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**Building Regional Payment Areas:
The Single Rule Book Approach**

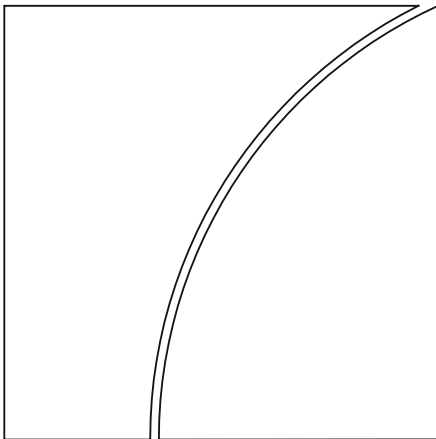
**Douglas Arner, Ross Buckley, Thomas Lammer, Dirk Zetsche
and Sangita Gazi**

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Building Regional Payment Areas: The Single Rule Book Approach

Douglas Arner, Ross Buckley, Thomas Lammer¹, Dirk Zetzsche, Sangita Gazi

Abstract: In October 2020, the G20 endorsed a significant initiative to enhance cross-border payments. Faster, cheaper, more transparent, and more inclusive cross-border payment services will deliver widespread benefits for citizens and economies worldwide, supporting economic growth, international trade, global development, and financial inclusion. Enhancing cross-border payments requires more than mere adoption of technical standards. The best outcome involves aligned technological, regulatory, and legal frameworks. This paper analyzes such payment integration projects.

Each border adds to the costs of a cross-border payment if crossing the border means entering into a different technological, regulatory and legal environment, with different systems, regulators, and courts. Under ideal circumstances, cross-border payments will be processed as seamlessly as comparable domestic payments, even where various currencies are processed. While this highly ambitious target is unlikely to be achieved globally in the short to medium term, regionally, the gap between cross-border and domestic payments has already been narrowed. At the global level, mismatches between the inter-institutional framework on the back-end and the contractual relationship with clients on the front-end represent potential costs for the payment services provider and increase legal risk, prompting costly legal, due diligence manual adjustments in payments processes. A high degree of cross-border harmonization via rulebooks along the technological, regulatory, and legal dimensions has been instrumental for successful regional integration projects and has promoted straight-through-processing. Potentially costly events such as rejects, returns, and revocations of payment orders have been reduced, sanction screening and financial crime compliance processes agreed.

Drawing on this insight, this paper suggests globally coordinated action to develop a comprehensive framework to guide and support regional payment integration. This we call a "Single Rule Book." Such a Single Rule Book could be instrumental in enhancing safety, efficiency, and integrity in cross-border payments. We explore its potential contents, and importantly, the minimum standards it would impose.

Keywords: Payment Systems, Regional Integration, Single Rule Book, Harmonization, Law and Regulation.

¹ The views expressed in this paper are those of the authors and not necessarily those of the Bank for International Settlements or the Committee on Payments and Market Infrastructures.

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1. Introduction

With the progressive re-internationalization of trade following the Second World War, international payments increased in importance. In the early 1970s, the end of the Bretton Woods monetary system and the collapse of Herstatt Bank² highlighted the importance and risks of cross-border payments. From the 1970s, the development of both domestic and international electronic payments accelerated dramatically, supported by the establishment of the Society for Worldwide Interbank Financial Telecommunication (SWIFT) in 1973 and what would eventually become the Committee on Payments and Market Infrastructures (CPMI) in 1980. Across the 1980s-2000s, internationalization shifted to globalization combined with digitization, transforming cross-border payment flows. This period also saw the advent of the Economic and Monetary Union (EMU) as part of the European Union's single market integration project, the euro and related regional payment integration efforts.³ Following the 2008 global financial crisis, rapid technological evolution supported the development of e-commerce and cross-border electronic interactions, including new approaches to payment, both centralized and decentralized.⁴ COVID-19 has accelerated these trends and consumers have shifted from physical cash to digital and contactless payment instruments in an unprecedented way.^{5,6}

While digitization has transformed domestic payment systems, cross-border payments remain expensive, slow, and opaque: each transaction usually requires several layers of processing, including correspondent banks and payment service providers (PSPs), based on structures which developed in the 1960s-70s. Moreover, end-users and providers must comply with layers of domestic and international regulation, which is time-consuming, costly, and involves risks while the payments are in transit. Further, a payment's value influences end-user experiences in accessing the payments channel and complying with regulations concerning anti-money laundering (AML), combatting the financing of terrorism (CFT), reporting requirements, data protection, and risk-exposure.⁷ Technological and regulatory fragmentation exacerbates cross-border complexity and makes connecting domestic payment systems more challenging. Foreign exchange (FX) conversion and liquidity management add another layer of complexity.⁸

Particularly over the past decade, digital innovation is disrupting historically dominant payment instruments and institutions. New players are developing payment solutions that compete with traditional means of payment. Spurred on by

² E Mourlon-Druol (2015), "Trust is good, control is better: The 1974 Herstatt Bank Crisis and its Implications for International Regulatory Reform", *Business History*, vol 57, no 2, pp 311-334.

³ DW Arner, *Financial Stability, Economic Growth, and the Role of Law* (Cambridge University Press, 2007).

⁴ DW Arner, J Barberis and RP Buckley (2016): "The Evolution of FinTech: A New Post-Crisis Paradigm?", *Georgetown Journal of International Law*, vol 47, no 4, pp 1271-1319.

⁵ For COVID-19's impact on digital finance, see DW Arner et al (2021, forthcoming) "Digital Finance and the COVID-19 Crisis", *National Law School of India Review*.

⁶ CPMI (2021), 'Covid-19 accelerated the digitalisation of payments', December, https://www.bis.org/statistics/payment_stats/commentary2112.htm.

⁷ CPMI (2018), "Cross-border Retail Payments", *CPMI Papers*, no 173, February, <https://www.bis.org/cpmi/publ/d173.htm>.

⁸ M Bech, M Faruqi and T Shirakami (2020), "Payments without Borders", *BIS Quarterly Review*, March, pp. 53-65, https://www.bis.org/publ/qtrpdf/r_qt2003h.pdf.

newcomers' competitive threats, incumbents are improving payment infrastructures and arrangements to make them faster, cheaper, easier, more inclusive and safer.

In particular, interlinking of domestic payment systems could enhance cross-border payments by allowing overseas banks and other payments services providers "remote access", or by facilitating dedicated systems.⁹

Over the past 20 years, several factors have increased the focus on the development of safer, faster, more efficient and transparent cross-border payments. These include: concerns about the impact of AML/CFT measures on financial inclusion and development ("de-risking") in the aftermath of 9/11, the emergence of new risks in existing international systems (focused on wholesale payment systems) in the context of the Bangladesh Bank cyber heist of 2016, the emergence of disruptive new technologies and business models (particularly cryptocurrencies and FinTechs), and the announcement of Facebook/Meta's Libra/Diem global stablecoin and payment system project. While initial efforts primarily focused on challenges around de-risking, financial exclusion and remittance costs, the rapid progress of technology and its integration in payments have shown the prospect of real-time or near real-time cross-border payments.¹⁰

Technology has further accelerated the prospect of enhancing domestic and international monetary transactions. Financial innovations by BigTech companies, especially in introducing electronic wallets (AliPay, ApplePay, GooglePay, WeChatPay) provide more convenient ways of interacting with the core monetary system.¹¹ Stablecoins, including potential "global" stablecoin arrangements (GSAs),¹² proposed by BigTechs and other new entrants will potentially play a very significant role in cross-border payments.¹³ Innovative digital transformation in payments and the digitalization of money is driving central banks around the world to actively explore and in an increasing number of cases to adopt central bank digital currencies (CBDCs).¹⁴

⁹ Ibid.

¹⁰ While the financial impact of enhancing cross-border payments is almost impossible to determine, positive estimates assume that real-time cross-border payment innovation could reduce global financial friction by billion or even trillions of dollars. See Ekberg et al (2021): "Unlocking \$120 billion value in cross-border payments", *Oliver Wyman and JPMorgan Chase & Co*, November, <https://www.oliverwyman.com/content/dam/oliver-wyman/v2/publications/2021/nov/unlocking-120-billion-value-in-cross-border-payments.pdf>.

T Groenfeldt (2020), "Real-Time Cross-Border Payment Innovator Could Cut Trillions from Global Financial Friction", *Forbes*, September, <https://www.forbes.com/sites/tomgroenfeldt/2020/09/03/real-time-cross-border-payment-innovator-could-cut-trillions-from-global-financial-friction/>.

¹¹ BIS (2020), "Big Tech in Finance: Opportunities and Risks", *BIS Annual Economic Report 2019*, [bis.org/publ/arpdf/ar2019e3.pdf](https://www.bis.org/publ/arpdf/ar2019e3.pdf); see also Hornuf et al (2018), "How do banks interact with fintechs? Forms of alliances and their impact on bank value", *CEifo Working Papers*, no 7170, July 2018 [iwfsas.org/iwfsas2018/wp-content/uploads/2018/08/39-Hornuf-Klus-Lohwasser-Schwienbacher-2018-How-do-Banks-Interact-with-Fintechs_IWFSAS2018.pdf](https://www.iwfsas.org/iwfsas2018/wp-content/uploads/2018/08/39-Hornuf-Klus-Lohwasser-Schwienbacher-2018-How-do-Banks-Interact-with-Fintechs_IWFSAS2018.pdf).

¹² The FSB characterizes global SA as "a stablecoin with potential reach and adoption across multiple jurisdictions and the potential to achieve substantial volume". See FSB (2020): "Regulation, supervision and oversight of "global stablecoin" arrangements: Final report and high level recommendations", *Financial Stability Board*, October, [fsb.org/wp-content/uploads/P131020-3.pdf](https://www.fsb.org/wp-content/uploads/P131020-3.pdf).

¹³ One of the very first examples of a global SA is Diem (formerly known as Libra) proposed by Facebook.

¹⁴ For an analysis on CBDC's motive, design choices, and economic implications, see R Auer and R Böhme (2021), "Central bank digital currencies: motives, economic implications and the research frontier", *BIS*

To capitalize on opportunities of new technologies and address risks and barriers to cross-border payments, the G20 endorsed a Roadmap in 2020. The G20 Roadmap sets out the responsibilities and timelines for the comprehensive G20 cross-border payments program. The G20 program seeks to address the four challenges of high cost, low speed, limited access, and low transparency. It builds on the Financial Stability Board's (FSB) earlier Stage 1 report and the CPMI's Stage 2 report. The FSB report identified seven frictions:¹⁵ fragmented and truncated data formats; complex processing of compliance checks; limited operating hours; legacy technology platforms; long transaction chains; funding costs; and weak competition. The CPMI report, in turn, identified 19 'building blocks grouped into five focus areas, where joint public-private efforts could enhance cross-border payments'¹⁶ and mitigate frictions identified in the FSB Stage 1 report.¹⁷ The five focus areas in the CPMI Report are: (1) committing to a joint public and private sector vision to enhance cross-border payments; (2) coordinating regulatory, supervisory and oversight frameworks; (3) improving existing payment infrastructures and arrangements to support the requirements of the cross-border payments market; (4) increasing data quality and straight-through processing by enhancing data and market practices; and (5) exploring the potential role of new payment infrastructures and arrangements. The first four focus areas center around enhancing existing payment infrastructures and arrangements and integrating new technologies and approaches. The fifth focus area covers emerging payment infrastructures and the scope of new technologies, including multilateral payment platforms, GSAs, and CBDCs, and how these can address the challenges of cross-border payments without compromising on minimum supervisory and regulatory standards to control risks to monetary and financial stability.¹⁸

One promising way to address these challenges is to focus on regional cross-border payments. Many regions have focused on developing and enhancing regional payment schemes and systems to support trade and other forms of economic and financial integration. Similarly, several operators have established interlinkages between their payment systems.

This paper considers case studies from the European Union (EU), Africa, and Asia-Pacific to examine the lessons from regional integration projects for enhancing cross-border payments, with a particular focus on legal and regulatory challenges and approaches.

Working Paper, no 976, June, bis.org/publ/work948.pdf; also, R Auer, G Cornell & J Frost (2020), "The rise of the central bank digital currencies: drivers, approaches and technologies", *BIS Working Paper*, no 880, August, bis.org/publ/work880.pdf; see MK Brennermeier, H. James & JP Landau (2019), "The Digitalization of Money", *NBER Working Paper*, no 26300, September, nber.org/papers/w26300; R Ali & N Narula (2020), "Redesigning digital money: what can we learn from a decade of cryptocurrencies?", *MIT DCI Working Papers*, January, dci.mit.edu/research/2020/1/22/redesigning-digital-money-what-can-we-learn-from-a-decade-of-cryptocurrencies-by-robleh-ali-and-neha-narula-of-the-digital-currency-initiative.

¹⁵ FSB (2020b), "Enhancing Cross-border Payments: Stage 3 Roadmap", October, <https://www.fsb.org/2020/10/enhancing-cross-border-payments-stage-3-roadmap/>.

¹⁶ CPMI (2020), "Enhancing cross-border payments: Building blocks of a global roadmap", *CPMI Papers*, no 193, July, <https://www.bis.org/cpmi/publ/d193.htm>.

¹⁷ FSB (2020a), "Enhancing Cross-border payments - Stage 1 Report to the G20", April, <https://www.fsb.org/2020/04/enhancing-cross-border-payments-stage-1-report-to-the-g20/>.

¹⁸ CPMI (2020) (n 16) p 4.

Any border increases the costs of cross-border payments if crossing the border means entering a different legal environment with different regulators and courts. Ideally, cross-border payments would be processed as seamlessly as comparable domestic payments, even when different currencies are involved. Specifically, any mismatch between the inter-institutional framework on the back-end and the contractual relationship with clients on the front-end represents a potential cost to the payment services provider, increasing legal risk and prompting costly legal, due diligence, and manual adjustments in payment processes. Conversely, a high degree of cross-border harmonization via rulebooks of technological, regulatory, and legal aspects furthers straight-through-processing and potentially minimizes costly exceptional events such as rejects, returns, and revocations of payments orders. Furthermore, sanction screening and financial crime compliance processes can be agreed upon and – in some cases – automated. In the regional context, the best outcome is likely when technical integration is paired with regulatory and legal harmonization. The outcome improves with higher levels along those dimensions. While full harmonization will be very difficult to achieve even within the most economically and politically integrated regions, payment regulators can reduce costs by pursuing a long-term harmonization strategy that goes beyond licensing PSPs and includes contractual relationships between PSPs and payee/payor, consistent application of AML/CFT rules, standardized reporting, data governance and digital identification (for individuals and legal entities, including beneficial ownership). Once regional integration occurs on a granular level, individual regions can cooperate to enhance cross-border payments across regions. Accordingly, we suggest developing a comprehensive scheme rules with consideration at a global level (e.g., to support the implementation of the G20 cross-border payments program), resulting in a “Single Rule Book”. This Single Rule Book can guide implementation for individual regions, provide comparative insights, and lead to a degree of harmonization of payment laws and regulations among regions globally.

This paper is structured as follows: Part 2 provides a primer on cross-border payment elements and processes, including in the regional context, and challenges associated with them. Part 3 describes and analyses obstacles to regional integration of payment systems. Part 4 categorizes and analyses regional payment integration projects and lays out obstacles at the technical and legal levels. Part 5 synthesizes the legal and regulatory insights for regional integration projects and suggests how regional integration can function as an intermediate step towards enhancing cross-border payments on the super-regional, global level. Part 6 concludes.

2. Cross-border Payments

2.1 Deconstructing Cross-border Payments

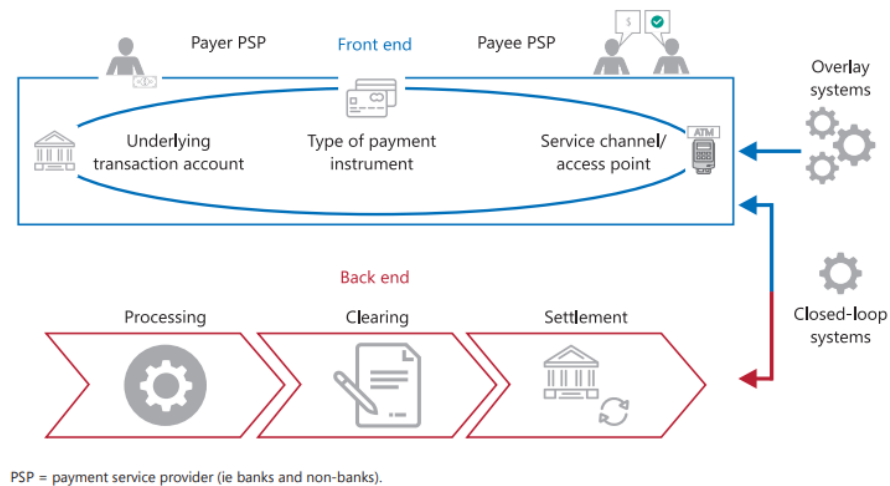
2.1.1 Core Payment Systems

A national payment system ‘encompasses all payment-related activities, processes, mechanisms, infrastructure, institutions, and users in a country or a broader region (e.g., a common economic area)’.¹⁹ At the front end, competing payment service

¹⁹ CPMI and World Bank Group (2016), “Payment Aspects of Financial Inclusion”, April, p 65.

providers (banks and authorized non-banks) offer end-users transaction accounts and a variety of payment instruments and channels to transfer value. At the core are one or more payment systems, that is 'a set of instruments, procedures, and rules among participating institutions, including the operator of the system, used for the purposes of clearing and settling payment transactions'.²⁰ At the back end, payment service providers are connected via these payment systems.²¹ Payment systems can be divided into two broad categories: (1) wholesale payment systems, involving high-value transfers, mainly between banks, and (2) retail payment systems, managing low-value and high-value transfers between end-users.²² Wholesale payment systems often settle on a real-time gross basis in central bank money. Retail payment systems often rely on wholesale payment systems for the net settlement of transactions. Banks and other PSPs participating in payment systems are therefore connected, sometimes indirectly through top-tier intermediaries, with a central bank at the center.

Figure 1: A Core Payment System



Source: BIS (2020), adapted from CPMI (2018).

2.1.2 Reducing settlement risk: Towards RTGS

The collapse of Herstatt Bank in 1974 showed that deferred settlement increases counterparty risk.²³ Many jurisdictions²⁴ have since adopted Real Time Gross

²⁰ CPSS-IOSCO (2012), "Principles for Financial Market Infrastructures", April, p 177, <https://www.bis.org/cpmi/publ/d101a.pdf> and BIS (2020), "Central Banks and Payments in the Digital Era", *BIS Annual Economic Report 2020*, June, p 71, <https://www.bis.org/publ/arpdf/ar2020e.htm>.

²¹ The notable exception is transactions for which the payor and the payee are customers of the same payment service provider (in the case of closed-loop or "on us" transactions).

²² M Bech & J Hancock (2020), "Innovations in payments", *BIS Quarterly Review*, March.

²³ The Herstatt bank collapsed because of trading on foreign currency markets, paired with lax internal controls, poor governance, and poor oversight by bank regulators such that, despite deficiencies being revealed in investigations, the magnitude and riskiness of Herstatt bank's FX positions were not able to be clearly identified. The sheer size of Herstatt's contracts exposed the counterparties to significant risks, resulting in greatly reduced currency trading in New York when the collapse of the mid-size German bank became widely known. See Mourlon-Druol (n 2) at p 313 et seq.

²⁴ Most jurisdictions (96% of recently surveyed countries) have RTGS systems: World Bank (2020), 'Payment systems worldwide: A snapshot – summary outcomes of the fifth global payment systems survey', July, <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/906601594375979294/section-two>.

Settlement (RTGS) systems where high-value wholesale transactions are settled intra-day in real-time and typically in central bank money, avoiding the need for netting altogether. This development has been facilitated by international standards, e.g., the CPSS²⁵-IOSCO Principles for Financial Market Infrastructures.²⁶ The World Bank, among others, has supported RTGS system implementations in many emerging markets and developing economies.

2.1.3 Correspondent banking

In cross-border transactions, payments usually flow through correspondent banks.²⁷ Because the transacting payment systems are located in two different jurisdictions disconnected from each other, spatially, legally, technically, and regulatorily, there is no transfer of currencies. Instead, banks (generally large) provide accounts for foreign counterparts and have their own accounts with foreign counterparts. Accounts are credited in one jurisdiction and debited in another.²⁸ This system of double accounts enables banks to exchange book positions in FX-adjusted terms. The respective amount is then credited and debited to the correspondent banks' clients so they experience the transaction as a "payment" in foreign currency.

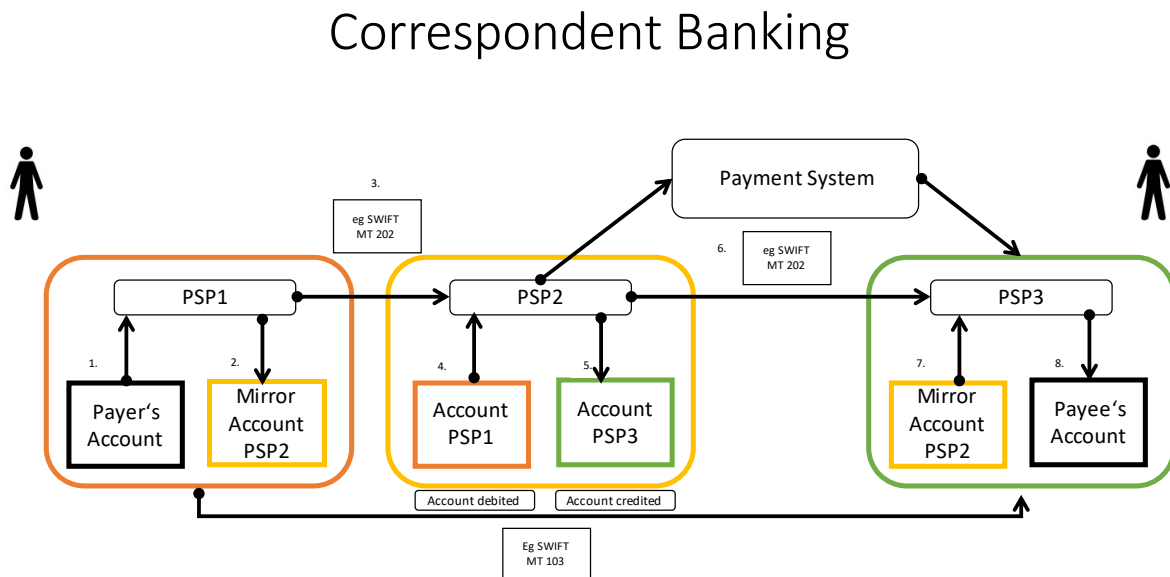
²⁵ The Committee on Payment and Settlement Systems (CPSS) changed its name to Committee on Payments and Market Infrastructures in September 2014. References to reports published before that date use the Committee's old name.

²⁶ CPSS-IOSCO (2012), "Principles for Financial Market Infrastructures", April, https://www.bis.org/cpmi/info_pfmi.htm.

²⁷ Correspondent banking usually refers to "an arrangement under which one bank (correspondent) holds deposits owned by other banks (respondents) and provides payment and other services to those respondent banks". See CPSS (2003), 'A glossary of terms used in payments and settlement systems', *BIS* < https://www.bis.org/cpmi/glossary_030301.pdf >, cited in CPMI (2016), 'Correspondent banking', [bis.org/cpmi/publ/d147.pdf](https://www.bis.org/cpmi/publ/d147.pdf). In the context of cross-border payments, a correspondent bank "provides local account and payment services for banks based abroad – collectively forming the correspondent banking network." "CPMI quantitative review of correspondent banking data", *CPMI*, https://www.bis.org/cpmi/paysysinfo/corr_bank_data.htm.

²⁸ "Cross-border payments", *Bank of England*, <https://www.bankofengland.co.uk/payment-and-settlement/cross-border-payments>.

Figure 2: Cross-border Payment with Correspondent Banks²⁹



Correspondent banking rests on a sequence of booking transactions, eventually resulting in the booking of an amount on the payee's account equal to the amount removed from the payer's account (minus fees). The more correspondent banks involved in a transaction, the more intermediate booking of transactions is necessary, with longer transaction time, greater credit risk, and higher costs. No money is transferred across borders as such. Rather, the process involves:

- (1) PSP1 debits the payer's account the amount to be transferred;
- (2) PSP1 credits a mirror account held in the name of PSP2, which is kept purely for accounting purposes;
- (3) PSP1 sends to PSP2 a payment message via an electronic messaging system (e.g., SWIFT MT 202) and announces the forthcoming payment to PSP3 (via e.g., SWIFT MT 103);

(4) PSP2 debits PSP1's account with PSP2.

Then, if no (electronic) fund transfer/payment system is involved:

- (5) PSP2 credits PSP3's account with PSP2;
- (6) PSP2 sends a payment message to PSP3 via an electronic messaging system (e.g., SWIFT MT202);
- (7) PSP3 debits PSP2's mirror (nostro) account with PSP3, which is kept purely for accounting purposes;
- (8) PSP3 credits payee's account with PSP3.

²⁹ Adjusted from European Banking Federation (2019) 'Guidance for Implementation of the Revised Payment Services Directive: PSD2 Guidance', p 11, <https://www.ebf.eu/wp-content/uploads/2019/12/EBF-PSD2-guidance-Final-December-2019.pdf>.

Then, if an (electronic) fund transfer/payment system is involved:

- (5) PSP2 sends a payment message to the fund transfer system (often using a proprietary messaging standard);
- (6) Settlement takes place via the fund transfer system;
- (7) The fund transfer system sends a payment message to PSP3 (often using a proprietary messaging standard);
- (8) PSP3 credits the payee's account with PSP3.

Although correspondent banking continues to play a dominant role in cross-border payments, it experienced an overall 25 percent contraction between 2011 and 2020.³⁰ The worldwide decline in correspondent banking relationships can largely be attributed to the complexity and multiple layers of the process increasing the latency period in payments' final settlement and cost of the transaction as well as to increasing AML/CFT concerns and concentration in the global banking industry.

2.1.4 Majoy Payment Infrastructure Providers

Traditional cross-border payments rely on payment infrastructures that facilitate messaging and transaction processing among PSPs.

Most notably, SWIFT, a cooperative society under Belgian law owned and controlled by its shareholders (mainly large international banks), provides financial messaging services to over 11,000 institutions worldwide.³¹ SWIFT was essential in standardizing messaging protocols globally and thus streamlining interbank communication: Until the 1970s, banks across the world managed cross-border transactions through telegram and telex—a system secured by manually calculated sequential test keys (popularly known as “wire transfer”).³² This manual process of dealing with complex cross-border transactions was inefficient and vulnerable to error and fraud. To overcome these problems, in 1973, SWIFT was founded to develop secure financial messaging services for international financial transactions.³³ SWIFT It is not a payment system but a financial messaging network for its users (FMs, banks, and other businesses). SWIFT messages use unique eight- to eleven-digit codes (business identifier code (BIC)) identifying a recipient and its location. In 2019, SWIFT transmitted messages with a total value of USD 67 trillion (65% of global cross-border payment messages).³⁴

Owing to rapid technological transformation, SWIFT recently launched “SWIFT gpi” seeking to ensure that international payments meet ‘the industry’s needs for

³⁰ “Correspondent banking trends persisted in 2020, even as payment landscape changed, new data show”, *CPMI*, <https://www.bis.org/press/p211213.htm>.

³¹ SWIFT (2021), “SWIFTNET FIN Traffic & Figures”, July, p 2, <https://www.swift.com/about-us/discover-swift/fin-traffic-figures/swift-fin-traffic-document-centre>.

³² D Rambure & A Nacamuly (2008), “Cross-Currency payments and SWIFT” in *Payment Systems*, London, Palgrave Macmillan, pp 43-51.

³³ SWIFT, <https://www.swift.com/>.

³⁴ SWIFT (2020), “SWIFT gpi: Driving a payments revolution”, *SWIFT Info Paper*, October, <https://www.swift.com/swift-resource/249536/download>; and R Wim (2018): ‘SWIFT gpi: How industry co-creation transformed global payments’, *Journal of Payments Strategy & Systems*, vol 12, no 3, pp 207-212.

speed, traceability, and transparency.”³⁵ SWIFT’s most recent collaboration between SWIFT gpi instant and the UK’s Faster Payments System—a pilot cross-border payment project—seeks to process cross-border payments in seconds by integrating SWIFT gpi with domestic fast payment systems (FPS).³⁶

The other important financial infrastructure noteworthy to mention for cross-border payments is CLS Bank International (CLS for Continuous Linked Settlement) that settles multicurrency transactions across 18 CLS-eligible currencies (with the Chilean peso expected to be added soon). CLS accommodates 73 direct members and almost 28,000 third-party participants which access its services by paying the direct members. CLS operates a global multi-currency settlement system aimed at mitigating cross-border settlement risks.³⁷ Correspondent banking is exposed to FX settlement risk due to the risk of one party defaulting before a transaction is complete. CLS removes FX settlement risk by using a payment-versus-payment mechanism. On settlement day, each counterparty to the trade (or a direct member on behalf of the counterparty) pays CLS the currency it sells. CLS pays out the purchased currency only if the sold currency is received. In effect, CLS acts as a trustee for both parties in the settlement process, executing a strict protocol. Nevertheless, CLS is *not* a central counterparty – the trade remains between the parties, as does the risk from delay, currency volatility, and post-transaction default.

Box 1: Cross-Border Payments Systems Analysed

Cross-border payments systems are broadly categorized as: (i) offshore, (ii) single currency cross-border and (iii) multicurrency cross-border.³⁸

In an **offshore payment system**, the payments or securities are denominated in a different currency from that of the jurisdiction where the FMI or the Central Counterparty (CCP) is located.³⁹ The Clearing House Automated Transfer System (CHATS) in Hong Kong SAR is a prime example of a multicurrency offshore system. Operated jointly by Hong Kong Interbank Clearing and the Hong Kong Monetary Authority (HKMA), CHATS is a group of RTGS systems, each of which settles in HKD, USD, EUR and RMB.⁴⁰

A **single currency cross-border system** facilitates payment in any of the currencies of the participating economic agents or in another currency.⁴¹ Switzerland, for example, has built two models for settling single currency cross-border payments: first, it provides the foreign-domiciled bank with remote access to the common Swiss Interbank Clearing (SIC),⁴² allowing the bank to participate in economic activity involving a Swiss counterpart. Second, it has also established a cross-border interface through interlinking euroSIC with the Eurosystem’s RTGS system TARGET2.⁴³

³⁵ Ibid.

³⁶ Pymnts (2020), “SWIFT gpi Instant Goes Live in the UK”, December, <https://www.pymnts.com/news/faster-payments/2020/swift-launches-real-time-global-transfers-payments-in-uk/>.

³⁸ Bech et al (n 8).

³⁹ CPMI (2016), “Glossary”, *BIS*, October, <https://www.bis.org/cpmi/publ/d00b.htm>.

⁴⁰ HKMA (2020), “Payment Systems”, December, <https://www.hkma.gov.hk/eng/key-functions/international-financial-centre/financial-market-infrastructure/payment-systems/>.

⁴¹ Bech et al (n 8).

⁴² A domestic RTGS system.

⁴³ M Handig et al. (2012), “Understanding TARGET 2: The eurosystem’s euro payment system from an economic and balance sheet perspective”, *Monetary Policy & the Economy*, no 1, pp 81-91.

Multi-currency cross-border systems are further sub-divided based on the services they provide: cross-currency, choice of currency, and Payment vs Payment (PvP) arrangements.⁴⁴ Cross-currency service allows the payer to be debited in one currency and the payee credited in another. Examples include Directo a México, and the Gulf Cooperative Council RTGS system (Afaq), which started its pilot phase late in 2020. Choice of currency service allows users to select the currency of payment from among those in which the system settles; e.g., the Regional Payment and Settlement System (REPSS) of the Common Market for Eastern and Southern Africa (COMESA), the East African Payment System (EAPS), and Buna in the Arab Region. PvP allows the conditional processing of payments, e.g., CLS.

2.2 Challenges in Cross-border Payments

2.2.1 Policy objectives: Safety, efficiency, integrity

Payments support economic activity: they are the lifeblood of every economy. Technology is at the heart of these systems, with systems and instruments continually evolving. Over the past several decades, as innovation has progressed, the structure of domestic and cross-border retail payments systems has gone through a drastic transformation.⁴⁵ Non-traditional payment service providers began offering novel payment solutions.⁴⁶ Public and private engagements in the payments sector increased. This prompted central banks to extend their capacity beyond overseeing the payment system to acting as a catalyst to support market outcomes and a facilitator of market and regulatory evolution.⁴⁷ Central banks' regulation of payment systems typically has three primary objectives: safety (as payment systems weaknesses often have wider financial and economic consequences); efficiency (minimizing costs, maximizing inclusion and developmental impact); and integrity (minimizing illegal use of the payment system and protecting consumers).⁴⁸

A variety of technological, regulatory, and legal approaches have evolved to support each objective domestically and in the cross-border context. Nonetheless, these objectives are sometimes in conflict, particularly around safety and efficiency (e.g., AML/CFT rules while enhancing national security are increasing costs). Further, solutions do not lend themselves readily, given that each party to cross-border payments— end-users, payment service providers (banks and non-banks), payment system operators and other payment infrastructure providers, and central banks and

⁴³ M Handig et al. (2012), "Understanding TARGET 2: The eurosystem's euro payment system from an economic and balance sheet perspective", *Monetary Policy & the Economy*, no 1, pp 81-91.

⁴⁴ Bech et al (n 8).

⁴⁵ Payment systems efficiency has been a major driver for these transformations. While competition and collaboration among payment service providers are vital, so is regulatory intervention in bringing about optimal efficiency. See K Kemppainen (2007), 'Regulating cross-border retail payment systems – a network industry problem' in D Mayes & GE Wood (eds), *The Structure of Financial Regulation*, London, Routledge.

⁴⁶ CPSS (2003), "Policy issues for central banks in retail payments", *BIS*, March, <https://www.bis.org/cpmi/publ/d52.pdf>.

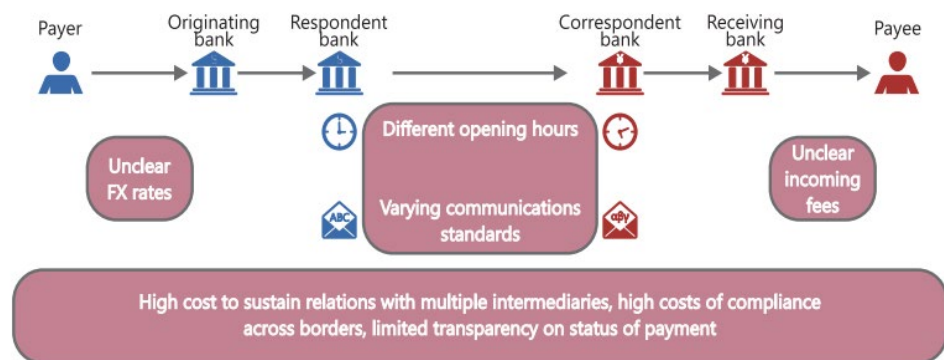
⁴⁷ Ibid.

⁴⁸ For an academic analysis of central banks' roles and responsibilities in relation to other banks, see CAE Goodhart (1987), 'Why do banks need a central bank?', *Oxford Economic Papers*, vol 39, no 1, 75-89; for central banks' broader objective of maintaining financial stability, see RG Ferguson, Jr. (2004), "Should financial stability be an explicit central bank objective?" in A Schaechter, P Ugolini & MR Stone (eds), *Challenges to central banking from globalized financial system*, International Monetary Fund, March.

other relevant regulatory authorities— faces unique challenges.⁴⁹ For example, an end-user expects cross-border payment services to be accessible, low-cost, transparent, and on-time and considers these factors when selecting a service provider, while the complexity of divergent regulatory requirements adds extra costs and delays for end-users.⁵⁰

In particular, lack of coordination among payment service and payment infrastructure providers during the transaction, due to the complexity of multiple jurisdictions, currencies, and regulatory/compliance requirements, adds to the overall costs of cross-border payments.⁵¹ For example, a cross-currency payment system can expose participating banks to FX settlement risks as FX conversion is needed at some point in the transaction.⁵² The existing models require banks to reserve liquidity (usually through derivatives) in foreign currencies, which can be costly, given currency volatility. Simultaneously, ensuring a high degree of interoperability across payment systems is challenging, resource-intensive, and time-consuming due to legacy IT infrastructure. These frictions contribute to operational risks and add more complexities in the cross-border payments systems.⁵³

Figure 2: High costs associated with a cross-border transaction and payments settlement



Source: Auer, Haene & Holden. (2021).

Furthermore, fragmented data standards and lack of interoperability, complexity in meeting compliance requirements (especially AML/CFT and data protection), different operating hours across various time zones, and outdated technological platforms are significant frictions in cross-border payments.⁵⁴ Notably, the

⁴⁹ For an overview of payment systems development, see AN Didenko et al (2020), "After Libra, Digital Yuan and COVID-19: Central Bank Digital Currencies and the New World of Money and Payment Systems", *SSRN Electronic Journal*, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3622311.

⁵⁰ T Rice, GV Peter and C Boar (2020), "On the Global Retreat of Correspondent Banks" *BIS Quarterly Review*, March; see also, FSB (2019), "FSB action plan to assess and address the decline in correspondent banking: Progress report", May, fsb.org/wp-content/uploads/P290519-1.pdf.

⁵¹ McKinsey (2016) reported that the average cost for a US bank to execute a cross-border payment via the correspondent banking network is 10 times higher than the cost of an average domestic payment.

⁵² Build-in Payment-versus-Payment mechanisms can mitigate FX settlement risk.

⁵³ R Auer, P Haene & H Holden (2021), "Multi-CBDC Arrangements and the Future of Cross-Border Payments", BIS Working Paper, no 115, March, [zbis.org/publ/bppdf/bispap115.pdf](https://www.bis.org/publ/bppdf/bispap115.pdf).

⁵⁴ FSB (2020b) (n 15).

combination of lack of acceptable digital identity systems, AML/market integrity rules and lack of interoperability across platforms, systems, data, and messaging standards adversely impact financial inclusion and cross-border payment processing.⁵⁵ These challenges affect end-users and service providers alike.

2.2.2 Recent initiatives

To address these challenges existing payments systems need to be enhanced to facilitate safer, efficient, faster, and more transparent cross-border payments. Such initiatives are being taken at the national, regional, and global levels.

For that purpose the G20 cross border payments roadmap proposes five focus areas for improving cross-border payments.⁵⁶

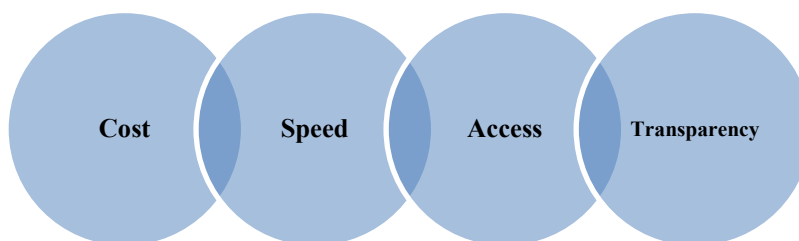
- A. Commitment to a joint public and private sector vision to enhance cross-border payments and drive meaningful, coordinated change at the global level over a sustained period of time.
- B. Regulatory, supervisory, and oversight framework coordination to mitigate critical challenges arising from the multijurisdictional nature of cross-border payments by advancing consistent international rules and standards without compromising individual jurisdictional discretion or lowering standards.
- C. Improving existing payment infrastructures and arrangements to support the requirements of the cross-border payments market, focusing on technical and operational improvements to existing domestic and international payment infrastructures that cross-border payments depend upon.
- D. Increasing data quality and straight-through processing by enhancing data and market practices, aiming to maximize the positive impact of the technical, operational and regulatory process changes being advanced in focus areas A to C. This also has the potential to improve compliance processes and address data handling issues.
- E. Exploring the potential role of new payment infrastructures and arrangements, particularly the potential of new multilateral cross-border payment platforms and arrangements, CBDCs, and so-called global “stablecoins” to enhance cross-border payments.

⁵⁵ CPMI (2020) (n 16); C Boar et al (2021) “Interoperability between payment systems across borders”, BIS Bulletin, no 49, December.

⁵⁶ FSB (2020b) (n 15); CPMI (2020) (n 16).

Figure 3: G20 Roadmap targets to be achieved by 2027;⁵⁷

- **Cost:** Reducing it to 1 percent for cross-border payments, and 3 percent for remittances.
- **Speed:** Crediting the payment (wholesale, retail, remittance) within an hour of payment initiation.⁵⁸
- **Access:** Increasing financial institutions and end-users' (individuals and MSMEs) to every aspect of payments, including wholesale, retail and remittance payments.
- **Transparency:** Enhancing payments providers' accountability to provide information to payee and payers concerning transaction cost, FX rate and currency conversion charges, expected time to deliver funds, tracking payment status, and terms of service.



To make progress this policy agenda needs to be implemented both on the national and the regional level.

At the national level, central banks are reviewing the scope for modernizing existing RTGS systems to reflect the changes in the payments domain. A key motivation is ensuring the ongoing resilience of the systems in the face of new threats. Domestic RTGS operators also need to consider how they will interact with new, innovative platforms such as distributed ledger technology (DLT). Additionally, new technologies are enabling new products and access channels in many jurisdictions, often offered by new market entrants. New products include instant payments,⁵⁹ stablecoins,⁶⁰ and CBDCs.⁶¹ While central banks worldwide are

⁵⁷ FSB (2021), "G20 Roadmap for enhancing cross-border payments: First consolidated progress report", October, <https://www.fsb.org/wp-content/uploads/P131021-1.pdf>.

⁵⁸ For wholesale, it can be within one hour of the pre-agreed settlement date and time for forward-dated transactions. Ibid.

⁵⁹ According to the definition of European Central Bank (ECB), "[i]nstant payments are electronic retail payments that are processed in real-time, 24 hours a day, 365 days a year, where the funds are made available immediately for use by the recipient." The Eurosystem is working on developing an instant payment solution called 'TARGET Instant Payment Settlement (TIPS)'. See ECB, "What are instant payments?", https://www.ecb.europa.eu/paym/integration/retail/instant_payments/html/index.en.html.

⁶⁰ The FSB defines stablecoins as "a specific category of crypto-asset" that preserves "a stable value relative to a specified asset, or a pool of basket of assets." FSB further posits, "a stablecoin may also employ algorithmic or other means to stabilize or impact its market value by, for example, automatically adjusting its supply in response to changes in demand." FSB (2020), "Regulation, supervision and oversight of "global stablecoin" arrangements: Final report and high-level recommendations", FSB, p 9, October, [fsb.org/wp-content/uploads/P131020-3.pdf](https://www.fsb.org/wp-content/uploads/P131020-3.pdf).

⁶¹ There is no universally agreed definition of a CBDC as it is strictly associated with its design, purposes and policy considerations. The IMF defines CBDC as "a new form of money, issued digitally by the central bank

analysing the prospect of issuing CBDCs with a view to enhancing safety, integrity efficiency, financial inclusion, and interoperability, at the same time,⁶² stablecoins and CBDCs can also generate instabilities in emerging economies and least developed countries through the potential for currency substitution.⁶³

In addition to regional initiatives, such as in the EU, ASEAN, the Middle East and North Africa (MENA), and Sub-Saharan Africa which will examine infra (at 3.), several bilateral initiatives towards more advanced cross-border payment arrangements are worthwhile to mention.⁶⁴ One example of such an initiative is the establishment of a bilateral link between the fast payment systems of Singapore and Thailand, which facilitates cross-border payments initiated through a mobile number and via QR code and commenced in April 2021. Singapore, Thailand and other ASEAN members are considering partnering further to enhance payments across Southeast Asia. Interoperability between two payment systems can significantly reduce frictions.⁶⁵ Finally, a range of new private sector initiatives are seeking to use new technologies to build better systems for cross-border payments.

Reinforcing all these trends, COVID-19 has triggered change in payment landscapes—domestic and international—as digital payments have surged in popularity.⁶⁶

This combination of factors highlights how the technological horizon of what is possible with cross-border payments (as well as that of money itself) is evolving

and intended to serve as legal tender." See IMF Staff (2018), "Casting Light on Central Bank Digital Currency", *IMF Staff Discussion Notes*, no 18/08; CPMI refers to CBDC as "a central bank liability, denominated in an existing unit of account, which serves both as a medium of exchange and a store of value." See CPMI (2018), "Central Bank Digital Currencies", *BIS*, March, p. 1. In 2016, the Bank of England (BoE) considered CBDC as an interest-bearing currency with 24x7 access to the central bank's balance sheet. See J Barrdear & M Kumhof (2016), "The macroeconomics of central bank issued digital currencies", *Bank of England Staff Working Paper*, no. 605, July, bankofengland.co.uk/-/media/boe/files/working-paper/2016/the-macroeconomics-of-central-bank-issued-digital-currencies.pdf?la=en&hash=341B602838707E5D6FC26884588C912A721B1DC1. For a literature review of CBDCs, see F Carapella & J Femming (2020), "Central bank digital currency: A literature review", *FEDS Notes*, November, federalreserve.gov/econres/notes/feds-notes/central-bank-digital-currency-a-literature-review-20201109.htm.

⁶² T Adrian & T Mancini-Griffoli (2019), "Central bank digital currencies: 4 questions and answers", *IMF Blog*, December, blogs.imf.org/2019/12/12/central-bank-digital-currencies-4-questions-and-answers/.

⁶³ For an overview of the risks associated with stablecoins, see FSB (2020) (n 12), D Arner et al (2020), "Stablecoins: Risks, potential and regulation", *BIS*, November, [bis.org/publ/work905.pdf](https://www.bis.org/publ/work905.pdf) and also, President's Working Group (2021), "Report on Stablecoin", *Treasury*, November, home.treasury.gov/system/files/136/StableCoinReport_Nov1_508.pdf.

⁶⁴ For example, on 8 November 2021, the Monetary Authority of Singapore (MAS) and the Bangko Sentral ng Pilipinas (BSP) entered into the FinTech Cooperation Agreement, aimed at enhancing interoperable payments between Singapore and the Philippines: MAS (2021), "MAS and BSP to Pursue Cross-border Payment Linkages", *gov.sg*, November, <https://www.mas.gov.sg/news/media-releases/2021/mas-and-bsp-to-pursue-cross-border-payment-linkages>. Furthermore, the Arab Monetary Fund (AMF) has recently entered into a memorandum of understanding with Mastercard to expand interoperability with AMF's payment system Buna in the MENA region: AMF (2021), "The Arab Monetary Fund (AMF) announces a MoU with Mastercard to join forces in facilitating the growth of payments activities across the Arab region and beyond", December, <https://www.amf.org.ae/en/content/arab-monetary-fund-amf-announces-mou-mastercard-join-forces-facilitating-growth-payments>.

⁶⁵ Auer, Haene & Holden (2021) (n 59).

⁶⁶ Arner et al (2021) (n 5); R Auer et al (2020), "Inclusive Payments for the Post-Pandemic World", *SEURF Policy Note*, no 193, September, <https://www.suerf.org/policynotes/16645/inclusive-payments-for-the-post-pandemic-world>. CPMI (2021), "Covid-19 accelerated the digitalisation of payments", December, https://www.bis.org/statistics/payment_stats/commentary2112.htm.

rapidly, highlighting the possibility of building better systems to achieve the overall goals of safety, efficiency, and market integrity. The question is what lessons can be learned from regional experiences to date to increase the prospect of success for new initiatives.

3. Building Regional Cross-border Payment Infrastructures

A wide range of regional initiatives to support the development of regional payments has emerged over time. As further framed in the Annex, these initiatives take a range of forms. In particular, we distinguish between projects focusing on developing regional payment systems (cf. Annex, Table A) and regional integration projects (Annex, Table B). A closer look at the major initiatives undertaken in three regions with vastly different levels of development and payments infrastructure⁶⁷ – Europe, Africa and the Asia-Pacific – highlights the range of approaches being taken and their evolution over time.

3.1 Europe

The EU's regional integration projects are the most developed, albeit likely *sui generis*, given the region's high degree of political, economic, and legal integration. With the adoption of the euro in 1999,⁶⁸ and subsequently a single payment and settlement platform,⁶⁹ the European banking and payments industry, with the support of national governments, the European Commission, European System of Central Banks (ESCB), and other public authorities, have focused on integrating the euro retail payments market by establishing the Single Euro Payments Area (SEPA).⁷⁰

The project integrates public and private elements to enhance competition and coordination concurrently. It connects more than 4,000 payment service providers through common payment schemes, managed by the European Payments Council,

⁶⁷ We understand payment infrastructures in this paper to include a legal or functional entity organized to provide multilateral services for payments. Besides payment systems in the narrow sense, we include other types of infrastructures used for facilitating payments, notably shared transaction systems for payments, such as traditional ATM and POS card payment networks, more modern on-line payment and mobile payment networks as well as, more broadly, financial messaging networks providing critical services for payments. See for a slightly diverging definition, World Bank (2014). "Guidelines for the successful regional integration of financial infrastructures", <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/553331468182345838/guidelines-for-the-successful-regional-integration-of-financial-infrastructures>.

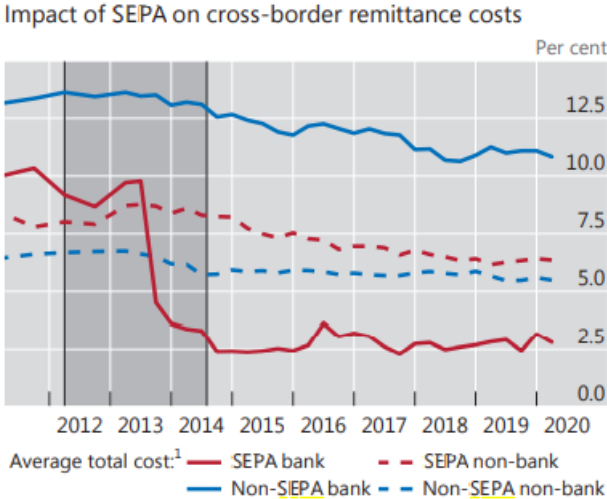
⁶⁸ The Euro replaced the former European Currency Unit (ECU) and has since 1999 been adopted by 19 Member States as well as the nations of Kosovo and Montenegro as the common monetary unit.

⁶⁹ The Council of the European Monetary Institute decided to construct the TARGET system in March 1995, to meet three main objectives: 1. to facilitate the integration of the euro money market for smooth implementation of the single monetary policy; 2. to improve the soundness and efficiency of payments in euros; 3. to provide a safe and reliable mechanism for the settlement of payments on an RTGS basis, thus contributing to minimizing risks. See, European Central Bank (1998): "Third Progress Report on the TARGET Project", <https://www.ecb.europa.eu/pub/pdf/other/p3prtpen.pdf>.

⁷⁰ For an analysis on SEPA as a means of payment systems integration across Europe, see O Sclossberger & J Budik (2018), "The SEPA project as a tool for European integration in payment system", *International Conference on European Integration 2018*; also, A Calabrese et al (2010), "New Technologies in the Payment System Industries: The SEPA Project", *American Journal of Economics and Business Administration*, vol 2, no 4), pp 384-394.

and processed via publicly and privately operated payment infrastructure. The integration also substantially decreased the average cost of transfer within the SEPA zone (Graph 1).⁷¹

Graph 1



Source: BIS (2020)

The SEPA project promotes the EU’s goal of establishing a true single market. The unique feature of SEPA is the legal integration which allows interconnectivity and competition among the divergent technical payment infrastructure: SEPA relies, in principle, on common payment schemes, for direct debit, credit transfers, and instant payments, respectively. In addition, SEPA encompasses the creation of a single harmonized framework for cards, which aims to ensure a consistent customer experience when making or accepting card payments throughout the euro area. SEPA thus goes beyond cross-border transactions and envisions the full integration of domestic payment markets for euro payments.

These European payments initiatives cannot be seen in isolation from the legal efforts to harmonize payments law and regulations in Europe.

Box 2: EU Legal Harmonization Tools⁷²

Harmonization as objective

EU law differs between Primary Legislation (consisting of the EU’s “constitution” established by the Treaty of the European Union and the Treaty on the Functioning of the European Union – “TFEU”) and Secondary Legislation, which provides all detailed legislation aiming at implementing the EU’s policy objectives. Secondary Legislation on payments is now based on Article 114 TFEU which entitles the EU to harmonize laws and regulations to complete the EU’s Single Market so there are no legal and economic barriers among EU Member States. Article 114 TFEU allows the EU to pursue harmonization of laws within the limits of proportionality and subsidiarity.

Hierarchy of secondary legislation

⁷¹ See the dramatic impact of SEPA on cross-border remittance costs in Graph 3.7 of BIS (2020): “Annual Economic Report”, June, <https://www.bis.org/publ/arpdf/ar2020e.pdf>, at p 84.

⁷² U Bux (2021), “Sources of EU Law”, *European Parliament*, October, https://www.europarl.europa.eu/ftu/pdf/en/FTU_1.2.1.pdf.

Articles 289, 290, and 291 TFEU provide a hierarchy of Secondary Legislation and differ between legislative acts (so-called Level 1 legislation), and delegated acts and implementing acts, together referred to as so-called Level 2 legislation). In the words of the EU Parliament,⁷³ legislative

'acts are legal acts that are adopted through the ordinary or a special legislative procedure. Delegated acts are non-legislative acts of general application that supplement or amend certain non-essential elements of a legislative act. The power to adopt these acts may be delegated to the [European] Commission by the legislator ([European] Parliament and the [European] Council). The objectives, content, scope, and duration of the delegation of power are defined in the legislative act, as are any urgent procedures, where applicable. In addition, the legislator lays down the conditions to which the delegation is subject, which may be the authority to revoke the delegation or the right to express an objection. Implementing acts are generally adopted by the [European] Commission, which is competent to do so in cases where uniform conditions for implementing legally binding acts are needed. Implementing acts are a matter for the Council only in specific cases which are duly justified and in areas of common foreign and security policy. Where a basic act is adopted under the ordinary legislative procedure, the European Parliament or the [European] Council may at any time indicate to the [European] Commission that, in its view, a draft implementing act goes beyond the implementing powers provided for in the basic act. In this case, the [European] Commission must revise the draft act in question.'

Legal harmonization tools

The EU uses regulations, directives, decisions, recommendations, and opinions as legal harmonization tools.

Regulations

A "regulation" is a binding legislative act. It must be applied in its entirety across the EU. For example, when the EU sought to ensure common safeguards on goods imported from outside the EU, the Council adopted a regulation.

Directives

A "directive" is a legislative act that sets out a goal that all EU countries must achieve. However, it is up to the individual countries to devise their laws on reaching these goals. One example is the EU consumer rights directive, which strengthens rights for consumers across the EU by eliminating hidden charges and costs on the internet and extending the period under which consumers can withdraw from a sales contract.

Decisions, Recommendations, and Opinions

A "decision" is binding on those to whom it is addressed (e.g., an EU country or an individual company) and is directly applicable. For example, the Commission issued a decision on the EU participating in the work of various counter-terrorism organizations. The decision related to these organizations only.

A "recommendation" is not binding. When the Commission issued a recommendation that EU member states' legal authorities improve their use of video-conferencing to help judicial services work better across borders, this did not have any legal consequences. A recommendation allows the institutions to make their views known and suggest a line of action without imposing any legal obligation on those it is addressed.

An "opinion" is an instrument that allows the institutions to make a statement in a non-binding fashion, in other words, without imposing any legal obligation on those to whom it is addressed. An opinion is not binding. It can be issued by the main EU institutions (Commission, Council, Parliament), the Committee of the Regions, and the European Economic and Social Committee. While laws are being

made, the committees give opinions from their specific regional, economic, and social viewpoints. For example, the Committee of the Regions issued an opinion on the clean air policy package for Europe.

The operating mode of these various measures can be demonstrated well by looking at the binding EU regulations and directives regarding payments (see Annex 1).

Among all these legislative acts, the EU's main payment legislation is Directive (EU) 2015/2366 ("PSD2"). PSD2 alone, in more than 150 comprehensive articles, provides a dense net of payments regulation relating to, for instance, licensing and operating requirements, supervisory cooperation, data transfer, private law on payment contracts, and liability of intermediaries. PSD2 is, to a large extent, mandatory and is meant, according to Article 107 PSD 2, to deliver "full harmonization," that is, the Member States must adopt neither stricter nor less strict laws and regulations.

On top of this dense net of rules come delegated and implementing acts as mentioned in Box 2 (so-called "Level 2 legislation") with a usually narrow scope and detailed content, adopted by the European Commission upon proposal by the European Banking Authority (EBA). Annex 3 lists the Level 2-legislation relating only to PSD2.

Since harmonized laws and regulations do not result in the harmonized application of rules and regulations, harmonized enforcement by the various national competent authorities of the EU Member States is required. The EU thus achieves supervisory convergence through the so-called European System of Financial Supervision (ESFS): non-binding "guidelines" issued by the EBA, constant exchange and cooperation of national competent authorities of the EU Member States on matters in multiple working groups under the auspices of the EBA, "conflict mitigation" by EBA, and legal "opinions" issued by the EBA, all of which together result in a high degree of legal harmonization in practice.

BOX 3: European System of Financial Supervision (ESFS)

The European System of Financial Supervision (ESFS) is a multi-layered system of micro- and macro-prudential authorities to ensure consistent and coherent financial supervision in the EU. It was established in 2010 in pursuance of Articles 114 and 127(6) of the Treaty on the Functioning of the European Union, followed by the proposal of a Commission communication on financial supervision and the recommendation of the de Larosière expert group.⁷⁴ It became operational in 2011. The ESFS consists of the European Systemic Risk Board (ESRB), three European supervisory authorities, namely the EBA, the European Securities and Markets Authorities (ESMA), and the European Insurance and Occupational Pensions Authority (EIOPA), as well as national supervisors.⁷⁵ Established by Regulation

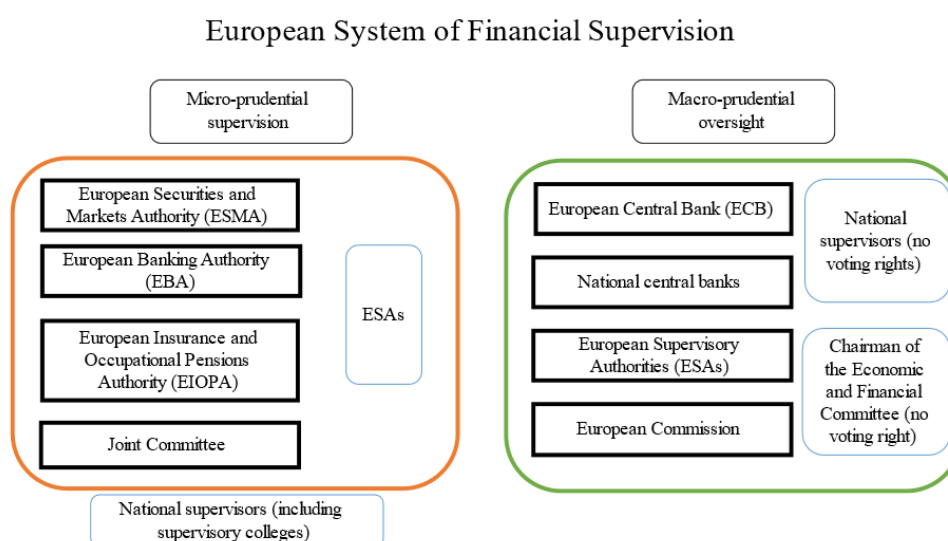
⁷³ Ibid.

⁷⁴ European Commission, "European System of Financial Supervision", https://ec.europa.eu/info/business-economy-euro/banking-and-finance/financial-supervision-and-risk-management/european-system-financial-supervision_en#system.

⁷⁵ The founding legislations for both the ESRB and the three ESAs are, Regulation (EU) No 1092/2010 establishing the ESRB; Regulation (EU) No 1096/2010 conferring specific tasks upon the European Central Bank concerning the functioning of the ESRB; Regulation (EU) No 1093/2010 establishing the EBA; Regulation (EU) No 1094/2010 establishing the EIOPA; Regulation (EU) No 1095/2010 establishing the ESMA; and 'Omnibus' Directive 2010/78/EU amending existing financial services legislation to ensure that the new authorities can work effectively.

(EU) 1092/2010, the ESRB's main objective is to ensure the harmonious implementation of the rules across the EU Member States and preserve financial stability, build market confidence and protect consumers. The EFPS also aims to integrate a common supervisory culture and facilitate a single European financial market.⁷⁶ The supervisory framework has two core layers of prudential regulation—micro-prudential regulation and macro-prudential regulation. In the EU, the micro-prudential regulation is oversight by the EBA, ESMA, and EIOPA (together the "ESAs"), and national supervisors. The ESAs also harmonize financial supervision in the EU by developing a single rulebook and uniform prudential standards to create a level playing field. The ESA's Joint Committee also ensures cross-sectoral consistency in the development and application of the single rulebook. The ESRB is the bespoke body responsible for the macro-prudential supervision of the safety and soundness of the overall EU financial system. The president of the ECB is the Chair of the ESRB. ESRB brings together the Member States' central banks representatives and the Chairs of the EBA, the ESMA, and the EIOPA.

The following graph represents the multi-layered prudential supervision system of the ESFS:



Since the establishment of the Banking Union in 2012, the EU regulatory and supervisory framework has added new elements and actors in its supervisory convergence mechanism. For instance, (1) a **Single Rulebook that contains** the most relevant legal acts for the Banking Union, such as CRR, CRD, Deposit Guarantee Schemes, IFR Regulation, Bank Recovery and Resolution Directive, Anti-Money Laundering Directive. The EBA is working on developing the Interactive EU Single Rulebook; (2) the **Single Supervisory Mechanism (SSM)** which refers to the system of banking supervision in Europe that comprises the ECB and the national supervisory authorities of the participating countries⁷⁷, and which became operational in 2014 and supervised the largest and most important banks in the euro area directly at the European level; and (3) the **Single Resolution Mechanism (SRM)** which seeks to ensure the orderly restructuring of any failed or failing bank covered by the SRM.⁷⁸

⁷⁶ R Parenti (2021), "European System of Financial Supervision (ESFS)", *Fact Sheets on the European Union*, October, https://www.europarl.europa.eu/ftu/pdf/en/FTU_2.6.14.pdf.

⁷⁷ Banking Supervision, "Single Supervisory Mechanism", *European Central Bank*, <https://www.bankingsupervision.europa.eu/about/thessm/html/index.en.html>.

⁷⁸ European Commission, "Single resolution mechanism", https://ec.europa.eu/info/business-economy-euro/banking-and-finance/banking-union/single-resolution-mechanism_en.

The ESFS thus comprises a dense net of legal measures that enhance legal certainty and supervisory convergence in the field of payments. A number of these guidelines and opinions are summarized in Annex 2.

In addition to the principal and delegated legislative acts, various contractual, quasi-legal mechanisms are integral components in completing the EU Single Rule Book. In particular, the European Payments Council (EPC) is responsible for developing and maintaining SEPA schemes and rulebooks for credit transfers and direct debits.⁷⁹ The EPC also contributes to card payment standardization⁸⁰ and the harmonization of mobile payments.⁸¹ Under the SEPA framework, the principle of equal charges is applicable for domestic and cross-border electronic payment transactions in euro. Countries outside the euro area may also extend the application of this regulation to their national currency. Sweden and Romania have chosen this option. In 2018, the European Commission proposed to extend the benefits of equal charges to non-euro countries so that all consumers and businesses in the EU could fully utilize the benefits of the single market.⁸² Under this proposal, all people in the EU will be able to transfer money cross-border, in euro, at the same cost as they would pay for a domestic transaction.

As is evident from the above, creating a true single rule book in payments requires substantial effort.

3.2 Africa

In Africa, several economic and monetary groups have been engaged in regional payments integration.⁸³

The West African Economic and Monetary Union (WAEMU), covering eight countries, is an example of an advanced regional payments integration initiative. WAEMU has a single central bank, the Central Bank of West African States (BCEAO), and a single currency, the West Africa CFA Franc. Against this background, the BCEAO facilitated an RTGS (STAR-UEMOA) for large-value payments, a regional interbank electronic clearing system (SICA-UEMOA), and an interbank card-based payment system managed by GIM-UEMOA. For these purposes, the respective national payment systems in the WAEMU countries link into the regional interbank clearing system run by the BCEAO via their own national clearing systems. The participants of STAR-UEMOA must comply with the Operating Rules, which are based on the SWIFT-

⁷⁹ The EPC has developed rulebooks for SEPA Credit Transfer, SEPA Direct Debit B2B, SEPA Direct Debit Core, and SEPA Instant Credit Transfer: European Commission, "Single euro payments area (SEPA)", https://ec.europa.eu/info/business-economy-euro/banking-and-finance/consumer-finance-and-payments/payment-services/single-euro-payments-area-sepa_en.

⁸⁰ The EPC works to achieve harmonisation when paying with a card, European Payments Council, "EPC contribution to a SEPA for cards", <https://www.europeanpaymentscouncil.eu/what-we-do/other-sepa-payments/sepa-cards>.

⁸¹ The EPC contributes to the development of mobile payments: European Payments Council, "SEPA goes mobile", <https://www.europeanpaymentscouncil.eu/what-we-do/sepa-goes-mobile>.

⁸² European Commission, "Single euro payments area (SEPA)", https://ec.europa.eu/info/business-economy-euro/banking-and-finance/consumer-finance-and-payments/payment-services/single-euro-payments-area-sepa_en#legal-framework.

⁸³ Not all rulebooks for regionally payments integration are freely accessible; in the following, we provide a short description for those rulebooks we have access to.

based transmission of payment orders and four cardinal principles: (1) all transactions are final; (2) the system processes orders by the level of priority, i.e., payments are given certain priority levels under system rules, and arrival date; (3) funds in the settlement account of the originating participant are checked automatically; and (4) transactions are immediately charged to the settlement accounts of the participants involved.

Additionally, the national clearing systems of the WAEMU also comply with the SICA UEMOA's Operating Procedures. Macroprudential supervision and systemic risk controls are also centralized and vested in the West African Monetary Union (WAMU) Financial Stability Committee (CSF-UMOA). In contrast, micro-prudential supervision is centralized with the WAMU Banking Commission that approves and withdraws the authorization of credit institutions, monitors credit institutions and decentralized financial systems, sanctions violations, and appoints interim administrators or liquidators of credit institutions.⁸⁴ The WAMU is characterized by a single currency, a single central bank, and single macro- and micro-prudential supervisory framework. In this regard, the WAMU is almost as closely integrated as the Eurozone in the economic and financial context, albeit without the EU's political and judicial dimensions.

Indeed, there are many similarities between the WAEMU and the EU. Not only do they share the goal of creating a common regional market amongst member states,⁸⁵ with BCEAO monetary policies resembling those of the ECB, but also the types of WAEMU instruments reflect those of the EU: regulations, directives, decisions, and recommendations. In this regard, WAEMU regulations cover topics from prudential regulation⁸⁶ to private law matters, such as competition law.⁸⁷

Another notable example of regional payments integration is the South African Development Community (SADC). The SADC has, through its "Payments Project," streamlined interbank settlement since 2013. Hosted by the South Africa Reserve Bank (SARB) with 85 participants (central banks and commercial banks alike) across SADC participating, the SADC-RTGS (formerly known as "SIRESS") settles and clears large value cross-border interbank settlements in multiple currencies. The legal

⁸⁴ BCEAO (2017), "Presentation of the Banking Commission", <https://www.bceao.int/en/content/presentation-banking-commission>.

⁸⁵ See Amended Treaty of the West African Economic and Monetary Union art 4(c) available at http://www.uemoa.int/fr/system/files/fichier_article/traitrevisueuemoa.pdf – the English translation of the goals listed in art 4 is available at <http://www.uemoa.int/en/amended-treaty>.

⁸⁶ Decision n°013 adopted by the WAEMU Council of Ministers on 24 June 2016, introduced prudential regulation standards based on BASEL II and III. See O Illy and S Ouedraogo (2020), "West African Economic and Monetary Union: Central Bankers Drive Basel Under IMF Pressure", in Emily Jones (ed), *The Political Economy of Bank Regulation in Developing Countries: Risk and Reputation*, Oxford, Oxford University Press, 174, 182.

⁸⁷ '(1) Règlement No. 2/2002/CM/UEMOA, *relatif aux pratiques anticoncurrentielles à l'intérieur de l'Union Economique et Monétaire Ouest Africaine*; (2) Règlement No. 3/2002/CM/UEMOA, *relative aux procédures applicables aux ententes et abus de position dominante à l'intérieur de l'Union Economique et Monétaire Ouest Africaine*; (3) Règlement No. 4/2002/CM/UEMOA, *relatif aux aides d'Etat à l'intérieur de l'Union Economique et monétaire Ouest Africaine et aux modalités d'application de l'article 88(C) du traité*; (4) Directive No. 2/2002/CM/UEMOA, *relative à la coopération entre Commission et les structures nationales de concurrence des Etats Membres pour l'application des articles 88, 89 et 90 du traité de l'UEMOA*; (5) Directive No. 1/2002/CM/UEMOA, *relative à la transparence des relations financières entre d'une part les Etats Membres et les entreprises publiques, et de l'autre part entre les Etats Membres et les organisations internationales ou étrangères*', as cited in M Bakhoum (2006), "Delimitation and exercise of competence between the West African Economic Monetary Union (WAEMU) and its member states in competition policy", *World Competition*, vol 29, no 4, pp 653-681.

framework of the regional clearing and settlement system is based on the "Stakeholder Agreement" between the SADC Central Banks and the SARB and the "Participant Settlement Agreement" and "Service Agreement" between the SARB and SADC-RTGS. Furthermore, to accelerate the regional integration of retail payments infrastructure, SADC is developing payment schemes for low-value credit transfers and instant payments (known as Transactions Cleared on Immediate Basis (TCIB)). The possibility to settle all intra-SADC card transactions on SADC-RTGS is to be pursued once TCIB is implemented. SADC's Payment Scheme Rule Books ("Beige Book") provides integrated payment and settlement rules, procedures, and operating models for SADC-RTGS and SADC-TCIB.⁸⁸ As to governance, the SADC Payment System Oversight Committee (SADC PSOC),⁸⁹ composed of participating central banks, is the principal governing body that oversees the operation of SADC-RTGS, the Regional Clearing and Settlement Operator (RCSO), and SADC-TCIB.⁹⁰ The Payment Scheme Management Body (PSMB)—an autonomous sub-structure of the SADC Banking Association, is responsible for managing payment processing between SADC countries, including ensuring the compliance of the Beige Book.⁹¹ The PSMB deals with any deviation from the rulebook and has the power to refer any dispute to the SADC PSOC for further consideration.⁹²

3.3 Asia-Pacific

In 2014, the ASEAN-5 Central Banks from Indonesia, Malaysia, Singapore, Philippines, and Thailand agreed to implement an integrated multi-currency real-time payments system to facilitate faster electronic payments.⁹³ The following year, the ASEAN Economic Community (AEC) adopted a strategic action plan, the "ASEAN Economic Community Blueprint 2025," for region-wide integration of trade, investment, and payment. ASEAN countries have since undertaken bilateral and multilateral initiatives to link their domestic RTGS systems and adopt a standardized messaging format (e.g., ISO 20022) to achieve a level of seamlessness across the region. The system would allow multicurrency transactions in minutes through electronic payments. Singapore and Thailand recently enabled a cross-border payment link to facilitate cross-border

⁸⁸ The Beige Book was released by the SADC Banking Association ('SADC BA'), and contains 'operating models, rule books, other information and background' for the Payments Project. See SWIFT (2017), "Achieving financial integration in the ASEAN region", *SWIFT Discussion Paper*, <https://www.swift.com/resource/discussion-paper-achieving-financial-integration-asean-region>. See also SADC BA, "Presentation on Interoperability Approach Adopted in SADC: SADC Low Value Credit Transfers Cleared on an Immediate Basis (TCIB)", presentation, slide 22 available at <https://www.aacb.org/sites/default/files/2-AACB%20Presentation%20on%20SADC%20TCIB%20stream.pptx>.

⁸⁹ World Bank (2021), "Project Information Document/Identification/Concept Stage (PID)", *World Bank Report*, no PIDC244223, June, <https://ewsddata.rightsindevelopment.org/files/documents/29/WB-P176529.pdf>.

⁹⁰ Regional Payment Framework, "Components of a Regional Payment Scheme Framework", <https://regionalpaymentframework.com/components-of-a-regional-payment-scheme-framework/>.

⁹¹ Ibid.

⁹² Ibid.

⁹³ ASEAN Briefing (2014) "ASEAN 5 Prepares for Integrated Payment System", *ASEAN Business News*, June, <https://www.aseanbriefing.com/news/asean-5-prepares-integrated-payment-system/#:~:text=SINGAPORE%20E2%80%93%20The%20five%20largest%20members%20of%20ASEAN,systems%20to%20be%20in%20effect%20by%20next%20year>.

payments through mobile numbers and standardized QR codes starting from 2021.⁹⁴ Unlike the EU and parts of Africa, ASEAN lacks a central authority for banking supervision and payment systems oversight as well as a single currency or linked exchange rate system. Therefore, regional integration projects are predominantly supervised by member states' central banks while the ASEAN Economic Community monitors implementation alongside the ASEAN Finance Ministers and Central Bank Governors.⁹⁵

In pursuance of China's domestic policy measures to strengthen the international use of the RMB in trade and investment, the People's Bank of China (PBOC) established the Cross-border Interbank Payment System ("CIPS") to provide cross-border RMB clearing and payment facilities to financial institutions.⁹⁶ CIPS is constructed in two phases—the first phase launched in 2015 is built to 'support the settlement of cross-border trade in goods and services, cross-border direct investment, cross-border financing and cross-border individual remittance.'⁹⁷ The essential features of CIPS are: (1) processing RMB payments in real-time; (2) centralized clearing system for direct participants, shortening the clearing path; (3) compliance with the ISO 20022 messaging standard in the cross-border payments chain; and (4) operating hours covering all major time zones.⁹⁸ So far, 19 commercial banks in Mainland China are direct participants in CIPS, and 176 banks from 50 countries are indirect participants.⁹⁹ In terms of use, CIPS has become a major payments channel for African banks to receive infrastructure funds in RMB under China's Belt and Road Initiative.¹⁰⁰

Looking forward, the digital yuan (formerly DCEP: Digital Currency / Electronic Payment, now eCNY) is being explored as a means of facilitating cross-border transactions. During the launch of pilots for the eCNY in 2020, China emphasized its domestic use. However, PBoC is also exploring the potential of the eCNY for cross-border payments. Authorities in Mainland China and Hong Kong SAR are working on a pilot project to use digital yuan on cross-border payments, including central banks in Thailand and the UAE.¹⁰¹

⁹⁴ Fintechnews Singapore (2021), "Singapore and Thailand Announces World's First Linkage of Real Time Retail Payment Systems", April, <https://fintechnews.sg/50682/thailand/singapore-and-thailand-announces-worlds-first-linkage-of-real-time-retail-payment-systems/>.

⁹⁵ RB Guerrero (2020), "Regional Integration: The ASEAN Vision in 2020", *IFC Bulletin*, no 32, <https://www.bis.org/ifc/publ/ifcb32c.pdf>.

⁹⁶ China International Payment Service Corp, "About the System", <http://www.cips.com.cn/cipsen/7052/7057/index.html>.

⁹⁷ Ibid.

⁹⁸ Ibid.

⁹⁹ Ibid.

¹⁰⁰ Reuters (2020), "China's Onshore Yuan Clearing and Settlement System CIPS", July, <https://www.reuters.com/article/china-banks-clearing/factbox-chinas-onshore-yuan-clearing-and-settlement-system-cips-idUSL3N2F115E>.

¹⁰¹ HKMA (2020), "A New Trend for Fintech - Cross-border Payment", December, <https://www.hkma.gov.hk/eng/news-and-media/insight/2020/12/20201204/>.

4. Analysing Regional Approaches

In analysing experiences, four approaches have so far been prevalent at the regional level.

4.1 Establishing new payment infrastructures

As the overview of regional integration projects demonstrates, designed public sector and public-private initiatives, like RTGS and retail FPS, supported by public digital identity (ID) infrastructures, are already significantly improving the speed and availability of payments in many countries. In theory, FPS could offer additional functionalities or become interoperable with advanced digital solutions, including DLT applications.

4.2 Enhancing interoperability: Standards

A second strategy focuses on enhancing the interoperability of existing and future payments systems. One way to enhance interoperability is to adopt uniform ISO standards and harmonize message formats processed by domestic payment systems across the region, allowing for automatic processing, reduced manual contributions and enhanced speed.

However, developing and adopting ISO standards for payment messages, such as ISO 20022, requires updating existing domestic payment systems, creating challenges if they are based on legacy technology platforms. SWIFT messaging protocols come with their own costs, and in many countries payment service providers may experience challenges in the timely implementation of annual SWIFT protocol updates. Thus, some well-integrated payment areas have developed their own messaging protocols; for example, in the EU, the Electronic Banking Internet Communication Standard (EBICS) is gaining traction among banking organizations and being used to initiate SEPA instant payments.

Legacy systems provide significant challenges for institutions as the technology core may not serve new digital needs and may require major maintenance with every update. Greenfield projects are an alternative. However, where new systems are designed and built, connected institutions may still partially operate using legacy systems.

Further, path dependency may affect the design choices of an entirely new system. In these design choices, interests of banks with an international reach and higher transaction volumes (preferring SWIFT) might conflict with those of banks with domestic or regional scope and lower transaction volumes (preferring alternatives).

4.3 New technologies

While market acceptance of new infrastructures based on new technologies is currently limited, integrating innovative technology could overcome system problems. As an example of a new foundational infrastructure, some DLT infrastructures combine a messaging system (competing directly with SWIFT) with digital currency and blockchain technology in retail payments. Such a design can transfer transaction information and settle payments simultaneously and immediately

after payment is initiated from the sender. The system can provide more information transparency regarding each node's liquidity status and currency exchange rate.¹⁰² Incumbent financial institutions are also adopting blockchain technology to ensure faster and more secure remittances,¹⁰³ although mostly still at piloting and testing stages.

DLT and tokenized payments exhibit potential for cross-border payments.¹⁰⁴ We have examined the use of DLT and related challenges in the payment context elsewhere.¹⁰⁵ Regarding high-value payments, "synthetic CBDCs"¹⁰⁶ could simplify cross-border payments by rendering them less costly and more widely accessible.¹⁰⁷ Stablecoin or GSC arrangements could become a convenient means of electronic payment due to 'their 24/7 availability, borderless nature, and fractionalization, i.e., their ability to support programmable micropayments'.¹⁰⁸ In wholesale transactions, they could allow for "atomic settlement" (where it is guaranteed in a bilateral settlement that the transfer of currency will only occur if a corresponding transfer from the opposite direction occurs): for instance in cases of DvP, where payment and the transfer of ownership happen simultaneously.¹⁰⁹ However, stablecoin arrangements may not be effective for cross-border payments in the long run as the technical infrastructure, and operational costs are expected to be high and operational risks as the technologies are largely untested.¹¹⁰

¹⁰² T Qiu, R Zhang & Y Gao (2019), "Ripple vs. SWIFT: Transforming Cross-border Remittance Using Blockchain Technology", *Procedia Computer Science*, vol 147, p 428.

¹⁰³ M Musharraf (2020), "Bangladesh to get its first blockchain remittance service", *Cointelegraph*, September, <https://cointelegraph.com/news/bangladesh-to-get-its-first-blockchain-remittance-service>.

¹⁰⁴ See CPMI (2017), "Distributed Ledger Technology in Payment, Clearing and Settlement: An Analytical Framework", February, bis.org/cpmi/publ/d157.pdf; also, G Shabsigh, T Khiaonarong & H Leinonen (2020), "Distributed ledger technology experiments in payments and settlements", IMF FinTech Note, no 20/01, June, <https://www.imf.org/en/Publications/fintech-notes/Issues/2020/06/25/Distributed-Ledger-Technology-Experiments-in-Payments-and-Settlements-49251>; also, Bank of Canada & Monetary Authority of Singapore, "Jasper – Ubin Design Paper: Enabling cross-border high value transfer using distributed ledger technology", *Accenture*, [accenture.com/_acnmedia/pdf-99/accenture-cross-border-distributed-ledger-technologies.pdf](https://www.accenture.com/_acnmedia/pdf-99/accenture-cross-border-distributed-ledger-technologies.pdf).

¹⁰⁵ See DA Zetzsche et al (2021), "The Case for a Best Execution Principle in Cross-border Payments", *SSRN Electronic Journal* <papers.ssrn.com/sol3/papers.cfm?abstract_id=3834335>; DA Zetzsche (2021), "DLT-Based Enhancement of Cross-Border Payment Efficiency – a Legal and Regulatory Perspective", *BIS Working Paper*.

¹⁰⁶ A synthetic CBDC, also known as "Hybrid CBDC" is a form of "narrow bank" money rather than a proper CBDC because a synthetic CBDC, issued by private entities, is not a direct claim on the central bank. However, the claim may be fully backed by central bank money. BIS (2020), "Central bank digital currencies: foundational principles and core features", *Report*, no 1, p 4, <https://www.bis.org/publ/othp33.pdf>. See T Mancini Griffoli et al (2018), "Casting Light on Central Bank Digital Currencies", *IMF Staff Discussion Notes*, no 18/08, November, [imf.org/en/Publications/Staff-Discussion-Notes/Issues/2018/11/13/Casting-Light-on-Central-Bank-Digital-Currencies-46233](https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2018/11/13/Casting-Light-on-Central-Bank-Digital-Currencies-46233); R Auer & R. Böhme (2020), "The Technology of Retail Central Bank Digital Currency", *BIS Quarterly Review*, March, [bis.org/publ/qrpdf/r_qt2003j.pdf](https://www.bis.org/publ/qrpdf/r_qt2003j.pdf). Bank of Canada et al (2020), "Central bank digital currencies: foundational principles and core features", *BIS*, October, <https://www.bis.org/publ/othp33.pdf>.

¹⁰⁷ BIS (2020) (n 20).

¹⁰⁸ T McLaughlin (2021), "Two Paths to Tomorrow's Money", *Journal of Payments Strategy & Systems*, vol 15, no 1, pp 23-36.

¹⁰⁹ Arner et al (2020) (n 69).

¹¹⁰ CPMI (2020) (n 16).

4.4 Regional monetary arrangements: Monetary areas and CBDCs

From the central bank perspective, CBDCs are being widely discussed (yet rarely adopted) as a way to enhance payment efficiency, especially in reducing overall cross-border transaction costs.¹¹¹ Regional CBDC arrangements (e.g., m-CBDC,¹¹² Project Dunbar¹¹³) are at the center of attention, especially in settings where just one central bank or a network of central banks is involved, as in West Africa, the EU, and potentially in East Africa. A regional CBDC (if used as a settlement asset among the currencies) could be used to make payments to and from another currency area. Alternatively, different jurisdictions may facilitate the interoperability of their domestic CBDC platforms to simplify cross-currency payments. The resulting benefits could include: (i) faster transaction processing on a 24/7 basis, (ii) improved transparency, or (iii) enhanced settlement mechanisms (such as “atomic” settlement).

Nevertheless, while conceptually straightforward, the benefits of using CBDCs across borders are difficult to quantify currently.¹¹⁴ Risks exist. Foreign CBDCs could raise pressures for currency substitution and worsen vulnerabilities from currency mismatches.¹¹⁵ This could constrain the ability of local authorities to conduct monetary policy.¹¹⁶ CBDCs could facilitate illicit flows without appropriate safeguards, making it harder for regulatory authorities to enforce exchange restrictions and capital flow management measures.¹¹⁷

Aside from the regional CBDC efforts to connect multiple CBDC systems, there is also a massive potential for linking instant payment systems (IPs). For instance, Singapore’s PayNow and Thailand’s PromptPay were linked in April 2021. This linkage of two systems now allows the participating banks’ customers to transfer money cross-border by using the recipient’s telephone number only.¹¹⁸ IPs are available in around 60 countries. To explore this potential, the BIS Innovation Hub recently launched ‘Nexus’—a scalable cross-border payment network that would link IPs in multiple countries.¹¹⁹

¹¹¹ For an analysis of CBDC’s cross-border impacts, see BIS et al (2020), “Central bank digital currencies for cross-border payments: report to the G20”, July, <[bis.org/publ/othp38.pdf](https://www.bis.org/publ/othp38.pdf)>; for CBDC’s use in wholesale payments, see Oliver Wyman & JPMorgan (2021), “Unlocking \$120 billion value in cross-border payments: How banks can leverage central bank digital currencies for corporate”, *Onyx*, November, gateway.on24.com/wcc/eh/3177500/lp/3512788/mcbdc-unlocking-120-billion-value-in-cross-border-payments.

¹¹² Cf. Table A. R. Auer, P. Haene, and H Holden (2021), “Multi-CBDC Arrangements and the Future of Cross-Border Payments”, *BIS Papers*, no 115, March, www.bis.org/publ/bppdf/bispap115.pdf.

¹¹³ BIS, “Project Dunbar: International Settlements Using Multi-CBDCs”, www.bis.org/about/bisih/topics/cbdc/wcbdc.htm.

¹¹⁴ IMF (2020b), “Legal Aspects of central bank digital currency: Central bank and monetary law considerations”, November, <https://www.imf.org/en/Publications/WP/Issues/2020/11/20/Legal-Aspects-of-Central-Bank-Digital-Currency-Central-Bank-and-Monetary-Law-Considerations-49827>.

¹¹⁵ BIS et al (2020) (n 119).

¹¹⁶ Foster et al. (2021) (n 69).

¹¹⁷ IMF (2020b) (n 126).

¹¹⁸ BIS Innovation Hub, “Nexus: A Blueprint for Cross-Border Payments”, *BIS*, July, <https://www.bis.org/publ/othp39.htm>.

¹¹⁹ *Ibid.*

Box 4: Three ways to achieve interoperability in a cross-border CBDC

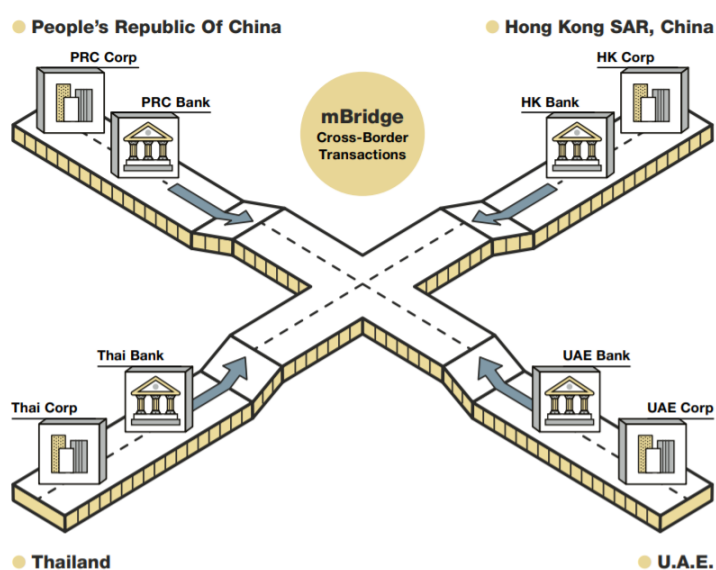
A joint research report published by JPMorgan and Oliver Wyman posits that an mCBDC can potentially save \$120 billion in wholesale transaction costs for corporates.¹²⁰ Auer, Haene & Holden (2021) studied three theoretical approaches to an interoperable cross-border CBDC arrangement: (1) enhancing compatibility among CBDC systems, (2) interlinking CBDC systems, and (3) a single system for multiple CBDCs.

Compatible CBDC systems share a similar design and technological architecture. This may take the form of a hybrid CBDC structure in which private sector actors manage the customer interface for CBDCs. Under this model, CBDC systems will separately determine the rulebook, governance structure, participation rules, and infrastructure.

Interlinked CBDC systems can be established through sharing similar technical interfaces among different CBDC systems. There can also be a common clearing system that can be either centralized or decentralized. A contractual arrangement can govern the joining of several CBDC systems.

A single multiple CBDC system integrates multi-currency cross-border CBDC systems. This model envisions that the participating central banks will have a single rulebook with a single set of participation criteria and supporting infrastructure. Under this system, the management of the system and governance structure would be shared. The Inthanon-LionRock project of the Bank of Thailand and HKMA is an example of such a CBDC system. Another example of such a CBDC is the m-Bridge Project. Launched by the BIS Innovation Hub with participation from the PBoC, Hong Kong SAR, Thailand, and UAE, the m-Bridge Project is a proof of concept developed by the HKMA that explores use cases for CBDC in the context of international settlements.¹²¹ It integrates four different currencies.¹²² Following

is a visualization of the m-Bridge platform—a multiple CBDC arrangement connecting four different jurisdictions:¹²³



Source: BIS Innovation Hub (2021)

¹²⁰ Oliver Wyman & JPMorgan (2021) (n 119).

¹²¹ HKMA (2021), "Joint research on multiple central bank digital currency (CBDC) shows potential for speeding up cross-border payments and reducing costs", *Press Release*, September, hkma.gov.hk/eng/news-and-media/press-releases/2021/09/20210928-3/.

¹²² HKEX (2021), "HKEX's Proof-of-Concept use cases for HKMA's mBridge project", November, hkex.com.hk/-/media/HKEX-Market/News/Media-Centre/Special/mBridge/HKEX_mBridge.pdf.

¹²³ See BIS Innovation Hub (2021), "mBridge – Building a multi CBDC platform for international payments", HKMA, October, hkma.gov.hk/media/eng/doc/key-functions/financial-infrastructure/mBridge_Building_a_multi_CBDC_platform_for_international_payments.pdf.

4.5 Legal harmonization as policy objective

In addition to technical approaches, regional integration efforts can be categorized regarding their level of legal integration.

So far, regional efforts have tended to focus primarily on efficiency, safety, and effectiveness, to reduce transaction costs and increase inclusion to support regional trade, investment, remittances, and travel. At the regional level, relatively less has been done around integrity. In this respect, the EU – through its eIDAS project as well as increasing use of legal entity identifiers (LEIs) and other transparency requirements – offers an important example, which we have analysed elsewhere.¹²⁴

While standardization is a recognized policy objective, we stress the need for regional efforts to pursue harmonization as a policy objective, as a precondition for enhancing scale economies in cross-border payments if not outright centralization of technology as such, which would facilitate a common payments area.

Considerable challenges to realizing the vision of a common payments area remain. The main obstacles in realizing a successful regional payments system integration include:

Regulatory fragmentation across the region. Lack of regulatory harmonization across the region causes inconsistencies in implementation. Fragmented regulatory regimes increase compliance costs and create uncertainties regarding international standards.

Digital infrastructures differ significantly. Some countries may be substantially ahead of others in having robust and technically sound ICT infrastructures in any region.

Monetary sovereignty. Concerns about currency substitution and its potential impact on political, economic, and monetary sovereignty are major challenges in developing regional monetary arrangements, particularly for emerging and developing economies.

Cooperation and information sharing among authorities. While central banks and financial regulators have long histories of cooperation and information sharing, the level required for regional payments projects are often highly demanding and politically challenging.

Other issues are the risk of money laundering, terrorist financing, privacy, and antitrust concerns.

In addition, the World Bank argues that skepticism and uncertainty regarding the viability of the integration project among participants, the enormous short-term costs of the integration project, the lack of effective leadership, and the ongoing need for technical, financial, and human resources could prevent the success of a regional integration project.¹²⁵

In addition, any integration project will create new risks. For instance, once the project is launched, the integrated system and the participating country systems may be susceptible to concentrated network risks (i.e., technological risks, legal risks, credit

¹²⁴ DW Arner et al (2019): “The Identity Challenge in Finance: From Analogue Identity to Digitized Identification to Digital KYC Utilities”, *European Business Organisation Law Review*, vol 20, p 55-80.

¹²⁵ World Bank (2014), ‘Guidelines for the successful regional integration of financial infrastructures’.

and liquidity risks, and operational risks) arising out of the operation of an integrated payment system, including additional risks as a result of cross-border aspects.¹²⁶ Further, managing a cross-border regional payment system adds a layer of complexity in understanding and administering the arrangement that differs from managing a single national-level payment system.¹²⁷ The specificity and magnitude of risks further depend on the integration model's type and complexity, technology involved, operational and procedural schemes, and the regional political, legal and regulatory environment in which they operate.¹²⁸

Generally, there is a trade-off: the more technically complex an integration project, the more it can benefit from harmonizing legal and regulatory standards. For example, a single regulator with a single central bank and a single supervisor is better positioned to address complex projects. On the other hand, where a region is fragmented politically or legally, technical complexity or the number of participating countries may be reduced, such that bilateral solutions can replace the need for long-lasting multilateral negotiations. Singapore and Canada's collaborative Project Jasper-Ubin¹²⁹ and Thailand-Hong Kong SAR's Inthanon-LionRock¹³⁰ are good examples of bilateral integration projects, albeit ones that can potentially underpin more comprehensive regional initiatives.

5. Lessons Learned: Towards A Single Rulebook

Regional integration initiatives show that a combination of technical, regulatory, and legal changes will best enhance safety, efficiency, and integrity.

5.1 Foundations: Safety, efficiency, integrity

This conclusion follows from the complexity that borders entail: Crossing any border will increase the cost of cross-border payments if it involves entering a different technical, legal and regulatory environment. Under ideal circumstances, cross-border payments would face no technical, legal, and regulatory barriers, even with different currencies and countries involved. In particular, mismatches between the inter-institutional framework on the back-end and the contractual relationship with clients

¹²⁶ Ibid.

¹²⁷ Ibid.

¹²⁸ Ibid.

¹²⁹ MAS (2020), "Project Ubin: Central Bank Digital Money using Distributed Ledger Technology", 8 December, <https://www.mas.gov.sg/schemes-and-initiatives/Project-Ubin>; Accenture (2019), "Enabling Cross-Border High Value Transfer Using Distributed Ledger Technologies", *Jasper-Ubin Design Paper*, <https://www.mas.gov.sg/-/media/Jasper-Ubin-Design-Paper.pdf?la=en&hash=EF5857437C4857373A9287CD86F56D0E7C46E7FF>.

¹³⁰ HKMA (2020), "Inthanon-LionRock: Leveraging Distributed Ledger Technology to Increase Efficiency in Cross-Border Payments", January, https://www.hkma.gov.hk/media/eng/doc/key-functions/financial-infrastructure/Report_on_Project_Inthanon-LionRock.pdf.

increase costs for payment services providers, including costly due diligence¹³¹ and manual adjustments to technical payment processes.

Conversely, a high degree of cross-border harmonization along technological, regulatory, and legal dimensions furthers straight-through-processing as potentially costly exceptional events such as rejects, returns and revocations of payments orders, sanction screening, and even financial crime compliance processes can be agreed upon via rulebooks with processes potentially automated. In the regional context, the best outcome is likely when technical integration and regulatory harmonization or even centralization are paired with legal harmonization.

Essentially, a “single rule book” is the most robust available foundation for efficient cross-border payments. As a single rulebook, we understand the tool that results in full legal, procedural and technical harmonization of cross-border payment processes under (if possible) one supervisory authority, despite the fact that clients and intermediaries reside in different jurisdictions. If principal terms and conditions are fully harmonized this way, software vendors can develop standard technologically based compliance products and monitoring and supervisory solutions (RegTech and SupTech)¹³² able to replace proprietary and legacy systems at a much lower cost.

As intermediate steps, efficiency-enhancing initiatives must aim to reduce legal and regulatory barriers, which, in time, will reduce technical differences between jurisdictions in which payment service providers operate. However, ultimately a Single Rule Book is likely to deliver the largest cost-saving opportunities.

The remainder of this section deals with the definition and content of a Single Rule Book (5.2), its impact on licensing and supervision (5.3), the recommended framework for payment system governance (5.4), the extent to which retail and wholesale transactions should be distinguished in the Single Rule Book (5.5) and the extent to which the Single Rule Book can be utilized to further the efficiency of super-regional (i.e., global) payment systems (5.6).

5.2 Content

5.2.1 Private and public law matter

A Single Rule Book (SRB) as understood herein is far more than technical specifications or requirements for technical interfaces for financial messaging (such as SWIFT) or straight-through-processing (STP). It also encompasses contractual and mandatory legal provisions detailing each payment service provider’s and end user’s legal rights and duties and the risk allocation within the payment arrangement, similar

¹³¹ World Bank (2020) “Payment systems worldwide: A snapshot – summary outcomes of the fifth global payment systems survey”, June, <https://documents1.worldbank.org/curated/en/115211594375402373/pdf/A-Snapshot.pdf>, p 8.

¹³² For an overview of the use of RegTech and SupTech, see FSB (2020), “The use of supervisory and regulatory technology by authorities and regulated institutions: Market developments and financial stability implications”, [Octoberfsb.org/wp-content/uploads/P091020.pdf](https://www.octoberfsb.org/wp-content/uploads/P091020.pdf); for technologies that are in use by the early adopters, see S Castri et al (2019): “The supotech generations”, *BIS Insights*, no 19, October, [bis.org/fsi/publ/insights19.pdf](https://www.bis.org/fsi/publ/insights19.pdf); also, D Broeders & J Prenio (2018), “Innovative technology in financial supervision (supotech) – the experience of early users”, *BIS Insights*, no 9, July, [bis.org/fsi/publ/insights9.pdf](https://www.bis.org/fsi/publ/insights9.pdf); for an academic analysis, see DW Arner, JN Barberis & RP Buckley (2016), “FinTech, RegTech, and the reconceptualization of financial regulation”, *Northwestern Journal of International Law & Business*, vol 37, no 3, pp 371-413.

to the rules currently in place for international card schemes. For example, an SRB will allocate responsibilities for rejected, revoked, returned, and fraudulent transactions.

To make meaningful progress, the SRB must aim at full harmonization of the way all potential risks are addressed at the front-end and back-end of the payments process chain for both PSPs and end-users. As such, the SRB must deal with private law matters and financial regulation, and technical standards. This can be done in the context of a single system (e.g., a centralized regional RTGS system or a regional CBDC arrangement), but especially a single set of requirements across multiple systems (e.g., SEPA payment schemes) has the potential to enhance cross-border payments.

A SRB will enable STP across the whole payments arrangement. In particular, a SRB should include principles of market integrity, transparency, and data governance, including data protection and security. A SRB should also address matters of AML/CFT including customer due diligence and identification (particularly relating to a digital ID for individual and entities including beneficial ownership) and basic reporting principles (ideally, by reference to an OECD standard reporting template).

While a single currency is not a precondition for a SRB, it would facilitate legal harmonization as the SRB will be less complex without FX risk in the payment system.

5.2.2 Regional vs. institutional approach

The SRB is premised upon *an* integrated payment region and effective enforcement of the SRB, which will affect how often certain checks must be performed within the region.

For instance, concerning regulatory compliance, AML/CFT costs could become one-off-costs if all institutions within a regional payments area accept AML/CFT checks performed by the first institution accepting money flows from an institution or person. Similarly, for data governance: if the payments arrangement covers one regulated area and the purposes of data use are clearly defined in the SRB, data flows within the payments arrangement could be efficiently organized and face fewer barriers from data protection rules. From the end user's perspective, an integrated regulatory compliance mechanism embedded in the SRB approach would lower user-costs, generate simplified financial services, achieve faster cross-border transactions, and create more efficient and reliable payments services within the region, particularly when technologically enabled via RegTech / SupTech.¹³³ The integrated approach will also lower the cost for financial institutions making traditional banking less expensive and thus promoting cheaper access to financial services, especially in emerging markets and developing countries.

The SRB approach supports regulatory and supervisory convergence among financial institutions at national and transnational levels. The current financial system is interconnected, while a wide variety of supervisory architectures create regulatory fragmentation. The regulatory and supervisory convergence inherent in a SRB would seek to align regulation and technical standards to create a well-developed financial ecosystem where all players are treated equally. It facilitates better risk management by bringing all national regulations under the same platform through coordination and communication.

¹³³ World Bank (2014) (n 74).

5.2.3 Implementing an SRB

We identify five main methods to implement an SRB.

The first involves a single regulator. Within regions that have achieved some degree of political integration (e.g., the EU) or financial/monetary integration (e.g., EEA, WAEMU), an SRB can be made mandatory **by regulation of competent authorities**, such as by the European institutions for SEPA or by the BCEAO for WAEMU.

A SRB can also result from the standardization of contractual terms across systems, schemes, and participants by **private ordering**. This alternative approach involves establishing a dedicated entity, scheme, or system, with participation governed by **contract**. International card schemes, such as Visa and Mastercard, rely on strongly harmonized contractual terms for their scheme participants, with mandatory compliance for end users accepting these cards (i.e., merchants).

A variant is the creation of a **cooperative or association**, with members tied together through the cooperative's rules, e.g., Visa in its original structure and SWIFT. Common contractual terms for payment systems or payment schemes owned by their membership can be set by the governance body or payment system operator concerned, e.g., EPC or EBA Clearing.

The fourth approach includes **coordinated behavior of multiple group entities** owned by the same parent company. All closed-loop systems operated by a single group (PayPal, Alipay) are based on an SRB approach. In addition, international card schemes have acquired a number of payment solutions over the past years, often integrating them into their core services or diversifying beyond card payments.

We distinguish, however, SRBs created by mandatory regulation and those created by contract and membership rules. Mandatory rules differ in their enforcement and sanctions, are binding on third parties, and prevent opting out. Thus, to achieve full harmonization, some degree of mandatory cross-border regulation might be required, with contractual means and membership in organizations perhaps a second-best solution. We conclude this as courts in different countries construe contractual clauses on issues such as client protection in different ways. The more courts' views diverge over time, the more need for additional due diligence when crossing borders.

To achieve the effect of harmonized regulation across borders, without one common regulator, the fifth option is the development of **optional but effectively implemented standards** (e.g., technical standards such as ISO, or financial standards issued by standard-setting bodies such as CPMI).¹³⁴ Such common standards are then implemented in domestic systems. If these standards are sufficiently prescriptive and thoroughly implemented, the results can be similar to those of mandatory regulation.

A recent BIS survey conducted among 31 FPS users in CPMI jurisdictions revealed a common trend among the users to adopt ISO 20022 in payments and financial services in general.¹³⁵ The trend of using a common messaging standard can

¹³⁴ In particular, in line with CPMI's Building Block 14 on adopting a harmonized ISO 20022 version for message formats. CPMI (2020) (n 16).

¹³⁵ CPMI (2021), "Developments in retail fast payments and implications for RTGS systems", December, <https://www.bis.org/cpmi/publ/d201.pdf>.

potentially facilitate the achievement of a harmonized cross-border payments sector. In line with this vision, SWIFT has announced to substitute their current messaging format with ISO 20022 messages for international transactions. SWIFT's shift towards a particular standard essentially means that all banks using the SWIFT network would need to start using ISO 20022.¹³⁶

5.2.3 Minimum content

The SRB can refer to existing standards, regulations or laws and/or define its own requirements.

Based on the considerations in the previous sections 5.2.1. and 5.2.3., as well as the most successful example of a SRB approach, the SEPA, which is the result of a myriad of legal and technical harmonization steps (see, supra, at 3.1.), the minimum SRB content¹³⁷ should include:

- technical stipulations: a governance mechanism that can adopt, issue and amend technical standards;
- financial regulation: licensing conditions, operational requirements (including own funds and prudential regulation, fee transparency and applicable regulation), sanctions/penalties, allocation of responsibilities within the regional integration system (e.g., AML/CFT, data governance);
- risk allocation from economic activities: such as operational risk, credit risk, FX risk, counterparty risk, technological risk and risk from exceptional events (e.g., revocations or returns), and legal consequences;
- SRB governance: membership and financial contributions by participants, access rights, the role of respective authorities, for initial acceptance and amending the SRB, and obligation to implement and execute the SRB in the laws and financial regulations of its territories;
- mechanisms to deal with (1) state-issued sanctions, or (2) a moratorium against certain participating or recipient institutions;
- uniform data governance rules (data protection, privacy rules);
- uniform reporting requirements;
- enforcement measures (private and public);
- oversight and supervisory arrangements, including references to cooperative agreements and information exchange of regulators and supervisors involved as well as mutual recognition of other regulators' decisions and actions, to the extent possible under the respective constitutional environment;
- arbitration and mediation mechanisms binding payment institutions and defining the relationship among regulators/financial supervisors;
- a binding effect on courts is desirable to avoid case-law deviating from the SRB, yet will require in most jurisdictions' legislation.

¹³⁶ Ibid.

¹³⁷ Providing details on the content goes beyond the scope of this paper. An overview of the legal framework on payments is provided by World Bank (2020) (n 141), 6-19.

If these preconditions are met in a rule-based, rather than standard, fashion, the cost reduction from harmonization will follow after an implementing period where the software needs to be rewritten and updated. We estimate, based on experience in the SEPA, that the effects will set in after three to five years after the coming into force of the SRB. As an example of implementation processes, we refer to the multiple steps undertaken to achieve the SEPA laid out *supra*, at 3.1.

5.3 Licensing and supervision: Mutual recognition

A harmonized set of rules and close cooperation among regulators are preconditions for mutual recognition¹³⁸ schemes based on equivalence/substituted compliance. Mutual recognition of another regulator's actions within closely integrated regions may be easier to achieve than in other fields of financial regulation, given that all jurisdictions benefit from the enhanced trade associated with reduced payment costs. The CPSS-IOSCO Principles for Financial Market Infrastructures require that central banks, market regulators, and other relevant authorities should cooperate with each other, both domestically and internationally, as appropriate, in promoting the safety and efficiency of FMIs.

Mutual recognition would further help identify which institutions could participate in the cross-border regional payments arrangement. The strongest form is the European passport or licensing by just one institution (e.g., BCEAO in WAMU).

Mutual recognition significantly reduces costs within the regional payment arrangement as PSPs need to respond only to one regulator and central bank. Mutual recognition is most effective if it embraces the full scope of the SRB, including AML/CFT and data governance matters.

A third field where mutual recognition could matter is sanctions against countries or politically exposed persons. Currently, each country preserves its right to sanction as a matter of sovereignty. This increases costs as each payment system participant must check country-specific lists. With mutual recognition, however, while the right to sanction would remain with each country, the sanction checks would only have to be done by one entity, and the costs within the payment system would thus decrease. A harmonized approach (such as a datafied way to approach sanctions with a pre-set list of LEIs within the system) could reduce costs and increase effectiveness.

5.4 Payment arrangement governance

The SRB must provide the basis for sustainable long-term governance of the payment arrangement. We identify three models utilized in regional integration projects to date.

The **concentrated model** includes:

- a strong single regulator (e.g., EU Institutions, WAMU Banking Commission);
- a joint central bank (with one currency) (e.g., Eurozone); and

¹³⁸ See on mutual recognition (in the EU context where this is a key principle) M Möstl (2010), "Preconditions and Limits of Mutual Recognition", *Common Market Law Review*, vol 47, no 2, 405-436; M Ortino (2007), "The Role and Functioning of Mutual Recognition in the European Market of Financial Services", *International and Comparative Law Quarterly*, vol 56, no 2, 309-338.

- a centralized payment system operated by the central bank or the private sector.

The **cooperation model** includes the cooperation of central banks (with multiple currencies) and supervisory authorities sharing a policy agenda. Such cooperation arrangements may govern a centralized payment system or interlinking arrangements between multiple systems.

The **sectoral mutual recognition model** rests on mutual recognition with limited cooperation.

There is a tradeoff across these models: while mutual recognition with limited cooperation is the easiest to achieve politically, it also leads to the lowest degree of regulatory, legal, and technical harmonization, resulting in less impact on payment system safety, efficiency, and integrity. Conversely, a joint regulator, joint central bank, *and* a single currency can achieve the highest impact but requires the strongest political commitment and a significant loss of sovereignty.

Further, the SRB can clarify the roles of the central bank(s) within the payments arrangement. A central bank's main roles can be those of (1) operator (e.g. as a provider of liquidity and hedging, directly as a participant or indirectly through top-tier intermediaries; correspondent bank; clearing and netting service provider; settlement service provider (e.g., via the RTGS system), and issuer of a digital currency / retail CBDC); (2) overseer, and (3) facilitator/catalyst (e.g., by promoting messaging standardization). However, the role of central banks is not limited to these three main functions.

There could be a tradeoff: the more functions a central bank assumes, the more difficult cooperation becomes with other central banks in multicurrency payment platforms as each central bank is concerned about the influence of others and loss of currency sovereignty. Conversely, one could argue that central banks providing many functions have more power to agree to cooperate on certain functions with others: if they are not operating the payment system on their own, it will be more difficult for them to convince private operators to establish links. Which of the two arguments prevails depends on each central bank's role, perception, and regulatory influence and independence?

Although within a single currency, an SRB can provide the highest level of payments safety, efficiency, and integrity, a solution in the case of multiple currencies includes the interlinking of payment systems. Yet, the feasibility of expanding the interlinking arrangement beyond the pilot stage and beyond two central banks is often uncertain.

5.5 Retail vs. wholesale

We observe several approaches to creating centralized wholesale payment systems based on RTGS systems, while regional retail integration for wholesale payments is less common.

The argument to support cross-border wholesale RTGS systems goes that trade can grow best when transaction costs are low. Retail use cases often do not go across borders. But there are exceptions including

- the single market for consumer goods and services of the EU/EEA, WAEMU, certain East-African and Caribbean states,
- remittances, and

- tourism (admittedly a lesser concern at present).

For these reasons, several projects in Africa seek to streamline retail *and* wholesale payments.

Given that wholesale transactions can rely on greater client sophistication, SRBs for wholesale payments can exclude difficult questions relating to consumer protection in payments.

Yet, the trade-off comes at a cost since countries' approaches to consumer protection diverge significantly, and this divergence drives up costs in the sector. The high costs for remittances underscore the need to improve consumer payments,¹³⁹ most likely triggered by (a) a lack of political will to reduce payment costs on the side of the country where the payment is initiated, given the benefits of high fees to incumbent PSPs, (b) the lack of political influence of migrant workers, (c) the paucity of technical links to certain recipient countries which facilitate monopoly rents for PSPs, and (d) inconsistent integration or harmonization in the field of AML/CFT rules, tax and many other fields of law that serve as excuses for high fees.

Despite these difficulties, we encourage the development of model rules for retail payments because the lack of detailed consumer protection rules may impede intra- and cross-regional links between payment systems and regions.

5.6 Potential for global extension: Model Rule Book

The SRB approach has particular merits when drafted as a Model Rule Book supporting existing global initiatives, such as the G20 Roadmap, and implemented at the regional level. In particular, the Model Rule Book could first have a limited scope and then be extended whenever sufficient private and public sector commitment supports an extension; this will most likely depend on whether (1) political support for enhancing cross-border payments will sustain and prompt regulators to favor harmonization, and (2) advancement in technologies prove insufficient in addressing the existing challenges relating to cross-border payments.

Regional integration can also help to ease barriers to payments between regions. We suggest the development of comprehensive global guidelines developed through coordinated action. Such guidelines could guide implementation, provide comparative insights and support the standardization of law, standards, and regulation of regional payment systems.

Once regional integration has occurred on a granular level based on a SRB with common global features, individual regions can enhance payment efficiency. That cooperation may be facilitated by a comply-or-explain approach when implementing an SRB, providing transparency where a region deviates from global features. Thus, the SRB approach supports regional integration of payment systems and payments between regions globally.

A possible sequence of policy steps would be:

¹³⁹ As of November 2021, the average cost of remittance to send an amount of \$200 varied across various regions. The East Asia and Pacific region has the highest average cost of remittance (6.7 percent) and South Asia has the lowest (4.6 percent). But sending money to South Asian countries using traditional banks remains more expensive. World Bank (2021). "Remittance flows register robust 7.3 percent growth in 2021", <https://www.worldbank.org/en/news/press-release/2021/11/17/remittance-flows-register-robust-7-3-percent-growth-in-2021>.

- (1) Establish a governance mechanism to monitor the implementation of global features via the SRB;
- (2) Complement the Rule Book for sectors not yet addressed by these global features of the SRB based on comparative studies, working groups, and country-level experience with regional integration;
- (3) Monitor implementation via a peer review comply-or-explain approach regarding the SRB;
- (4) Bilateral (or potentially multilateral) memoranda of understanding establishing a framework for mutual recognition based on peer assessment of compliance;
- (5) International organizations, such as development banks, could play a critical role in disseminating and implementing SRBs with global features and including them in their various monitoring processes.

6. Conclusion

Enhancing the safety, efficiency, and integrity of cross-border payments requires more than mere technical integration. The best outcomes rest on technological, technical, regulatory and legal harmonization, and the outcomes improve with the degree of harmonization achieved.

Any border adds to the costs of cross-border payments if crossing the border means entering into a different technical, regulatory and legal environment, with different operators, regulators, and courts. Under ideal circumstances, cross-border payments would face no borders in technical, regulatory, and legal terms, even where different currencies are processed. In particular, any mismatch between the inter-institutional framework on the back-end and the contractual relationship to clients on the front-end will impose potential costs on the payment services provider, prompting costly legal, due diligence, and manual adjustments to mainly technical payment processes. Conversely, full harmonization – or even centralization – across borders furthers straight-through-processing as potentially costly extraordinary events such as revoking payments orders, state sanctions, and even criminal activities can be addressed and embedded in technology.

While centralization or full harmonization is unlikely to be achieved even within the most economically and politically integrated regions, we have made the case in this paper for a Single Rule Book approach: payment regulators could do much in terms of enhancing safety, efficiency, and integrity of regional payments by pursuing a long-term legal and regulatory *harmonization* strategy that goes beyond the licensing of PSPs and includes reporting, contractual relationships between PSPs and payee/payor, AML/CFT standards as well as data governance. Digital identity structures would provide an important extension of any efforts in this respect.

Regional integration can also ease barriers to payments across regions if the regional Single Rule Book follows global guidelines. We thus suggest developing a comprehensive Model Rule Book for cross-border payments as a framework for regional payment integration.

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