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ABSTRACT

Closer cooperation between neighbouring countries has throughout the ages been part of their respective political agendas. In many regions of the world, the desire to create efficient economic spaces, and eventually perhaps even political union, has been one of the driving forces behind political and institutional frameworks created in pursuit of such goals. Often, such goals have suffered setbacks, delays, changes in orientation, but also progress. The central banks of Costa Rica, the Dominican Republic, El Salvador, Guatemala, Honduras and Nicaragua — through their joint organisation, the Central American Monetary Council (CMCA)[1] — have recently inaugurated the regional interlinked payment system known as the SIP (Sistema de Interconexión de Pagos de Centroamérica y República Dominicana). The SIP is the framework for the interlinking of the region's payment systems, allowing for cross-border 'electronic funds transfers' between participants without the need for corresponding banking relationships with institutions inside or outside the region. The system is the result of a broad programme for financial infrastructure development in the region, which was formally initiated in 2004. This represents a large step
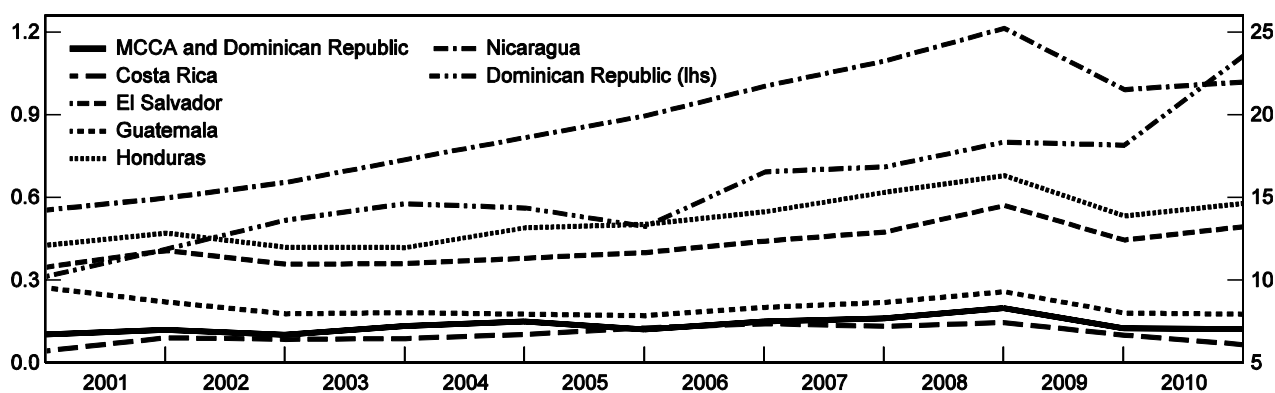
Figure 1 MCCA and Dominican Republic intra-regional trade: exports and imports as a percentage of GDP (MCCA stands for Mercado Común Centroamericano); on the right-hand side of the scale unless otherwise indicated, the figures from 2007 to 2009 are forecast

Sources: SIECA; ONE (Dominican Republic); IMF.

forward towards further integration in the region. This paper offers an overview of the goals and practical functioning of SIP and the various steps leading up to its implementation within the context of regional integration.

Keywords: Central America, cross border payments, central banks, CMCA, SIP

SIP[2] — A NEW INTEGRATED REGIONAL PAYMENT SYSTEM[3]

Intra-regional trade in Central America has seen exceptional growth in the two decades before 2002, with reciprocal trade reaching a share of 28 per cent of total exports, the highest share ever recorded by any integration agreement in Latin America and the Caribbean.[4] If one looks at the volume of exports and imports in comparison with GDP, however, interregional trade has stagnated somewhat in the last decade in many Central American countries, the exception being Nicaragua and the Dominican Republic; for the latter, the overall trade with the region is rather small in comparison. This relative stagnation is independent of the fact that regional trade contracted in the aftermath of the financial crisis and has

recovered since to levels at, or slightly above, pre-crisis levels.[5]

Furthermore, looking at absolute levels of interregional trade, the flows are by no means evenly distributed.

Of the many reasons that could explain this observation, one important element could be the fact that there is no fully functioning common market. In particular, Central American countries do not share a common currency, and making payments between persons or entities residing in different countries has been cumbersome and relatively expensive. Thus, SIP can be seen as part of a wider initiative that seeks to develop the financial infrastructure with a view to furthering a regional financial market and reducing real or perceived impediments to cross-border payments.

The SIP now puts at the disposal of participants an automated, transparent and secure process which allows them to settle, within an real time gross settlement (RTGS) infrastructure, payment operations resulting from interregional, ie cross-border payment instructions. By offering legal and operational certainty, fast processing times, efficiency and low cost for cross-border transactions, the Central
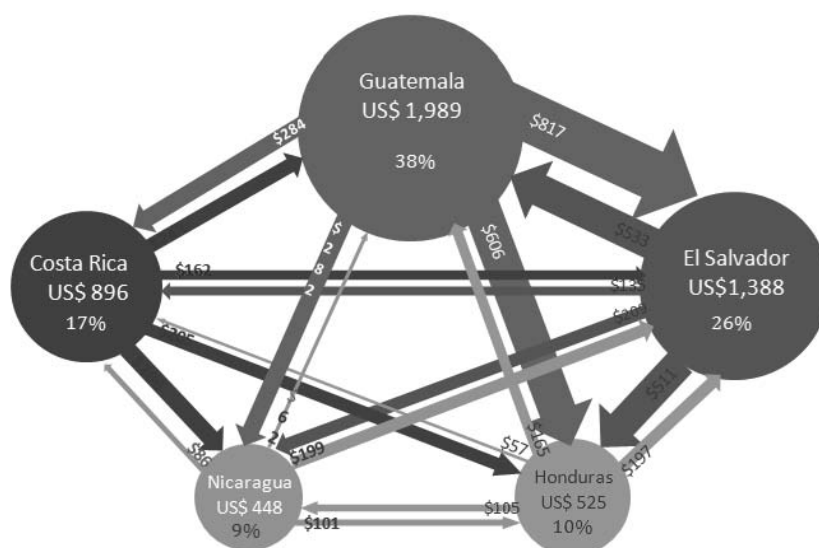
Figure 2 Trade flows in 2009, based on data for exporting country, in US$

Source: Dubón/Hernández

American Monetary Council (CMCA) and its member central banks hope that this infrastructure will indirectly stimulate business, trade, competition and financial operations among member countries and help to modernise domestic and regional financial architecture.

The SIP has several features that distinguish it from other cross-border payment systems in the region[6] in that

(i) it was designed by, and is run by central banks
(ii) it is a cooperative project involving more than two countries, or two systems
(iii) it is overseen by a common authority
(iv) it links exclusively RTGS systems, rather than an automated clearing house (ACH) system in one country with a central bank system of another country, as in the US–Mexico link
(v) it operates in a currency that is not common to all participants.

Indeed, the SIP was introduced without the participating countries sharing a common national currency and thus also no common monetary policy. This approach differs, for instance, from the EU, where the central bank's RTGS systems were linked within TARGET only once a common currency, the euro, was introduced in 1999 for account transactions (and later also for cash transactions).[7]

PROCESSING AN INTERREGIONAL PAYMENT WITH SIP

A typical cross-border payment operation via the SIP requires nine basic steps (Figure 3).

At the outset, the originator of an operation uses a financial institution that is a participant in their national payment system in order to request an intraregional payment. The originator authorises a debit to his/her account, together with the instruction that a beneficiary in the other country should be credited with a certain amount. If the originator's account is denominated in national currency, the debited amount will be converted to US dollars at the exchange applicable on the day of debit. If the account is denominated in US dollars, the

Figure 3   SIP — basic message flow
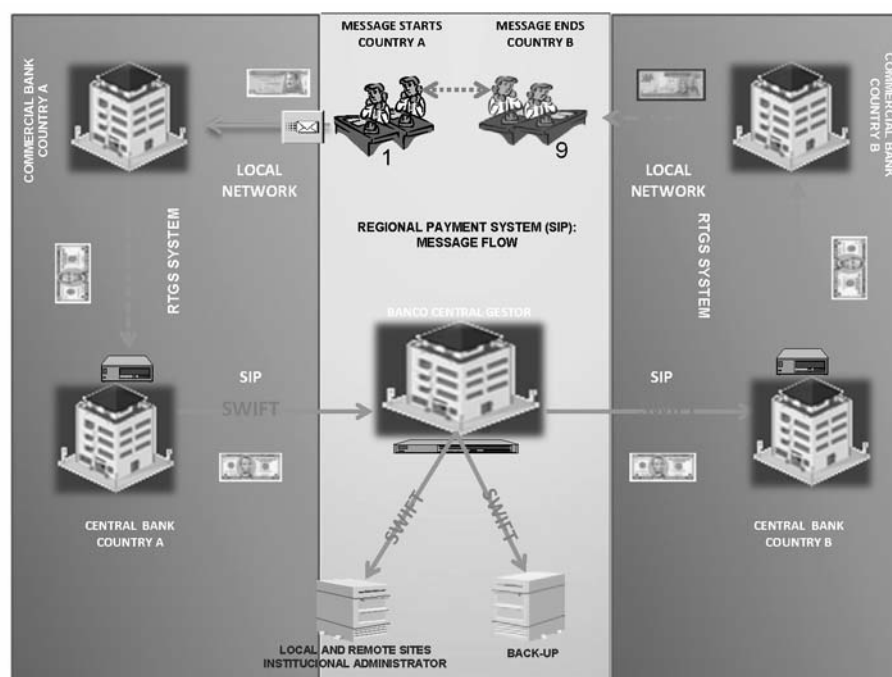
Source: MCA — Committee on Payment Systems, 2009; Dubón.

authorised amount, plus a US$5.00 pro-cessing fee is debited to the account. The payment instruction is then transmitted to the local payment system, using the SIP gateway of its central bank. The central bank in the originator's country will debit the account of originator's bank at the central bank and generate an order to the SIP Administrator. As the instructions are denominated exclusively in US dollars within SIP, the originator bears a certain foreign exchange risk, as he/she will need to convert any amount owed in national currency to the US dollars that are used for the SIP transaction. To this point, the operation is processed solely within the local network.[8]

The central bank will transmit the order via SWIFT to the Institutional Administrator. The Administrator then processes the necessary steps for settle-ment, communication and registration. To this effect, it will earmark funds on the account of the originator's central bank and transmit an order to the central bank in the beneficiary's country.

The recipient country's central bank then channels the payment order via its domestic payment system to the financial institution where the ultimate beneficiary keeps an account. The beneficiary's finan-cial institution will need to verify the instruction and communicate acceptance or rejection within one hour following receipt of the instruction.[9] The benefi-ciary's account will be credited with the amount in question, at the latest one day after the originator's bank acted upon the instruction received,[10] unless the instruc-tion included a later valued-date.[11] If the beneficiary's account is expressed in US dollars, the full amount is credited. If the beneficiary's account is denominated in local currency, the beneficiary may ask to be paid in either US dollars or local cur-rency at the prevailing exchange rate of

the value date.[12] No additional charges for the SIP transaction are applied at the beneficiary's end for this operation.

Essential elements in these separate steps are the participants, the Administrator, the settlement accounts held with the Administrator, governance of SIP and risk mitigation. These elements are described in more detail below.

Participants

The SIP will settle only payments between direct participants in the system.

Direct participants are the central banks from those countries who fulfil the following criteria:

(i) members of the CMCA
(ii) having ratified the international Treaty on payment and securities settlement systems for Central America and the Dominican Republic[13] ('the Treaty')
(iii) with a domestic RTGS system in operation
(iv) who adhere to the terms and conditions of SIP.

The CMCA can authorise other entities to participate in SIP, but at the time of writing no specific criteria have been published that would guide the CMCA in granting such authorisation.

Indirect participants are such entities that maintain a deposit account with any of the direct participants in SIP and who have direct access to the domestic RTGS system of their respective countries.

Settlement agent — Institutional Administrator

The CMCA decided on one of its members, the Central Bank of the Dominican Republic (BCRD),[14] to function as Institutional Administrator and Settlement Agent. This choice was based to a large extent on the ability of the central bank to offer an existing RTGS infrastructure which allows it to operate according to international best practice and standards, but also as it was one of the first countries in the region to ratify and put into force the clauses of the Treaty.

In particular, the central bank's RTGS system fulfilled the criteria laid down in Article 5 of the General Terms for an Institutional Administrator. These criteria include the management of limits for settlement accounts of participants, the capacity to manage collateral, the capacity to operate with various time zones, depending on the foreign currency, queue management, prioritisation of payments, the ability to process payment instructions with a future settlement, automated confirmation of settled payments, automated generation and communication of account statements at the end of each operating day, management of tariffs/fees, native integration with SWIFT formats and messaging systems, audit trails, separate settlement of both national and regional operations.

Messages, settlement accounts and settlement

The criterion that the Institutional Administrator needs to be able to settle national as well as regional payments is of particular relevance, as the countries of Central America do not share a common currency. Therefore, the (payment and) settlement currency within SIP is the US dollar.[15] The choice of the US dollar is based, on the one hand, on the fact that, following the regional economic crisis of the 1980s, the national economies and regional trade are highly dollarised,[16] and, on the other hand, on the fact that the US is the most relevant market for the region.

Each direct participant maintains a settlement account in US dollars, administered via the Institutional Administrator, on the books of the BCRD. The terms

and conditions governing these accounts are defined by the CMCA.

There is no fixed amount that participants must hold in their settlement accounts, and amounts will naturally vary according to the volume and frequency of payments.[17] This could at some time pose challenges to liquidity management. This and the merits of such a flexible system would probably need to be evaluated after some months of operating experience.

The SIP is based on a Y-messaging system using FIN-Copy and requires that each participant in SIP integrates SWIFT into its internal operating systems.

The payment instructions from the originator's bank to the beneficiary's bank are transmitted via SWIFT MT103 messages. The SWIFT message contains information on the amount in US dollar as well as the value date. The message also contains information on the 'ordering customer' (ie the originator of the instruction, who maintains an account with a commercial bank in the originator country), the ordering institution, with its BIC number, and receiver information (the institution in the recipient country as well as the ultimate beneficiary, ie the receiver who maintains an account with the financial institution in the recipient country).

As regards SIP, the Institutional Administrator receives SWIFT MT202 inter-bank messages. For SIP, one direct participant central bank is the 'sender' whose account with the Administrator is to be debited, and another participant central bank is the recipient whose account with the Administrator is to be credited.

One needs to distinguish the process of the payment instructions between originator and beneficiary via SIP and the settlement of the obligations that arise for the two central banks involved in the process as direct participants of SIP. Because SIP is conceived as an RTGS system, debits to the respective settlement accounts can only occur if there are sufficient funds available. Should that not be the case, the instruction will remain 'on hold', and the payment order to the beneficiary's account holding institution and the respective central bank cannot be transmitted. The SIP Manual[18] contains a general provision for queue management and allows for participants to change the ranking, or priority, for each order that is on hold. During the operating day, the SIP algorithm will periodically check the settlement account of the participant whose order is on hold and will process the order as soon there are sufficient funds available, respecting the ranking/priority given by the participant. Queue management can be set to be either fully automatic or also allow for manual intervention by the Administrator's operators.

During processing, SIP identifies the status of each instruction received by a participant according to the following criteria:

- 'Pending or received': an instruction that is 'on hold' pending availability of funds on the respective settlement account. This status changes automatically at the moment of settlement or at the end of the business day.
- 'Cancelled': an operation or instruction that was cancelled owing to insufficiency of funds at the end of the operating day or which could not be processed for any other reason that did not allow for verification by SIP.
- 'Settled': an operation whose processing cycle within SIP was completed and the settlement accounts have been debited or credited, respectively.
- 'Warehoused': an operation with an instruction for a settlement date later than the date of transmission to SIP.

While there is a contractual obligation for each participating central bank to hold

sufficient amounts on their settlement accounts for SIP to operate, none of the participating central banks can 'create' US dollars, the currency of the settlement accounts. Therefore, a funding arrangement for the settlement accounts had to be put in place.

The SIP therefore needs to operate a correspondence account which has direct access to the US payments systems in order to manage the foreign exchange deposited by SIP participants on their respective settlement account, be it on their own behalf or on behalf of indirect participants in the SIP.

Each central bank, as direct participant in SIP, can influence how this correspondence account is funded by choosing between two basic forms of administration of its settlement account in SIP:

(i) *Overnight:* Balances are held on the books of the BCRD and invested by the central bank under the same criteria that apply to the investment of its foreign-exchange reserves.
(ii) *Daily:* At the end of each business day, the participant will dispose of any balances on the settlement account by instructing the BCRD, via SWIFT message, to transfer balances to an account held with a foreign correspondent financial institution.

According to the general instructions for administration of the participant accounts,[19] the CMCA and BCRD decided that the correspondence account should be with a bank of highest standing[20] in the USA. The correspondent account must have at all times a minimum balance of US$100,000. Each participant would have to hold a proportion, defined by the CMCA, of that amount. Initially, the CMCA decided that each SIP participant should contribute US$100,000 to that account, but in practice, given the

liquidity requirements for some participants, amounts could be much higher for those central banks. While holding the mere minimum would not be remunerated, any funds kept in excess of the minimum would be remunerated on a monthly basis, taking into account the average balance on the settlement account in each month. In the first year of operation, ie until spring 2010, the Administrator would not charge participants for the management of the joint US dollar correspondence account, but was allowed to envision charging a fee, to be mutually agreed with the direct participants in the SIP.

SIP governance and risk mitigation

The cooperative approach in the development and implementation of SIP requires sound governance arrangements.

As Institutional Administrator, the BCRD has the institutional backing of the CMCA. At the same time, the Central Bank is itself a member of the CMCA, and operator of its national payment system. In theory, the CMCA could also designate another central bank as Administrator, as the General Rules are open as to which organisation should function as Administrator as long as it fulfils the criteria laid out in the General Rules. In fact, the Administrator has the right to give notice and withdraw, with at least one year's advance notice, from its functions as Administrator.[21]

The Administrator has reporting obligations not only to the direct participants in SIP (mainly as regards the operations), but also to the CMCA.[22] For instance, it needs to inform the Executive Secretariat of the CMCA of any proposed change to the terms and conditions for direct participants in the SIP, or of proposed changes to operating procedures. It also has to send settlement account information to the Secretariat, and information on any incid-

ent that affects the normal functioning of the SIP.

The CMCA, in turn, has a number of rights and obligations as regards the operation of the SIP. Above all, it is the formal overseer of the SIP.[23] The CMCA is also the authority which authorises the participation of its member central banks in the SIP. The CMCA issues the rules, procedures and other administrative guidelines for the SIP, as advised by its Committee of Payment System Experts: it approves the operating manual, establishes the accounting procedures and accounting manuals, issues instructions to the Administrator, and sets the operating hours.

As regards general risk mitigation measures, the CMCA and the project team were guided by general principles and key international standards, such as the CPSS Core Principles, and best practices recommended by the market, which resulted in particular in the use of internationally accepted formats and messaging standards rather than developing proprietary formats.

As a result, the structure of SIP requires the fulfilment of certain obligations by any direct participant (who could be excluded from SIP if they do not comply with them). Such obligations are namely: to have an adequate IT platform to participate in SIP, to maintain a settlement account with the Administrator, maintain sufficient funds in the account, maintain a system for quality control of data and information, pay the fees imposed by SIP, and inform the Administrator of any changes as regards the indirect participants in SIP, such as changes in account numbers following bank mergers.[24]

As regards credit risk and liquidity risk, payments are settled in real time on a gross net basis, once the direct participant makes funds available for transfer via SIP. While this reduced the credit risk in the system, the degree of liquidity risk might warrant further study, as the SIP administrator is not the issuer of the US dollar settlement asset.

As regards operational (technological) risk, SIP uses SWIFT as a network and for messaging between the direct participants and the Institutional Administrator. Legal risk is reduced with entry into force of the Treaty and through the use of standard operating procedures. As regards financial risk: the SIP is conceived to be self-sufficient, ie to finance its operational costs through fees and not require any subsidies from participating central banks.

While SIP appears to have the advantage of using a centralised RTGS system for settlement of payments from direct participants, two potential risk factors remain. On the one hand, as mentioned above, settlement within the SIP is in US dollars, ie in a currency that is not that of any of the SIP's direct participants. The central bank acting as Institutional Administrator may be able to offer liquidity in an emergency situation, but it is not in its own currency. On the other hand, a full straight-through processing (STP) of a single data set between indirect participants in the SIP is not yet possible, as only the Dominican Republic has so far implemented the CMCA IBAN account definition standard.[25]

Operating hours/cost

As participating countries operate in different time zones, the SIP uses GMT as the common reference. Operating hours are between 1500 and 2100 GMT, which corresponds to between 0900 and 1500 in Central America and between 1100 and 1700 for the Dominican Republic.

The fee structure is to be revised for the first time six months after the start of SIP and every two years thereafter.

Given the fixed structure of SIP and economies of scale, the cost for transferring funds from one country to another

can be considerable reduced. Until now, the average cost for a bank transfer was at least US$35 for banks that did not have a branch in the recipient's country, and then increased in proportion to the amount to be transferred.

The SIP, in contrast, offers a fixed fee structure, regardless of the amount to be transferred and regardless of whether there was an institutional relationship between the originator's bank and the beneficiary's bank. Looking at the entire payments chain, the originator pays for every instruction and the amount charged has to include all tariffs charged by the various entities involved in the payment process: the originator's bank, the central bank in the originator's country, the Administrator, the central bank in the beneficiary's country and the beneficiary's institution. In principle, the beneficiary will not need to cover any cost (except, as mentioned above, possibly the cost of the FX transaction at their end).

STEPS LEADING UP TO THE INAUGURATION OF THE SIP

Regional integration (the political goal)

As regards the integration process in Central America, there are several initiatives[26] which, at least in the economic/financial area, have some common elements. The most important one, with regard to the SIP project, is the cooperation of regional central banks in the CMCA; another is the political process of gradual political, economic, social and cultural integration, as exemplified by the Central American Integration System (SICA).

The CMCA was created in 1964 by the central banks of Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua, with the objective of promoting the coordina-

tion of credit and foreign exchange policies with a view to establishing the requirements for a Central American monetary union.[27] The BCRD joined the CMCA on 22nd June, 2002.

The main goals of the CMCA were laid out in the 'Acuerdo para el Establecimiento de la Unión Monetaria Centroamericana', and in the Protocol to the General Treaty on Central American Economic Integration, known as 'Protocol of Guatemala', of 1993.[28] The agreement regarding the CMCA was later replaced by the Acuerdo Monetario Centroamericano (*Acuerdo*), which came into force on 25th October, 1974.[29] (The *Acuerdo* empowers the CMCA and its Executive Secretariat to implement the goals of the *Acuerdo*.)

Apart from the — probably distant — goal of monetary union, the *Acuerdo* lists several objectives. As regards (regional) payment systems, CMCA is authorised to create any mechanism, financial system or payment systems that may be required to fulfil the objectives of the *Acuerdo*.[30] And such objectives include the promotion of the orderly development of financial systems in the region to further unhindered freedom of payments with the region, to facilitate the use of payment instruments, to promote the use of the national currencies of the regional states in interregional payments and to facilitate free trade in these currencies.[31]

Additional goals of the CMCA include working on the general regional convergence of macro-economic policies, convergence of credit, foreign exchange and financial policies, as well as the strengthening of the autonomy of the participating central banks. Furthermore, the *Acuerdo* allows for a possible joint management of regional countries'/central banks' foreign exchange reserves.[32]

CMCA is in fact an organ of the SICA.[33]

*Figure 4   SIP —
basic project
timeline*

PROJECT TIMELINE
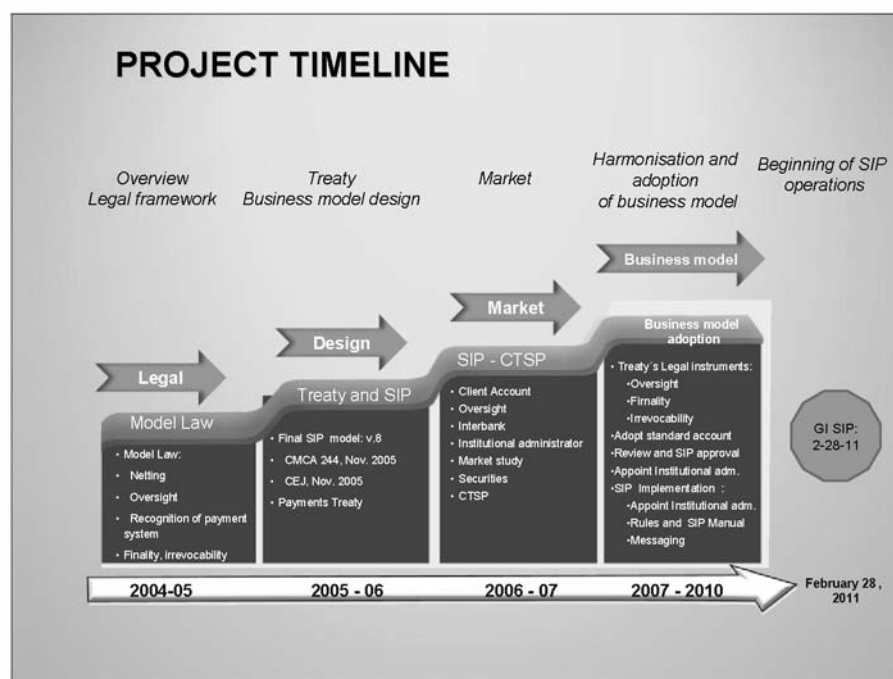
Source: MCA — Committee on Payment Systems, 2009; Dubón

THE SIP DEVELOPMENT PROJECT

As regards the payment system infrastruc-
ture, the initiative followed a two-step
approach: the first step was to strengthen
the payment systems in CMCA member
countries, which included creating a
common legal basis in all participating
countries. Once these goals had been
accomplished, the structure for interlink-
ing the systems and allowing for cross
border payments could be put in place.

In support of this initiative, the CMCA
has received technical support from the
European Central Bank and the Bank of
Spain. Financial support came from the
IADB, from the Secretariat of Economic
Integration of Central America (SIECA)[34]
as project manager and from the joint
SIECA–EU ADAPCCA programme.[35]

The project was developed by the
Regional Payments Group, attached to the
Technical Committee for Payment
Systems, one of the group of central bank
experts supported by the CMCA's
Executive Secretariat. The Regional
Payments Group, in turn, consists of
experts from the various areas that are
involved in payment systems: legal, tech-
nical and service providers. Furthermore,
the group was supported by other CMCA
Groups of Experts, such as the Committee
of Legal Experts and the Group of
Computer Experts.

With regard to the project's timeline, it
is a good example of the step by step
approach taken in the development of the
SIP, while at the same time not losing sight
of the end product: starting from the legal
basis, to the market foundation, systems
design and start of operations. The differ-
ent project phases are symbolised in Figure
4 and outlined in more detail below.

Legal basis

The requirement to work first on an ad-
equate legal basis was motivated to a large

extent by the work of the Committee on Payment and Settlement Systems (CPSS), in particular the Core Principles for Systemically Important Payment Systems, which in Article 1 state 'The system should have a well–founded legal basis under all relevant jurisdictions'.[36]

Because the SIP interlinks the systems of several countries, it was essential to har–monise the basic rules applicable to pay–ment systems in all participating countries, a requirement that is also reflected in the CPSS 'Guidance' document.[37]

In 2004, the Legal Working Group elab–orated the Model Law on payment and securities settlement systems for Central America and the Dominican Republic, which was approved by the CMCA at its 240th meeting in November 2004.[38] In order to become national law in particip–ating countries, the member countries of the CMCA then elaborated an interna–tional treaty which contained the main provisions of the Model Law, such as the need for formal approval of a payment and settlement system by the respective central bank, irrevocability of payment orders after a cut–off moment determined by the rules of the system, finality of payments (ie protection in the event of bankruptcy of a participant)[39] and protection against seizure of funds held in central bank accounts for the purpose of settlement of payment orders within a recognised system.[40]

While all participating central banks had approved of the Treaty by December 2006, at least three signatory countries needed to ratify the Treaty for it to come into effect.[41] This criterion was fulfilled by 2008, and by 2011 the Treaty had force of law in all participating countries.[42]

Business model and technical implementation

In 2007, the CMCA had commissioned the Academia de Centroamérica[43] with a market study on cross–border payments for member countries. The result was that an interlinked payment system would be accepted and used by all relevant players effecting cross–border payments in the region, and the main reasons given were: convenience, better coverage, safety, speed and low cost.[44]

Once the adequate legal basis was ensured, as described above, the project group elaborated a technical work plan in January 2010 which further developed the business model, the messaging formats and transfer systems, a standard for bank account identification and the develop–ment of the operating procedures and operation manuals. Furthermore, the BCRD as Institutional Administrator founded the closed SWIFT FIN Message User Group and started work on the tech–nological platform for the SIP.

From the outset, the participants opted for the International Banking Account Number (IBAN) as a standard for bank account identification, rather than devel–oping a generic numbering standard. Created by the International Organisation for Standardisation (ISO) as a viable and internationally agreed bank identifier, used internationally to identify uniquely the account of a customer at a financial insti–tution, to assist error–free cross–border payments and to improve the potential for STP, with a minimum amount of change within domestic schemes.[45]

For the direct participants in the SIP, ie the central bank involved, the settlement process is a matter of seconds. While this on its own does not guarantee quasi–immediate credit of transferred amounts to the account of the beneficiary, the SIP should act as a stimulus for the processing of payments at the domestic level so that that the time lag between debiting of the originator account and credit of the bene–ficiary's account of the original payment instruction is considerably reduced to

reach almost real time (SAME-DAY) speeds. This will generate economies of scale in participating economies and should facilitate a deepening of markets. At the same time, some of the institutions that benefit from existing cross-border inefficiencies today might not favour the introduction of the SIP.

OUTLOOK

The SIP is a novel framework in the Americas, with several elements that distinguish it from other cross-border arrangements: it involves participants in various countries, allows for payment flows in all directions among participants, uses an RTGS concept for its 'hub' and interlinks exclusively central bank RTGS systems, not ACHs, and uses a foreign currency for its settlement accounts.

There may certainly be some doubts as to whether the degree of existing commercial integration among the countries of Central America and the Dominican Republic will suffice to make SIP a commercially viable proposition.

But one can see the SIP as part of a wider initiative which seeks to develop the financial infrastructure with a view to furthering a regional financial market. The SIP will be an integral part of the local payment systems of CMCA member countries and, as such, will widen the coverage of available services to the benefit of participants of the national payment systems. Furthermore, the SIP could act as a direct stimulus for those banks that operate in only one of the member countries to offer affordable cross-border payment services to its clients and thus assist in the strengthening of regional financial integration.

Short of monetary union, common financial infrastructures may favour a convergence of business practices and further the creation of a common market, and making payments is one element of such a market. Making interregional payments easier could therefore also be a catalyst for increased interregional trade and, indeed, further one of the goals of Central American integration: eventual monetary union.[46] The institutional framework in place could, over time, also allow for links between the SIP and other payment systems, from outside the region,[47] in particular in major trading partner countries such as the US, Mexico or the EU.

Furthermore, only with an efficient and safe payment system infrastructure can securities markets be developed further. The CMCA has always supported initiatives to create a public debt market that could contribute to the development of a regional capital market. In a future phase, the SIP could include securities' settlements, and this could in turn stimulate increased trading in both public debt and private securities, which could reduce the existing fragmentation of markets and could stimulate the creation of more active, deep and liquid markets in the region.[48]

Regional central banks are hoping, in particular, that the SIP can become an important element for the development of a market for public debt instruments, and eventually it could become an important feature of a regional inter-bank market for liquidity.

But SIP is already a new 'financial highway' which should benefit the current participants in the domestic payment systems and even the end-user/consumer/retail user. It is still to be seen how dense the traffic on the SIP highway will be.

AUTHORS' NOTE

The views expressed in this paper are those of the authors and do not necessarily reflect those of the CMCA or the BIS or any of their members

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(4) Rodríguez, E. and Versteeg, P. (2003) 'Central American regional integration: recent progress and future challenges', in: European Commission, (2003) 'Central America Integration: What´s Next? The Integration Process in Central America and the Role of the European Union', Brussels, European Commission, publication resulting from a European Commission sponsored conference on 'Central American Regional Integration and Institutional Reform', Brussels, 3rd March, pp. 84–89, available at: http://eeas.europa.eu/ca/docs/integ_1203_en.pdf (accessed 6th July, 2011).

(5) Dubón, E. and Hernández, S. (2010) 'Comportamiento del comercio regional en época de crisis', SECMCA, Nota Económica no. 32, available at: http://www.secmca.org/NOTAS_ECONOMICAS/articulo32MAY2010.pdf (accessed 6th July, 2011).

(6) For instance, between the US Federal Reserve System and Banco de México (at this time exclusively for payments from the US to Mexico, not vice-versa): 'Directo a México', in place since 2004: available at http://www.directoamexico.com (accessed 6th July, 2011); Banco de México information: available at http://www.banxico.org.mx/sistemas-de-pago/informacion-general/sistemas-de-pago-de-bajo-valor/directo-mexico.html (accessed 8th July, 2011), Grover, M. and Nguyen, J. (2008) 'Directo a Mexico helps customers join the financial system', descriptive article from the Federal Reserve Bank of Minneapolis, November, available at: http://www.minneapolisfed.org/publications_papers/pub_display.cfm?id=4088 (accessed 6th July, 2011); between Argentina and Brazil to allow payments in domestic currency to payees of the respective other country, 'Sistema de pagamento em moeda local' available at http://www.bcb.gov.br/?SML (accessed 6th July, 2011).

(7) On the process of euro introduction in payment arrangements, see ECB (1993) 'Minimum Common Features For Domestic Payment Systems', Working Group on EC Payment Systems, November, available at: http://www.ecb.int/pub/pdf/othemi/commonfeaturesen.pdf (accessed 6th July, 2011); ECB (2002) 'TARGET Interlinking Specifications' (November 2001 edn.), Frankfurt, available at: http://www.ecb.int/pub/pdf/other/target01annex2en.pdf (accessed 6th July, 2011); and ECB (2002) 'Minimum Common Performance Features of RTGS Systems within TARGET' (November 2001 edition), Frankfurt, June, available at: http://www.ecb.int/pub/pdf/other/target01annex4en.pdf (accessed 6th July, 2011). The earlier 'ECU clearing', for which the Bank for International Settlements (BIS) acted as agent, was not a payment and settlement system like SIP or TARGET, but greatly facilitated settlement in the respective national currencies of operations by private banks in instruments that used an accounting unit, the 'ecu', as denominator. On the functioning of the ECU clearing system, see Lefort, D. (1991) 'Aspects juridiques de l'écu privé', *Revue suisse de droit des affaires*, pp. 49–62.

(8) To get an overview on the payments infrastructure in the various countries, see the country reports published by the World Bank/CEMLA supported 'Western Hemisphere Payments and Securities Settlement Forum', available at

http://www.forodepagos.org/country_reports.htm (accessed 6th July, 2011). These reports are not necessarily up to date; the websites of the respective central banks offer additional information.

(9) In the event that the financial institution does not communicate anything, or does so after an hour, the instruction is deemed to have been rejected.

(10) This appears to produce a float, which is not necessarily desirable, but the period for the overall transaction is greatly reduced compared with arrangements without the SIP.

(11) The SIP allows participants to enter payment instructions with a future value date of up to 30 days following the order ($T+30$). Full processing of course requires the availability of sufficient funds on the participant's settlement account.

(12) The option to be paid in US dollars is a result of the fact that Central American economies show a high, albeit slightly declining, degree of *de facto* dollarisation, and accounts denominated in US dollars are widely used (IMF (2010) 'Dollarization Declines in Latin America', *Finance & Development*, March, Vol. 47, No. 1, available at: http://www.imf.org/external/pubs/ft/fandd/2010/03/dataspot.htm (accessed 6th July, 2011).

(13) Tratado sobre sistemas de pagos y de liquidación de valores de Centroamérica y República Dominicana ('the Treaty') (2007), available at: http://www.sica.int/busqueda/busqueda_archivo.aspx?Archivo=trat_12457_2_22012007.htm, ratified subsequently by participating countries.

(14) Banco Central de la República Dominicana (BCRD), website: http://www.bancentral.gov.do

(15) Art. 20, General Rules, ref. 3 above.

(16) El Salvador has been using the US dollar as legal tender since January 2001; Panama (not a participant in SIP and with no central bank) has been using the US dollar since 1904. The other regional economies show varying, but overall slightly declining, degrees of dollarisation (IMF, ref. 12 above).

(17) There is also no minimum or maximum limit for the amounts that can be transferred per instruction via the SIP. Any payment instruction above US$10,000, however, would be subject to anti-money-laundering screening in the originator's country. Such screening is not the responsibility of SIP or its direct participants however.

(18) Manual de Funcionamiento del SIP, versión actualizada el 15 de Junio de 2011, available at: http://www.secmca.org/DOCUMENTOS/SP/MANUAL%20DE%20FUNCIONAMIENTO%20DEL%20SIP%20Version%20final%2016%20CTSP.pdf

(19) 'Instructivo para manejo de la cuenta corresponsal del Sistema de Interconexión de Pagos (SIP)', February 2011.

(20) Such a bank could be either a commercial bank, or conceivably, such as in the case of the US–Mexican ACH link (see ref. 6 above), an account with an entity of the Federal Reserve System.

(21) Article 7, f, General Rules, ref. 3 above.

(22) Article 7, General Rules, ref. 3 above.

(23) Article 13, Treaty. On functions of a payment systems overseer in general, CPSS, (2005) 'Central bank oversight of payment and settlement systems', BIS, Basel, available at: http://www.bis.org/press/p050509b.htm (accessed 6th July, 2011); Spanish executive summary at http://www.bis.org/publ/cpss68execsum_es.pdf (accessed 6th July, 2011).

(24) Art. 13, General Rules, ref. 3 above.

(25) Costa Rica will apply a 'conversion tool' from its current client account system to SIP: see http://www.bccr.fi.cr/SINPE/index.html (accessed 6th July, 2011); El Salvador has created a working group with support of the central bank with a view to adopting the CMCA/SIP standard; Guatemala plans to introduce the new account standard in 2012, following a cooperative approach

involving the national banks, systems administrators and the Bankers Association; Honduras has not yet implemented its planned RTGS system, and account standardisation has yet to occur (on the current status of modernisation projects in Honduras, see http://www.bch.hn/snp.php (accessed 6th July, 2011)); Nicaragua does not yet have a national RTGS system, but a multilateral netting system (see http://www.bcn.gob.ni/sistemas_pago /index.html?&val=3# (accessed 6th July, 2011); it has created a working group including the central bank that has made a proposal for an account standard (*Estándar de Cuenta Nacional*).

(26) See for instance, European Commission, ref. 4 above.

(27) On the history and vision regarding a monetary union in the region, see Young J. (1964) 'Unión Monetaria Centroamericana' (Informe rendido al Departamento de Estado del Gobierno del os EEUU – A.I.D., del 28 diciembre 1964), Centro Regional de Ayuda Técnica, México. On the problematic issue of optimal currency areas and monetary unions in the absence of a political union, De Grauwe, P. (2006) 'What have we Learnt about Monetary Integration since the Maastricht Treaty?', *Journal of Common Market Studies*, Vol. 44, No. 4. pp. 711–730, available at: http://www.econ.kuleuven.be/ew/ academic/intecon/Degrauwe/PDG– papers/Recently_published_articles/JCL S–2006.pdf (accessed 6th July, 2011) and (2006) 'On Monetary and Political Union', May, available at: http://www.econ.kuleuven.be/ew/ academic/intecon/Degrauwe/PDG– papers/Work_in_progress_Presentations/ EMUandPoliticalUnionMay06.pdf (accessed 6th July, 2011). On *de facto* dollarisation and the prospects for a regional currency union, see also: Bloch, D. (2006) '*Gran Colombia* revisited: Spontaneous Currency Union in Central America'', *Loyola University Chicago International Law Review*, Vol. 4,

No. 1, available at: http://www.winston.com/siteFiles /publications/BlochLoyolaLawRevarticle 2006.pdf (accessed 6th July, 2011); Hira, A. and Dean, J. (2004) 'Distributional effects of dollarisation: the Latin American case', *Third World Quarterly*, Vol. 25, No. 3, , pp. 461–482; Lindenberg, N. and Westermann, F. (2010) 'How strong is the case for dollarization in Central America? An empirical analysis of business cycles, credit market imperfections and the exchange rate', Working Paper 83, Institute of Empirical Economic Research, University of Osnabrück, August. On the CMCA, Vargas, L. (2007) 'La experiencia normativa de Centroamérica y República Dominicana sobre sistemas de pagos y de liquidación de valores', Centro de Estudios Monetarios Latinomericanos (Center for Latin American Monetary Studies) (CEMLA), pp. 3–4, available at: http://www.cemla.org/pdf/legales/viii_ rodriguez_vargas.pdf (accessed 6th July, 2011); English website: http://www.cemla.org/english.htm (accessed 8th July, 2011).

(28) 'Protocolo al Tratado General de Integración Económica Centroamericana' (Protocolo de Guatemala), 1993, as amended 17th May, 2003, available at: http://www.sieca.int/publico/ integracionecoca/marcolegal/protocolos /4protocolodeguatemala.htm (accessed 6th July, 2011) and http://www.fecamco.com/legislacion /PROTOCOLO-DE-GUATEMALA- AL-TGIEC.pdf (accessed 8th July, 2011).

(29) First modified on 22nd January, 1999. The most recent version of the '*Acuerdo*' is from June 2007, available at: www.secmca.org/LEGISLACION /REGIONAL/AcuerdoMonetario.pdf (accessed 6th July, 2011).

(30) *Acuerdo*, Art. 5, e).

(31) *Acuerdo*, Art. 2, c), j) and k).

(32) *Acuerdo Monetario Centroamericano* (2005), Art. 2, a), b) and h).

(33) Sistema de la Integración Centroamericana, with head offices in El Salvador; website: http://www.sica.int. The SICA was created by the Protocol of Tegucigalpa which came into force in February, 1993, and has been ratified by all member States: Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panama and Belice. This group overlaps to some extent with the CMCA. Panama, for instance, is part of the SICA, but not of the CMCA.

(34) SIECA, based in Guatemala, website: http://www.sieca.int

(35) 'Apoyo al diseño y aplicación de políticas comunes centroamericanas', available at http://www.adapcca.org/

(36) CPSS (2001) 'Core Principles for Systemically Important Payment Systems', BIS, Basel, pp. 3, 6, and 16–20, available at: www.bis.org/publ /cpss34e.pdf (accessed 6th July, 2011); Spanish version at: http://www.bis.org/publ/cpss43es.pdf (accessed 6th July, 20011).

(37) CPSS (2006) 'General guidance for national payment system development', Annex 4: 'Legal framework and model laws on payments', pp. 63–67, BIS, Basel, available at: http://www.bis.org/publ/ cpss70.pdf (accessed 6th July, 2011); Spanish version at: http://www.bis .org/publ/cpss70es.pdf (accessed 6th July, 2011). On international initiatives in this area in general, Heinrich, G. (1997) 'International initiatives for the harmonisation of rules applicable to payments and payment systems', in: Hadding, E. and Schneider, U. (eds.) (1997) 'Transboundary Payment Transactions in the European Single Market', Bundesanzeiger, Cologne, pp.193–247; updated version (2001) available at: http://www.forodepagos.org /pdf/en_annotated_bibliography.pdf (accessed 6th July, 2011).

(38) 'La Ley Modelo sobre sistemas de pagos y de liquidación de valores de Centroamérica y República Dominicana', Resolución CMCA/RE-04-240-04, available at http://www.bancentral.gov.do/sipard /tratado_pagos_y_liquidacion_ valores.pdf. Two articles deal with private international law aspects: article 14 establishes that the law applicable to a given system will govern the rights and obligations of a participant in the system against whom insolvency procedures have been initiated; article 15 establishes that guarantees or collateral in favour of a system shall be governed by the law of the country where such security rights have been registered.

(39) As regards this rule, the Model Law and the Treaty were inspired by the EU's Directive of the European Parliament and of the Council of 19th May, 1998, on settlement finality in payment and securities settlement systems Official Journal L 166, 11/06/1998 P. 0045–0050, available at http://ec.europa.eu/internal_market /financial–markets/settlement /index_en.htm (accessed 6th July, 2011).

(40) 'Tratado sobre sistemas de pagos de liquidación de valores de Centroamérica y República Dominicana', approved by the CMCA in November 2005. On the elaboration of the Treaty and the Model Law, Vargas, ref. 27 above, pp. 7–14.

(41) Treaty, ref. 13 above, Article 16.

(42) Ratification decisions: Dominican Republic, Senate, 24th June, 2008, with subsequent changes to law applicable to RTGS system, for instance, in 2009, as to who may be a participant in the system, available at: http://www.ban central.gov.do/sipard/legal/modificacion _reglamento_5ta_res2009-05-21.pdf (accessed 8th July, 2011); Nicaragua, Congress Decree AN 5319 of 24th January, 2008; Honduras, Congress Decree 134-2008, of 1st October, 2008; Guatemala: Congress Decree 42-2008 of August, 2008; El Salvador: Legislative Assembly Decree 299 of 23rd August, 2007; Costa Rica: Legislative Assembly, law 8876, of 1st November, 2010, available at: http://historico.gaceta.go.cr /pub/2011/01/12/COMP_12_01_2011 .html#_Toc282520907 (accessed 6th

July, 2011).

(43) Website: www.academiaca.or.cr

(44) Academia de Centroamérica, (2007) Informe Final de la Investigación de Mercado sobre los Pagos Transfronterizos de la Región Centroamérica–República Dominicana (Proyecto BID–FOMIN–CMCA, ATN/MT–8544–RG), August 2007, http://www.secmca.org/DOCUMENT OS/SP/InformeFinalEstudioMercadoAC ADEMIACA.pdf and http://www.scribd.com/doc/44846396/ Payments–in–CARD–Market–Considerat ions (accessed 8th July, 2011).

(45) Latest version: ISO 13616–1:2007 and ISO 13616–2:2007.

(46) But, as argued for instance by Storti, C. and De Grauwe, P. (2002) 'Electronic Money and the Optimal Size of Monetary Unions', paper prepared for the Fordham/CEPR conference on the euro and dollarization, New York, 5th–6th April, one can also envisage the scenario that continued progress in IT systems makes transfers between two currency zones increasingly easy (and SIP could be an example of this), making the existing monetary networks more compatible with each other and reducing the attractiveness of a full monetary union; see http://www.econ.kuleuven.be/ew /academic/intecon/Degrauwe/PDG –papers/Work_in_progress_Presentations /Costa%20De%20Grauwe%20NY% 202002.pdf (accessed 6th July, 2011).

(47) This would in all likelihood require adhesion to the Treaty.

(48) For other regions and in general, Committee on the Global Financial System (CGFS) (1999) 'How should we design deep and liquid markets? The case of government securities', BIS, 22nd October, available at: http://www.bis.org/publ/cgfs13.pdf (accessed 6th July, 2011); Marés, A. (2002) 'Market liquidity and the role of public policy', BIS papers no. 12, August, available at: http://www.bis.org/publ /bppdf/bispap12r.pdf (accessed 6th July, 2011); McCauley, R. and Park, Y-C. (2006) 'Developing the bond market(s) of East Asia: global, regional or national?', BIS papers no. 30, November; Haiss, P. and Marin, S. (2005) 'Options for developing bond markets. Lessons from Asia for Central and Eastern Europe', EI Working Paper No. 63, Europainstitut, Vienna, January, available at: http://epub.wu.ac.at/1234/ (accessed 6th July, 2011).