bank for International Settlements	Head of CPSS Secretariat
Dave Mitchell	Reserve Bank of South Africa (former)	Former Head of National Payment Systems Department
Harry Newman	SWIFT	Head of Market Initiatives, EMEA
Sean O'Connor	Bank of Canada (former)	Research Adviser and CPSS member (retired)
Franco Passacantando	Bank of Italy	Managing Director
Daniela Russo	European Central Bank	Director General, Payment Systems and Market Infrastructure
John Bosco Sebabi	National Bank of Rwanda (former)	Director General Operations
Lawrence Sweet	Federal Reserve Bank of New York	Senior Vice President
John Trundle	Euroclear UK & Ireland	CEO
Froukelien Wendt	International Monetary Fund	Senior Financial Sector Expert
SECRETARIAT		
Jose Antonio Garcia	The World Bank	Leader of Secretariat
Marco Nicoli	The World Bank	Member of Secretariat
Ceu Pereira	The World Bank	Member of Secretariat

ANNEX 2: CROSS-BORDER INTEGRATION EXPERIENCES OF FINANCIAL INFRASTRUCTURES FOR PAYMENTS

This annex presents a more detailed description of some of the FI integration experiences mentioned or referenced in the main report, as well as several other projects and initiatives. This annex, however, *is not an exhaustive list* of such cross-border FI integration projects and initiatives.¹¹²

A. PAYMENT SETTLEMENT INFRASTRUCTURES AND MECHANISMS

ALADI Reciprocal Payments and Credits Agreement

The Reciprocal Payments and Credits Agreement of ALADI was created in August 1982, although its origin can be traced back to 1965 in the Multilateral Netting System of Reciprocal Payments and Credits. The objective of the Agreement is to facilitate cross-border payments and trade between member countries, minimizing the use of global reserve currencies.

In essence, the Agreement consists of a multilateral net payment mechanism supported by a system of reciprocal credits between the central Banks of the 12 participant countries.¹¹³ The clearinghouse is operated by the central bank of Peru. The multilateral net mechanism is executed every four months: debits recorded in the mechanism – which correspond to exports made from country A and paid to the exporter by the central bank of country A – are settled at the end of April, August and December. The Agreement is also supported by a system of guarantees: *Convertibility* (of the various domestic currencies into US Dollars, the latter being the sole legal tender to settle transactions in the Agreement); the *Transferability* of underlying US dollars through the mechanism; and, *Reimbursement* between the participating central banks of all transactions channeled through the Agreement.

During the 1980s, nearly 90% of all intraregional trade was channeled through the ALADI Agreement. This share started falling since the early 1990s and currently it is a one-digit figure. However, the ALADI Agreement is still considered relevant as it is able to support the continuity of intra-regional trade in cases where one or more of the participating countries face uncertain economic or political conditions, or other unanticipated upheavals.

Arab Payment System

The Arab Payment System will be specifically designated to clear and settle intra-regional cross-border payments among the willing participating Arab Monetary Fund member countries. The system will complement, and to a large extent utilize, the facilities already available in the national payment systems of its participating countries.

This system will not, however, clear and settle purely domestic payments in any of these national systems, nor will it clear and settle cross-border payments destined to beneficiaries outside the participating countries.

¹¹² Annex 4 also presents a comparative table highlighting the main features of some of these projects.

¹¹³ Argentina, Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, Mexico, Paraguay, Peru, Uruguay and Venezuela.

CHATS (www.hkma.gov.hk)

The Hong Kong Monetary Authority's RTGS systems for Hong Kong dollar, U.S. dollar, Euro and Renminbi Yuan (RMB) settlement operate on a common CHATS platform that has technical links with the RTGS systems of other central banks to enable safe and efficient settlement in any of these currencies. For example, the CHATS has been linked with the Bank Negara Malaysia's RENTAS and Bank Indonesia's BI-RTGS to allow PvP settlement between these national currencies and the USD through the HKMA's RTGS USD service.

With respect to the link between CHATS RMB and the CNAPS RTGS system operated by the Peoples' Bank of China, a real-time technical interface between the two systems is supplemented by a cross-participation account arrangement in which the commercial bank Bank of China (Hong Kong) has settlement accounts in both the CHATS RMB and CNAPS and acts as settlement agent between the two settlement schemes.

CHATS USD and CHATS EUR use global commercial banks as the settlement banks for payments in these currencies.

CLS Bank International (www.cls-group.com)

The impetus behind the creation of CLS came from regulatory concerns regarding the potential for FX settlement risk to be a major source of systemic risk. CLS was established in 2002 as a private sector initiative to deliver and operate a service to mitigate this risk. This is achieved through CLS' PvP service, which links to the RTGS systems of each currency CLS settles.

CLS now settles payment instructions in 17 currencies:¹¹⁴ Australian dollar, Canadian dollar, Danish krone, euro, Hong Kong dollar, Israeli shekel, Japanese yen, Korean won, Mexican peso, New Zealand dollar, Norwegian krone, Singapore dollar, South African rand, Swedish krona, Swiss franc, British pound sterling and United States dollar.

The CLS community includes the central banks of each participating currency, Settlement Members (direct participants in CLS) and their third party customers (indirect participants in CLS), nostro agents and Liquidity Providers (banks that commit to providing liquidity to CLS in a CLS Eligible Currency in certain circumstances). CLS has over 60 Settlement Members from 24 jurisdictions, which in turn have customers in over 80 jurisdictions.

CLS settles payment instructions relating to a variety of FX transactions, including FX spot, FX forwards, FX option exercises, and FX swaps. Settlement Members submit payment instructions relating to their own FX transactions, or they may submit payment instructions on behalf of third parties. Once received, payment instructions are authenticated and matched by CLS and stored until the settlement date.¹¹⁵

CLS holds an account at each of the central banks of the 17 currencies it settles. Settlement across the books of CLS and funding in each of the 17 currencies is final and irrevocable. CLS funding obligations (Pay-ins) are multilaterally

¹¹⁴ Currencies have to fulfill the eligibility criteria established by CLS

¹¹⁵ Although Settlement Members can submit instructions at any time prior to the settlement date, they generally submit payment instructions to CLS within 30 minutes of execution of the underlying FX transaction.

netted to significantly reduce the value of required Pay-ins: each day prior to settlement in each currency, CLS calculates the funding required of each Settlement Member on a multilateral netted basis for each currency, after taking into consideration all payment instructions of the Settlement Member that are due to settle that day in that currency. The amount of cash required by CLS to settle all payment instructions is reduced by an average of 96%.

CLS settlement service is supported by a robust and resilient infrastructure within a comprehensive and well-established legal framework. At the operational level the settlement service maximizes the benefits of STP processing and minimizes operational errors and their associated costs. Real-time information on the status of payment instructions is provided to, and therefore easily monitored by, Settlement Members. Unmatched payment instructions can be followed up promptly and corrections made as necessary before settlement.

Gulf Cooperation Council Payment Systems Connections

The Gulf Cooperation Council (GCC) Payment Systems Connections Strategy is a new project between all six GCC countries,¹¹⁶ expected to be completed by late 2015 or early 2016.

At the current stage, the project will study distinct system options which will be defined on the basis of different levels of integration between national systems and on the amount of new applications/intelligence required to be built at, and/or required for implementation into, existing national systems.

For example, this approach may lead to the following system models: i) one fully integrated GCC RTGS system; ii) a semi-centralized GCC RTGS system, and, iii) a fully distributed system with national systems linked multilaterally. In this work, the GCC representatives intend to continue studying and adopting proven international experiences in this area.

B. PAYMENT CLEARING INFRASTRUCTURES

STEP2 (www.ebaclearing.eu)

STEP2 is a centralized Pan European ACH (PE-ACH) for bulk payments in EUR. Established in 2003 to clear cross-border EUR credit transfer payments for its participating member-banks, it has expanded its services to include clearing of domestic EUR payments for participating banks –primarily in Luxembourg and Italy at present, while Estonia is in the pipeline – and to include direct debit payments. STEP2 also developed clearing services for SEPA credit transfer (SCT) and direct debit (SDD) schemes in 2008-09 and replaced its original XCT technical platform, which was based on MT103+, with an upgraded SEPA-compliant platform in 2011.

STEP2 is a tiered connectivity system involving both direct and indirect participant on its processing platform so it provides direct routing to beneficiary banks with straight-through processing and automated settlement connectivity, for settlement, to TARGET2 for its SEPA services and also to Euro1 for certain of its original bulk payment services.

¹¹⁶ Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates.

SICA-UEMOA (www.bceao.int)

SICA-UEMOA, which was inaugurated in 2008 by the Central Bank of the West African States (BCEAO), is a regional retail payment clearing infrastructure for the West African Economic and Monetary Union. It represents a single regional scheme with a centralized technical platform in “hub-spoke” form that services a central regional clearing facility and 8 national clearing facilities in member countries, with many “clearance access” points available across the region.

SICA-UEMOA clears domestic and intra-regional cross-border payments denominated in West African CFA francs, including batch files of digitized paper items such as cheques, for all participating banks within the region. Payment obligations are netted multilaterally, with settlement on BCEAO’s regional RTGS system, STAR-UEMOA.

C. RETAIL PAYMENT TRANSACTION SERVICES

GCC Net (www.gcc-net.net)

The GCC NET is a single ATM network linking all the GCC National Switches. It offers numerous features based on standards similar to those of other international networks.

A notable aspect is the availability of this ATM switching facility at a reasonable fee. It has also helped lower the exchange rate margins between GCC currencies. Further, account settlement between member countries is conducted directly in those countries’ own currencies, without the need for opening a non-GCC currency account - or even referring, for settlement purposes, to a non-GCC currency.

D. OTHER INITIATIVES FOR CROSS-BORDER RETAIL PAYMENTS

SEPA (www.sepa.eu)

By the time national currencies in the euro zone were about to be replaced by euro banknotes and coins, it was recognized that despite the launch of European Monetary Union (EMU) and single currency in 1999, the cost of transferring money across borders remained too high. This absence of progress led the European Commission to call for a “concerted approach” involving the ESCB, EU institutions and the private sector “to deliver a technically secure and operational solution as a matter of utmost urgency.”¹¹⁷

Despite the “concerted effort approach” proposed initially, the European Commission decided to go for a price-fixing Regulation which was supported by Member States.¹¹⁸ The Regulation established the principle of equality of charges for payments initially up to €12,500 within Member States (national) and between Member States (cross-border).

¹¹⁷ See the European Commission’s Financial Services Action Plan of 1999.

¹¹⁸ Regulation 2560/2001 on cross-border payments in euro, later repealed by Regulation 929/2009.

The obligation to apply the same charges to national and cross-border payments created the need for the banking industry to deploy EU-wide plans and infrastructures in order to cut the costs and improve the service levels. In order to respond to this challenge, the banking industry created the European Payments Council (EPC). The preamble of the EPC charter states the industry's vision of the Single Euro Payments Area (SEPA) in 2002.¹¹⁹

During the five years which followed the coming into force of the price-fixing Regulation and the creation of the EPC, European instances and the EPC worked in parallel to pave the way for SEPA. From 2002 to 2007, the EPC established the rules and practices for the new payment schemes and selected the standards to be applied. It also created and tested the new SEPA products. The European Commission supported the work of the EPC by adopting a legal framework underpinning an integrated retail payments market.¹²⁰ Member States also started their preparations for SEPA, by setting-up national implementation and migration bodies, tasked to prepare the roll-out of the new SEPA instruments, standards, and infrastructures.

The EPC launched the SEPA Credit Transfer Scheme in January 2008 and the SEPA Direct Debit Scheme in November 2009¹²¹, allowing banks to gradually offer these SEPA products to their customers. It also adopted the SEPA card framework to enhance interoperability, improve transparency and remove other barriers to the development of a SEPA for Cards.

The adoption of SEPA products had been nevertheless very slow: By August 2010 only 9.26% of all credit transfers processed in the euro area were SEPA credit transfers, while SEPA direct debits remained at a share well below 0.1% of all direct debit transactions processed in the euro area. Taking this into account and the need for the banks to offer both SEPA products, the industry called upon policy-makers to adopt an “end date” for national schemes and standards.

The “end date Regulation”, Regulation 260/2012 was adopted in March 2012, requiring that banks and payment institutions and their customers and CSMs should have implemented the standards (IBAN as account identifier and ISO20022 for the messaging) of the SCT and SDD Rulebooks for euro payments at the latest before 1 February 2014. All schemes which do not offer their customers the possibility to do “SEPA compliant” transactions will have to disappear.¹²²

The pace of adoption of SCTs has now accelerated considerably, representing 64.1% of all credit transfers processed in the euro area as at end-November 2013. Adoption of SDDs remains somewhat slow though, at 26.0% of all direct debit transactions processed in the euro area as at the same date.

¹¹⁹ The preamble says that members “share the common vision that Euroland payments are domestic payments; join forces to implement this vision for the benefit of customers, industry and banks and accordingly launch our Single Payments Area.”

¹²⁰ The Commission issued a legislative proposal in 2005 (Proposal for a Directive on Payment Services, December 2005), which was adopted by Member States in November 2007 and came into force in December 2007.

¹²¹ The EPC is responsible for the development and maintenance of SEPA payment schemes as defined in the SEPA Credit Transfer (SCT) and SEPA Direct Debit (SDD) Rulebooks. The rulebooks can be regarded as instruction manuals which provide a common understanding on how to move funds within SEPA. The schemes are based on technical standards defined by bodies such as the International Organization for Standardization.

¹²² On January 9, 2014, the European Commission proposed an additional transition period of 6 months for those payment services users who are yet to migrate. In practice this means the deadline for migration remains February 1, 2014 but payments that differ from a SEPA format could continue to be accepted until August 1, 2014. For additional information see: http://europa.eu/rapid/press-release_IP-14-6_en.htm

Today, SEPA already enables customers to make cashless euro payments to anyone located anywhere in Europe, using a single payment account and a single set of payment instruments as easily, efficiently and safely as they make payments in the domestic context.¹²³ About 4500 banks joined the SEPA CT Scheme. For the SEPA Core DD Scheme more than 3800 banks have signed up, and about 3400 banks for the SEPA Business to Business Direct Debit Scheme.

¹²³ Customers can make electronic euro payments within and across 33 countries under the same basic rights and obligations. SEPA consists of the 28 EU Member States, Iceland, Liechtenstein, Norway, Switzerland and Monaco.

ANNEX 3: CROSS-BORDER INTEGRATION EXPERIENCES OF FINANCIAL INFRASTRUCTURES FOR SECURITIES AND DERIVATIVES

This annex presents a more detailed description of some of the FI integration experiences mentioned or referenced in the main report, as well as several other projects and initiatives. This annex, however, *is not an exhaustive list* of such cross-border FI integration projects and initiatives.¹²⁴

A. SECURITIES TRADING INFRASTRUCTURES

ASEAN Trading Link (www.asiaetrading.com)

The first stage of the ASEAN Trading Link began operations in 2012 by linking the stock exchanges in Malaysia and Singapore, with the exchange in Thailand soon to link-up. Exchanges in the Philippines, Indonesia and Viet Nam are also scheduled to participate in the Trading Link.

The ASEAN Trading Link is an electronic hub-spoke arrangement with SunGard providing the central operating facility – the Intra-ASEAN Network (IAN) – for the Trading Link. There are sponsoring brokers in each member exchange that facilitate clearing and settlement of cross-exchange orders that are submitted directly from the originating broker to the executing exchange through the Trading Link. The IAN also provides an entry point for non-ASEAN investors and for FIX-based infrastructures and the SunGard Global Network.

There are two ways to connect. For cross-exchange orders placed with a local member dealer, that dealer uses its exchange's interface, called ASEAN Common Exchange, to IAN to route orders to the order matching system of another ASEAN exchange, which then acknowledges and fills the order, confirms the trade and provides relevant market data back through the ACE and IAN interfaces. Interfaces use the FIX protocol and standards. Another interface, available to international clients seeking to connect directly, called Neutral Access Point, is intended as another gateway. The connection is via Singapore, but still requires designation of correspondent dealers and custodial accounts in each securities jurisdiction

CEESEG (www.ceeseg.com)

The Central and Eastern Europe Exchange Group (CEESEG) is a holding company owned jointly by the Vienna Stock Exchange and Austrian banks that, in turn, owns stock exchange in Vienna (Austria), Ljubljana (Slovenia), Prague (Czech Republic) and Budapest (Hungary).

While each exchange operates separately within its own jurisdiction, CEESEG Holding is responsible for strategic and financial management and joint administration. Organized in 2009, the operational plan is to harmonize trading and service schemes, establish a common trading platform (i.e., XETRA), provide cross-membership among all member exchanges, and introduce a common clearing system and CCP service. Listed securities on each member exchange will be registered in the respective national CSDs as required by law with links to the common clearing CCP. CEESEG also has links to exchanges in Bosnia-Herzegovina, Macedonia and Romania.

¹²⁴ Annex 4 also presents a comparative table highlighting the main features of some of these projects.

MILA (www.mercadointegrado.com)

The Latin American Integrated Market (MILA), which began operations in mid-2011, links together the stock exchanges in Colombia, Chile and Peru. The project involved a two-stage process that began in late 2010 with an automated router model – the FIX message routing network – providing participants on one member exchange with access to securities listed on another of the member exchanges. Phase two, finalized at the end of 2011, allows individual investors direct access to the market information in all 3 countries through their local brokers.

Although networked together at the broker and infrastructure levels, the trading infrastructures are not merged into a single regional entity, nor do they operate on a common or even uniform trading platform or scheme. However, there are common trade transparency protocols and standards via the FIX solutions, for cross-border pre-trade, trade and post-trade information. Also, the member countries do not have uniform regulatory, tax or foreign capital regimes. There are agreements on the need to achieve some harmonization in these policy areas, but with no firm deadlines as of yet for their implementation.

With no regional currency, trades settle in the local currency of the securities' custody accounts, which is also generally the same location of the exchange on which the securities are transacted.

Costa Rica, Mexico and Panama have also indicated an interest in joining MILA.

B. CENTRAL SECURITIES DEPOSITORIES AND SECURITIES SETTLEMENT SYSTEMS

Euroclear (www.euroclear.com)

The Euroclear group comprises the national CSDs of Belgium, Finland, France, Ireland, the Netherlands, Sweden, and the UK, together with Euroclear Bank which specializes in cross-border settlement and related activities; Euroclear Bank is known as an international CSD. The parent company is owned and governed by users of the FI and the group seeks to meet the needs of the users for efficient and low-risk post-trade services.

The merger of Euroclear Bank with various European CSDs offered both the opportunity to take advantage of economies of scale by sharing activities and costs, and the prospect of moving towards a more consolidated settlement structure in Europe. The first objective has been achieved, but the second has been only partly achieved. Three successful forms of integration within the group can be distinguished:¹²⁵ the sharing of common services; the integration of CSDs through the use of a single settlement platform while retaining separate governance arrangements; and, a fully integrated approach for CSDs in two countries.

¹²⁵ Euroclear also provides some of the benefits of integration by offering links and services with other parties, such as the Hong Kong/Malaysian service described in this same annex.

The Euroclear group shares as much of its services as possible across the group's individual CSDs. In particular, IT development and IT operations are common to most entities.¹²⁶ This allows the development of highly robust systems. For example, the group operates two fully synchronized live data centers and a third live, but distant, data center to provide protection against a regional disaster. This level of protection would be likely to be uneconomic for a single CSD in the group. In addition, common services like finance, human resources, audit and risk are fully or partly shared.

A higher level of integration has been achieved in the “ESES” CSDs.¹²⁷ The three CSDs of Belgium, France and the Netherlands jointly developed a single settlement platform, which provides a common technical approach in those three separate jurisdictions supported by common operations teams. The platform covers settlement, custody, asset servicing and issuer services. To achieve this, it was necessary to increase the degree of harmonization of market practices and rules across the three markets. The fact that local equities were traded on the same exchange (Euronext) provided added incentive to find common solutions. Settlement is fully harmonized from a process point of view, and other services are becoming more harmonized through changes in law and in market practice. Although the three CSDs share a common management team and have board members in common, they retain separate governance and regulatory arrangements. They have, however, been able to capture many of the synergies and client benefits of a full merger.

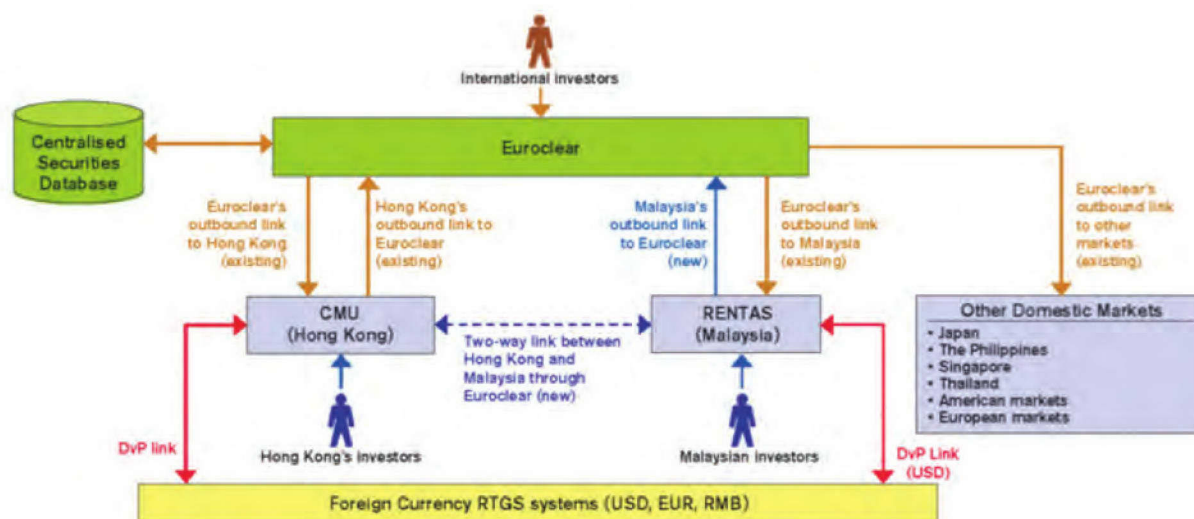
The UK and Ireland, by contrast, share a single CSD operating a single settlement system offering settlement, corporate actions and related services. This is possible because of the near equivalence of market practice and legal structures between the two countries.¹²⁸ Although transfers of title to Irish securities are governed by Irish law and those of British securities by English law in the system operated by Euroclear UK & Ireland (EUI), they can each be effected by the same technical system. Ireland's users are able to have a highly robust CSD with low unit costs by sharing the UK's infrastructure. The UK's users gain access to euro settlement in central bank money. Both countries and their users gain from the arrangement. While EUI has a single board, management and operating system it maintains separate Market Advisory Committees in Ireland and the UK, consisting of representatives from each local market, which help determine the strategy and prioritization of service developments for each country.

Euroclear has sought to develop common solutions whenever possible but found that this is constrained by the degree of harmonization achievable. It developed a single platform program which offered the vision of a common technical platform across all group entities, which might also have been made available to all European CSDs. The internal positioning engine, the Single Settlement Engine (SSE), was delivered first. The SSE does the core booking activity of identifying the securities which can settle on a DvP basis, but is not directly visible to clients. The single settlement platform for ESES, which includes the “front end” interface with market participants, was delivered next in the three markets mentioned earlier. However, the ambition to deliver a single platform to cover all custody and corporate actions aspects of securities management however, was stopped because there was insufficient harmonization of law and

¹²⁶ The Nordic CSDs of Euroclear Sweden and Euroclear Finland share IT and other resources and use fewer of the group's shared services, although the degree of sharing is increasing over time.

¹²⁷ Euroclear Settlement of Euronext-zone securities.

¹²⁸ EUI, in fact, also acts as the CSD for securities issued in, and under the laws of, Jersey, Guernsey and the Isle of Man. The same argument applies that the market practices and laws in the relevant jurisdictions are sufficiently similar to be able to use the same technical solution for securities transaction settlement.

FIGURE 6: HKMA'S PILOT PLATFORM FOR THE SETTLEMENT OF CROSS-BORDER SECURITIES TRADES

Source: HKMA.

practice which created too much complexity in design to be cost effective. Similarly, the idea that the single settlement platform might be extended to all CSDs in the group and beyond was dropped because there was no reasonable prospect of sufficient harmonization in a commercially viable timeframe. The current approach therefore is to pursue regional integration where the market environment gives sufficient chance of success and to seek to provide local services in as harmonized a way as possible where full integration is not feasible.

HKMA's Pilot Platform for the Settlement of Cross-Border Securities Trades

Early in 2012, under the auspices of the Pan Asian CSD Alliance, which was formed under the ASEAN +3 initiative to further the development of Asian bond markets (Asia Bond Market Initiative, ABMI), the HKMA launched a 'pilot platform' with Euroclear and the Bank Negara Malaysia (BNM) to create a hub-spoke network structure linking Euroclear, the HKMA CMU, and BNM's RENTAS.¹²⁹ The scheme calls for a common centralized securities database operated by Euroclear and technical operating links among the three systems through Euroclear as the connectivity hub. The scheme also incorporates the technical links between the HKMA CMU and HKMA CHATS USD, Euro and RMB and a link between BNM's RENTAS and CHATS USD.¹³⁰ The structure is illustrated in Figure 6.

The Pilot Platform will provide the Steering Group for the ABMI with some insights into the pros and cons of a regional CSD hub-spoke network model for the region. However, the ABMI Steering Group has also established a task

¹²⁹ BNM's RENTAS encompasses an RTGS system and a debt securities depository and settlement system and is operated by the Malaysian Electronic Clearing Corporation, which is a BNM subsidiary.

¹³⁰ Some of these links were described in Annex 2.

force to examine the feasibility and benefits, costs and risks relating to different regional integration and settlement architectures as an alternative to a region-wide distributed bilateral CSD (spaghetti) network model.

One variant could be a distributed network model with a centralized regional operations hub linking national CSDs of participating countries, which would not involve regionally centralized settlement of cross-border bond transactions. The other model is similar to the HKMA's pilot platform but would involve a regional Asian CSD interlinking the various national CSDs in a common platform, to provide common pre-trade, trade, post-trade and settlement services. These CSDs would still be separate legal entities in their respective countries. Yet another variant would be a single regional CSD in which custody banks and broker-dealers participate directly rather than through their national CSDs. Another variant of this model under consideration is a truly regional ICSD in which custody banks and broker-dealers may participate directly rather than through a local CSD. The implications of various barriers that would affect any or all of these models are also examined in the feasibility study.

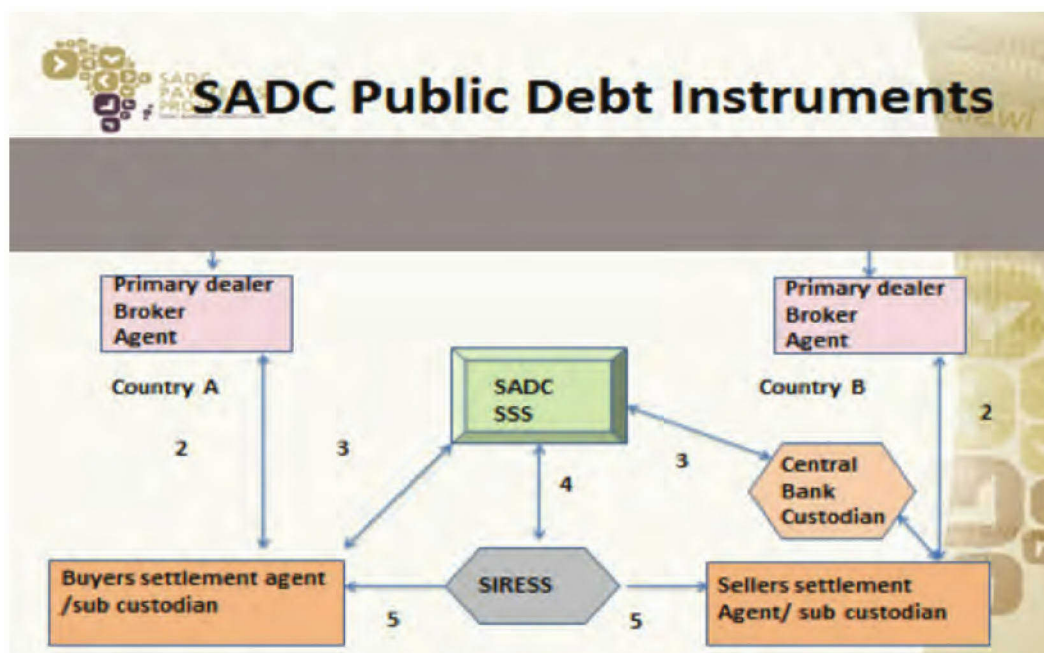
SADC Cross-Border DVP Settlement for Public Debt Securities (www.sadc.int)

The cash leg of financial markets instruments issued in SADC countries and traded across borders within the region is being analyzed in the context of overall strategic framework of the SADC Payments Project, as per the instruction of the SADC Committee of Central Bank Governors (CCBG).

The business model and process flows for DVP-based settlement of intra-SADC cross-border trading of public debt securities will be based on the following principles, developed together with the Committee of SADC Stock Exchanges and the CCBG Financial Markets sub-Committee:

- Settlement in central bank money (SIRESS)
- Cash and debt instrument exchanged at the same instance
- Settlement accounts at SIRESS must be pre-funded
- All buyers and sellers appoint settlement agents (banks)
- Central banks provide custodial services, but this can be provided by the private sector
- Current domestic processes are maintained
- International policy and regulatory standards (CPSS/IOSCO) are adopted
- International messaging standards are applied
- The complete model is depicted in Figure 7:

FIGURE 7: SADC CROSS-BORDER DVP SETTLEMENT FOR PUBLIC DEBT SECURITIES



T2S (www.ecb.europa.eu)

Target 2 Securities (T2S) is a project of the Eurosystem aiming at creating by 2015 a single securities settlement platform in Europe and providing European CSDs with a centralized service for delivery-versus-payment (DVP) settlement of transactions in central bank money. T2S will operate as an integrated model, thereby holding on the same platform both cash and securities accounts. Therefore, CSDs which join T2S will be “outsourcing” their settlement processes to T2S, but will retain all their other functions and relations with their clients, including keeping securities records and undertaking corporate actions according to the relevant local rules and regulations.

Market participants will need to have a legal relationship with a CSD in order to use T2S and only CSDs enter into a legal relationship with T2S. The national central banks (NCB) will hold central bank money accounts for CSD customers on the T2S platform, so that the DVP settlement of securities transactions will exclusively take place in central bank money. T2S will therefore connect any securities account at any participating CSD with any cash account at any participating central bank. All changes in the balances of cash and securities accounts, regardless of which CSD or NCB they belong to, are made in real time.

The NCB accounts held on the T2S platform will be dedicated to settlement purposes only and will be linked to the cash accounts in the respective RTGS systems. For the settlement in euro, the T2S platform will be linked to the TARGET2 system, also operated by the Eurosystem.

While initiated by the Eurosystem, T2S will be a multicurrency system. Therefore, it will not be limited to the euro but also be open to process DVP settlement in non-euro currencies if non-euro central banks are interested to connect to the platform. Danmarks Nationalbank signed the Currency Participation Agreement on 20 June 2012 and will make the Danish krone available in T2S as of 2018.¹³¹

T2S will not only foster the integration of the settlement market in the Eurosystem but also beyond by introducing a single set of rules, standards and tariffs for all the transactions processed by contrast to the current fragmented European environment composed of over 30 different SSSs. Thus, T2S will prompt the adoption of a common set of rules for intraday settlement finality and a harmonized daily timetable and calendar.

Regarding standards, T2S will be based on the use of a common interface and common message standards. T2S will consequently contribute to reduce the Giovannini Barriers 1 (national differences in information technology and systems), 2 (national clearing and settlement restrictions that require the use of multiple systems), 3 (differences in national rules relating to corporate actions, beneficial ownership and custody), 4 (absence of intraday settlement finality), 5 (practical impediments to remote access to national clearing and settlement systems) and 7 (national differences in operating hours and settlement deadlines).

Liquidity Alliance

(http://www.clearstream.com/ci/dispatch/en/kir/ci_nav/3_gsf/045_liquidity_alliance)

The Liquidity Alliance is an example of an industry-led FI cross-border integration initiative which aims to deliver common solutions to industry-wide collateral management issues. The network was established in January 2013 by Australian financial market infrastructure group ASX, Brazilian CSD CETIP, Clearstream, the Spanish CSD Iberclear and the South African CSD Strate. These five market infrastructures have decided to use the same collateral technology system and to share their expertise, experience and efforts in creating a sustainable global response to growing demands for sophisticated collateral management without introducing new systemic risks to the industry.

The fundamental goal of the solution is to strengthen local markets by enabling financial infrastructure providers to offer their market participants sophisticated, state-of-the-art collateral management services. Synergies, cost efficiencies and a short time-to-market (12-18 months until the launch of a collateral management system for any given domestic market) can be achieved through the use of the common collateral technology system.

The collateral remains on local domestic accounts of the market participants (i.e. in the books of the Liquidity Alliance members) and is governed by local rules and regulations. This avoids the introduction of new systemic risks and ensures the liquidity remains in the local market (i.e. it is not transferred to other intermediary providers). Due to the common collateral system, the Liquidity Alliance members have the option – not the obligation – to easily pursue joint opportunities where business, legal and regulatory circumstances are favorable. For example, this is the case for cross-border collateral (inbound and outbound) because the common collateral technology can identify collateral availability as well as collateral needs on a real-time basis across all connected markets.

¹³¹ The Currency Participation Agreement is the contractual basis for non-euro central banks' participation in T2S. The central banks having signed the Currency Participation Agreement will be involved in the T2S governance to ensure that they retain control over their currency.

The use of collateral can thereby be optimized and fully tracked across markets, time zones and exposure types. Market participants benefit from these fully automated allocation processes as they help overcome issues resulting from fragmentation.¹³²

The open architecture of the system means that the Liquidity Alliance is set to grow. The Canadian CSD CDS and the Singapore Exchange SGX have publicly announced their intention to leverage the same collateral management platform and, accordingly, to follow the path of the Liquidity Alliance. Further market infrastructures are expected to follow this example.

¹³² The fragmentation of holdings across several locations itself cannot be changed much as it is a result of business, legal and regulatory requirements.

ANNEX 4: COMPARATIVE TABLE OF CROSS-BORDER FINANCIAL INFRASTRUCTURE INTEGRATION PROJECTS

This Annex aims at providing a comparative snapshot of regional, cross-regional and global FI integration projects, structuring them in a table with a limited number of basic features.

This table *is not an exhaustive list* of cross-border FI integration projects and initiatives. Not all the projects mentioned throughout the report are included in the table.

In the case of some highly complex integration projects related to securities and derivatives, some of their key elements are also shown and compared graphically in Annex 5.

Project Name	Start of project (start operations) ¹	Geographic focus	Ownership ²	Centralized or Decentralized Model	Applicable legislation/provisions	Lead overseer	Main Industry Standards Adopted
Payment Settlement Infrastructures/Mechanisms							
ALADI Reciprocal Payments and Credit Agreement	1982 ³	12 Latin American countries	Public	Decentralized	Convenio de Pagos y Créditos Recíprocos	12 Latin American central banks	MT 200 (together with proprietary standards)
Arab Regional Payment System (ARPS)	2010	Arab Monetary Fund (AMF) member countries	Public	Decentralized	Articles of Association and Statute of the ARSB, ARPS Membership agreement	Cooperative Oversight of participating central banks and the AMF	SWIFT as communication network (probably)
CHATS	1994 (1996) (2000) USD (2003) EUR (2007) RMB	South East Asia	PPP	Decentralized	Clearing and Settlement Systems Ordinance (CSSO) of 2004	HKMA	SWIFTNet (as communication network)
CLS Bank	1996 (2002)	Global	Private	Centralized	CLS Bank International Rules	Federal Reserve System	SWIFTNet Inter-Act; SWIFT FIN (as communication network) MT300, MT304, MT305, MT398, Gross Direct Input (GDI) (message formats) Business Identifier Code and Business Entity Identifier ISO 9362 (as data elements)

¹ If the project is not yet operational, the planned start of operations.

² The integration project can either be characterized by public ownership, private ownership or a combination of both (a private-public partnership or "PPP").

³ The current ALADI mechanism had its origin in the *Sistema de Compensación Multilateral de Pagos y Créditos Recíprocos* (Multilateral Netting System of Reciprocal Payments and Credits), in operation since 1965.

Project Name	Start of project (start operations) ¹	Geographic focus	Ownership ²	Centralized or Decentralized Model	Applicable legislation/provisions	Lead overseer	Main Industry Standards Adopted
East African Payment System (EAPS)	2009 (2013) Kenya, Tanzania, Uganda (2014 - planned) Rwanda, Burundi	East African Community (EAC) countries	Public	Decentralized	To be defined.	Central banks of the participating countries	SWIFT (as communication network) SWIFT MT103/MT202 (message formats)
ECCB Large Value Funds Transfer System (LVFTS)	(2009) STP RTGS	Eastern Caribbean Currency Union	Public	Centralized	Rules for the Large Value Funds Transfer System	Eastern Caribbean Central Bank	SWIFT Alliance Lite (as communication network)
GCC Payment Systems Connections	2007 (2015-2016 planned)	GCC countries	Public	To be defined.	To be defined.	To be defined.	To be defined.
SIP	2004 (2011)	Central America and Dominican Republic	Public	Decentralized	Payment Systems Treaty of Central America and the Dominican Republic	Central American Monetary Council (CMCA)	SWIFT (as communication network) SWIFT MT103/MT202 (message formats) IBAN ISO13616 (data elements)
SADC Integrated Regional Electronic Settlement System (SIRESS)	2009 (2013) South Africa, Namibia, Lesotho and Swaziland	SADC countries	Public	Centralized (CP) in planning	SADC Finance and Investment Protocol	South African Reserve Bank	SWIFTNet FIN-Copy SWIFT MT 103/MT202 (message formats)
Sistema de Pagamentos em Moeda Local (SML)	2005 (2008)	Argentina and Brazil	Public	Decentralized	Convênio do Sistema de Pagamentos em Moeda Local entre a República Argentina e a República Federativa do Brasil	Banco Central de la República Argentina and Banco Central do Brasil	SWIFT (as communication network) SWIFT (message format)
STAR-UEMOA	(2004)	L'Union Monétaire Ouest Africaine (UEMOA)	Public	Centralized	Décision n°397/12/2010 portant règles, instruments et procédures de mise en œuvre de la politique de la monnaie et du crédit de la BCEAO	BCEAO	SWIFT (as communication network)

Project Name	Start of project (start operations) ¹	Geographic focus	Ownership ²	Centralized or Decentralized Model	Applicable legislation/provisions	Lead overseer	Main Industry Standards Adopted
TARGET	1995 (1999) ⁴	European Economic Area (EEA)	Public	Decentralized	TARGET Guideline	European Central Bank (ECB)	SWIFT (as communication network) SWIFT MT103, MT103+, MT202 (message formats) Business Identifier Code ISO 9362 (as data element)
TARGET2	2002 (2007)	European Economic Area (EEA)	Public	Centralized	TARGET2 Guideline	European Central Bank (ECB)	SWIFT (as communication network) SWIFT MT103, MT103+, MT 202, MT202COV (message formats) Business Identifier Code ISO 9362 (as data element)
Payment Clearing Infrastructures/Mechanisms							
European Automated Clearing House Association (EACHA)	2006 (2008)	European Economic Area, Macedonia	Private (although some central banks member too)	Centralized (framework ownership) Decentralized (operational implementation)	EACHA framework 6.0	Not applicable	SWIFT (as communication network) ISO20022 (message formats) Business Identifier Code ISO 9362, IBAN ISO13616 (as data elements)
EURO1	1998	EU, OECD member countries outside the EU	Private	Centralized	EURO1 Regulations	ECB	SWIFT (as communication network) SWIFT MT103, MT 202, MT204, MT400 (message formats) Business Identifier Code ISO 9362 (as data elements)
SICA-UEMOA	2008 (interregional transactions)	UEMOA countries	Public	Centralized - decentralized ⁵	Decision Number 397/12/2010 of BCEAO	BCEAO	SWIFT (as communication network)

⁴ TARGET 1 ceased operations in 2008.

⁵ See description of SICA-UEMOA in main text.

Project Name	Start of project (start operations) ¹	Geographic focus	Ownership ²	Centralized or Decentralized Model	Applicable legislation/provisions	Lead overseer	Main Industry Standards Adopted
STEP2	(2002) 2003	European Economic Area, Monaco, Switzerland	Private	Centralized	STEP2-T General Terms and Conditions	ECB	SWIFT (as communication network) ISO20022 (message formats) Business Identifier Code ISO 9362, IBAN ISO13616 (as data elements)
SADC Inter-bank Transfer System (SITS)	2014 (planned)	SADC	Private	Centralized	SADC Finance and Investment Protocol	South African Reserve Bank	SWIFT (as communication network) ISO 20022/ SWIFT MT102/ MT103/MT 298 (message formats)
Retail Payment Transaction Services/Schemes							
Acxsys International ATM Service	(2009)	Canada, China, USA	Private	Decentralized ⁶	Not available	No lead overseer	Not available
Euro Alliance of Payment Schemes (EAPS)	2007 (2008)	European Union	Private	Decentralized ⁷	EAPS Scheme Rules	No lead overseer	EMV, Berlin Group Standard
GCCNET	1994	GCC countries	GCC Central Banks + GCCSG	Decentralized ⁸	GCCNet Regulation & Operating Rules.	GCC Central Banks	EMV PCI IPVPN as connectivity infrastructure. ISO 8593 3 DES
Interac Cross Border Debit between Interac and NYCE	(2005)	Canada, USA	Private	Decentralized ⁹	Not available	No lead overseer	Not available
Single Euro Payments Area (SEPA)	2002 (2008) SEPA credit transfer (2009) SEPA direct debit	EEA countries, Switzerland, Monaco	Private (scheme owner European Payments Council)	Centralized (scheme ownership)	SEPA credit transfer rulebook SEPA direct debit rulebook Regulation 260/2012, Regulation 924/2009, Directive 2007/64/EC (PSD)	ECB for the SEPA credit transfer and SEPA direct debit schemes	ISO20022 (message formats) Business Identifier Code ISO 9362, IBAN ISO13616 (as data elements)

⁶ Bilateral links between the member networks.⁷ Bilateral links between the member networks.⁸ A cross-border ATM network linking all the GCC National Switches.⁹ Bilateral links between the member networks.

Cross-border Financial Infrastructures for Securities and Derivatives ¹⁰							
Project Name	Start of project (start operations)	Geographic focus	Ownership	Centralized or Decentralized Model	Applicable legislation/provisions	Lead overseer	Type of Infrastructure and Instruments
CDS & DTC/NSCC	(1998) ¹¹	Canada, USA	Private	Decentralized ¹²	Local laws and regulations	Bank of Canada and Federal Reserve Bank of New York	CSDs and SSS for securities
Clearstream-Euroclear Bridge	(2004)	Global	Private	Decentralized ¹³	Local laws, Euroclear and Clearstream Rulebooks	No lead overseer	CSDs and SSS for securities
DTCC & Euroclear Bank	2013 (2015) planned	Global	Private	Decentralized	Local laws, regulations and rules	No lead overseer	CSDs and SSS for securities
DTCC Global Trade Repository	2006	Global	Private	Centralized	European Market Infrastructure Regulation (EMIR), Dodd-Frank Act (DFA)	Federal Reserve Bank of New York	Trade repository for securities and derivatives
EMCF, EuroCCP, LCH.Clearnet Ltd and SIX x-clear Interoperability arrangement	2010	Netherlands Switzerland, UK	Private	Decentralized	EMIR, Interoperability agreement, rulebooks of 4 CCPs	No lead supervisor or overseer	CCPs for securities
Euroclear ESES	2009	Belgium, France, Netherlands	Private	Centralized	Local laws, Euroclear Rulebook	National Bank of Belgium	CSDs and SSS for securities
Euroclear National CSDs	2001 (other CSDS joined in 2002, 2007 and 2008)	Belgium, Finland, France, Ireland, Netherlands Sweden, UK	Private	Decentralized	Local laws, Euroclear Rulebook	National Bank of Belgium	CSDs and SSS for securities
HKMA Pilot Platform	2012	ASEAN member countries	PPP	Centralized	Not available	Not available	SSS for government securities
LCH.Clearnet Group Ltd	2003	Belgium, France, Netherlands Portugal, UK	Private	Decentralized	European Market Infrastructure Regulation (EMIR), rulebooks of LCH.Clearnet Ltd and SA	No lead supervisor or overseer	CCPs for securities and derivatives
LCH.Clearnet SA	2001	Belgium, France, Netherlands Portugal, UK	Private	Centralized	EMIR, rulebook of LCH. Clearnet SA	ACPR, Banque de France	CCP for securities and derivatives
LCH.Clearnet SA and CC&G link	2004	France, Italy	Private	Decentralized	EMIR, link agreements, rulebooks of two CCPs	No lead supervisor or overseer	CCPs for government securities
Link Up Markets		Global ¹⁴	Private	Centralized	Local laws, regulations and rules	No lead overseer	CSDs and SSS for government securities
Liquidity Alliance	(2013)	Australia, Brazil, Spain, South Africa, Planned for Canada, Singapore	Private	Centralized	Not available	No lead overseer	CSDs for collateral optimization
MILA	2010 (2011)	Latin America ¹⁵	Private	Decentralized	Local laws, regulations and rules	No lead overseer	CSDs and SSS for securities
SADC SSS	(2014) (-)	SADC	Public/Private	Centralized	SADC Finance and Investment Protocol	South African Reserve Bank	CSDs and SSS for securities
T2S	2006 (2015)	EEA, Switzerland	Public	Centralized	T2S General Principles	ECB	SSS for securities

¹⁰ For these infrastructures, the last column to the right shows the type of infrastructure and instruments cleared/settled and not the industry standards used.

¹¹ Since 1979, CDS has been a participant in DTC. DTC then became a direct CDS participant in 1998, making cross-border clearing and settlement a reality.

¹² Clearing interface from CDS to NSCC, plus CSD links.

¹³ Bilateral link.

¹⁴ Currently Austria, Cyprus, Denmark, Egypt, Germany, Greece, Luxembourg, Norway, Spain, South Africa and Switzerland.

¹⁵ MILA is currently operational for Chile, Colombia and Peru, and planned for Costa Rica, Mexico and Panama.

ANNEX 5: GRAPHICAL REPRESENTATIONS OF HORIZONTAL AND VERTICAL INTEGRATION OF SECURITIES TRADING, CLEARING AND SETTLEMENT SYSTEMS

FIGURE 8: HORIZONTAL AND VERTICAL INTEGRATION IN THE CENTRAL AND EASTERN EUROPEAN STOCK EXCHANGE GROUP (CEESEG)

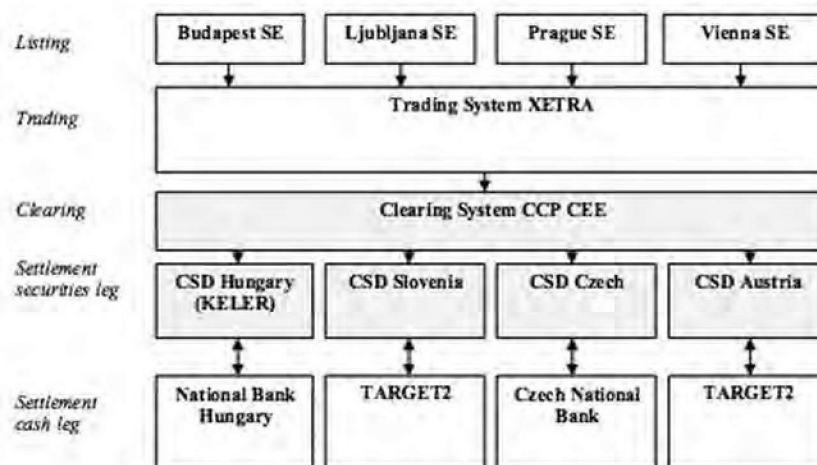
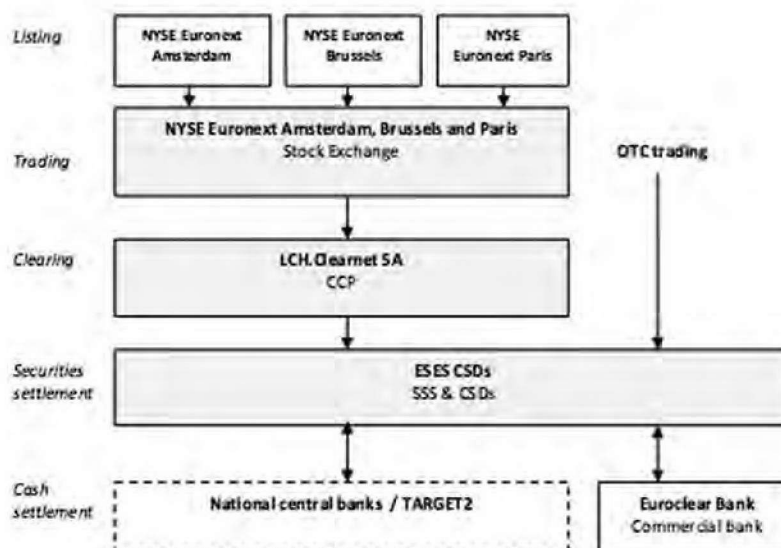


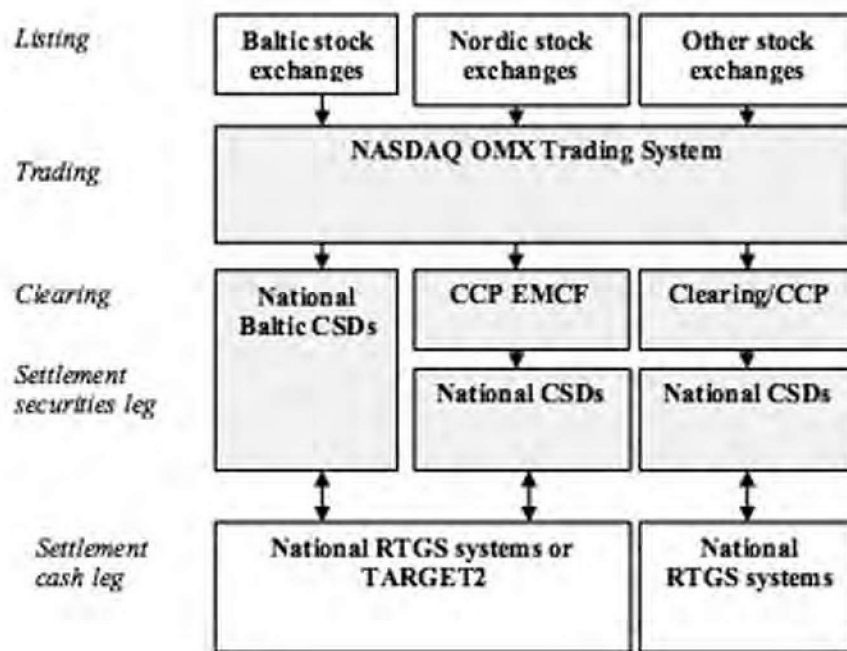
FIGURE 9: HORIZONTAL AND VERTICAL INTEGRATION IN NYSE Euronext (BE, FR, NL)¹, LCH.CLEARNET SA, EUROCLEAR ESES²



¹Belgium, France and the Netherlands. This is only a part of the NYSE Euronext Group.

²This figure only shows part of the NYSE Euronext structure and for simplicity reasons excludes for example NYSE Euronext Lisbon and NYSE Euronext LIFFE.

FIGURE 10: HORIZONTAL AND VERTICAL INTEGRATION IN NASDAQOMX



ANNEX 6: LEGAL AND REGULATORY FRAMEWORK HARMONIZATION EFFORTS

A. PAYMENTS AND PAYMENT SERVICES LAWS

- UNCITRAL Model Law on International Credit Transfers, 1992 (www.uncitral.org/uncitral/en/index.html)
- Central America and the Dominican Republic: Payment Systems and Securities Settlement Treaty (www.secmca.org/)
- EU Payment Services Directive, 2007 (http://ec.europa.eu/internal_market/payments/)
- EU Settlement Finality Directive, 2009 (http://ec.europa.eu/internal_market/financial-markets/)

B. (INTERMEDIATED) SECURITIES HOLDING AND TRANSFER

- UNIDROIT Convention on Substantive Rules for Intermediated Securities, 2009 (<http://www.unidroit.org>)
- EU Draft CSD Regulation, Draft Securities Law Legislation, EMIR, 2012 (http://ec.europa.eu/internal_market/)

C. COLLATERAL AND NETTING LAWS

- UNIDROIT Convention on Substantive Rules for Intermediated Securities, 2009 (<http://www.unidroit.org>)
- UNIDROIT Principles on the operation of close-out netting provisions, 2013 (<http://www.unidroit.org>)
- EU Financial Collateral Directive, Possible Close-out Netting Legislation, 2002 (<http://eur-lex.europa.eu/homepage.html>)

D. LAW OF CONTRACTS

- UNIDROIT Principles of International Commercial Contracts, 2010 (<http://www.unidroit.org>)
- United Nations Convention on the Assignment of Receivables in International Trade, 2001 (<http://www.uncitral.org/uncitral/en/>)
- UNCITRAL Model Law on Electronic Signatures with Guide to Enactment, 2001 (<http://www.uncitral.org/uncitral/en/>)
- United Nations Convention on the Use of Electronic Communications in International Contracts, 2005 (<http://www.uncitral.org/uncitral/en/>)

E. COMPANY LAW

- EU Shareholders' Rights Directive, 2007 (http://ec.europa.eu/internal_market/)

F. INSOLVENCY LAW

- UNCITRAL Model Law on Cross-Border Insolvency, 1997 (<http://www.uncitral.org/uncitral/en/>)
- UNCITRAL Legislative Guide on Insolvency Law, 2004 (<http://www.uncitral.org/uncitral/en/>)
- UNCITRAL Practice Guide on Cross-Border Insolvency Cooperation, 2009 (<http://www.uncitral.org/uncitral/en/>)

- UNCITRAL Legislative Guide on Insolvency Law, Part three: Treatment of enterprise groups in insolvency, 2010 (<http://www.uncitral.org/uncitral/en/>)
- CPSS-IOSCO Recovery of Financial Market Infrastructures – consultative report , 2013 (<http://www.bis.org/publ/cpss109.pdf>)
- EU Regulation on Insolvency Proceedings (2000), (<http://eur-lex.europa.eu/homepage.html>)
- Directive on Reorganisation and Winding Up of Credit Institutions (2001), (<http://eur-lex.europa.eu/homepage.html>)
- Directive on Reorganisation and Winding Up of Insurance Undertakings (2001), (<http://eur-lex.europa.eu/homepage.html>)
- Proposal for a Directive establishing a framework for the recovery and resolution of credit institutions and investment firms (2012) (<http://eur-lex.europa.eu/homepage.html>)
- Financial Stability Board Key Attributes of Effective Resolution Regimes for Financial Institutions, 2011 (https://www.financialstabilityboard.org/publications/r_111104cc.pdf)

G. CONFLICTS OF LAW REGIMES

- Hague Convention on the Law Applicable to Certain Rights in Respect of Securities held with an Intermediary of 5 July 2006 (<http://www.hcch.net/upload/conventions/txt36en.pdf>)

ANNEX 7: OVERVIEW OF TECHNICAL STANDARDS RELEVANT FOR REGIONAL FI INTEGRATION

A. ISO TECHNICAL COMMITTEE – FINANCIAL SERVICES STANDARDS

The complete list of the 68 standards is available at www.isoTC68.org. Some of the most relevant standards for regional FI integration are:

- ISO 4217: 2008 Codes for the representation of currencies and funds
- ISO 6166: 2001 ISIN International Securities Identification Numbering System
- ISO 8583: 2003 Financial transaction card originated messages
- ISO 9362: BIC (Business Identifier Code)
- ISO 11649: Structured creditor reference to remittance information
- ISO 13616: IBAN (International Bank Account Number)
- ISO 17442: LEI (Legal Entity Identifier)

B. ISO 20022

ISO 20022 is a portfolio of messaging standards for financial services. There are currently 325 message standards (available on www.ISO20022.org) for:

Payments (retail and large-value)

- Payment initiation
- Payment clearing and settlement
- Cash management
- Authorities financial investigations

Securities

- trade
- clearing
- settlement
- collateral management
- regulatory reporting investor
- regulatory reporting issuer

Cards

- acceptor to acquirer card transactions
- card clearing and settlement
- card administration

Foreign Exchange

- pre-trade
- trade
- clearing
- settlement

- regulatory reporting

C. FIX STANDARD

The Financial Information Exchange is an electronic communication standard for real time exchange of information on securities transactions and markets (www.fixprotocol.org) for:

- equities
- futures and options
- fixed income
- foreign exchange
- exchanges and markets

D. FPML STANDARD

The Financial products Markup Language is an XML message standard for OTC derivatives (for details see www.fpml.org).

E. EMV STANDARD

The EMV is a global standard for credit and debit payment cards based on chip card technology. (for details see www.emvco.com).

ANNEX 8: GLOSSARY OF SELECTED TERMS

This glossary includes only those terms deemed especially relevant in the context of integration of financial infrastructures across borders. Definitions were taken from CPSS, *A Glossary of Terms used in Payment and Settlement Systems*, March 2003, and the European Central Bank's glossary of payments and markets available at www.ecb.int. Terms marked with “*” were defined by the Secretariat. For general definitions of terms not found in this glossary please refer to the CPSS and ECB documents/websites.

Central counterparty link: An arrangement between two central counterparties (CCPs) that allows the provision of central counterparty services for trades performed by the participants of those two CCPs, without requiring those participants to become members of both CCPs.

Central securities depository link: A set of technical and legal arrangements between two central securities depositories (CSDs) for the cross-system transfer of securities.

Collateral management: Collateral management includes the process used to control the correspondence between the market value of the relevant collateral and the required value of that collateral. It generally also includes the generation and processing of collateral transfers.

Correspondent banking: An arrangement whereby one bank (the settlement or service-providing bank) makes or receives payments (potentially performing other banking services in addition) on behalf of another bank (the customer or user bank).

Cross-border payment: A payment where the financial institutions of the payer and the payee are located in different countries.

Cross-border settlement: Settlement that takes place in a country (or currency area) in which one or both parties to the transaction are not located.

Cross-margining agreement: An agreement among CCPs to consider positions and supporting collateral at their respective organizations as a common portfolio for participants that are members of two or more of the organizations.

Currency peg*: A mechanism in which a country's financial and/or monetary authorities try to maintain the country's currency value constant in terms of another asset, like another currency, a basket of currencies or a fixed weight of gold, for example. In a *hard peg*, a currency's price is held permanently at a fixed level. In a *soft peg*, a currency's price is returned to the predefined parity at regular intervals (e.g. monthly, weekly). In a *crawling peg*, a currency's price is fixed based on prescheduled changes.

Direct link: An account opened by a CSD, referred to as the “investor CSD”, in the books of another CSD, referred to as the “issuer CSD”, in order to facilitate the transfer of securities from participants in the issuer CSD to participants in the investor CSD.

EMV: An acronym describing the set of specifications developed by the consortium EMVCo, which is promoting the global standardization of electronic financial transactions – in particular the global interoperability of chip cards. “EMV” stands for “Europay, MasterCard and Visa”.

Financial infrastructure*: A legal or functional entity organized to provide multilateral transaction and post-transaction services for payments, securities, derivatives and other financial transactions. The definition of an FI is conceptually similar to a financial market infrastructure, but is functionally broader in scope, referring also to trading systems for securities, derivatives and foreign exchange as well as shared transaction systems for payments, such as traditional ATM and POS card payment networks and more modern on-line payment and mobile-payment networks.

Financial infrastructure scheme*: A common framework for transacting, clearing and settling transactions, including operating rules, business practices and standards, participation requirements and funding schemes, among others.

Financial market infrastructure: A multilateral system among participating institutions including the operator of the system, used for the purposes of clearing, settling, or recording payments, securities, derivatives, or other financial transactions.

Gap analysis*: A technique that businesses use to determine what steps need to be taken in order to move from the current state to the desired, future state. Also called “need-gap analysis”, “needs analysis”, and “needs assessment”.

Global custodian: A custodian that provides its customers with custody services in respect of securities traded and settled in several countries around the world.

Horizontal integration*: A set of contractual and operational agreements connecting two or more FIs in parallel roles. For example, a CSD with a CSD, or a payment settlement infrastructure with another payment settlement infrastructure.

Hub-spoke arrangement*: An arrangement in which all transaction traffic moves along spokes connected to the hub at the center. The hub is a single centralized operation center. The nodes are the points of delivery and the spokes are the communication routes between the nodes and the hub. There are variations, but in its most simple form, there are no point to point routes directly between nodes and all transaction traffic must go through the hub and then out again.

International Bank Account Number (IBAN): An International Organization for Standardization (ISO) technical code that is an expanded version of the basic bank account number (BBAN). Intended for use internationally, the IBAN uniquely identifies an individual account at a specific financial institution in a particular country. The IBAN also includes the bank identifier of the financial institution servicing that account.

International central securities depository (ICSD): A CSD which was originally set up to settle Eurobond trades and is now active also in the settlement of internationally traded securities from various domestic markets, typically across currency areas. At present, there are two ICSDs located in EU countries: Clearstream Banking in Luxembourg and Euroclear Bank in Belgium.

Interoperability: The set of arrangements/procedures that allows participants in different systems to conduct and settle payments or securities transactions across systems while continuing to operate only in their own respective systems.

Link*: A set of contractual and operational arrangements between two or more financial infrastructures that connects them directly or through an intermediary.

Oversight: The oversight of payment systems is a typical central bank function whereby the objectives of safety and efficiency are promoted by monitoring existing and planned systems, assessing them against the applicable standards and principles whenever possible and, where necessary, fostering change. Oversight activities increasingly relate also to securities clearing and settlement systems.

Pan-European automated clearing house (PE-ACH): A business platform for the processing of euro payment instruments which is made up of governance rules and payment practices and supported by the necessary technical platform(s).

Payment versus payment (PvP): A mechanism which ensures that the final transfer of a payment in one currency occurs if – and only if – the final transfer of a payment in another currency or currencies takes place.

Regional integration*: A process in which states enter in a region enter into an agreement in order to enhance regional cooperation through regional institutions and rules. The objectives of the agreement can range from economic to political, environmental and several others Typically, commercial interests have been the focus for achieving broader objectives.

Remote access: Direct access by an institution established in one country to a system (e.g. a payment system, a securities settlement system or a CCP) established in another country.

Settlement agent (settlement institution): The institution across whose books transfers between participants take place in order to achieve settlement within a settlement system.

Single Euro Payments Area (SEPA): A process initiated by European banks and supported, inter alia, by the Eurosystem and the European Commission with a view to integrating retail payment systems and transforming the euro area into a true domestic market for the payment industry.

WOT analysis: Is a structured planning method used to evaluate the Strengths, Weaknesses, Opportunities, and Threats involved in a project or in a business venture. It involves specifying the objective of the business venture or project and identifying the internal and external factors that are favorable and unfavorable to achieving that objective.

Trade repository: An entity that maintains a centralized electronic record (database) of transaction data.

Vertical integration*: A set of contractual and operational agreements connecting two or more FIs in sequential roles. For example, an ACH with a payment settlement infrastructure, or a trading system with a CSD-SSS.

