



Title: **A Study on ECO Regional
Payment System**

Date: **March, 2021**

Ver.: **3.0**

Contents

1 Executive Summary	1
2 Glossary.....	2
3 Payment Systems and Building Components.....	4
4 Frictions of the Current Payment System.....	5
4.1 Other Reasons for Existence of Clearing Unions	7
5 Regional Payment Systems: Definitions and Typology.....	8
6 ICU as a General Model of a Clearing Union	10
7 Five Examples of Regional Payment Systems	11
7.1 The Asian Clearing Union (ACU)	11
7.1.1 Clearing Operations	12
7.1.2 ACU Organization.....	13
7.1.3 Operations Statistics	13
7.2 ASEAN Cross-Border Payment Scheme.....	15
7.3 From European Payments Union (EPU) to Single European Payment Area (SEPA) ..	16
7.3.1 SEPA Purpose and Members	19
7.4 The Latin American Agreement on Reciprocal Payments and Credits (CPCR- LAIA)19	
7.4.1 Institutional Framework.....	20
7.4.2 What Are Its Objectives?.....	20
7.4.3 What Is the Payments Agreement?.....	20
7.4.4 What Transactions Does the Agreement Cover?	23
7.4.5 What Guarantees Protect Agreement Payments?	23
7.4.6 How May Transactions be Channeled Thereby?.....	23
7.4.7 How Does the Payments System Operate?.....	24
7.4.8 7. Other Aspects of the Payments Mechanism.....	28
7.4.9 Automatic Payments Program.....	31
7.4.10 Settlement of Disputes	32
7.4.11 Benefits Have Resulted from Agreement Application	32
7.4.12 Internal Regulations.....	33
7.5 Regional Payment and Settlement System (REPSS) of COMESA	33
7.5.1 Payment Exchange Schemes.....	37

7.5.2 Cost of Transactions	38
8 Summarizing Clearing Unions.....	40
9 Comparative Analysis	41
9.1 Clearing House:.....	41
9.2 Central Banks	41
9.3 Commercial Banks	42
9.4 Financial Arrangements.....	42
9.4.1 Settlement Bank.....	42
9.4.2 Settlement Period.....	43
9.4.3 Unit of Accounting	43
9.5 Technical Infrastructure.....	43
10 Preface	47
11 Key Concepts of Clearing Union.....	48
11.1 Clearing.....	48
11.2 Settlement	49
11.3 Settlement Institutions	49
11.4 Settlement Methods	50
12 Types of Payment System	51
13 Designated-Time Net Settlement Systems	52
14 An Example of The Clearing House Function.....	54
14.1 Multilateral DNS Payment System	56
15 Applying Clearing Mechanism in ECO	57
15.1 Bilateral Clearing	57
15.2 Multilateral Clearing.....	58
15.3 ECO Overall Clearing Operations.....	61
16 Payment Systems Operating Mechanism and Proposed ERPS	94
16.1 EURO1.....	94
16.1.1 Operation of the system and settlement procedures	95
16.2 ACU.....	96
16.2.1 Clearing operations	96
16.3 Risk of payment systems	98
16.3.1 Credit risk.....	98

16.3.2 Liquidity risk	98
16.3.3 Legal risk.....	98
16.3.4 Operational risk	98
16.3.5 Systemic risk	98
16.4 Risk management	100
16.4.1 Liquidity Pool.....	100
16.4.2 Liquidity Bridge	101
16.4.3 Swap facility.....	102
16.5 Proposed mechanism for ERPS.....	103
16.5.1 Messaging process	103
16.5.2 Settlement period and risk management plan	104
17 ERPS Costs and Benefits.....	106
17.1 Regional payment systems costs	106
17.2 ERPS cost model	107
17.2.1 Establishment Cost	107
17.2.2 Operating Costs	107
17.2.3 Opportunity Cost of LP.....	110
17.2.4 Negligible Cost.....	110
17.3 Model of benefit evaluation of ERPS.....	111
17.3.1 Different type of benefits	111
17.3.2 Transaction cost reduction	112
17.3.3 Reduction of Delay cost.....	114
17.3.4 Benefits from Liquidity Pool Income	114
18 Calculation results of the cost-benefit of the ERPS	116
18.1 Expenses	116
18.2 Benefits	118
18.3 ECO Plus Calculations	119
19 Sole member states' benefit	121
20 Conclusion.....	123
21 References.....	125

1 Executive Summary

The member states of ECO have reached an agreement on 2014 to setup the ECU and there has been an announcement for a project to go one step further on 2018. During several occasions, the ECO secretariat tried to bring the plan of ECU to reality, but until start of 2021 there seems that no considerable progress is achieved.

ECU could be regarded as a special kind of RPS between the central banks. It seems central banks of ECO member states have some policy considerations that prevented the ECU to become operational.

By benchmarking the building blocks of clearing unions around the world, it might be possible to design an RPS between commercial banks of ECO member states. Since the commercial banks usually do not have the policy considerations like those of central banks, establishing ERPS by participation of commercial banks would be more practical.

ERPS between commercial banks not only will be a valuable and reliable financial and banking solution to improve trade between member states, but also could be considered as a pilot plan for ECU to become operational. Of course, set up of RPS between central banks and commercial banks has some differences. While ECU is in form of an intergovernmental agreement which its expenses are borne by governments, ERPS is expected as a private sector project between commercial banks that should be financed by its own incomes, say, the fees paid by merchants to the system, and still competitive enough in comparison to the existing payment system.

In this study, important clearing unions of different continents were surveyed. Then the capacity of ECO member states to gain from clearing operations, in terms of clearable volume of trade, was inspected. Finally, a feasibility study was conducted to check the financial possibility of implementing an RPS in the ECO region.

2 Glossary

ACU	Asian Clearing Union
AMU	Asian Monetary Unit
ASEAN	Association of Southeast Asian Nations
CCH	COMESA Clearing House
CET	Central European Time
CIPS	Cross-border Interbank Payment System
COMESA	Common Market for Eastern and Southern Africa
COSO	Committee of Sponsoring Organizations of the Treadway Commission
DNS	Designated-time Net Settlement
EBA	Euro Banking Association
ECB	European Central Bank
ECO	Economic Cooperation Organization
ECU	ECO Clearing Union
ERPS	ECO Regional Payment System
ESCAP	Economic and Social Commission for Asia and the Pacific
EU	European Union
ETDB	ECO Trade and Development Bank
FIFO	First In First Out
GRF	General Reserve Fund
ICU	International Clearing Union
IMF	International Monetary Fund
LIBOR	London Inter-Bank Offered Rate
LP	Liquidity Pool
LVPS	Large-Value Payment System
RCD	Regional Cooperation for Development
REPSS	Regional Payment and Settlement System (for the COMESA)
RPS	Regional Payment System
RTGS	Real Time Gross Settlement
SAARC	South Asian Association for Regional Cooperation

SEPA	Single Euro Payment Area
SPI	SAARC Payments Initiative
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TARGET	Trans-European Automated Real-Time Gross Settlement Express Transfer
ToR	Terms of Reference
WAC	Worldwide Acceptable Currencies (mainly USD and EUR)



RUNC[®]
International
Banking Solutions

A Study on ECO Regional
Payment System

3 Payment Systems and Building Components

In every economy, many transactions take place on the initiative of a wide range of economic actors each day. All transactions, whether they involve the acquisition of goods, financial assets or services (provided that they do not involve bartering), have two settlement components: (i) the delivery of the good or service; and (ii) the transfer of funds – i.e. payment using cash (banknotes and coins) or deposits held with banks (funds in accounts held with banks). A payment is therefore a transfer of funds which discharges an obligation on the part of a payer vis-a-vis a payee. A payer is the party to a payment transaction which issues the payment order or agrees to the transfer of funds to the payee. A payee – or beneficiary – is the final recipient of funds.

Well-designed payment infrastructure contributes to the proper functioning of markets and helps to eliminate frictions in trade. If the cost of a transaction exceeded the benefits expected from the trade, then services, assets and products might not even be exchanged. The availability of reliable and safe payment mechanisms for the transfer of funds is therefore a sine qua non for the majority of economic interactions (i.e. “no payment, no trade”). In its more restricted sense, the term “payment system” is sometimes used as a synonym for “interbank funds transfer system” or “IFTS”. However, at a general level, the term “payment system” refers to the complete set of instruments, intermediaries, rules, procedures, processes, and interbank funds transfer systems, which facilitate the circulation of money in a country or currency area. In this sense, a payment system comprises three main elements:

1. Payment instruments, which are a means of authorizing and submitting a payment (i.e. the means by which the payer gives its bank authorization for funds to be transferred or the means by which the payee gives its bank instructions for funds to be collected from the payer);
2. Processing (including clearing), which involves the payment instruction being exchanged between the banks (and accounts) concerned;
3. A means of settlement for the relevant banks (i.e. the payer’s bank must compensate the payee’s bank, either bilaterally or through accounts that the two banks hold with a third-party settlement agent).

4 Frictions of the Current Payment System

The current international payment system delays payments and increases costs because it depends on the dollar and euro as the intermediate currencies and the time-consuming and complex network of correspondent banks. In order to resolve this issue, regional payment agreements are international systems set up to facilitate payments between countries.

To better understand this, giving an example can be helpful. If a resident of Turkey wants to purchase goods from a resident of Pakistan, the Turkish has to find a way to pay for the goods with a currency that the Pakistani is willing to accept. Such a currency can be the Pakistani one, or some international currency such as the US dollar. However, in both cases, the Turkish is confronted with the cost of obtaining a currency different from his own in order to pay for the Pakistani goods. While the cost may be small for an individual transaction, it may be large for the country, since in a modern economy because of the existence of correspondent banks there will typically be a need for large numbers of similar payments.

Typically, in correspondent banking, in order to perform cross border payments in international currencies, banks need to establish accounts at other banks in jurisdictions of European Union and United States. The downside is it ties up funds and is an administrative burden. Even for those jurisdictions where it doesn't have a banking relationship, payments will be routed via another bank. This method of payment architecture, which now governs international payments, greatly increases the time, cost and complexity of payments.

According to proprietary McKinsey research and analysis (2015) on cross-border payments, the average time to complete a cross-border transaction is three to five business days, which includes the final mile transfer via a domestic payment network, such as Automated Clearing House.

Fees accumulate at each step in the process, including transfers from the sender's bank to the national correspondent bank, from one correspondent bank to another, and foreign exchange fees. Fees for cross-border payments where volumes are high usually average 2 percent to 3 percent, but can exceed 10 percent where payment volumes and values are low. And it's not always clear when costs will also be charged to a recipient.

Given such a situation, countries may reduce transaction costs by having their central banks or an intermediary entity act as clearing houses for payments between them. Central banks may agree to record and pay their own residents for eligible purchases from residents of the other country, thus extending credit to each other, and settle the accumulated net differences periodically, at the end of each quarter for example.

As a result, in direct use of local currencies in the implementation of foreign trade there is no need to conduct exchange operations in local currency of importer country to dollar and again dollar to local currency of exporter country. Thus, it is reducing the cost of transactions, both financial and administrative.

In other words, currency flows, and the associated transaction costs, are actually saved on at least two ways. First, if the periodic settlement of the two accounts is done in a net basis, the amount of each settlement would only reflect the difference between accumulated sales and purchases during the settlement period. In contrast, if all transactions are paid individually, as would happen in a decentralized system, all sales and purchases would involve an international currency flow. Second, in order to pay for the bilateral trade between the two countries, the central bank of the country in deficit only needs to transfer a reserve currency at the end of the settlement period. In comparison, in a decentralized system each central bank would need to maintain enough international reserves to finance bilateral payments continuously during the period. Coupled with net settlement, this feature implies that each central bank can safely reduce its holdings of reserve assets.

At the bank and importing/exporting firm level, the amount of cost reduction depends mainly on the costs of the currency exchange transactions in the foreign exchange market. These vary during time, depending on the country's credit conditions at the international market. Additionally, these costs vary for firms and banks depending on their size, their share in international trade and other criteria. The primary function of reducing transaction costs in intra-regional trade transactions requires the establishment of a clearing mechanism among the central banks of the participating countries, where trade-related payments are registered. Therefore, at the core of a regional trade-related payment system is the agreement between the member countries' central banks to temporarily extend credit to each other by settling the accumulated net differences periodically.

Reducing transaction costs and the need to hold international reserves was the primary motivation for the establishment of a number of regional payments systems by using the capacity of clearing unions, starting with the European Payments Union in the 1950s. Success of EPU encouraged developing countries to set up similar regional payment systems by using clearing union's mechanism in Africa and in Latin America as well as in Asia and the Pacific region.

To clarify the continuation of the discussion, it is important to mention two important points. First, regional payment systems are a general and abstract concept and do not refer to a specific type of payment system alone. Rather, it refers to actions in which countries have worked together to establish their own payment system. Therefore, all payment and financial mechanisms that countries and the unions have established in cooperation with each other fall under the concept of regional payment systems.

Another important point is that one of the most frequent and widely used mechanisms for creating regional payment systems is the establishment of clearing union. In other words, most economic and trade unions have set up a clearing union to form a regional payment system among themselves.

In fact, ECO member countries, as an economic and trade union, are seeking to establish a regional payment system among themselves. In meetings held in recent years by ECO to establish and operate the system, it has been concluded that a clearing union should be established for ECO.

4.1 Other Reasons for Existence of Clearing Unions

As explained above earlier, a clearing union can be defined as a multilateral payments arrangement that periodically offsets the debits and credits accumulated by each member against the other members in the process of trade and other transactions. Multilateral clearing or payments arrangements facilitate the use of national currencies, and thus serve to relax the foreign exchange constraints of the members.

In addition to the basic reasons for the formation of a clearing union that have been considered earlier, also the following can be mentioned:

1. Exports and imports among members can expand relatively faster because of conservation of foreign exchange in intra-group transactions, at least until the settlement date.
2. Trade liberalization can be promoted initially among the members.
3. Exploitation of scale economies would be made possible by enlarged trade.
4. An adjustment process can be promoted that would raise the international competitiveness of the members which have similar distortions in trade and production.
5. Measures and surveillance by the union can help to secure a more balanced current account which in turn contributes to the creation of conditions for the future convertibility of each of the currencies of member countries.
6. Ground can be prepared for regional economic cooperation in general and for monetary and financial cooperation in particular.

5 Regional Payment Systems: Definitions and Typology

Regional payment systems are international mechanisms designed to facilitate payments between residents of the participating countries. A closer look at past and present regional payment systems shows that a variety of arrangements exist which address the problem of transaction costs in regional trade with a range of different instruments.

The degree to which regional payments systems can contribute to reducing transaction costs of intra-regional trade transactions at the aggregate level thus depends on three main criteria and the institutionalized mechanisms established between the involved central banks:

- (a) The difference between the gross and net values of trade transactions, and the length of the clearance period: As a general rule, the greater the difference between the number and volume of gross and net transactions, and the longer the clearance period for net surpluses and deficits, the more effective a regional payment system can be in terms of reducing transactions costs in intra-regional trade. Additionally, temporary liquidity may rise through the provision of credit by central banks throughout the agreed clearance period.
- (b) The currency denomination of the final clearance, and settlement of surpluses and deficits between the central banks: When final clearance and settlement between the central banks are conducted not only in international currencies but also (at least partially) in national currencies of the member countries, transaction costs diminish, because central banks do not need to obtain the equivalent volume of foreign currencies for this purpose.
- (c) Provision of credit beyond the clearance period: Additional credit can be provided to deficit member countries through credit lines or swap arrangements on terms agreed between the member countries' central banks. Depending on the interest rate charged for these mutual credit lines, this can be more advantageous than financing conditions in financial markets.

Beyond the specific features of clearance, regional payment systems may also incorporate mechanisms for adjustment among deficit and surplus countries at the regional level. Strongly unbalanced intra-regional trade within a regional payment system rewards debtor countries with greater gains in terms of reduced transaction costs, especially when final net clearance in domestic currencies is allowed and/or the provision of credit beyond the clearance period is provided. The higher the intra-regional cumulative deficits, the smaller are the incentives for surplus countries to continue trading within the system. Regional payment systems, to be attractive to both surplus and deficit countries alike, require mechanisms to balance trade among its members. The main benefit expected from such regional adjustment mechanisms is the prevention of beggar-thy-neighbor policies¹, especially in periods of balanceofpayments stress of individual member countries. Further to this, deeper macroeconomic cooperation is required to effectively prevent unsustainable imbalances at the regional level, as the ongoing crisis of an even deeper monetary regional integration arrangement - the euro zone - shows.

¹Beggar thy neighbor often refers to international trade policy that benefits the country that enacted it, while harming its neighbors or trade partners.

Regional payment systems additionally can introduce a unit of account, which has two main functions:

(a) A unit of account reduces transactions costs in multilateral clearing at the macroeconomic level, as it reduces the number of intra-regional exchange rates to the bilateral exchange rates of each of the currencies towards the regional unit of account. The unit of account is usually fixed to an external key or reference currency. Nominal changes in the exchange rate of individual members' currencies need to be reflected precisely in the adjustment towards the unit of account in order to prevent misalignments against market-based intra-regional exchange rates and avoid trade distortion.

(b) In a more sophisticated arrangement, the unit of account may emerge as an instrument for intra-regional exchange rate cooperation, as it may provide a point of reference for regional coordination of exchange rates. It already delivers a common denominator against external currencies that can be used as a target for increasing harmonization of real exchange rate fluctuations against an external currency or currency basket. Here, more significant gains in terms of increased intra-regional trade may be expected as a result of shielding intra-regional exchange rates from global currency instability through coordinated adjustment. Moreover, it may thus prepare grounds for deeper regional monetary cooperation.

In conclusion, beyond the common and basic goal of transactions cost reduction of every payments system (by means of settling the external trade operations in domestic currencies), there is a range of additional tools and objectives that can also be attached to these schemes. The most common ones are temporary liquidity provision, final settlement in national currency, credit lines beyond the clearance period (all aiming at saving foreign reserves), or even some mechanisms to reduce the trade imbalances and create a unit of account (that could turn into a vehicle for exchange rate coordination). The extension of these "advanced" features of a payment system reveals the ambition level of each initiative.

6 ICU as a General Model of a Clearing Union

In the past, in terms of literature, there was a proposal to create an International Clearing Union (ICU). The ICU was one of the institutions proposed to be set up at the 1944 United Nations Monetary and Financial Conference at Bretton Woods in the United States, by British economist John Maynard Keynes. Its aim was regulation of currency exchanges, a role that eventually was taken by the IMF.

The ICU would be a global bank whose job would be clearing of trade between nations. All international trade would be denominated in a special unit of account, the proposed bancor. The bancor would have a fixed exchange rate with national currencies, and would be used to measure the balance of trade between nations. Every good exported would add bancors to a country's account, while every good imported would subtract them. Each nation would be incentivized to keep their bancor balance close to zero by one of two methods to be applied as required. In the case of an excessively positive bancor balance, part of their surplus would be taken and applied to the Clearing Union's Reserve Fund. In the case of an excessively negative bancor balance, their currency exchange rate would be lowered, making imports more expensive and exports cheaper. In this way nations would be encouraged to buy other nations products.

Gold and national currency would no longer be used in international trade and would no longer be moved between countries in the proposed ICU.

In the field of efforts and measures taken to establish a multilateral payment system, there are some economic and trade unions like ECO that have taken measures to establish a special payment system to achieve their economic and commercial goals.

In this regard, this study aims to examine a number of International trade agreements, Unions, and cumulative actions between countries, which are similar cases to ECO.

7 Five Examples of Regional Payment Systems

The following cases which will be examined, in chronological order, are:

- ASEAN Cross-border Payment Scheme
- The European Payments Union (EPU)
- The Agreement on Reciprocal Payments and Credits of the Latin American Integration Association (CPCR-LAIA/ALADI)
- The Asian Clearing Union (ACU)
- Regional Payment and settlement System (REPSS) of the Common Market for Eastern and Southern Africa.

7.1 The Asian Clearing Union (ACU)

ACU, founded in 1974, offers a clearance period with provision of short-term liquidity and the provision of swap lines for deficit countries beyond clearance. It also provides a unit of account for the factoring of transactions channeled through the system. ACU started its operations in November 1975 with its headquarters in Tehran.

ACU was the outcome of an initiative of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) in order to foster regional cooperation between the countries concerned, namely Bangladesh, Bhutan (since 1999), India, the Islamic Republic of Iran, Maldives (since 2009), Myanmar, Nepal, Pakistan and Sri Lanka.

ACU itself describes its objectives as follows:

- To facilitate settlement, on a multilateral basis, of payments for current international transactions;
- To promote the use of participants' currencies in current transactions;
- To promote monetary cooperation among the participants and closer relations among the banking systems so as to expand trade and economic activity among the countries of the ESCAP region;
- And to provide for currency swap arrangement among the participants.

Since 1985, the use of the ACU clearing facility by member countries is optional. A regional unit of account, the Asian Monetary Unit (AMU), has been created for the settlement of ACU transactions. For many years market participants invoiced and settled intra-regional payments in local currencies, but since the beginning of 1996, ACU is implemented as a multicurrency settlement system through which participants may also settle their accounts in dollars or euros, and AMU is referred to as ACU dollar or ACU euro.

As the main purpose of the ACU is to provide a common unit of account, the term ACU dollar is specifically used to identify the use of ACU transactions as distinct from transactions in dollars. Otherwise, there is no distinction value-wise between the ACU dollar and the dollar. The same applies to the ACU euro.

AMU is kept equivalent to one dollar and one euro respectively. Intra-regional exchange rates with the ACU dollar/ACU euro are calculated based on daily SDR cross rates as published by the IMF.

Provision of liquidity by mutual central bank credits during the settlement period is realized in ACU. The settlement period is two months, after which interest payments and debtor and creditor positions are netted out. Within that period, trade between ACU member countries does not require any payment and there are no restrictions on volumes, or kinds of goods and services traded.

The basis of the ACU operating mechanism is the ACU dollar and ACU euro accounts of the participating countries' banks with the correspondent banks in other participating countries. Out of these accounts, only the net surpluses and deficits are required to be settled by the central banks in the countries concerned. Authorized banks settle commercial and other eligible transactions similar to usual foreign exchange transactions. The mechanism for inducing timely payments is through penalty fees or the threat of possible expulsion from the ACU. Delayed payments are subject to fines amounting to the higher of either the interest of 1 percent per annum above the rate for the relevant settlement period(s) or 1 percent per annum over the rate applicable on the day of default. In case a participant fails to pay within 15 days upon notification and no agreement can be reached between the partners involved in the pending transaction within seven days, the respective country is expelled from ACU until payments have been made. According to the ACU, no partner country has ever defaulted so far, probably due to its strong enforcement mechanism.

The ACU contains a swap facility for debtor countries beyond the clearing period: any participant in net deficit at the end of a settlement period is eligible for this swap facility. An eligible participant is entitled to the swap facility from every other participant up to 20 percent of the average gross payments made by it through ACU to other participants during the three previous calendar years. The interest rate charged on drawing on the swap facility is derived from the dollar or euro two-month LIBOR declared by the British Bankers' Association.

According to ACU, the regional payment and clearing system has contributed to a rapid expansion of trade, particularly in recent years: In 2007, transactions amounted to \$15,830.5 million, 31.4 percent more than the preceding year. On a monthly basis, the average transactions stood at \$1,319.2 million compared to USD 1,004.2 million in the preceding year. India, I.R. of Iran, Sri Lanka, Bangladesh and Pakistan account for the bulk of transactions. Payment of a large share of 17 intra-regional trade is being channeled through ACU, also in previous years.

7.1.1 Clearing Operations

Settlement of instruments is made by the commercial banks through operations of the accounts referred to in the following:

The participants permit the banks in their respective countries to maintain ACU dollar and ACU euro accounts with their correspondent banks in the other participating countries. All payments other than ineligible payments are settled by the banks concerned through these

accounts. The operations on these accounts shall be governed by the prevailing Exchange Control Regulations and such other directions, rules, regulations or guidelines as the participants may issue or specify from time to time. The participants' commercial banks are authorized to consider payment of interest, at their discretion, on ACU dollar and ACU euro accounts maintained by the commercial banks of other ACU member countries as per mutually agreed terms and conditions.

When a commercial bank desires to fund its ACU dollar or ACU euro account with its correspondent bank in another participating country, it may purchase the required amount of ACU dollar or ACU euro either from a local commercial bank having a surplus in that participating country or from its central bank. In the latter case, it will surrender equivalent amount of US dollars or euros or, at the option of the Central Bank, the equivalent in the local currency to its own Central Bank for remittance through the ACU mechanism. The participant receiving the amount will advise the participant in the country concerned to make available the amount in US dollars or euros to the concerned bank in that country. After making the payment, the second participant will advise the Secretary General of the ACU to credit its account by debit to the first participant's account.

When a commercial bank desires to repatriate funds from its ACU dollar or ACU euro account with its correspondent bank in another participating country, it may sell the desired amount of ACU dollar or ACU euro either to a local commercial bank which desires to fund its ACU dollar or ACU euro account in that participating country, or to its central bank. In the latter case, it will request that bank to affect the remittance through the ACU mechanism. The correspondent bank will surrender equivalent amount of US dollars or euros to its own Central Bank for remittance. The participant receiving the amount will advise the participant in the country concerned to make available the equivalent amount to the concerned bank in that country. The Central Bank may, at its option, make the payment in US dollar or euro or in local currency. After making the payment the second participant will advise the Secretary General of the ACU to credit its account by debit to the first participant's account.

On receipt of the advices referred to above, the Clearing Union shall affect the necessary transfers under advice to both the participants.

7.1.2 ACU Organization

Each participant appoints 1 Director and 1 Alternate Director to represent it on the Board of Directors. Each Director has 1 vote. The Board elects a Chairman from among its members to serve for a period of 1 year, and a Vice-Chairman to serve in the absence or inability of the Chairman during the same period. The Secretary General is appointed by the Board to conduct the business of the ACU. The Board of Directors makes arrangements with a participant to provide the necessary services and facilities for the operation of the clearing facility. The Islamic Republic of Iran acts as agent for the Union.

7.1.3 Operations Statistics

The table below shows the annual statistics of transactions that channeled through the ACU mechanism during 1975-2018. In 2018, volume of transactions booked at the ACU Secretariat reached to USD 13,466.62 million, reflecting an increase of 11.07 percent

compared to the last year. The total transactions channeled through the ACU mechanism amounted USD 26,933.24 million, revealing USD 2,683.88 million increase over the previous year.

Asian Clearing Union Transactions ¹ Channeled Through the ACU Mechanism During 1975-2018 (In millions of USDs)						
Table (1)						
Year	Yearly Transactions		Cleared in the System		Settled in Hard Currency	
	Amount ²	Growth (percent)	Amount	Share in yearly transactions (percent)	Amount	Share in yearly transactions (percent)
1975	0.44	-	0.09	20.00	0.35	80.00
1976	25.72	5,745.45	4.12	16.00	21.60	83.98
1977	79.36	208.55	16.67	21.01	62.69	78.99
1978	137.60	73.39	39.90	29.00	97.70	71.00
1979	161.31	17.23	83.88	52.00	77.43	48.00
1980	182.94	13.41	98.79	53.99	84.15	46.01
1981	269.39	47.26	166.92	61.96	102.47	38.05
1982	300.41	11.51	196.63	65.45	103.78	34.55
1983	498.66	65.99	192.32	38.57	306.34	61.44
1984	662.84	32.92	322.24	48.62	340.60	51.39
1985	605.20	-8.70	373.50	61.72	231.70	38.28
1986	690.62	14.11	581.12	84.14	109.50	15.86
1987	625.34	-9.45	396.97	63.48	228.37	36.50
1988	940.84	50.45	698.52	74.24	242.32	25.76
1989	1,041.78	10.73	832.39	79.90	209.39	20.10
1990	1,366.54	31.17	947.79	69.36	418.75	30.64
1991	1,851.44	35.48	1,424.35	76.93	427.09	23.07
1992	1,928.32	4.15	1,172.46	60.80	755.86	39.20
1993	1,448.88	-24.86	1,018.00	70.26	430.88	29.74
1994	1,965.38	35.65	1,110.71	56.51	854.67	43.49
1995	2,702.90	37.53	1,353.42	50.07	1,349.48	49.93
1996	3,161.10	16.95	1,448.30	45.82	1,712.80	54.18
1997	2,654.95	-16.01	1,251.60	47.14	1,403.35	52.86
1998	2,842.77	7.07	1,130.61	39.77	1,712.16	60.23
1999	2,630.74	-7.46	1,057.39	40.19	1,573.35	59.81

Table (1)

Year	Yearly Transactions		Cleared in the System		Settled in Hard Currency	
	Amount ²	Growth (percent)	Amount	Share in yearly transactions (percent)	Amount	Share in yearly transactions (percent)
2000	3,383.54	28.62	1,634.66	48.31	1,748.88	51.69
2001	3,553.67	5.03	1,643.56	46.25	1,910.11	53.75
2002	3,448.40	-2.96	1,446.40	41.94	2,002.00	58.06
2003	4,546.30	31.84	1,877.95	41.31	2,668.35	58.69
2004	6,679.79	46.93	3,163.25	47.36	3,516.54	52.64
2005	8,199.62	22.75	4,512.16	55.03	3,687.46	44.97
2006	12,049.84	46.96	5,864.27	48.67	6,185.57	51.33
2007	15,830.57	31.38	6,977.33	44.08	8,853.24	55.93
2008	20,966.74	32.44	8,031.32	38.31	12,935.42	61.69
2009 ³	14,072.42	-32.88	5,780.46	41.08	8,291.96	58.92
2010 ³	20,634.21	46.63	8,900.70	43.14	11,733.51	56.86
2011 ³	14,542.39	-29.52	4,974.53	34.21	9,567.86	65.79
2012 ³	9,095.79	-37.45	1,344.15	14.78	7,751.64	85.22
2013 ³	8,411.12	-7.53	1,098.81	13.06	7,312.31	86.94
2014 ³	10,178.31	21.01	1,187.59	11.67	8,990.72	88.33
2015 ³	10,525.80	3.41	1,229.27	11.68	9,296.53	88.32
2016 ³	10,249.25	-2.63	1,299.71	12.68	8,949.54	87.32
2017	12,124.68	18.30	1,199.49	9.89	10,925.19	90.11
2018	13,466.62	11.07	1,368.82	10.16	12,097.80	89.84
Total	230,734.53	-	79,453.12	34.43	151,281.41	65.57

Figure 1- Annual Statistics of ACU

7.2 ASEAN Cross-Border Payment Scheme

The Association of Southeast Asian Nations is an international political, economic, and cultural organization in Southeast Asia, and its main activities revolve around the development of economic cooperation. In 2014, the five largest members of ASEAN - Indonesia, Malaysia, Singapore, the Philippines, and Thailand- agreed to implement an integrated payment system to enable RTGS systems. With this system, a bank customer can carry out multi-currency transactions in minutes through non-cash payments. The ASEAN five Central Banks have worked on establishing protocols for intra-trade settlement, retail payments, monthly remittances, and capital market settlements.

Under the system, individual users across ASEAN will be able to make financial payments through ATMs, credit cards, or electronic money without spending a significant amount of time or money doing so.

7.3 From European Payments Union (EPU) to Single European Payment Area (SEPA)

EPU, which was created in 1950 and was replaced by the European Monetary Agreement in 1958, is regarded as a role model for fostering regional trade. In this context, the EPU's objectives were to develop convertibility of the European currencies at the regional level, liberalize intra-European trade, and multi-lateralize existing bilateral trade arrangements.

The founding members were Austria, Belgium, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, and the United Kingdom. EPU performed almost the full range of functions of regional payment systems. This included a reduction of transaction costs in regional trade by enabling trade payments to be settled in domestic currency. Hence, foreign exchange requirements were limited to the minimum amount necessary due to multilateral clearing. EPU included a short-term liquidity provision during the settlement period of one month and additional longer term credit provision exceeding the payment system's internal clearance periods. In addition, it had strong trade adjustment incentives through gold quotas and a regional unit of account that was used for accounting purposes only. Though explicitly not designed to provide a common European currency, this unit of account can be regarded as the first stage of what 30 years later became the European Currency Unit (ECU)¹ in 1981.

The design of the EPU was strongly linked to the unique conditions of the Bretton Woods system at the time of its foundation. It was set up in a world of fixed exchange rates, non-convertibility of all currencies other than the dollar and strictly limited private capital flows and is therefore probably the only regional payment system that did not need to create adjustment mechanisms for extra-regional exchange rate adjustments.

The main benefit of the EPU was that it ended bilateralism in intra-regional trade by introducing a multilateral clearing system: a regional unit of account was set up at par to 1/35 ounces of gold (equal to the gold conversion rate of the dollar but independent of it). The EPU's unit of account was used only for multilateral clearance of regional transactions, and each country set a parity of its own currency with this unit of account.

The EPU's accounts were held at the Bank for International Settlement (BIS), which acted as its financial agent and also its clearing house. The settlement period was one month, after which the participating countries reported their balances with each of the other countries to the BIS. The EPU had a limited mechanism to balance trade. Following its inception, each country received a quota of 15 percent of its total trade with the EPU.

As long as a country's net debt was less than 20 percent of its quota, it was financed by credit, so that the country did not need to pay. If a country's debt reached 20 percent of the quota, that country had to settle 20 percent of the quota in gold. Debts amounting to 40, 60 and 80 percent of quota were required to settle in an equal percentage of shares in gold or

¹The European Currency Unit was a unit of account used by European Economic Community composed of a basket of member country currencies. The ECU came in to operation on 1979 and replaced the European Unit of Account (EUA) at parity in 1979, and it was later replaced by the euro (EUR) at parity 1999.

dollars. If a country exceeded its entire quota, it was required to make its payments entirely in gold. Cumulative surpluses were settled in a similar way as deficits but at different percentage shares. Until its quota was exceeded, a surplus country would receive gold, but amounting to only a maximum of 50 percent of its cumulative net surplus position. In addition, claims were converted into commodities or hard currency only partially and with a delay.

Despite inherent incentives to avoid excessively large surpluses, countries with a net export surplus to the region benefited from the EPU in three ways.

First, surplus countries had access to gold, rather than having to use internationally unconvertible neighbor countries' currencies in return for their exports. Creditors were given more gold than debtor countries from a pool of \$350 million, which was initially financed by the Marshall Plan.

Second, financial assistance was provided, conditional upon economic adjustment by the debtor countries, thus limiting any potential misuse of the system.

Third, trade liberalization was a requirement for EPU membership. Reducing trade barriers by up to 75 percent was required over the course of EPU's existence, which resulted in trade gains, particularly for the internationally more competitive surplus countries.

The strong orientation towards trade liberalization within Europe was a crucial additional element of the EPU's success in increasing trade, as it prevented the countries from reverting to trade related beggar-thy-neighbor policies in order to enhance economic growth. The volume of European trade increased considerably during the existence of the EPU, partly as a result of trade liberalization agreements.

Although both intra-European trade and trade with the rest of the world expanded more quickly than European production in the EPU years, the spurt in European trade was coincident with the inauguration of the EPU.

Apart from increasing intra-European trade, the EPU contributed significantly to improving Europe's terms of trade. It functioned like a common external tariff scheme: demand for extra-regional goods declined as the prices of intra-European goods became more favorable due to the intra-regional convertibility scheme and the credits provided. While this rapid expansion of intra-European trade fueled productivity and rising income levels, it was crucial for the economic development of Europe to be able to build on several elements for economic growth. At the national level, the EPU counted on a strong commitment to an agreement on income distribution. Labor and management in the member countries bargained real wages below or at the level of productivity increases in return for productive reinvestment of profits.

Intra-European trade expanded vigorously under EPU, from \$10 billion in 1950 to \$23 billion in 1959. Imports from North America grew more slowly, from \$4 billion to \$6 billion. All this suggests that its liberalizing effect was considerable. Despite the relatively slow expansion of trade with the United States, Europe's strengthening dollar balance more than doubled its dollar holdings between the end of 1949 and amid 1956. As dollars grew less scarce, the need to discriminate against the US became less pressing. The terms of EPU

settlements were hardened, and the removal of quantitative controls on intra-European trade accelerated.

Participating countries had \$46 billion of surpluses and deficits against one another during EPU years. Nearly half (\$20 billion) was canceled multilaterally. Another quarter (\$12.6 billion) was canceled intertemporally, as countries ran deficits in one month, financing them wholly or partially with credit, and ran offsetting surpluses in subsequent months, canceling their previous position. Settlement in gold and dollars was limited to most of the remaining quarter (\$10.7 billion). Thus, EPU reduced settlement in gold and dollars by more than 75 percent compared to what would have been required under strict bilateralism.

In the post-war period, the EPU helped to secure complete stability of exchange rates and to promote free trade amongst the Member States. But the EPU fell victim to a series of crises caused by opponents objecting to price fluctuations and to the convertibility of European currencies between issuing banks but not between individuals. Finally, the EPU, which had advocated a return to full currency convertibility in Europe but which some feared would compete with the International Monetary Fund (IMF), was wound up on 27 December 1958 and replaced on the same day by the European Monetary Agreement (EMA), which called for a collective return to monetary convertibility in Europe.

The EMA was signed by the 17 Member States of the EPU on 5 August 1955, thereby creating a European reserve fund for those countries whose balance of payments showed a deficit and a multilateral settlement and equalization system founded on exchange rates, which were kept as stable as possible. The Bank for International Settlements managed the financial transactions resulting from the EMA, but, unlike the EPU, the EMA's system of multilateral settlements and granting of loans was neither compulsory nor automatic.

There were various goals which were set out to be achieved through the implementation of the European Monetary Agreement, however there was one main aim. The aim of the EMA was to reduce the short-term credit, a form of loan that was received between the member countries from one another. It was hoped this would be achieved through the changes made when moving from the European Payments Union to the EMA. The EMA was a short-term phase as part of a long-term plan for the economic integration of Europe. It followed previous agreements which were all created to boost the growth and development of the European economy. This was done particularly through trade liberalization and increased production, following the effects of the Second World War. It was hoped that a high level of trade liberalization could be maintained between the member countries of the Organization for Economic Co-operation and Development, even if they did not yet have convertible currencies.

Through the implementation of the EMA, it was intended that this agreement would eventually help Europe move towards an overall monetary union. The EMA was a framework arranged to further progress the work of the European Payments Union, which was responsible for the cooperation of exchange of goods and services between countries. In doing this, the EMA hoped to assist the European Economic Community. It hoped to do this by achieving a fixed exchange rate system, consistent economic policy, and a union where

factors of production such as capital and particularly labor were free to move around. Due to advanced facilities offered by the International Monetary Fund, the EMA was ended in 1972.

After the introduction of the euro in 2000, there have been hopes for moving towards a financial area, where no transaction costs would occur between cross-border payments, because it was expected that cross-border transactions would significantly increase with the euro. Cross-border payment transactions were costly for consumers and companies, who had to pay banking fees for international transfers and to have a separate bank account in each country they operated in. There was a clear need for a new payment system that would make the euro area a real one currency area without big operating costs. In this regard, efforts were focused on creating SEPA.

The single euro payments area (SEPA) is a system of transactions created by the European Union (EU). The SEPA harmonizes the way cashless payments transact between euro countries. European consumers, businesses, and government agents who make payments by direct debit, instant credit transfer, and credit transfers use the SEPA architecture. The single euro payment area is approved and regulated by the European Commission.

7.3.1 SEPA Purpose and Members

The purpose of the single euro payments area (SEPA) initiative is to make cross-border electronic payments as inexpensive and easy as payments within one country. Also, the system brings more competition to the payments industry by creating a single market for payment services, thus bringing down prices. More than 520 million people live in countries covered by the SEPA, and those customers make more than 122 billion electronic payments per year.

SEPA currently includes 36 members. It encompasses the 28 EU member states along with Iceland, Norway, Liechtenstein, Switzerland, Andorra, Vatican City, Monaco, and San Marino. The single euro payment area remains an ongoing, collaborative process between these parties. SEPA is in the process of harmonizing rules regarding mobile and online payments.

SEPA is managed by the European Commission and the European Central Bank (ECB) on a collaborative basis, through the European Payments Board. The board is chaired by the European Central Bank, which together with representatives from government and consumer groups, works to govern the board and steer its agenda.

7.4 The Latin American Agreement on Reciprocal Payments and Credits (CPCR- LAIA)

The Association of Latin American Integration, Reciprocal Payments and Credits Agreement (the ALADI Treaty) is a multilateral agreement signed in August, 1982 by representatives of the Central Banks of Argentina, Bolivia, Brazil, Colombia, Chile, Dominican Republic, Ecuador, Mexico, Paraguay, Peru, Uruguay and Venezuela. Similar agreements have been in effect since 1965.

The ALADI Treaty governs the flow of funds between Latin American countries by replacing the international payment mechanisms that have been traditionally utilized. These changes in procedure result in greater intra-regional trade by reducing the need for hard currency U.S. dollars and the risk of local currency inconvertibility, and by providing a mechanism for replacing cross-border foreign private bank risk with local central bank risk.

7.4.1 Institutional Framework

The Reciprocal Payments and Credits Agreement was initially supported institutionally by the Montevideo Treaty of 1960 which created The Latin American Free Trade Area (ALALC). At this stage, the Conference of Contracting Parties - highest political body of ALALC at the time - gave it shape through the creation of the Council for Financial and Monetary Policy, a body specialized in this matter, to which it granted resolute capacity in matters of its competence.

Under this framework, the Second Meeting of the Council for Financial and Monetary Policy of ALALC, held in Mexico, September 1965, approved and subscribed by the member central banks the Reciprocal Payments and Credits Agreement, also known as the Mexico Agreement.

When ALALC was replaced by The Latin American Integration Association (ALADI) upon signature of the Montevideo Treaty of 1980, the new intergovernmental body, successor to the former, assumed to all effects its legal status and results.

7.4.2 What Are Its Objectives?

The Payments Agreement was originally conceived with a view to starting "a formal multilateral cooperation among central banks of the region so as to reach, in successive stages, financial and monetary integration through the constitution of financial bodies for the establishment of a more advanced cooperation".

To this end the basic targets established for the Agreement were: to stimulate financial relations among the countries of the region, to facilitate the expansion of its reciprocal trade and to systematize mutual consultation in monetary, exchange and settlements basis.

Furthermore, the Agreement highlights the fact that the establishment of the multilateral clearing of payments mechanism is aimed, among other purposes, at the following:

- To facilitate the channeling of settlements and intensify economic relations among their respective countries;
- To reduce international currency flows among participants; and
- To stimulate financial relations among financial institutions of the region.

7.4.3 What Is the Payments Agreement?

It is an Agreement subscribed on August 25, 1982 within the Council for Financial and Monetary Affairs of ALADI, by the Central Banks of Argentina, Bolivia, Brazil, Colombia, Chile, Ecuador, Mexico, Paraguay, Peru, Uruguay, Venezuela and the Dominican Republic. This Agreement replaced without interruption of continuity the "Reciprocal Payments and Credits Agreement of ALALC countries" signed in Mexico on September 22, 1965, on the

basis of which the operation of a multilateral payments clearing, in convertible and freely transferable currencies, had been created among the mentioned central banks.

Under the Reciprocal Payments and Credits Agreement, international payments derived from trade transactions of the countries of member central banks, consisting of commodities originating therein and services performed by resident persons (included in agreements entered into by pairs or groups of central banks), are processed and cleared at four-monthly periods, in such a manner that at the end of every four-monthly period (clearing period) only the overall balance of the central bank of each country with respect to the others, is transferred or received, depending on whether there be a deficit or a surplus.

The Agreement establishes a System formed by three fundamental components: A Multilateral Payments Clearing Mechanism, a System of Guarantees and a Mechanism for the transitory financing of balances derived from multilateral clearing: The Automatic Settlements Program; concerning the characteristics, operation and connection thereof comments are to be found further on. (See Figure 1).

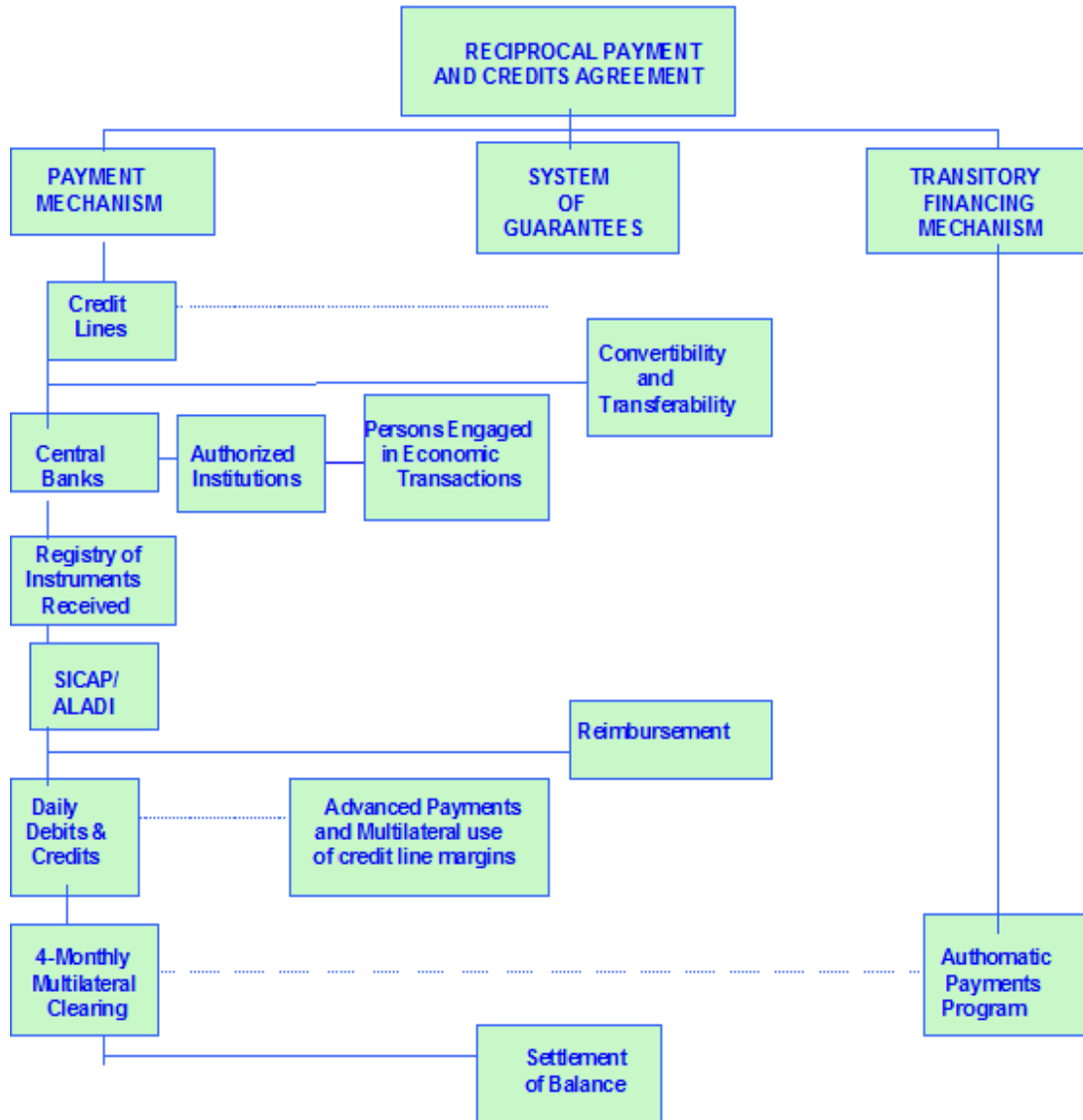


Figure 2- Payments Agreement Components

7.4.4 What Transactions Does the Agreement Cover?

Article 2 of Agreement sets forth that trade transactions: commodities originated and services performed by persons resident therein (included in agreements entered into by pairs or groups of central banks), may be channeled through the System.

Furthermore, it refers to financing operations involving commercial transactions through document discount in a third member country or in a third non-member country (instrument discount mechanism) as well as to commercial triangulation payments among member countries.

Finally, it bans the channeling of purely financial transactions, by which it should be understood such operations as imply a transfer of funds unrelated to a commercial transaction.

On the other hand, the Agreement itself limits admissible transactions to such as are conducted through those "instruments" referred to in the Regulations, issued or endorsed by Authorized Institutions.

7.4.5 What Guarantees Protect Agreement Payments?

The guarantees contemplated in the Agreement are those concerned with convertibility of national currencies into United States dollars, transferability of the latter through the Mechanism and with reimbursement and payment of operations processed as per Agreement through Central Banks, these being one of the most relevant elements of its operation.

The Reimbursement Guarantee merits special mention because of the certainty it affords the exporter of timely collection of monies due, thereby constituting a first supporting element of intra-regional trade. Through it, Authorized Institutions of the exporting country may finance their customers in the certainty that the respective "instruments" shall be reimbursed when due. This guarantee even gives that same exporter the possibility of offering direct credit to the importer, under the figure of suppliers' credit, thus increasing competitiveness vis-a-vis the international market.

7.4.6 How May Transactions be Channeled Thereby?

7.4.6.1 Regional Mechanism

It should be borne in mind that it is a mechanism applicable to relations among certain given countries and this determines the requirement of consigning origin of goods for commercial transactions and residence of intervening persons in any of the regional countries for the exchange of services (included in agreements entered into by pairs or groups of central banks).

The channeling of payments through the Agreement is voluntary. Nonetheless, on certain occasions, some Central Banks, at their convenience, have temporarily made it mandatory. In the event of its being voluntary, economic operators may request an authorized commercial bank that their transactions be channeled through the Agreement thus benefiting from the advantages and guarantees therein contained.

7.4.6.2 Instruments that may be used

Exchange operations channeled through Agreement should be endorsed by such valid documentation as is therein required, in other words, the "instruments". These are:

- Payment orders
- Nominal drafts
- Letters of credit
- Documentary credits
- Letters endorsed by banks
- Promissory Notes derived from commercial transactions

All these instruments shall contain a statement to the effect that they are reimbursable through the Agreement.

The diversity of instruments affords ample flexibility in the use of the payments mechanism, as it is possible to opt for any of them depending on the nature of the transaction, its maturity, volume and importance, nature of relations between importer and exporter, and commercial traditions prevailing in each country; it offers furthermore, a wide range of operational expenses.

Payment orders are generally used for sight drafts and for channeling "simple collections"- an instrument which is not directly contemplated in the Agreement- once the importer has deposited the respective counter value in national currency.

Nominative drafts are generally applied to personal transfers.

Letters of credit, documentary credits and letters endorsed by banks are more usual in the case of transactions for larger volumes and may eventually be negotiated, so that payment is settled in the short term.

Finally, promissory notes derived from commercial transactions, are applicable to transactions which include median and long-term payments and to covering, among other items, the trade in capital goods and equipment and public sector transactions. This "instrument" in the mode of promissory notes for discount transactions, is utilized as support for the financing of commercial transactions carried out between two countries through the intervention of an Authorized Institution of a third country (Instrument Discount).

7.4.7 How Does the Payments System Operate?

7.4.7.1 Payments mechanism

The Payments mechanism operates as follows:

a) Reciprocal credit lines

On the basis of the procedures set forth by the Agreement, each central bank establishes with each of the others within the System, a reciprocal credit line expressed in United States dollars which varies from case to case, in conformity with the importance of the commercial flows established among their respective countries. Currently, all central banks member has bilateral credit lines which are in force and operative. Said "credit lines" allow for the

channeling of payments among members, covering the daily balances between two Central Banks.

In no case, however, is the eventual exhaustion of a "credit line" tantamount to the suspension of transactions channeled thereby. These continue to be processed by the System in an irrevocable manner.

Should any central bank surpass the limits of a "credit line" agreed upon with another bank, upon request of the latter and within a given period prior to the closing of the "four-monthly period", it must settle the excess incurred in convertible currencies. Alternatively, the Agreement contemplates for such a case as this, and as shall be seen hereinafter, a multilateral "credit lines" mechanism concerning the margins that a central bank may have with other Central Banks, but this possibility is optional and subject to agreement of the parties concerned.

b) Authorized Institutions

On the other hand, an all-inclusive authorization is granted therein to the commercial banking system to channel directly, through the Mechanism, the transactions contemplated by the Agreement. For this purpose, the central banks direct those institutions in their country which grant the authority to operate, to go so far in some cases as to include in the list all institutions comprised in the respective banking system.

Authorized Institutions are responsible, totally and exclusively, for carrying out transactions that are or have been channeled under the Agreement and its Regulation. If an "instrument" is channeled through the agreement but has not been issued in conformity with the provisions therein contained, both the Authorized Institution which has issued it and the one receiving it or paying it, are responsible for the non-compliance thereof, have no right to reimbursement and the settlement of their dispute is their sole responsibility; this without detriment to such penalties or punitive measures as may be applied to them by the competent authority of their respective country.

c) Channeling of transactions and Clearing (Figure 2)

In the case of a commercial transaction, the channeling procedure is as follows:

On due date of a transaction, the exporter has to be reimbursed by its commercial bank (bank or authorized institution) against presentation of valid documentation (instruments). In turn the exporter's commercial bank obtains reimbursement from his country's central bank and the latter enters a credit in its favor and a debit to be charged to the importer's central bank, for whose account it has settled the amount due. The central bank that has been debited must be reimbursed by the importer's commercial bank and the latter by the importer.

In order to comply with the above procedure, each central bank keeps an account with each of the others, wherein it enters the amounts paid to exporters in its country, through an "authorized bank", on behalf of the importers' central banks, that is to say, its "credits" vis-a-vis those central banks. Moreover, on a separate account it registers the payments notified by each of the other central banks, in other words, its own "debits". The daily difference between

"credits" and "debits" of a central bank is covered by a bilateral "credit line" established by pairs of central banks with respect to each other.

Multilateralization operates through a primary assessment of bilateral balances at the close of the "four-monthly period", at which time bilateral positions are cleared, resulting in a single debit or credit balance for each central bank, to be transferred or received as the case may be.

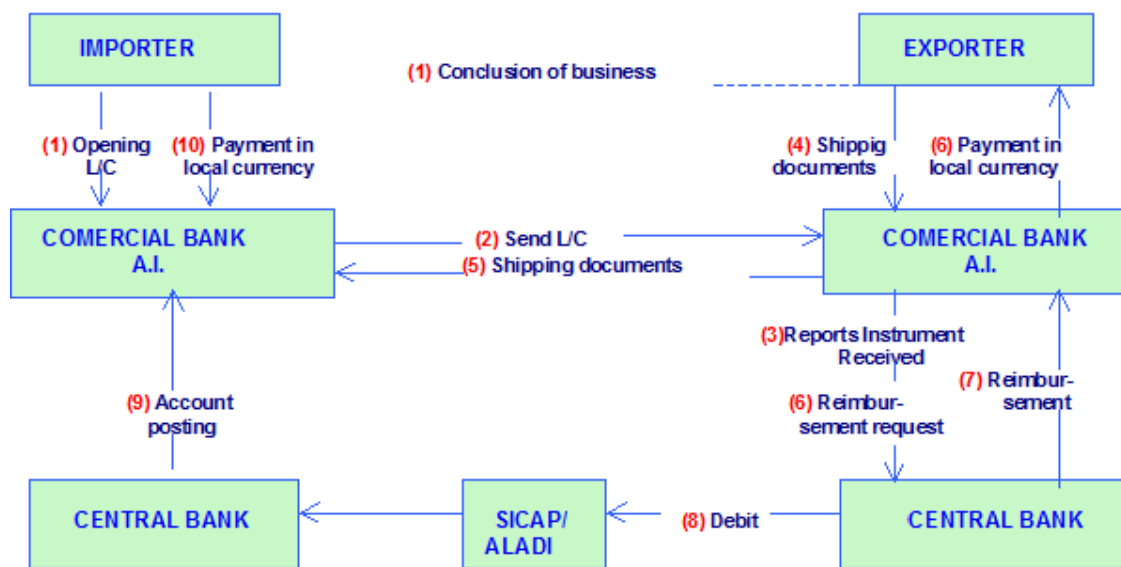
d) Interest on debits entered

It has been established that interest is to be paid on debits among Central Banks. Currently the effective rate is LIBO at four-months (British Bankers' Association), determined by simple arithmetical average of the registry of first three months and fifteen days of each period, plus one percentile point.

e) Agent Bank and Common Correspondent Bank

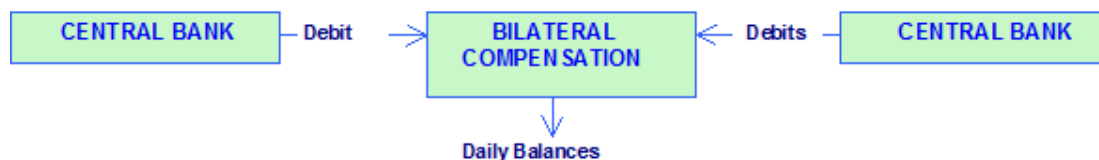
One Central Bank acts as Agent of the System and carries out the multilateral clearing: this bank is the Central Reserve Bank of Peru. There is also one common correspondent: The Federal Reserve Bank of New York, through which debit and credit balances are settled.

1-Commercial Transaction and Agreement Payment (During Period)¹



2- Daily Bilateral Clearing Between Central Banks(During Period)

¹A.I.: Institution Authorized to operate through Agreement.
L/C: Letter of credit.
BCRP: Central Reserve Bank of Peru.
FRB: Federal Reserve Bank of New York.



3- Multilateral Clearing (End of Period)

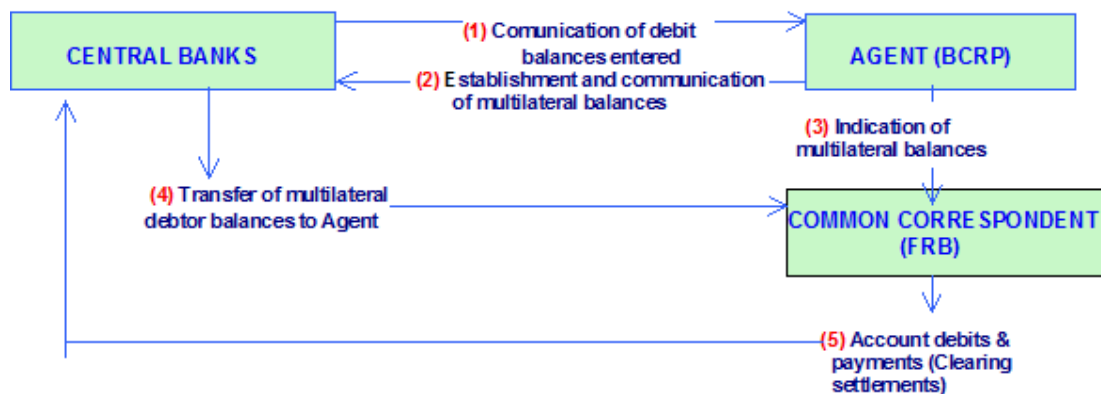


Figure 3- Cycle of Agreement Operations

7.4.7.2 SICAP/ALADI

It is important to point out that, as from May 1989, the Agreement is supported by the "ALADI Computerized Information Support System to the Reciprocal Payments and Credits Agreement" (SICAP/ALADI).

This System includes an Operations Center, located in Lima, in the headquarters of the Central Reserve Bank of Peru; Regional Centers operating in each of the Central Banks and a Statistical-Informative and Coordination Center located in the General Secretariat of ALADI.

SICAP/ALADI is formed by a series of computer software which, through the use of data transmission media, render possible the automatic data processing concerning Payments Agreement transactions as well as others concerning the reciprocal relations among member Central Banks. Its basic function is to make possible the daily updating and information regarding Account balances among member Central Banks. It furthermore registers and exchanges information concerning instruments received by authorized institutions of a country for settlement through the Agreement, prior to the reimbursement request. It furthermore supplies them in a methodical and detailed manner, with multiple and varied information concerning the movements which have taken place during a current period (debits, credits, balances, calculation of numerals and interests, refunds, extraordinary settlements, multilateral use of credit lines, authorized institutions, etc.), as well as with such historic data as refers to former periods.

SICAP/ALADI has optimized various aspects of the Payments Agreement operation, among which should be highlighted the timeliness and soundness of the information that travels through the System, as well as the reduction in communication costs among the member Central Banks. On the other hand, it is to be expected that its wealth in data compilation will gradually and progressively lead to a particularly valuable data source concerning the evolution of intra-regional commercial and financial transactions.

7.4.8 7. Other Aspects of the Payments Mechanism

7.4.8.1 Mechanism for the multilateral use of credit lines

As stated hereinbefore, when a Central Bank is debited by another in excess of the corresponding reciprocal credit line, the creditor may claim payment of said amount prior to the four- monthly period closing. Said excess is payable in cash, through direct remittance of amount (extraordinary settlement) or, prior consultation with the parties concerned, through the Multilateral use of the Credit Line Margins Mechanism.

Through this latter mechanism, is achieved a better use of the available credit lines open to each Central Bank and the multilateral cooperation among members increases.

This mechanism basically permits the substitution of debts. A debtor Central Bank (C) which has exceeded the reciprocal credit line with a second Central Bank (B), requests a third transferor Central Bank, with which it has an available credit margin (A), to substitute part or the whole of the debt with the "Debtor-in-excess Bank". The "transferor Bank" is then debited by the "Creditor-in excess Bank", which the former in turn transfers to the ""Debtor-in-excess Bank". Concomitantly, the "Debtor-in-excess Central Bank" receives a credit or credit entry from the "Debtor-in-excess Bank" for the same amount, and thus reduces the original debit balance with the latter returning to its line of credit margin. (See Figure 3)

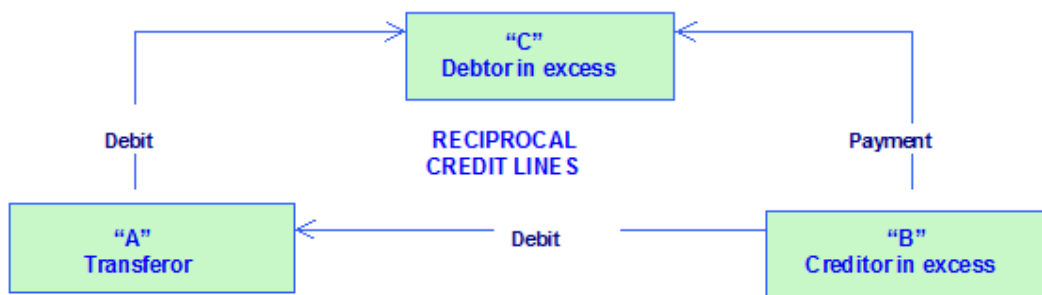


Figure 4- Multilateral Use of Credit Margins Mechanism

Procedure:

1. Once the excess occurs, C requests B the use of the mechanism.

2. B communicates to C the A potentials with respect to its credit line margins, preferably those with which B has the smallest margin (larger debit balances chargeable to it).
3. C selects A in consideration of the credit line margin available and requests the respective authorization.

7.4.8.2 Instrument discount mechanism

This Agreement Mechanism is of particular importance in giving financial support to intra-regional trade. It was originally implemented under Article 2 of the Agreement (Resolution 57 of the Council for Financial and Monetary Affairs-September 1989) and was subsequently incorporated into the Regulations in September 1993 ("Promissory notes for transactions involving discount of commercial "instruments" issued or endorsed by "authorized institutions" (PE)).

To the favorable conditions created by the operation of the reimbursement guarantee, this Mechanism adds a better use of the resources available to the commercial banks (Authorized Institutions) of the member countries thus making it possible for such resources to be channeled in financial support of transactions in intra-regional trade.

It is based on a payments instrument financed through a commercial transaction between two member countries whereby the exporter's Authorized Commercial Bank offers the respective document for discount to an Authorized Institution of a third member country. In case of acceptance, with the prior approval of central banks involved, the Commercial bank holding the original instrument issues an additional instrument, linked with it and subject to same maturity, ("Promissory notes for transactions involving discount of commercial "instrument" issued or endorsed by "authorized institutions" (PE)) in favor of the taker Institution of the third country; said instrument may also be channeled through the Agreement and the holder receives against it the corresponding funds. Both maturities, that of the commercial instrument and that of the financial instrument, must be simultaneous, therefore reimbursement to the exporter by its financing Authorized Institution and to the latter by its Central Bank, take place on the same date.

In this manner, on the one hand, the Commercial Bank of the exporter's country anticipates reception of funds and may continue to offer to finance its customers or to anticipate payment to the exporter. On the other, the Commercial Bank of the third member country can place the funds it has available for credits as convenient (See Figure 4).

7.4.8.3 Commercial triangulation Payments

The possibility of using this commercial triangulation mode was incorporated into the Payments Agreement in September 1992.

Commercial triangulation is a mode of international trade whereby a vendor, domiciled in a third member country, exports goods having origin in a member country to another member country. These transactions are subject to the prior approval of the importer's and vendor's central banks. The goods flow directly from the country of origin to the importer country, but payments through the Agreement mechanisms are settled from the importer country to the vendor country. Ultimately this operation is tantamount to the commercial financing of

importer by the vendor, making use of the reimbursement guarantee offered by the Agreement. The exporter, in turn, receives cash from the vendor.

In the following page there is a graph (Figure 5)¹ which presents in a simplified manner, trade and payment flows under this type of transaction.

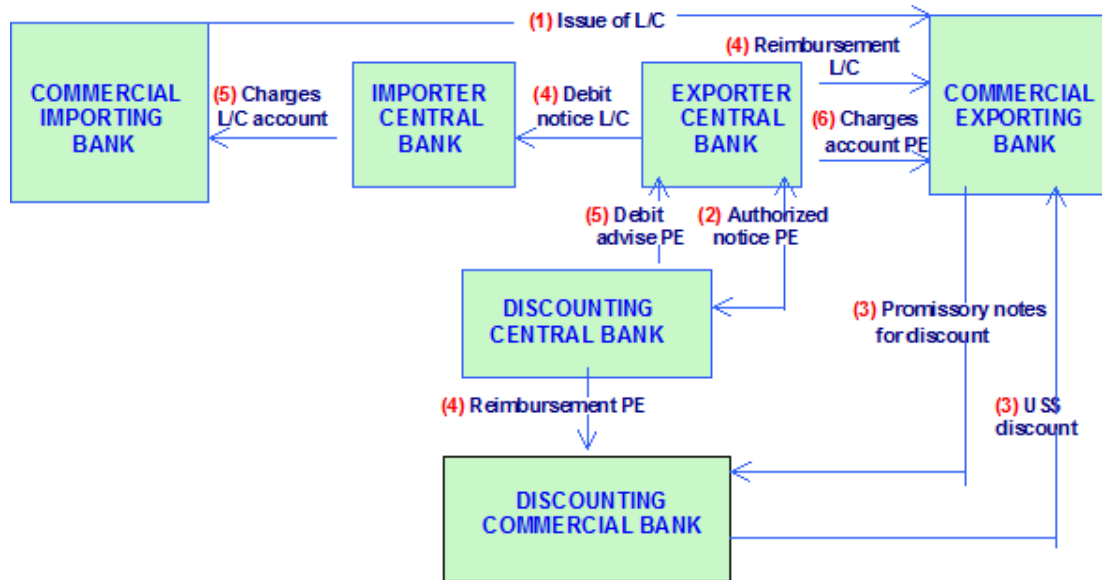
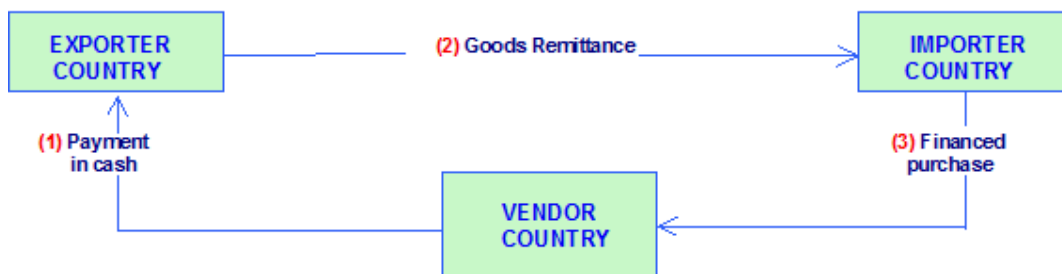


Figure 5- Discount in a Third Country (Financial Triangulation)

¹L/C: Letters of credit.

PE: Promissory notes for discount transactions of instruments derived from commercial transaction issued or endorsed by authorized institutions.

1-Commercial Transaction Flow



2. Triangulation Payments Flow

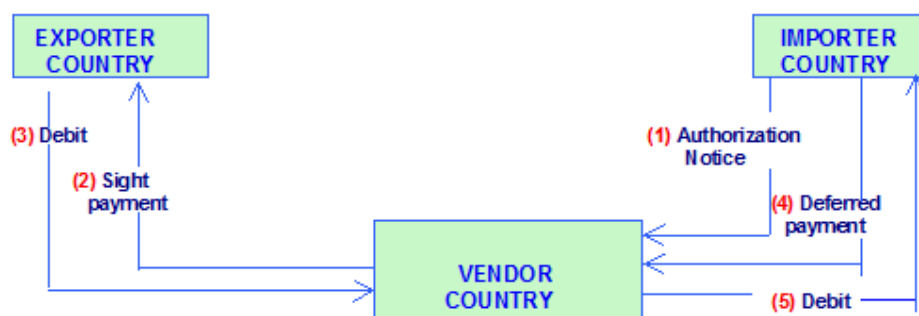


Figure 6- Financing Through Commercial Triangulation Simplified Process

7.4.9 Automatic Payments Program

On March 1991, the Council for Financial and Monetary Affairs of ALADI approved a Protocol Modifying the Payments Agreement in force as from May 1, 1991, establishing thereby a multilateral and automatic mechanism with a view to giving support to lack of liquidity situations which might arise, , with respect to any of its member central banks and thus preventing them from meeting their due payments at the multilateral clearing; it supplies, furthermore, corrective measures to attend to these unusual situations, which go beyond what the System may reasonably or possibly sustain.

The "Automatic Payments Program" consists in delaying payment of debit balances of a Central Bank over an additional four-monthly period, during which the respective amounts due must be canceled in four equal and consecutive payments at each month's end. This Automatic Payments Program may be used, by the same central bank, as often as twice during six Clearing periods (two years).

This mechanism constitutes an important extension of the multilateralism degree of cooperation developed through the Payments Agreement. It allows for an equitable distribution of risk and renders possible eventual general corrective action against it, aimed at meeting the urgencies and consequences which used to characterize the forced negotiation of bilateral arrangements outside the System, previously stipulated in cases of non-compliance by any of its members upon maturity.

According to the past system if a Central Bank were unable to meet its debit balance at the Multilateral Clearing, it was excluded thereof at end of period and the Clearing was conducted exclusively among the others. The debtor Central Bank was compelled to conduct, outside the Agreement, the pertinent bilateral arrangements with each of its creditors and during the following period, it would continue operating normally.

Consequently, it occurred that an excluded Central Bank would enter into arrangements of deferred payment with its creditors and, should it have any creditor balances with others, it would receive said amounts immediately.

The Automatic Payments Program corrects this situation by determining that if a debtor Central Bank during the multilateral clearing has any partial creditor balances, these balances would then be distributed on a proportional basis amongst its own creditors, thus reducing the respective amounts; the remainder, constitutes the debt contemplated by the Program, which, if not settled within the term prescribed, is maintained within the System and is added to the debits entered during the next four-monthly period.

In future the Agreement protection shall cover at all times, all transactions processed thereby, irrespective of whether the debtor central bank at a multilateral clearing does or does not meet its debts when due, as a result of liquidity problems.

7.4.10 Settlement of Disputes

In September 1994, the Council for Financial and Monetary Affairs of ALADI, approved the Protocol for Settlement of Disputes among Central Banks, which covers disputes arising among participating Central Banks on compliance with the provisions contained in the Agreement in the Regulations and in Council Resolutions or omission thereof, concerning operations transacted after signature of this Protocol, which shall remain open to the voluntary signature of all members.

In May 1997, when all Central Banks had endorsed it, the mechanism was incorporated into the rules governing Agreement.

7.4.11 Benefits Have Resulted from Agreement Application

The Agreement has served one of its main objectives: to facilitate limited use of convertible currencies in the commercial transactions among member countries thus contributing to the development thereof.

Furthermore, in granting full payment guarantee to transactions channeled thereby, the Agreement has promoted a minimal risk contingency and resulted in considerable expediency, to the benefit of those engaged in economic transactions in the region.

On the other hand, it has contributed to reduce the cost of commercial transactions, through the elimination of the traditional triangular banking process with institutions outside the region, plus eliminating the need for credit insurance on exports. Consequently, it has brought about the wide participation of banking institutions established in the member countries (authorized institutions), in opening, confirming and negotiating letters of credit concerning intra-regional trade.

This has resulted in an increased bond between commercial banks of the region, which have established or extended their intra-regional relations in order to facilitate their participation providing capital for regional trade therefore turning into valuable data sources on commercial opportunities among the countries in the area.

With respect to the member central banks, the Agreement has resulted in closer knowledge and a high degree of cooperation and support among them, thus making it possible to develop other financial integration mechanisms; in the future it shall, no doubt, contribute to deepening this process.

7.4.12 Internal Regulations

This presentation is based on the general principles of the Reciprocal Payments and Credits Agreement and its Regulations.

Nonetheless, it should be borne in mind that the Agreement contemplates the possibility that the Central Banks regulate, in their countries, the internal mode of payments to be made. This means that the Central Banks, in the use of this possibility and in accordance with its basic regulations, such as those concerning reimbursement guarantees, may restrict, according to their internal needs, such transactions as may be channeled through the Agreement, as well as the instruments to be used.

Therefore, the natural consultation channel for anyone engaged in economic transactions, as to the details of the Agreement and its operation at each country level, is that of authorized commercial banks, which in turn receive instructions from their own Central Banks.

Accessorially, the ALADI General Secretariat is a source of consultation as to scope of the rules governing the Agreement thus aiming at a uniform use of the mechanism throughout the region.

7.5 Regional Payment and Settlement System (REPSS) of COMESA

The Common Market for Eastern and Southern Africa (COMESA) is an initiative that began in 1994 in an effort to increase economic cooperation and security among its 19 member states. In 1984, the COMESA Clearing House (CCH) was established to enable member states to trade with each other in their own national currencies. Payments integration in COMESA took another big step forward in 2009 with the creation of the Regional Payment

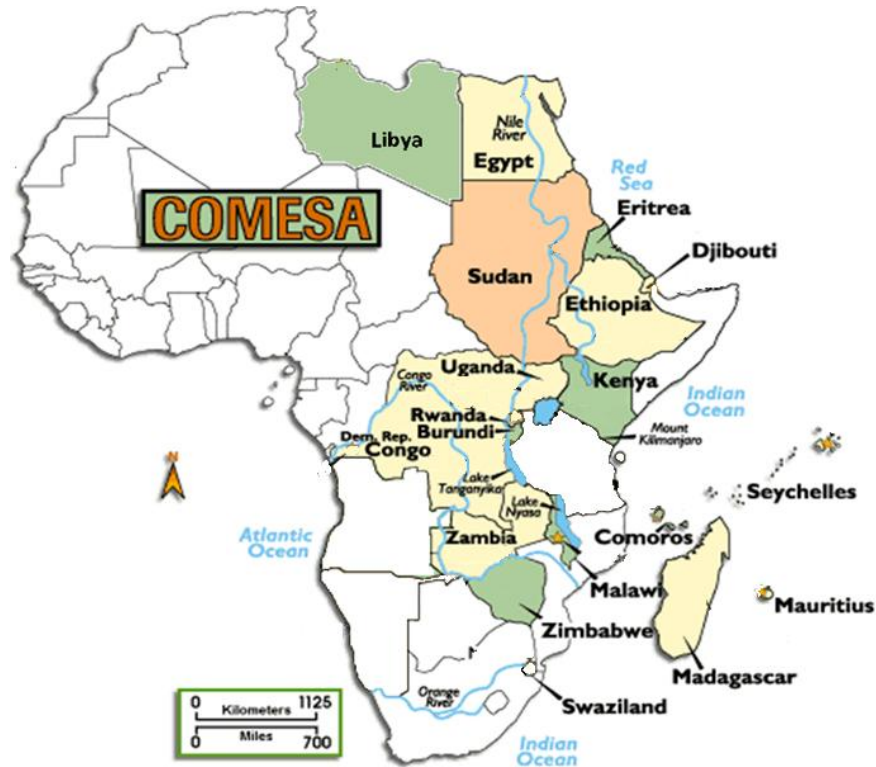


Figure 7- COMESA map

and Settlement System (REPSS), which enables participating member states to connect to a central clearing and settlement mechanism through their national central bank to make cross-border payments without using correspondent banking channels.

The REPSS system is not intended to replace domestic payment systems. Customers that wish to make a cross-border payment through REPSS inform a commercial bank, which then routes the payment to REPSS via their national central bank. Central banks are the only direct participants in REPSS, which clears and settles payments in either US dollars or euros. There is no value limit in REPSS; it clears and settles both high- and low-value payments. It is believed that REPSS will help bring about increased trade and the creation of a common market within COMESA.

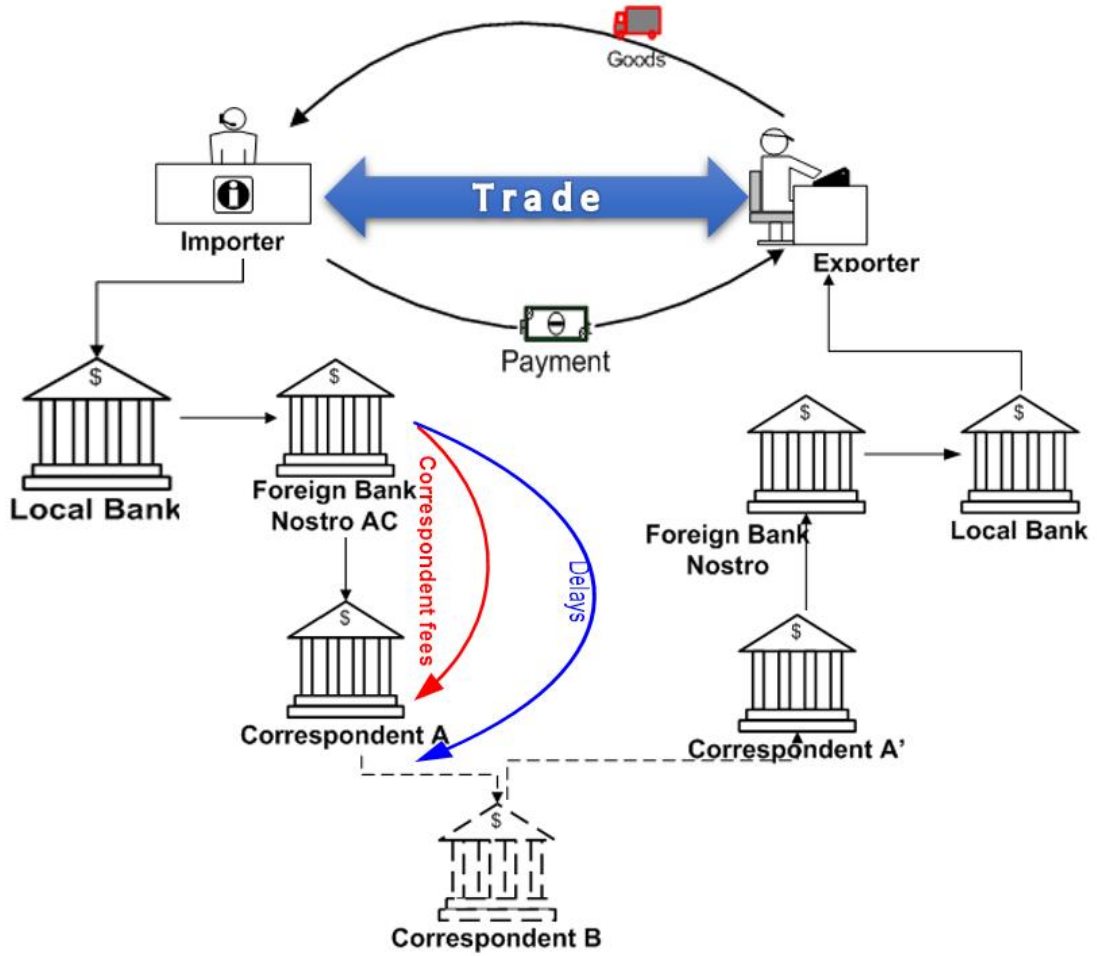


Figure 8- Traditional Cross Border Payment

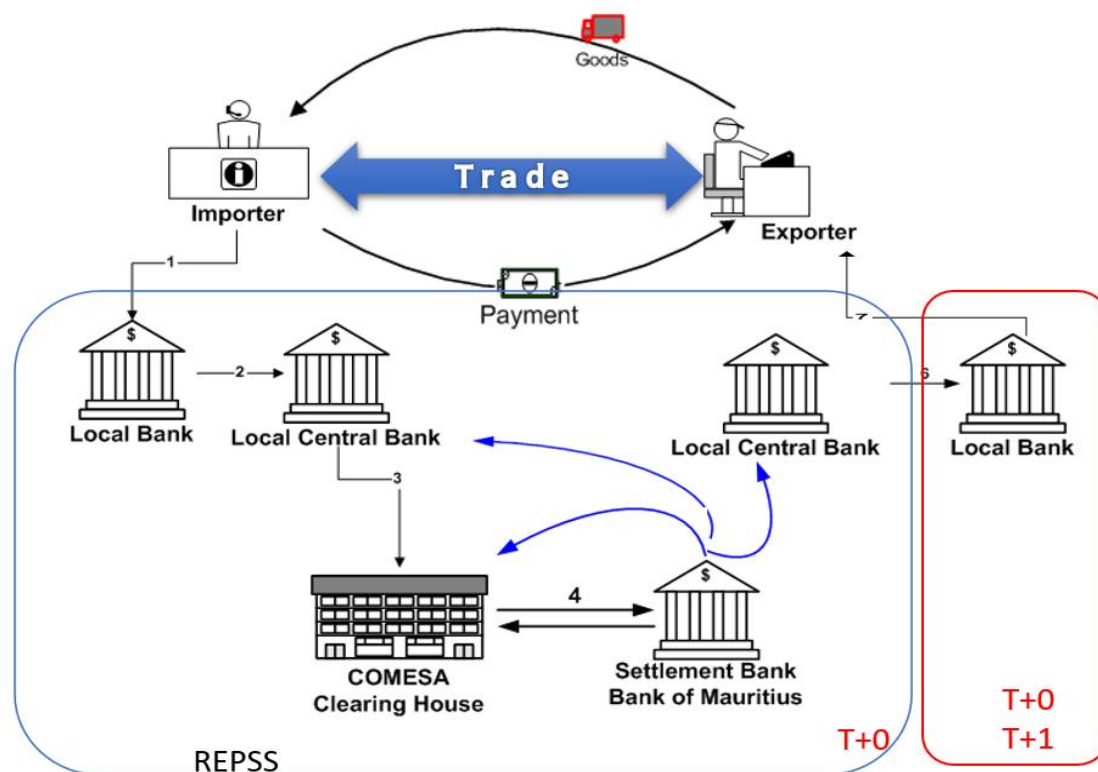


Figure 9- REPSS Model

The Clearing House was brought into existence when the countries of the region had strict exchange control regimes in place and foreign exchange was scarce. The clearing system allows businesses to invoice their exports in national currencies or in UAPTA. The COMESA central banks, in turn, offset these transactions on a daily basis through the Clearing House but only settle net debtor balances in hard currencies every two months.

The advantage derived from the Clearing House consists of the alleviation of the problem of inadequate foreign exchange through the use of national currencies in the region's transactions, thus giving them partial convertibility; confirmation of letters of credit are not necessary because they are only opened after the importer's monetary authority approves the transaction and takes on an obligation to settle its net balances at the end of the two month period; and prompt payment is made to the exporter as each transaction is backed by the central banks.

All the parties to this arrangement benefit in that net debtor countries gain credit in foreign exchange for their outstanding net debit balances, whereas net creditor countries increase their export potential.

With the adoption of economic reform and structural adjustment programs in most COMESA countries, leading to the direct availability of foreign exchange to firms and importers, the value of the services the Clearing House has been offering since 1984 have diminished and the Clearing House needs to redefine its role and the services it offers.

A paper prepared by the Secretariat on the future role of the COMESA Clearing House suggests that there is a number of services the Clearing House could usefully provide to COMESA member states which would actively assist to promote regional integration and, through that, economic growth. These services include:

- improving the efficiency of clearing operations so that they are able to complement the services offered by commercial banks;
- providing traders within the region with some form of political insurance on intra-regional trade;
- and the facilitation of monetary and fiscal policy harmonization within the region.

7.5.1 Payment Exchange Schemes

REPSS supports a set of payment flow scenarios that allows Central Banks and COMESA to use a scenario that is most appropriate for every case. All of these scenarios are based on a common payment exchange scheme that is presented below.

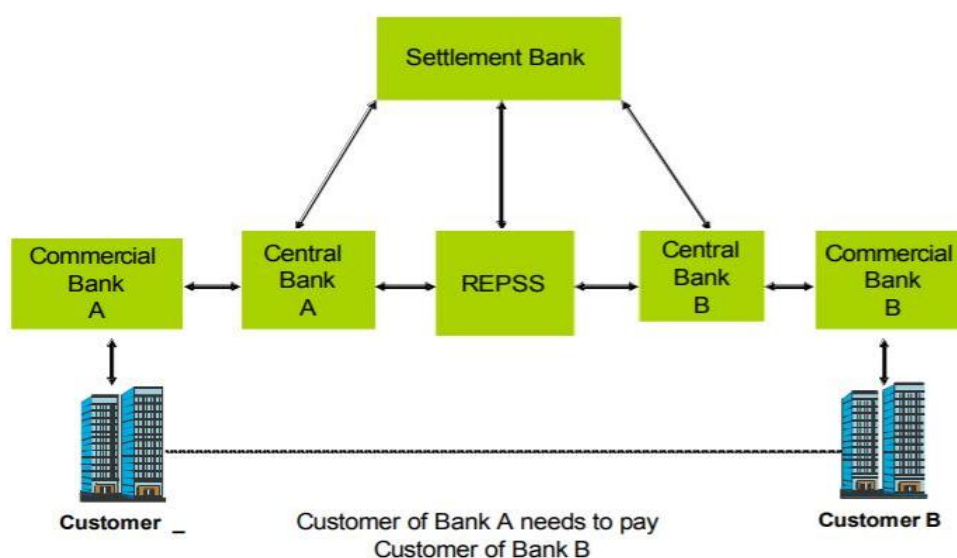


Figure 10- REPSS Payment Flow

1. Debit Leg at a National level

- Customer-Payer present a payment order to Commercial Bank;
- Commercial Bank sends MT103 to National payment system (RTGS) with Central Bank

as a Credit Party;

- Payment is settled in NPS with a mark that it should be processed in REPSS.

2. Processing in REPSS

- Central Bank sends MT103 to REPSS;
- REPSS includes this payment into clearing, settles Session results through a SettlementBank;
- REPSS routes a payment to Receiving Central Bank.

3. Credit Leg at a National level

- Central Bank receives a payment from REPSS (and, possibly, MT103 from corresponding Central Bank);
- Payment is settled in NPS and routed to Commercial Bank–Receiver;
- Commercial Bank receives MT103 and distributes it to a Customer.

7.5.2 Cost of Transactions

According to COMESA clearing house executive secretary Mahmood Mansoor: “The payment for the bulk of the 8 billion U.S. dollars in intra-COMESA annual imports is conducted through correspondent banks in the United States and Europe. As a result, the region pays transaction fees of up to 400 million dollars to foreign banks annually due to lack of use of the regional payment and settlement system. Currently, 21 African countries in East, South and North Africa are COMESA member states. The COMESA clearing house has been operating a regional payment system for the past five years that allows member states' central banks to guarantee payment for intra-COMESA trade and thereby eliminate the need for use of correspondent banks outside the region.”

Mansoor said: “Only 5 million dollars of COMESA imports is conducted through the COMESA clearing house every year. Intra-regional trade remains expensive as traders involved prefer to use letters of credit, which attract a 5 percent transaction fee. Through the COMESA Clearing House, traders don't have to use letters of credit and hence it results in lower cost of trade. The COMESA official noted that most of the bloc's member states have liberalized their economies and therefore central banks cannot dictate how payments for cross-border trade are conducted. The regional bloc plans to roll out a sensitization campaign to increase the use of the cost-effective regional payment and settlement system.”

According to the announcement of the Central Bank of Egypt to the commercial banks of this country, in relation to how to use the REPSS system in payments, the cost of transferring money in this system is as follows:

“0.4% of the transfer value, with a minimum of 25 dollars in addition to thirty pounds (Egyptian pound), a maximum of 65 dollars in addition to 300 pounds (Egyptian pound) or its equivalent, to be paid in the currency used for the transfer. The service fee is calculated from the value of each payment order issued to the REPSS.”

Compared to what COMESA clearing house executive secretary Mahmood Mansoor has said about the high cost of using correspondent banks in the United States and Europe, the cost of using the REPSS system is cheaper and more economical.

Also Compared to the current payment system, in which money is transferred through the complex network of correspondent banks, REPSS also greatly reduces the time and process of payments. In this system local banks will access the payment system through their central

banks. Any participating bank will, therefore, be able to make payments to, and receive payments from, any other participating bank. The linkages through central banks will avoid the complex payment chains that may sometimes occur in correspondent bank arrangements. The system will operate through member countries' central banks and their corresponding banking systems.

When regional payments integration is voluntary, adding new members to the scheme is a key measure of success. This can help increase volume through the system due to new members both putting new volume through and making it more attractive for other stakeholders, who can now send and receive payments to a wider pool of participants. The Regional Payment and Settlement System (REPSS) in COMESA has successfully established links between participating member states by enabling customers to send and receive payments in the local currency without going through correspondent banking channels. But volumes in REPSS are still low, and increasing membership is seen as a crucial step in achieving success in the system. With Egypt and Kenya, two major economies in COMESA for both sending and receiving cross-border payments, in the final phases of going online in the REPSS system, success is not far off.

8 Summarizing Clearing Unions

Because of time consuming and increased transaction costs, and also dependence on hard currencies, current cross-border payment systems and their components have caused friction in the international payments, which hinders the development of trade at the regional and global levels.

This report examines the mechanisms and experiences that can be used to overcome the friction in the international payment system, including the European Payment Union (EPU), The Latin American Agreement on Reciprocal Payments and Credits (CPCR- LAIA), the Asian Clearing Union (ACU), and the Regional Payment and Settlement System (REPSS) of COMESA.

The comparative analysis of these past and present trade-related regional payment systems presented in this report shows a variety of schemes in different parts of the world. The general reference model for most of the initiatives is the International Clearing Union, which sought to overcome a number of problems with the international monetary system, such as the prevention of global imbalances due to asymmetric adjustment costs assigned to debtor economies, and the problems for international trade associated with misaligned exchange rates. Past and present regional payment systems in Europe, Asia and Latin America focus on stabilizing and enhancing intra-regional trade through regional clearance of intra-regional trade transactions. A comparison of these regional arrangements shows that two elements are common to most of them: first, they offer the possibility of making transactions in local instead of international currencies between importers and exporters and correspondent banks; and second, they provide temporary liquidity during a determined clearance period whereby the participating central banks mutually offer credit by delaying final settlement of net deficits and net surpluses to the end of that period.

On the other hand, every trade union needs an infrastructure to drive the development of cross-border payments, which ECO can build based on the global experiences to develop trade between its member countries. Therefore, given the volume of past trade between ECO member countries and the capacities of this trade union, establishing a clearing union can lead to the reduction in the use of hard currencies result in an increase in foreign exchange reserves of member countries and by Reducing the time and cost of transactions will ultimately lead to the development of trade between member countries.

9 Comparative Analysis

By applying comparative analysis to the studied clearing unions, similar structures could be detected despite different legal and economic aim of establishment of these clearing unions. Analyzing the similarities help us to propose a regional payment system for ECO region.

9.1 Clearing House:

every clearing union has a clearing house entity. In fact, the heart of a clearing union is its clearing house.

For the European payment union (EPU), the Bank for International Settlement (BIS), played the role of clearing house, as well as settlement institution.

The Asian Clearing Union (ACU) established a secretariat, which act as a clearinghouse for the Clearing Union. The secretary general, as the head of secretariat, obliged to execute the advisement of debiting and crediting participant's accounts. Secretary General also notifies each participant of its net position and accrued interest. These are the tasks best fitted with the responsibilities of a clearinghouse.

In the Latin American Agreement on Reciprocal Payments and Credits (CPCR- LAIA) every central bank who has a bilateral credit-line with another participating central bank, acts as a bilateral clearing house by itself. All of these (local)bilateral clearing houses (participating central banks) has the Central Reserve Bank of Peruas Agent of the System and multilateral clearing house.

The Common Market for Eastern and Southern Africa (COMESA) even established the clearing house before the treaty come to existence. The member states have set up a clearing house in 1984 to manage current account transactions between member countries, which after establishment of COMESA in 1994, became the COMESA Clearing House (CCH).

9.2 Central Banks

central banks of participating countries have distinct role in a clearing union structure. The central banks are responsible for managing foreign exchange reserves of the country. They obliged to settle the net balances at the end of clearing period. So, they should havesupervision over the process as a whole.

In the EPU, the central banks hadheld the “settlement account” with Bank for International Settlements, and have been able to make their currency available to their partners, which has resulted in saving their scarce reserves of US dollar at that time.

The role of Central banks in ACU is minimal. Central banks are responsible for debiting and crediting ACU-Dollar and ACU Euro accounts with secretariat. Central banks also act as settlement bank at the end of settlement period, and play the role of liquidity provider (in national currency) during the settlement period.

In the CPR- LAIA, central banks engaged in a net of bilateral and multilateral reciprocal credit lines which provide liquidity for commercial flows. These credit lines, of course, plays the role of international reserve currency (us dollar) saver.

And finally, the central banks of COMESA act as a gateway of their subordinate commercial banks to the clearing house institution. Central banks are the direct participants in regional payment and settlement system (REPSS).

9.3 Commercial Banks

the commercial banks in the clearing unions act as operating agents. They interact with merchants and provide the payment services to the customers.

In the CPR- LAIA and COMESA, commercial banks should channel the transactions through their respective central banks. The commercial banks role in ACU, goes beyond of just providing payment instruments. Under ACU procedure rules, commercial banks are authorized to have Nostro account in ACU Dollar, ACU Euro and ACU Yen with their correspondent banks in other participating countries. As long as commercial banks could keep their (Nostro) accounts with their correspondent banks balanced, they do not need to ask central banks to interact through clearing mechanism and engage ACU clearing house. In fact, the Nostro accounts of correspondent banks in ACU Dollar, ACU Euro and ACU Yen, act as a local mini clearing system. The role of central banks and ACU secretariat become eminent when there is large volume of imbalances in trade between participants that should be settled outside the clearing system.

9.4 Financial Arrangements

The studied clearing unions have similar financial and legal arrangements, include settlement bank, settlement period and unit of accounting.

9.4.1 Settlement Bank

A settlement bank shouldn't be confused with clearing house. The function of settlement bank is to settle imbalances at the settlement date. It is usually a large international correspondent bank in an international financial center such as New York.

In the EPU, the bank for international settlement had been operating as settlement bank as well as clearing house. The Bank of Mauritius played such role for COMESA. This institution acts as Settlement Bank which is quite distinct from the role of COMESA Clearing House (CCH). In the CPR- LAIA, the Federal Reserve Bank of New York settles the balances of debits and credits. And finally, in the ACU, USD-correspondent banks of participating central banks, which are usually large international banks headquartered in New York, act as ACU-Dollar settlement banks. While EUR-correspondent banks of participating central banks are responsible for settlements in Euro.

9.4.2 Settlement Period

Another similar arrangement is to set up a settlement period. The clearing house participants nets the transaction during settlement period and settle the outstanding debt at the settlement date. The settlement period was one month for EPU. It is two months for ACU and COMESA. And CPR- LAIA settle the outstanding debt every four months.

The longer the length of settlement period, the larger the ratio of cleared transaction value to the settlement value, but also the larger the risks associated with settlement of debts.

9.4.3 Unit of Accounting

Finally, every clearing house adopts an accounting unit. EPU adopted a unit of account equal to 1/35 ounces of gold. Although the unit of account was equal to one US dollar at the time, it was just used for booking transactions and clearing operations. Of course, that unit of account became European Currency Unit many years later and finally evolved into Euro currency in 1999.

The CPR- LAIA chose US dollar as accounting currency, as the participating central banks provided reciprocal US dollar denominated credit-lines to each other.

In COMESA, The Unit of Account Preferential Trade Area (UPTA) was set equivalent to one Special Drawing Right (SDR) of the International Monetary Fund, although the outstanding debts are currently settled by UD Dollar or Euro by settlement bank of clearing union.

The ACU, has three types of unit of account. ACU Dollar, ACU Euro and recently, ACU Yen. The “ACU” prefix indicates that these accounts are booking accounts and just used for the purpose of book keeping. It is obvious that the value of ACU Dollar, ACU Euro and ACU Yen are set equal to one US Dollar, Euro and Japanese Yen respectively. Another interesting issue with the ACU is that not only central banks of participating countries have booking account with ACU secretariat, but commercial banks also authorized to keep such booking accounts with their correspondent. This option provides the commercial banks further ability to handle cross border transactions.

9.5 Technical Infrastructure

Operation of clearing unions in technical layer consists of two infrastructures: a computerized clearing system, and a financial messaging system. The computerized clearing systems handles debits and credits to the booking accounts automatically and reports net positions to participants accordingly. A good example is "ALADI Computerized Information Support System to the Reciprocal Payments and Credits Agreement" (SICAP/ALADI) of CPR- LAIA. With the fundamental task of calculating account balances among member central banks and reporting back to them.

REPSS of COMESA also is a computerized system which Processes financial messages received from Central Banks, manages exchange rates, Calculates Central Bank positions, controls debits and credits limits of the countries and Interacts with Settlement Bank. Some of clearing unions use the SWIFT as financial messaging system, some others have the messaging system of their own. ACU adopted a “Message Management Module” to handle

financial messages sent and received from participant central banks. Since ACU establishment dates back to an era which SWIFT was newcomer, it is not surprising that the clearinghouse had its own module to manage financial messages, but nowadays, providing an exclusive financial messaging system for a regional clearing union might be a necessity due to privacy concerns associated with SWIFT.



RUNC[®]
International
Banking Solutions

ECO Trade Figures & Payment
Arrangement

10 Preface

In previous section, which was related to Regional Payment Systems Benchmarking, it was discussed about the frictions in the current global payment system and it was said that since this system is based on correspondent banking networks and intermediate currencies of the dollar and the euro, payments have become costly and complicated. It was further explained that the existence of these frictions, complexities and costs has caused countries to work together to create their own regional payment systems.

Also, examples of these systems were introduced and reviewed. These examples base their payment systems on clearing union. These unions are actually clearing houses that process trade transactions between countries.

This section is about ECO Trade Figures & Payment Arrangement. Here, trade figures of goods and services and that how they are paid internationally will be analyzed. Also, the clearing mechanism will be described in this part and the effect of clearing mechanism on balancing payments will be demonstrated.

In order to know exactly these mechanisms, how they work and their effectiveness in order to achieve the stated goals, it is necessary to explain the key concepts. As a result, in this report, along with explaining the key concepts related to the clearing mechanism, using ECO trade statistics, its operation and effects will also be described.

11 Key Concepts of Clearing Union

11.1 Clearing

Clearing is the process of transmitting, reconciling and, in some cases, confirming found transfer instructions prior to settlement, potentially including the netting of instructions and the establishment of final positions for settlement. As an alternative to netting, trades can be settled directly one by one on a gross basis. The clearing agent may capture, match and confirm trades, as well as calculating obligations relating to found transfer instructions prior to settlement.

The use of payment systems is the most common way of settling payment transactions involving accounts held in different financial institutions. A payment system is a formal arrangement based on legislation or private contractual arrangements – with multiple membership, common rules and standardized procedures – for the transmission, clearing, netting and/or settlement of monetary obligations arising between its members. An interbank funds transfer system is a payment system in which all (or almost all) participants are credit institutions (and thereby subject to banking supervision). Consequently, this is an arrangement through which funds transfers are made between banks for their own account and on behalf of their customers.

As multilateral arrangements, payment systems make the processing of payment instructions more efficient by coordinating the exchange of payment instructions and providing communication networks and processing services.

A payment's route through a payment system starts with the submission of the payment order by the initiating bank. The submission of payment orders to payment systems and the processing of orders within those systems are typically automated. Depending on the rules and procedures of the payment system concerned, the further processing of that order may include matching, sorting, collection, aggregation, the exchange of relevant payment information between the financial institutions of the payer and payee, and the calculation of participants' mutual positions, possibly on a bilateral or multilateral net basis, with a view to facilitating the settlement of those participants' obligations in the books of a settlement institution.

One way of organizing the clearing process is in the form of a clearing house (when automated, also referred to as an “automated clearing house” or “ACH”). A clearing house is an organization that operates central clearing facilities, potentially also offering bilateral or multilateral netting arrangements. An alternative to the ACH model is the use of multilateral arrangements revolving around a “clearing association” – a coordinating body that organizes and facilitates clearing for institutions, but does not operate central processing facilities.

In economic terms, netting is the agreed offsetting of mutual obligations in order to establish single net settlement positions. Instead of handling a large number of payment instructions and settling them on a gross basis, two parties – or a group of parties – can achieve the same financial result by using netting arrangements and settling one single net position per party.

Netting arrangements are used both for payments and for obligations. Multilateral netting is typically provided by a central entity, usually a clearing house or a central counterparty. Incentives to enter into netting arrangements stem from the desire to reduce exposure to counterparty risk (including any capital charges associated with credit exposures) and the desire to reduce settlement-related costs, such as the cost of settlement instructions, the cost of holding balances and the cost of obtaining credit in order to effect settlement.

11.2 Settlement

In the field of payments, settlement is an act which discharges obligations between two or more parties. The settlement asset is transferred between the parties concerned, with or without the use of a settlement agent. Settlement methods vary, with a choice between gross and net settlement, and between real-time and designated-time settlement. For a payment instruction in a payment system, settlement occurs when funds are transferred from the payer's bank to the payee's bank. Settlement discharges the obligation of the payer's bank vis-a-vis the payee's bank in respect of the transfer. As regards settlement finality, a payment is considered final when it becomes irrevocable and unconditional. The rules of each individual payment system define the precise moment at which finality occurs. Finality may occur the moment payment instructions are entered into the system and technically validated, the moment the payment instruction is processed and the resulting balance is settled, or at any point between those two extremes. In real-time gross settlement (RTGS) systems, the time lag between the submission of a payment and the point of finality is kept short. This reduces uncertainty as regards the possibility of the sending bank failing between the initiation and completion (i.e. settlement) of a payment.

11.3 Settlement Institutions

The settlement institution (or "settlement agent") is the institution across the books of which transfers between participants take place in order to achieve settlement as part of a settlement arrangement. The settlement institution will be either a central bank (providing settlement in central bank money) or a commercial bank (providing settlement in commercial bank money). Only for cash payments (i.e., payments using banknotes and coins) is there no need for the involvement of a settlement agent.

Thus, for all non-cash payments either a commercial bank or the central bank will act as a settlement institution. Interbank settlement in correspondent banking can take place either directly between the two banks involved, with one bank holding an account with the other, or via a third-party settlement agent (a service-providing bank) holding accounts for the two banks concerned. Multilateral interbank settlement in payment systems relies on a settlement agent. This could be the payment system's operator or another designated institution. For large-value payment systems, the settlement agent is the central bank, irrespective of the ownership structure of the system. In the case of retail payment systems, risk considerations and payment systems oversight requirements determine the choice of settlement agent (which, again, is normally the central bank).

11.4 Settlement Methods

Settlement can be gross or net, and conducted in real time or at designated times.

Gross vs net settlement: In gross settlement, each payment instruction is passed on and settled individually across the accounts of the paying and receiving banks, resulting in a debit and credit entry for each and every payment instruction settled. In net settlement, payment instructions are netted in accordance with the rules and procedures of the system, and the number of resulting bilateral or multilateral net claims is smaller than the number of original payment instructions.

Real-time vs designated-time settlement: Real-time settlement occurs on a continuous basis during the operational day. Designated-time settlement occurs at pre-specified points in time, ranging from a single settlement cycle at the end of the day to frequent settlement cycles during the day.

12 Types of Payment System

A payment system is usually classified as a “large-value” or “retail” payment system depending on the main type of transaction processed in the system. Large-value payment systems (LVPSs), also called “wholesale payment systems”, are systems which are designed primarily to process urgent or large-value payments. These payments are exchanged between financial institutions in relation to financial market activities and are generally for large amounts and require urgent or timely settlement. Thus, a system handling such payments needs to meet high safety and efficiency standards. Some LVPSs also process a large number of low-value or retail payments, but the systems are designed primarily on the basis of the safety requirements for the processing and settlement of wholesale payments. Most LVPSs settle in central bank money. Retail payment systems are designed to handle a large volume of relatively low-value payments, such as credit transfers, direct debits and card payments. Retail payment systems may settle in either central bank or commercial bank money.

Depending on their settlement methods, payment systems are divided into four design types with the most common forms being real-time gross settlement and designated-time net settlement (DNS).

- Real-time gross settlement systems effect the final settlement of individual payments on a continuous basis during the processing day and are the predominant form of LVPS.
- Designated-time net settlement systems settle the net positions of participants at one or more discrete pre-specified settlement times during the processing day. This is the main form of retail payment system, often with several settlement cycles during the day. Net settlement LVPSs usually settle once at the end of the day.
- Designated-time gross settlement systems exist in some countries. In these systems, the final settlement of transfers occurs at the end of the processing day with no netting of credit and debit positions – i.e. on a transaction-by-transaction basis or on the basis of the aggregate credit and debit positions of each bank.
- Hybrid systems combine the features of gross and net settlement – e.g. frequent offsetting of transactions and frequent final settlement during the day.

Settlement Method	Gross	Net
Designated-time	Designated-time Gross Settlement	Designated-time Net Settlement (DNS)
Real-time	Real-Time Gross Settlement (RTGS)	(not applicable)

Table 1- Main types of system

13 Designated-Time Net Settlement Systems

In a net settlement system, the settlement of system participants' obligations occurs on a net basis in accordance with the rules and procedures of the system. Netting is the agreed offsetting of mutual obligations by two or more parties and the calculation of net settlement positions. This can be performed on a bilateral or multilateral basis.

Netting can take several forms, which have varying degrees of legal enforceability in the event that one of the parties defaults. At fixed times during the settlement day (or, in some systems, whenever a transfer order enters the system), each participant's net position is calculated. This is calculated as the sum of the values of all of the transfers the participant has received, minus the sum of the values of all of the transfers the participant has sent.

Thus, at settlement time each participant has a net settlement position, which can be a net credit position or a net debit position. The net settlement positions are settled by being booked to the participants' accounts with the settlement institution. The netting service is typically provided by a clearing house or a clearing association, but may also be organized in other ways. Moreover, the submission of net obligations for settlement may be organized in various ways. Positions may be reported to all participants with a view to them sending settlement instructions to the settlement institution.

Alternatively, the provider of netting services may be authorized by participants to send settlement instructions to the settlement institution on their behalf, or the settlement institution may be authorized to make the necessary entries in participants' accounts on the basis of the information on settlement obligations that it receives from the provider of netting services. Finally, there are various models for the actual conduct of settlement. If the clearing house maintains a settlement account with the settlement institution, all debit positions are typically first paid to this account (the "pay-in" stage) and all credit positions are then paid from the account (the "pay-out" stage).

If the clearing house does not have an account with the settlement institution (a less common model), information on all net obligations may be communicated to the settlement institution, which will try to settle all obligations in a "logical block" whereby either all debit and credit entries are successfully booked, or nothing is booked (the latter being the case if one of the participants with a net debit position does not have sufficient funds (or overdraft facilities) available on its account).

For LVPSs with net settlement, the settlement institution is, as a rule, the central bank. For retail net settlement systems, the settlement institution is often the central bank, but in exceptional cases it may also be a commercial bank. Figure 1 illustrates the netting effect achieved in a multilateral arrangement with three participants processing their mutual payments on behalf of customers via a net settlement system.

The netting of participants' obligations in net settlement systems considerably reduces their liquidity requirements by comparison with RTGS systems by reducing the number and overall value of settlement payments between financial institutions.

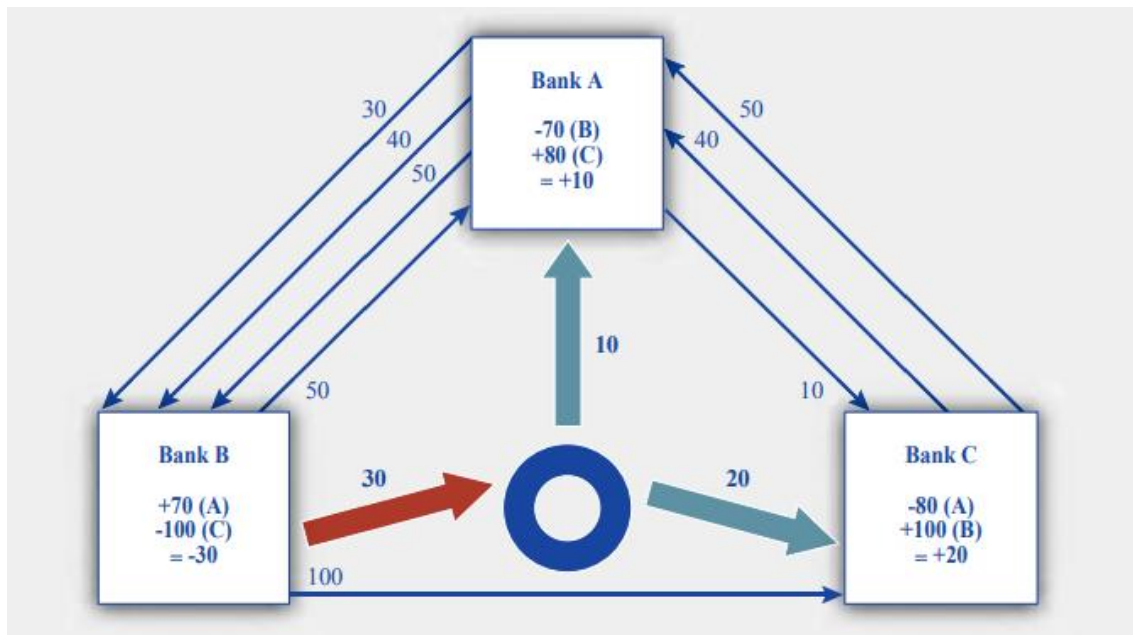


Figure 11- Netting Operation

14 An Example of The Clearing House Function

With the explanations given, it can be concluded that Clearing Houses and clearing mechanism play an important role in international banking payments. If two countries decide to setup a DNS payment system between themselves, they could net a large number and amount of transactions during the clearing period to only one settlement transaction, which is smaller than summation of transactions. Figure 12 illustrates a sample batch of transactions between two countries, which are aggregated in Figure 13.



Figure 12- Sample transaction between two countries in a period

If these two countries execute a write-off of 17.1 units of transactions, there is only needed 2.3 units to be settled after processing 36.5 units of transactions between two countries during the period. If this scenario is executed between couples of countries in a group, we call this settlement mechanism Bilateral DNS.

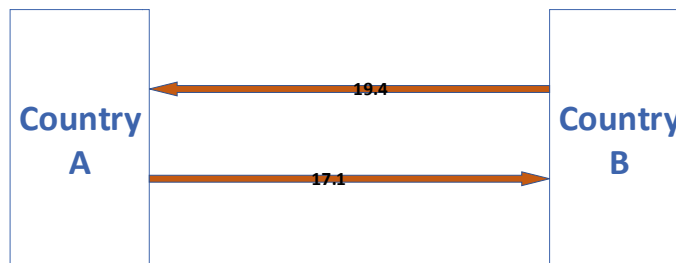


Figure 13- Aggregated transactions ready for clearing

In order to better define the bilateral DNS, there is a sample scenario of aggregated transactions between 5 countries during a period in Figure 14.

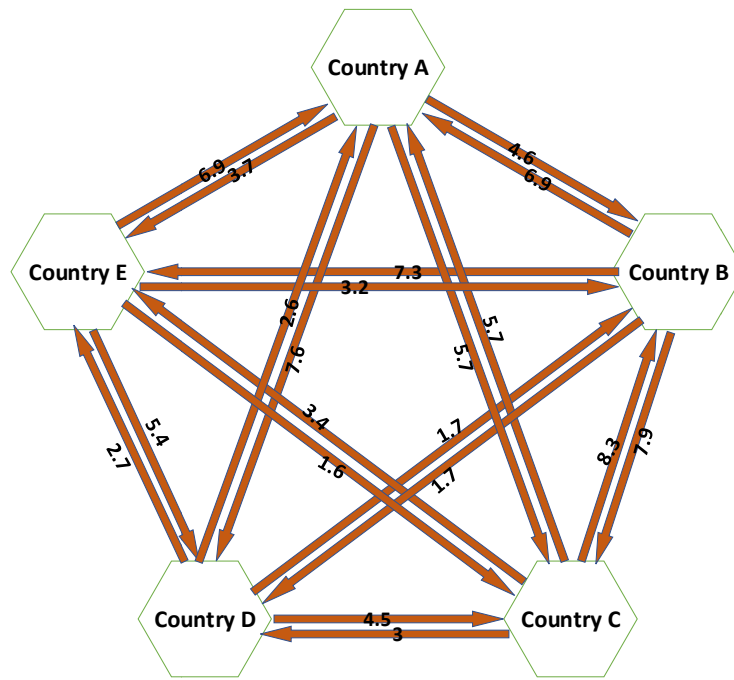


Figure 14- Sample aggregated transactions between five countries

In Figure 14, totally the amount of 94.4 units of transactions are executed during the period. If every couple of countries write-off the minimum aggregated transaction between themselves, only 21 units of transactions will remain uncleared after bilateral DNS execution, according to Figure 15.

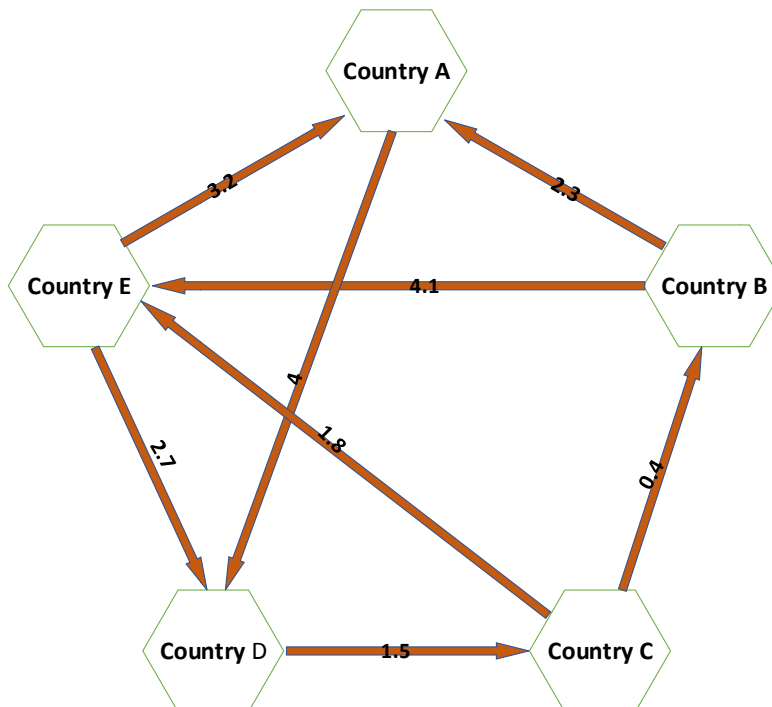


Figure 15- Uncleared transactions based on bilateral DNS

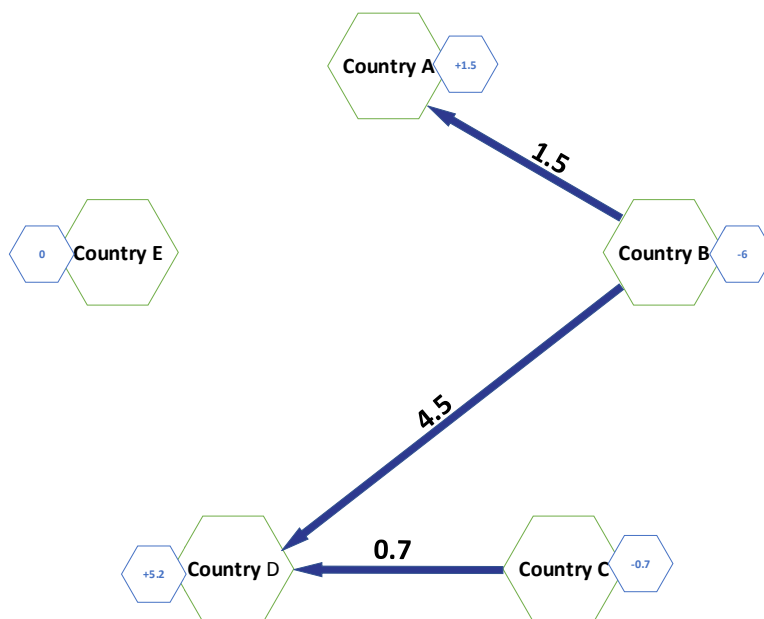


Figure 16- Uncleared transaction based on Multilateral DNS

14.1 Multilateral DNS Payment System

Bilateral DNS payment system is not benefiting from the maximum available efficiency in example of Figure 15. If the countries in the mechanism of bilateral DNS in Figure 15 reach an agreement to write-off their obligations in groups, then they will use the benefit of multilateral DNS payment system. Figure 16 illustrates the uncleared amounts of the example scenario of Figure 15 after using multilateral DNS. This mechanism will reduce the required settlement amount from 21.0 units to 6.7 units. Therefore, 14.3 units of premium efficiency will be caught by implementing multilateral DNS.

Here in an unreal scenario only 6.7 units out of 94.4 units of transactions was required to be settled and 87.7 units were cleared using DNS. In the real world, these amounts depend on the number of contributing countries and their trade status.

15 Applying Clearing Mechanism in ECO

15.1 Bilateral Clearing

According to the **data of TradeMap** site, Turkey and Iran, as two members of ECO, had \$ 4759 million in bilateral trade in 2018, of which \$ 2367 million was Iran's exports to Turkey and \$ 2392 million were Turkey's exports to Iran. If the two countries transfer value in accordance with the usual international payment procedures, \$ 4759 million of real fund must be transferred between the two countries. Therefore, the two countries need sufficient foreign exchange resources to carry out this amount of trade, and on the other hand, they will incur significant transaction costs and time.

\$2,367 m

\$2,392 m

Figure 17- Iran and turkey Bilateral trade

If two countries decide to setup a clearing mechanism between themselves, they could net a large number of transactions and large volume of value during the clearing period to only one settlement transaction, which is smaller than summation of transactions. In this way, they clear the lowest number of exports, i.e. 2367, as the balance of trade between them, and only Iran pays \$ 25 million to Turkey to settle trade at the end of the one-year period. Thus, the need for real fund transfers in trade between the two countries is reduced by \$ 4734 million, which is 99.5% of the total bilateral trade.

\$25 m

Figure 18- Need for settlement

15.2 Multilateral Clearing

In the example given in the previous section, using the actual trade data of ECO members, there were only two countries. It is now assumed that the three countries, Pakistan, Turkey and Kazakhstan, as members of the ECO, decide to cooperate in the form of a clearing mechanism to examine the multilateral status of how to trade transactions.

The figure below shows the amount of bilateral trade between the three countries.

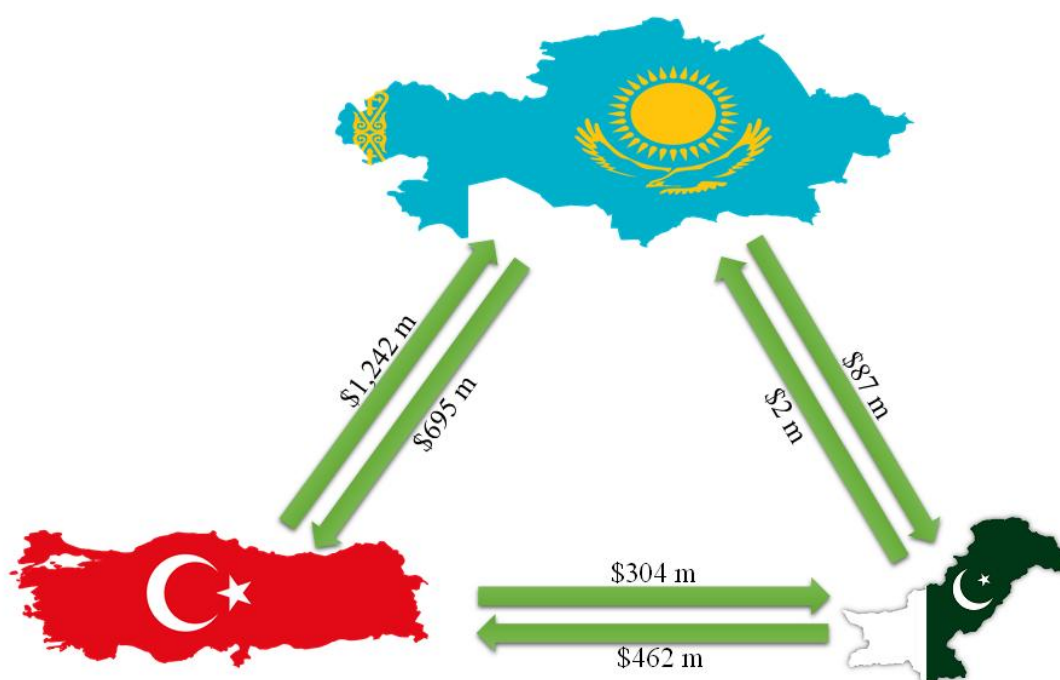


Figure 19- Pakistan, Turkey and Kazakhstan bilateral trade before clearing

If these countries reciprocally clear their trade, the result of this netting will be that Pakistan \$ 158 million to Turkey, Turkey to Kazakhstan \$ 547 million, And Kazakhstan to Pakistan \$ 85 million Will be a net debtor. The following figure shows this result. It can be seen that with the bilateral clearing that takes place between countries, the need for real found transfers is greatly reduced.

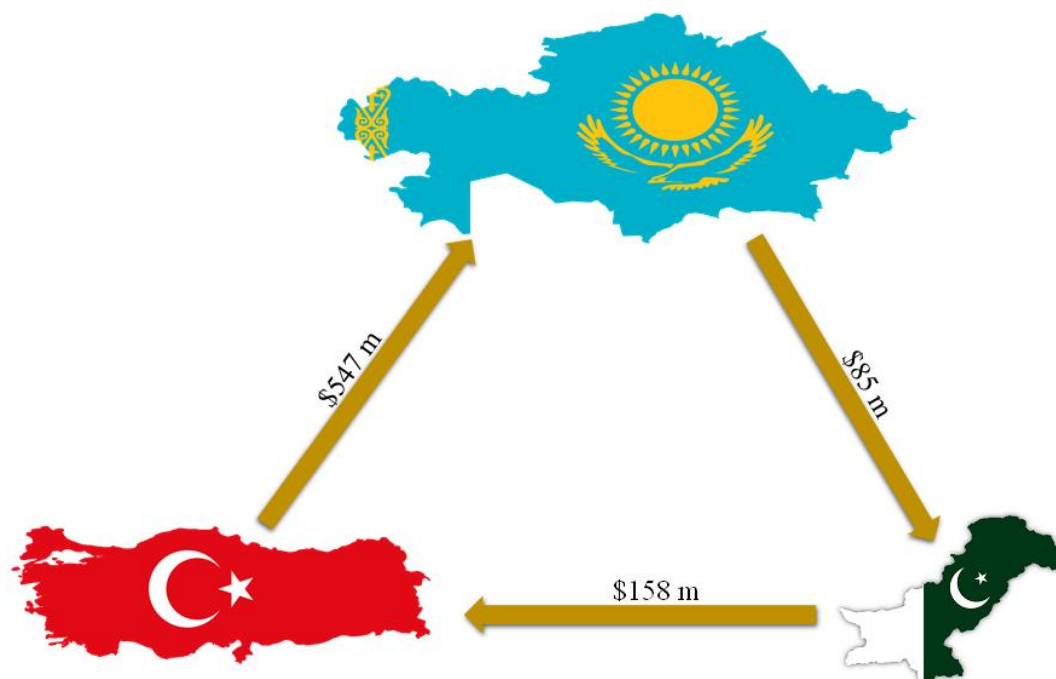


Figure 20- Debt balance after bilateral clearing

Given that after the bilateral clearing, a debt loop has now been formed between the three countries, if these countries proceed to the trilateral clearing of these debts, their net debt to each other will be reduced by another step.

Thus, the minimum amount of debt, which is \$ 85 million and Kazakhstan's debt to Pakistan is reduced from the total debts. In fact, in practice, Pakistan does not receive its request for \$ 85 million from Kazakhstan, Kazakhstan does not receive its request from Turkey, and Turkey does not receive the same amount from Pakistan.

With the second phase of clearing, which is a trilateral clearing, the need for real found transfers has decreased again, and has reached \$ 535 million that only Pakistan needs to pay \$ 73 million to Turkey and Turkey \$ 462 million to Kazakhstan to settle. The following figure shows the debt balance of countries after multilateral clearing.

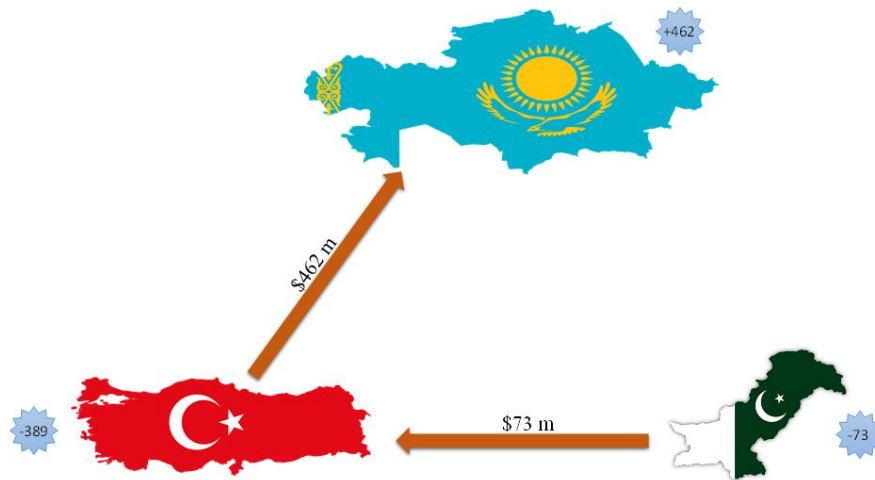


Figure 21- Debt balance after trilateral clearing

Given the above figure and the type of debt balance that exists between countries, countries have the opportunity to work together to reduce the amount of need for real found transfers to another step. Pakistan will pay its \$ 73 million debt to Turkey to Kazakhstan, and instead Turkey will pay \$ 389 million (\$ 73 million less) instead of \$ 462 million to Kazakhstan. In this case, it can be seen that the need to transfer real foundhas decreased from the previous case, which was \$ 535 million to \$ 462 million. The following figure shows the debt balance of countries after this redesign.

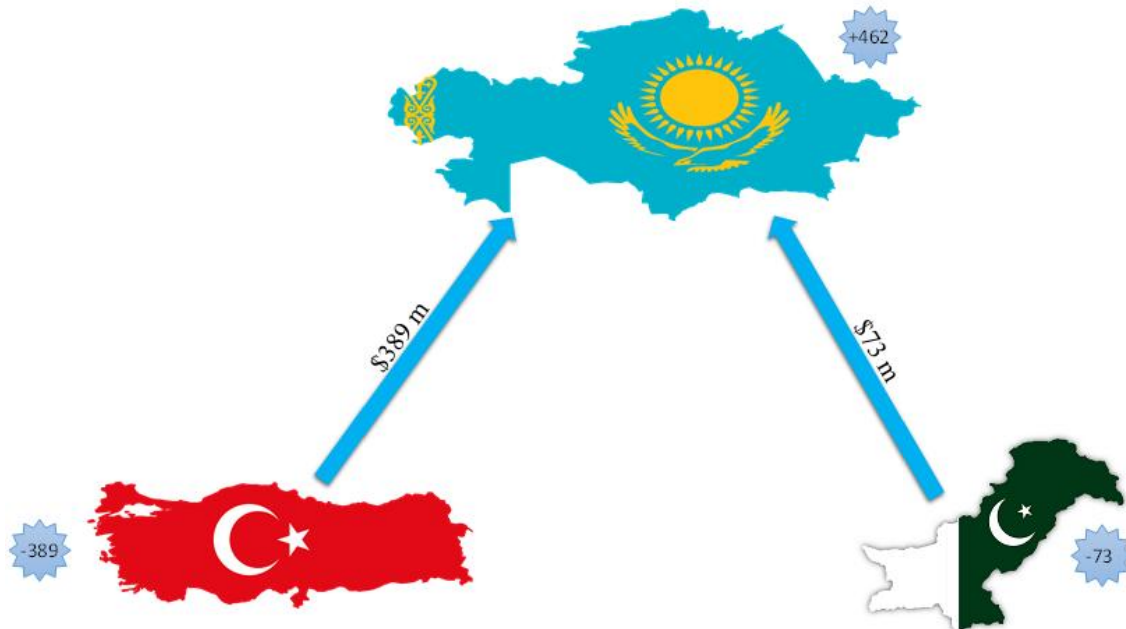


Figure 22- Debt balance after redesign clearing

15.3 ECO Overall Clearing Operations

The clearing mechanism, which was examined in the previous sections bilaterally and multilaterally for real ECO trade data, can also be examined for all ECO countries. The table below calculates the clearing capability and its percentage for each country with all other members.

At the bottom of the table, the clearing capability and its percentage for the whole ECO are calculated. These numbers are obtained by dividing the sum of each country with all other members capability by the total ECO trade.

ECO 2018 data from the TradeMap site (Unit: US Dollar thousand)	
Iran Exports to ECO	7,735,889
Iran Imports from ECO	3,123,015
Clearing Capability	3,123,015
Clearing Capability(percent)	58%
Pakistan Exports to ECO	1,814,679
Pakistan Imports from ECO	1,273,976
Clearing Capability	1,273,976
Clearing Capability(percent)	82%
Turkey Exports to ECO	7,143,030
Turkey Imports from ECO	10,427,941
Clearing Capability	7,143,030
Clearing Capability(percent)	81%
Azerbaijan Exports to ECO	2,019,767
Azerbaijan Imports from ECO	2,322,054
Clearing Capability	2,019,767
Clearing Capability(percent)	93%
Uzbekistan Exports to ECO	3,199,709
Uzbekistan Imports from ECO	3,321,352
Clearing Capability	3,199,709
Clearing Capability(percent)	98%
Afghanistan Exports to ECO	429,792
Afghanistan Imports from ECO	4,259,469
Clearing Capability	429,792
Clearing Capability(percent)	18%

Tajikistan Exports to ECO	864,907
Tajikistan Imports from ECO	1,009,975
Clearing Capability	864,907
Clearing Capability(percent)	92%
Turkmenistan Exports to ECO	1,081,859
Turkmenistan Imports from ECO	1,018,170
Clearing Capability	1,018,170
Clearing Capability(percent)	97%
Kyrgyzstan Exports to ECO	578,466
Kyrgyzstan Imports from ECO	1,005,998
Clearing Capability	578,466
Clearing Capability(percent)	73%
Kazakhstan Exports to ECO	5,286,211
Kazakhstan Imports from ECO	2,234,025
Clearing Capability	2,234,025
Clearing Capability(percent)	59%
ECO Overall Trade	30,154,309
ECO Clearing Capability	21,884,857
ECO Clearing Capability (percent)	73%

Table 2- Overview of the ECO clearing

According to these data, the country with the lowest clearing capability is Afghanistan with 18%. The country's trade with other ECO members is about \$ 4,690 million, of which \$ 429 million is the country's exports to ECO members and \$ 4259 million is related to the country's imports that of this amount, \$ 429 million has clearing capability.

Uzbekistan is the country with the highest clearing capability with 98%. The country's trade with other ECO members is about \$ 6520 million, of which \$ 3199 million is the country's exports to ECO members and \$ 3321 million is related to the country's imports that of this amount, \$ 3199 million has clearing capability.

As shown at the bottom of the table, the total trade between ECO members is about \$ 30,154 million, of which \$ 21,884 million, or 73%, can be cleared.

As mentioned in the previous sections on the use of local currencies in regional payment systems, it is possible to use local currencies to conduct transactions as long as trade between countries is balanced. In relation to ECO, its member countries in 2018 can clear up to 73% of their transactions using their local currencies, and only 27% of transactions between ECO this year to settle requires the use of non-clear methods. For example, international currencies such as the dollar and the euro or other currencies accepted by the parties can be used to settle

this 27%. Members can also change the way they trade with each other in order to increase the clearing capability of their local currencies.



RUNC[®]
International
Banking Solutions

Economic and Financial Feasibility
of ERPS

16 Payment Systems Operating Mechanism and Proposed ERPS

In order to calculate an estimate around the potential benefit, cost of implementation, and running costs of ERPS here we're going to have a brief review on the content of the previous part of the project and simple benchmark of EURO1 and ACU.

Regional payment systems are international mechanisms designed to facilitate payments between residents (commercial or social) of the participating countries. The main and largest cost consuming part of a payment system could be addressed as the clearing and settlement mechanism and the risk management procedures and related required actions. In some cases payment systems are a notion for clearing unions, while in facts they are different. A clearing union can be defined as a multilateral payments arrangement that periodically offsets the debits and credits accumulated by each member against the other members in the process of trade and other transactions. Multilateral clearing or payments arrangements facilitate the use of national currencies, and thus serve to relax the foreign exchange constraints of the members.

The advantage of this kind of mechanism is not difficult to understand: if a resident of a country, say Turkey, wishes to buy a good produced in another country, say Azerbaijan, the Turkish resident has to find a way to pay for this good with a currency that is accepted by the Azerbaijani resident. This may be the Azerbaijani Manat, or a major international reserve currency like the US dollar. In either case, the Turkish importer has to assume the cost of obtaining a currency different from his/her own currency in order to pay for the Azerbaijani good. While costs for the individual importer may be small (especially for large enterprises), they increase at the aggregate level, depending on the specific funding conditions at the international financial market for the respective country at a certain moment.

Here are two different regional payment systems, EURO1 in Europe region and ACU in Asia investigated in brief for selecting the main structure and mechanism for ERPS feasibility study. It should be mentioned that selected mechanism should be customized and tuned well while going to implement.

16.1 EURO1

EURO1 is the most important privately owned and EU-wide operated payment system for large-value payments.¹ EURO1 processes interbank payments as well as commercial payments.

EURO1 is an international system. As at 31 December 2001 there were 73 clearing banks participating in EURO1. These banks are from all the EU member states and five non-EU countries (Australia, Japan, Norway, Switzerland and the United States), all EURO1 participants are either incorporated or act through branches in the EU.

¹<https://www.ecb.europa.eu/>

EURO1 settles at the end of the day in central bank money at the ECB. The relevant provisions are set out in the Settlement Service Agreement concluded between the EBA and the ECB. After the cutoff time (4 pm Central European Time), clearing banks with debit positions will pay their single obligations into the EBA settlement account at the ECB through TARGET. After all amounts due have been received, and upon instruction from the EBA Clearing Company, the ECB will pay the clearing banks with credit positions, also through TARGET.

16.1.1 Operation of the system and settlement procedures

SWIFT provides the messaging infrastructure for EURO1 and acts as processing agent. Payment messages are sent by the participants to EURO1 via the SWIFT Net FIN network. The EURO1 messages must carry the tag “EBA” in field 103 of the message header. Messages with this tag are automatically copied (Y-copy) to the central computer via SWIFT’s FIN copy service. Once the messages are processed, they are immediately forwarded via the SWIFT Net FIN network to the receiving bank. The continuous calculation of the single obligation or claim of each EURO1 participant is carried out by the processing system operated by SWIFT.

The EURO1 system operates on weekdays (except TARGET2 holidays) from 7.30 am CET to 4 pm CET. Payment messages are processed on an individual basis. The technical features of EURO1 are such that payment messages are only processed by the central computer after it has been checked that these meet the criteria for being processed. In particular, these criteria include that a payment message can only be processed if this does not lead to a breach of binding intraday limits – corresponding to the debit caps and credit caps of the respective participants – built into the system. Payment messages that cannot be processed at the time they are sent are queued. The queues are revisited each time a payment message in relation to the sending or receiving bank, as applicable, is processed to check whether the adjusted balance allows the further processing of payment messages held in a participant’s “on-hold” queue. To that effect, the system follows the principle of “bypassing FIFO”. In addition, a circles processing function is available allowing for the simultaneous processing of a number of payment messages from different participants, which, if processed simultaneously, will not breach the applicable debit caps and credit caps. A payment message can be revoked or cancelled by the sending participant as long as it has not been processed. Once processed, payment messages cannot be revoked. All payment messages that are still on hold at the EURO1 processing cut-off time (4 pm CET) will be automatically carried over to the next valid value date, unless cancelled by the sending EURO1 participant. The above operations are monitored and administered by EBA Clearing staff. The hardware and software used by EBA Clearing for the management of EURO1 is duplicated at a parallel-running site located in a different country. At participant level, EURO1 participants have real-time access to their position at any given time in the day, including inter alia the monitoring and management of payments and queues. The EURO1 system settles the same day in central bank funds via a settlement account opened with the ECB in TARGET2-ECB using the Ancillary System Interface settlement procedure (“ASI4”). Settlement of the EURO1 system concerns the

settlement of the single amount, ie the single claim or the single obligation of each participant towards the community of all other participants. After the cut-off time for processing at 4 pm CET, the EURO1 (short) participants having a single obligation will pay the amount, by means of a transfer via direct debit from their account held in a component system of TARGET2, crediting the settlement account for EURO1. After all amounts have been received, the single claim of each (long) participant is satisfied by means of a transfer from the settlement account for EURO1 to the (long) participant's account in TARGET2. Completion of settlement is notified to all participants upon receipt of confirmation that the TARGET2 account of each of the long participants has been credited. The average settlement completion time from settlement using TARGET2- ASI4 is 4.08 pm CET. In TARGET2-ASI4, a guarantee fund account has been created through which additional liquidity (ie the liquidity pool or, if needed, additional funds transfers by the surviving participants) can be moved to ensure completion of settlement, even in the event of a shortfall owing to the inability of one or more participants to meet their settlement obligations.

16.2 ACU

Asian Clearing Union (ACU) is a payment arrangement whereby the participants settle payments for intra-regional transactions among the participating central banks on a net multilateral basis. The main objectives of the clearing union are to facilitate payments among member countries for eligible transactions, thereby economizing on the use of foreign exchange reserves and transfer costs, as well as promoting trade and banking relations among the participating countries.¹

16.2.1 Clearing operations

Settlement of instruments is made by the commercial banks through operations of the accounts, the participants permit the banks in their respective countries to maintain ACU Dollar and ACU Euro accounts with their correspondent banks in the other participating countries. All payments other than ineligible payments are settled by the banks concerned through these accounts.

The participants' commercial banks are authorized to consider payment of interest, at their discretion, on ACU dollar and ACU euro accounts maintained by the commercial banks of other ACU member countries as per mutually agreed terms and conditions.

When a commercial bank desires to fund its ACU dollar or ACU euro account with its correspondent bank in another participating country, it may purchase the required amount of ACU dollar or ACU euro either from a local commercial bank having a surplus in that participating country or from its central bank. In the latter case, it will surrender equivalent amount of US dollars or euros or, at the option of the Central Bank, the equivalent in the local currency to its own Central Bank for remittance through the ACU mechanism. The participant receiving the amount will advise the participant in the country concerned to make available the amount in US dollars or euros to the concerned bank in that country. After

¹<https://www.asianclearingunion.org/>

making the payment, the second participant will advise the Secretary General of the ACU to credit its account by debit to the first participant's account.

When a commercial bank desires to repatriate funds from its ACU dollar or ACU euro account with its correspondent bank in another participating country, it may sell the desired amount of ACU dollar or ACU euro either to a local commercial bank which desires to fund its ACU dollar or ACU euro account in that participating country, or to its central bank. In the latter case, it will request that bank to effect the remittance through the ACU mechanism. The correspondent bank will surrender equivalent amount of US dollars or euros to its own Central Bank for remittance. The participant receiving the amount will advise the participant in the country concerned to make available the equivalent amount to the concerned bank in that country. The Central Bank may, at its option, make the payment in US dollar or euro or in local currency. After making the payment the second participant will advise the Secretary General of the ACU to credit its account by debit to the first participant's account.

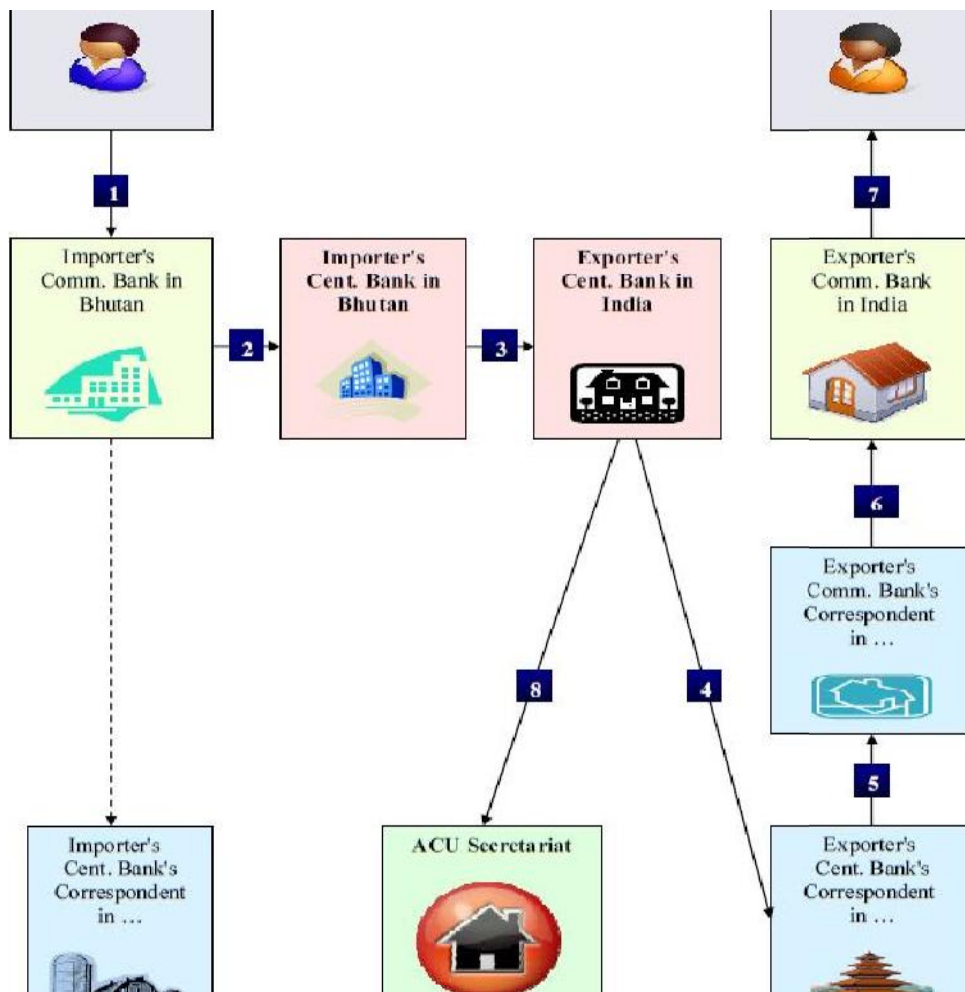


Figure 23- an example of ACU payment mechanism

16.3 Risk of payment systems

In international payments, managing the existing risks is one of the main concerns of the system designers and operators. Based on COSO definition, risk is the possibility that an event will occur and adversely affect the achievement of objectives.

Payment system risks fall into five categories. They are **credit risk**, **liquidity risk**, **legal risk**, **operational risk**, and **systemic risk**. In fact, they all manifest themselves in the risk of default in settlement obligations by one or more participants.¹

16.3.1 Credit risk

Credit risk is the risk where a participant will be unable to fully meet his/her financial obligations within the system either when due or at any time in the future. This is identical to insolvency risk.

16.3.2 Liquidity risk

Credit risk is the risk where a participant will have insufficient funds to meet financial obligations within the system as and when expected, although it may be able to do so at some time in the future. Unlike the credit (or insolvency) risk, liquidity risk is temporary; yet, settlement obligations are time sensitive, and hence the impact of the risk may be quite serious.

16.3.3 Legal risk

Legal is the risk where a poor legal framework or legal uncertainties will cause or exacerbate credit or liquidity risk.

16.3.4 Operational risk

Operational risk is the risk where operational factors such as technical malfunctions or operational mistakes will cause or exacerbate credit or liquidity risks.

16.3.5 Systemic risk

Systemic risk is the risk where the inability of one of the participants to meet his/her obligations, or a disruption in the system itself, could result in the inability of other system participants, or even of financial institutions in other parts of the financial system to meet their obligations as they become due. Effectively, this is the risk of a domino effect of default by one participant, namely, the risk that one failure may cause widespread liquidity or credit problems and, as a result, could threaten the stability of the system or of financial markets.

The risk of a settlement participant's default leading to a settlement failure varies according to the design of the settlement system. In principle, the risk ought to be addressed by settlement default procedures, legislation providing for settlement finality, and various risk reduction or elimination measures

¹ Handbook of key global financial markets, Institutions and Infrastructure

Credit and liquidity risks, leading to a settlement failure, are thus primary risks, with the legal, operational, and systemic risks being secondary, as either contributing or exacerbating the primary ones. Indeed, the payment process in a modern economy was said to centre on economic actors' management of the stock of currency and bank deposits, as well as their access to sources of credit that can be used to obtain money balances. This underlies the identification and management of credit and liquidity risks as an inherent part of the payment process.

For a systematically important system, the Core Principles, designed to meet risks, are set out as follows:

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

There are two main procedures to the response to the default of participants:

First, an issue arises as to the response to the default or to default procedures. On default of a debtor, netting may be repudiated, partly repudiated, or upheld. Thus, where multilateral netting is repudiated, funds are returned to debtors, and original counterparties' bilateral obligations are restored and settled directly outside the clearinghouse. Under a variation, a new multilateral balance among all surviving counterparties may be struck, so that only the defaulter's position will be settled bilaterally with each counterparty, while all survivors settle multilaterally in the clearinghouse.

Second, netting may be upheld, in which case the deficiency will be borne by the counterparties according to credit limits, multilateral debit caps, a predetermined loss sharing formula; collateral; or a third party such as insurer, issuer of a letter of credit, or guarantor. Recourse against the defaulter will take place after settlement completion and outside the settlement mechanism.

For each counterparty vis-a-vis another, a bilateral credit limit sets the maximum bilateral credit in the amount of total received less sent, that the other counterparty may extend to it at any point throughout the exchange. At the same time, for each counterparty vis-a-vis all others, the multilateral debit cap represents the maximum debit balance that it may be allowed; it is the maximum credit, in the amount of total received less sent, that all counterparties are prepared to extend to it at any point throughout the exchange. **While the bilateral credit limit measures bilateral debit positions, the debit cap measures the multilateral or overall debit position of a counterparty.** A counterparty may have absolute discretion in establishing bilateral credit limits or may act under guidelines. Debit caps are established either on the basis of the total bilateral credit limits or under guidelines, usually referring to capital adequacy standards.

Collateralization is usually in the form of liquid securities. Loss sharing is likely to be based on credit extended (or extendable) by counterparties to the failed one. The size of collateral required may be determined in relation to the total exposure of a counterparty, taking into account its debit cap and anticipated share under the loss-sharing scheme. In net-net settlement systems, all such measures are complementary.

Settlement repudiation enhances instability. It further delays settlement of individual transactions and generates a systemic risk, or domino effect, created where a participant owed by the defaulter, who was a creditor under the original settlement balance, cannot meet a newly created debit position. Public policy thus strongly favours laws providing for settlement finality as well as procedures designed to control settlement failure risk and complete settlement.

16.4 Risk management

The studies show two main procedures for managing primary risks (liquidity & credit risk) in payment systems. The first one is liquidity pool used in Euro1 and the second one is the swap facility used in ACU.

16.4.1 Liquidity Pool

A Liquidity Pool is a pool of liquid assets to which every participant contributes. Thus, it constitutes a type of mutual insurance.

To constitute liquidity pool, each participant must establish credit lines for all other participants individually. On the basis of these bilateral credit lines, the system determines for each participant the multilateral debit cap (sum of limits set for a participant by each other participant) and credit cap (sum of limits set by a participant for each other participant). No payment that would cause a breach of any limit is processed by the system at any time.

Instead, any payment order which would cause the limit to be exceeded is queued. Participants can change bilateral limits on a periodically basis according to their assessment of the creditworthiness of counterparties.

The amount of the liquidity pool in EURO1 was set at twice the amount of the single largest exposure (Maximum Debit Cap) in the system. Each participant contributes to the liquidity pool in equal shares, each share is assigned or pledged to the benefit of the other participants, so that the amount deposited in the pool can be used to cover the settlement obligations of failing participants. The settlement bank can only use the cash deposited in the pool to complete settlement if it receives an instruction from the Clearing Center/House to activate the pool. In the event that the pool is used partially or entirely to complete settlement at the end of the period, the participants must replenish it before the start of processing the following period.

16.4.2 Liquidity Bridge

EURO1 is geared at assisting banks in optimising their liquidity use. The system's Liquidity Bridge makes it possible for participants to withdraw excess liquidity from the system through seven daily liquidity distribution windows. The Liquidity Bridge also enables the participants to inject additional funds into EURO1 throughout the business day in order to allow for additional payments to be processed. This functionality supports the participants in resolving any queuing situations.

In this procedure banks that have reached the maximum level of their Debit Cap can pay in funds from their TARGET2 account (pre-fund), against which their position in EURO1 is adjusted upwards. The participant has, as a result, acquired increased sending capacity against pre-funded liquidity.

Banks that have incoming payments queued because they have reached the maximum level of their Credit Cap can authorize EBA clearing to withdraw liquidity from their credit position in EURO1 (liquidity distribution), which is then credited to the participants' TARGET2 accounts. Pre-funding takes place throughout the day and liquidity distributions take place at seven relevant times of the day to ensure the release of the maximum number of queued payments.

The liquidity distribution algorithm allows for the pre-funded liquidity to be recycled. Figure 24 illustrated in a graphical way how such mechanism works.

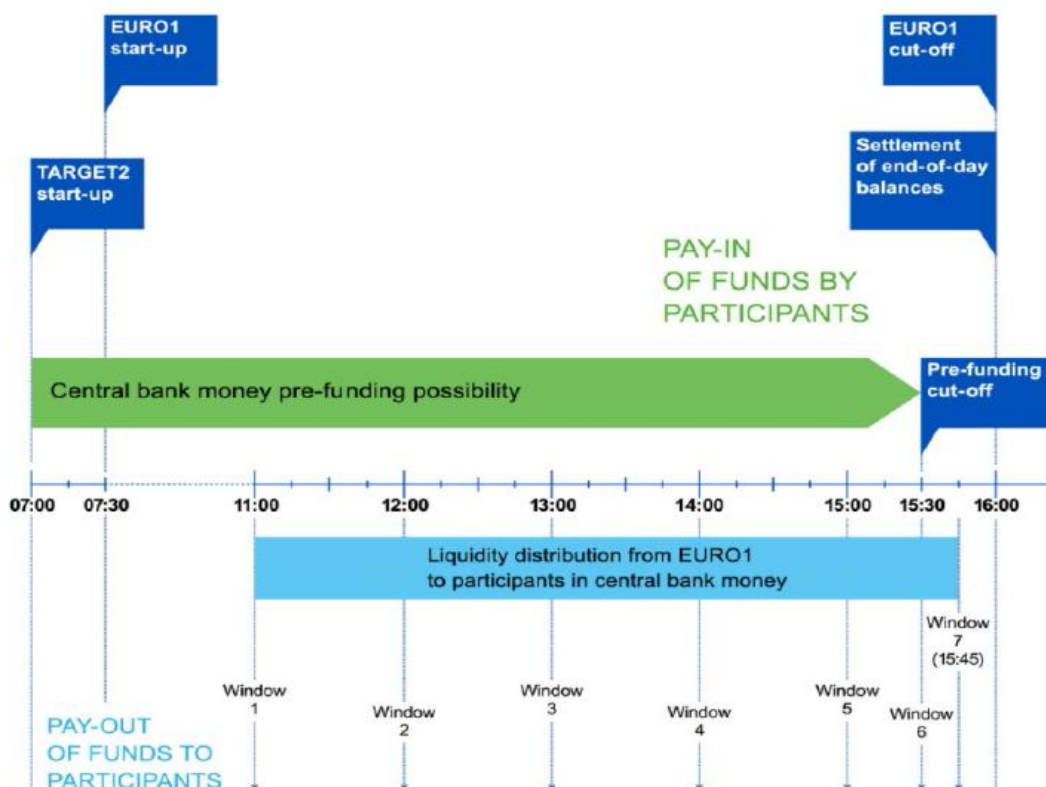


Figure 24- EURO1 Liquidity Bridge

16.4.3 Swap facility

In ACU, every eligible participant is entitled to the facility from every other participant up to 20 percent of the average gross payments (ACU dollar and ACU euro accounts collectively) made by it through the Asian Clearing Union mechanism to other participants during the three previous calendar years.

For a pre-specified settlement period, each participant can receive credit up to 20% of the average value of their transactions with other participant at the same period. The average is calculated based on the settlement period during three previous years.

For example, we aim to calculate entitlement of Nepal central bank to swap facility in 2018. For this purpose, we calculate the average value of transactions debited to the member central banks during three previous calendar years. Then we multiply it by 0.2 to achieve the swap facility limit.

In Table 3 the value of transactions debited to the member central banks during 2015-2018 is shown:

Table 3- Nepal (in ACU) Transactions Debited to the Member Central Banks During 2015-2018 (In millions of USDs)

Year	2015	2016	2017	2018
Value	42.90	50.32	44.41	76.41

$$\frac{42.90 + 50.32 + 44.41}{3} \times 0.2 = 9.17 \text{ millions of USDs}$$

16.5 Proposed mechanism for ERPS

In this section a very brief discussion around the proposed mechanism for ERPS is available. For sure a detailed design of the system is out of scope of this study which is the feasibility study of system.

From each member states which is deciding to join the system there would be at least one nominated bank (a commercial bank) which plays the role of gateway of the country to the ERPS.

16.5.1 Messaging process

Here in payment system, we consider MT standard for payment messaging, which consists of 5 primary types of message. Other type of messages may be used in payment system but for simplicity we have ignored them.

Table 4- Financial Message Types

Msg. type	Description
MT103	This message type is sent by or on behalf of the financial institution of the ordering customer, directly or through a correspondent, to the financial institution of the beneficiary customer
MT202	The MT202 message is used for bank-to-bank payments to give information about the underlying credit transfer instruction.
MT900	The MT900 is for the Confirmation of Debit that settlement bank sends it to the initiating Central banks.
MT910	The MT910 is for the Confirmation of Credit that clearing send it to the beneficiary Central banks.
MT950	After day-end processing, clearing sends an MT950 (Statement Message) to participating banks which contains the initial and final balances of the settlement account in question and the accumulated sums per service.

Figure 25 illustrates one sample transaction in the system and the end of period settlement efforts handling via settlement bank.¹

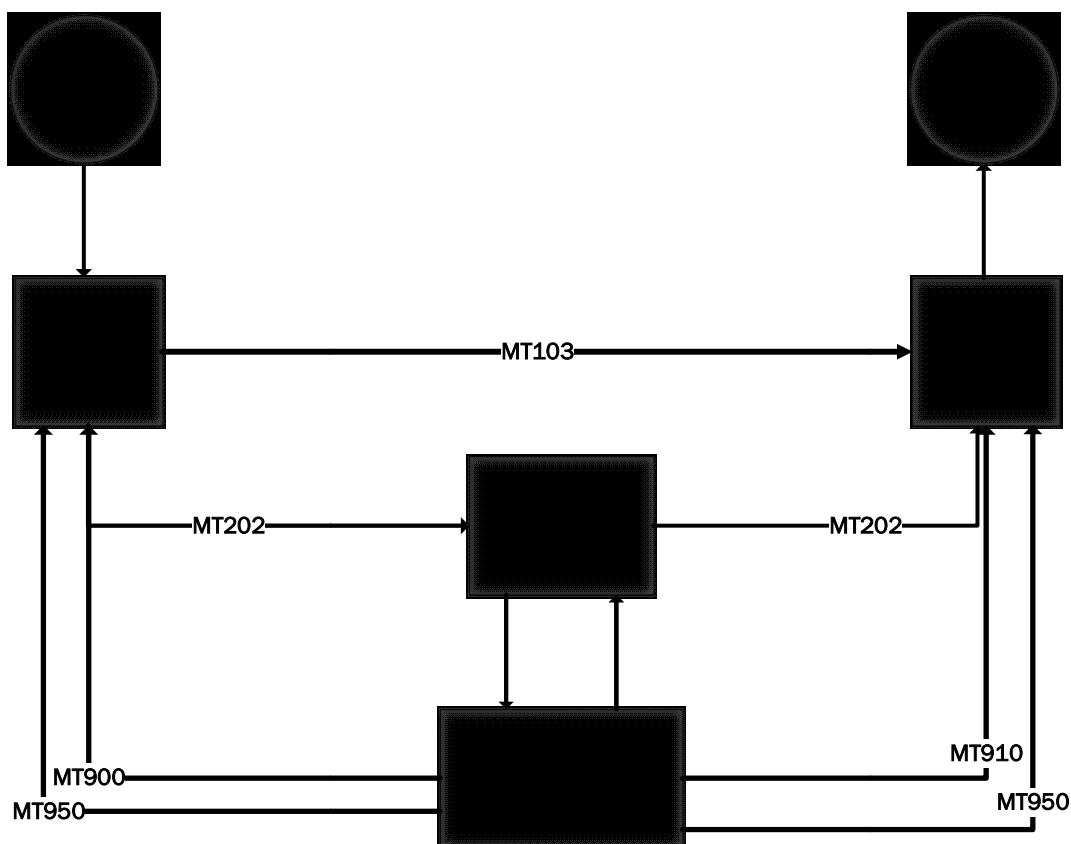


Figure 25-proposed payment mechanism

16.5.2 Settlement period and risk management plan

Regional payment systems have different settlement periods. For example, EURO1 settlement period is one day and ACU settlement period is two months.

As a general rule, the longer the settlement period for net surpluses and deficits, the more effective a regional payment system can be in terms of reducing transactions costs in intraregional trade. Thus, the settlement period of ERPS is considered as one year.

¹ A very simple sample transaction is provided here as an example and should not be taken as the proposed final architecture.

The proposed procedure here to construct a liquidity pool (for managing the risks) is a combination of EURO1 and ACU mechanisms. Liquidity pool has two goals; one is for hedging risks on the other hand it can compensate the cost of commercial banks that they have incurred because the delay of being repaid by other participants.

In this procedure each participant grants credit to each other participant by credit lines. Every participant Debit Cap is defined as the sum of credits granted to that participant. The calculations around the effect of these two functions of liquidity pool are available in next sections.

The proposed liquidity pool amount equals to the sum of participants Debit Caps. Each participant contributes in liquidity pool proportional to its import from ECO region, unless its Debit Cap exceeds maximum allowed Debit Cap (participants import from region multiplied by 0.3). In this case, the excess of liquidity pool volume is paid by the participants which exceed their maximum allowed Debit Cap proportional to the amount of their excess Debit Cap.

IM_j : Import of participant j from ECO region;

TIER: Total Import of ECO Region;

$$TIER = \sum IM_j$$

$MADC_j$: Maximum Allowed Debit Cap of participant j ;

$$MADC_j = 0.3 \times IM_j$$

CL_{ij} : Credit Line granted from participant i to j ;

DC_j : Debit Cap of participant j ;

$$DC_j = \sum_{i=1}^{10} CL_{ij}$$

LP: Liquidity Pool;

$$LP = 2 \times \max (DC_j)$$

$$\hat{LP} = 2 \times \max (MADC_j)$$

EDC_j : Excess Debit Cap for participant j ;

$$EDC_j = \max(0, DC_j - MADC_j)$$

$CiLP_j$: The amount of Contribution in Liquidity Pool by participant j ;

$$CiLP_j = \frac{LP \times IM_j}{TIER} \quad \text{if } LP' > LP$$

$$+ \frac{\hat{LP} \times IM_j}{TIER} + \frac{(LP - \hat{LP}) \times EDC_j}{\sum_j EDC_j} \quad \text{if } LP' < LP$$

17 ERPS Costs and Benefits

In this section after reviewing a summary of regional payment systems costs the cost analysis of ERPS and expected sources of benefits (cost recovery associated with ERPS for member states) are analysed in more details.

There are two main categories of costs in payment systems, the first one is direct costs and the second one is operating costs, direct costs include service-related costs such as costs of using messaging system. Operating costs or operational costs, are the expenses which are related to the operation of a business component, piece of equipment or facility. They are the cost of resources used by an organization just to maintain its existence. We can divide operating costs in some components such as Human Resources costs (wages, train, etc.), Rent costs, Consultancies costs, Maintenance costs, Equipment costs, etc.

Implementation of Regional payment systems may have costs based on strategies taken by them. For example, if a regional payment system uses liquidity pool as a tool to control risks, it faces the idle fund cost.

Establishing a clearing union can address the difficulties faced by developing countries in obtaining hard currency needed for imports (Kaderbeck,2019). Developing nations especially need access to a clearing mechanism which would eliminate the transaction costs associated with obtaining hard currency, and reduce the opportunity costs of holding foreign reserves.

In direct use of local currencies in the implementation of foreign trade there is no need to conduct exchange operations in local currency of importer country to dollar and again dollar to local currency of exporter country. Thus, it is reducing the cost of transactions, both financial and administrative.

Member states' central banks or any nominated low risk enough large commercial or state-owned bank can guarantee payment for intra-regional trade and thereby eliminate the need for use of correspondent banks outside the region. Through clearing house, traders don't have to use letters of credit and hence it results in lower cost of trade.

Reducing the time and cost of transactions will ultimately lead to the development of trade between member countries. Regional payment system can function like a common external tariff scheme, demand for extra regional goods declined as the prices of intra-regional goods became more favourable. Thus, trade is diverted from countries external to the Regional payment system, while trade is created among the member countries.

17.1 Regional payment systems costs

In every system there could be two main categories of costs noted: Establishment cost and Operating cost. Operating costs or operational costs, are the expenses which are related to the operation of a business component, piece of equipment or facility. They are the cost of resources used by an organization just to maintain its existence. We can divide operating costs in some components such as Human Resources costs (wages, train, etc.), Rent costs,

Consultancies costs and, Maintenance costs. Establishment costs are the amount of required investment for designing the system, developing any special software or purchase of any required infrastructure.

Implementation and operation of Regional payment systems may have some other costs based on strategies taken by them. For example, if a regional payment system uses liquidity pool as a tool to control risks, it faces the idle fund cost.

17.2 ERPS cost model

ERPS costs could be addressed as establishment costs, operating costs, opportunity cost of liquidity pool and some other negligible costs.

17.2.1 Establishment Cost

17.2.1.1 *Equipment costs*

One Part of the costs for equipment is determined per person, for example the cost of desks and chairs, PCs, printers, phone systems and etc.

The other part is the non-incremental costs such as Broadband costs, Central computers, kitchenware, meeting room facilities and etc.

EC = Equipment Costs

N = number of Employees;

C = Costs for an Employee

FC = Fixed Costs; in \$ thousands

$$EC = N \times C + FC$$

17.2.1.2 *Design and implementation Cost*

The system design and implementation including training, first supports and ... would be the most expensive part of the establishment cost of ERPS. At this stage there could be a rough estimate of \$1,000,000 of design and implementation cost.

17.2.1.3 *Technical /Servers*

This part of establishment cost is supposed to be totally procured via services therefore only included in the operational costs.

17.2.1.4 *System and software customization and purchase*

As a conservative approach it's recommended an amount of \$1,000,000 to be accounted and kept reserved for unplanned, if any, required software and systems which may be developed during establishment.

17.2.2 Operating Costs

17.2.2.1 *Human Resources Cost*

The Human Resource Cost consists of wages, training and etc. It can be calculated for each person so it depends on the number of employees. For calculating No. of employees there has

been supposed a fixed No. plus an incremental No. based on the No. of contributing countries.

$$\begin{aligned} \text{HRC} &= \text{Human Resource Cost} \\ \text{N} &= \text{Number of Employees} \\ \text{NF} &= \text{Number of Fix Needed Employees} \\ \text{NEC} &= \text{Number of Employees per Country} \\ \text{NC} &= \text{Number of Countries} \\ \text{N} &= \text{NF} + \text{NEC} \times \text{NC} \\ \text{HCpP} &= \text{Human Cost per Person;} \\ \text{HRC} &= \text{N} \times \text{HCpP} \end{aligned}$$

The following table illustrates the numbers and facts used in the model.

Table 5HR cost parameters

Human Resources Cost	
Number of Employees needed per Country	3
Fixed needed Employees	25
Annual Human Cost per Person (\$ thousands)	50.00

17.2.2.2 Rent Costs

The cost of rent for an office varies from country to country. The average fee per square meter is 5 to 10 dollars and the required security deposit for a 150 square meter office varies from 5,000 to 20,000 dollars.

Required Space

To calculate how much space needed for an office we have two standards, the Building Block and Australian Standard.

- **The Building Block**

This method recommends a minimum of 6 square meters per person for tertiary space and additional space for secondary and primary space requirements. It enables planners to provide enough space for all the requirements of technical people working in offices including clerical and administrative staff.

- **Australian Standard**

This standard recommends an overall 10 square meters per person for offices, including primary, secondary and tertiary spaces. This standard relates to the ventilation of the building. The important thing to design for in all circumstances is the functional needs of the employee.

As mentioned above the minimum required space needed for each employee shouldn't be less than 6 square meters. Here since the task is a financial activity and is critical it is considered 10 square meters as the required space for each employee.

RC = Yearly Rent Cost

N = Number of Employees

ES = Extra Space needed for office

MFpS = Monthly Fee per Square meter

SD = Security Deposit

R= Interest rate

$$annual\ RC = (10 \times N + ES) \times MFpS \times 12) + SD \times R$$

For more simplicity, the required deposit would totally be converted to rent. Table 6 is providing the parameters around the rent costs.

Table 6 Rent cost parameters

Rent Cost	
Extra Space Needed for Office(Square Meters)	100
Annual fee per Square meter(\$ thousands)	0.5
Security Deposit-Rent (\$ thousands)	20.00
Conversion Rate of Deposit to Rent	5.00%

17.2.2.3 Consultancies Costs

Consultancy services are a service provided by a professional expert who provides expert advice in a particular area such as Security, Finance, Management or any of many other professional specialized fields. Consultancy provides their advice to their clients in various different forms such as reports and presentations. Professional consultants offer specific knowledge or skills for addressing specific goals, tackling problems, or managing projects.

As a result, there is relatively little information available publicly on the fees and rates charged by consultants. What is known, though, is that rates can differ widely based on types of services.

Here in the analysis there have been considers an amount of \$200,000 consultancy costs per year.

17.2.2.4 Technology costs

There would be various needs around technological infrastructure and facilities which here are considered all to be procured based on XaaS and the Capex could be neglected. Using a cloud service for main business and support activities may have around \$500,000 per year.

17.2.2.5 Maintenance Costs

How much an individual pay in maintenance expenses depends on the type of asset and how often upkeep is required and performed. As a general rule we can assume maintenance cost of an asset proportional to its value.

MC_i = Maintenance Cost of Equipment i ;

V_i = Value of Equipment i ;

α_i = a number between 0 & 1.

$$MC_i = V_i \times \alpha_i$$

In the ongoing model, there is estimated the maintenance costs to be equal to 10% of total establishment cost (excluding idle-fund cost).

17.2.2.6 Overhead and unplanned costs

It is a normal decision to put aside a percentage for overhead and unplanned costs. In this model 30% of other operational costs are considered to be as Overhead and unplanned costs.

17.2.3 Opportunity Cost of LP

One of the main costs which is considered in the model is the opportunity cost of reserve capital paid by member states as the Liquidity Pool. LP could also generates benefit (by investing the amount and getting LIBOR back) but the primary use of the benefits is compensating nominated banks credit facility (is exists) and then to be repaid to member states.

17.2.3.1 Idle Fund Cost

Following is the way the idle fund cost (contribution of each member estates in LP) is calculated for the settlement period.

$CiLP_j$: The amount of Contribution in Liquidity Pool by participant j ;

T = settlement period;

R_j = Interest rate of Participant j which may differs from LIBOR

$$\text{Idle Fund Costs of member state } j = CiLP_j \times T \times R_j.$$

17.2.3.2 Reward of nominated bank

By implementing ERPS since the settlement period is proposed to be one year, the nominated bank in exporting countries needed to be compensated for liquidity provided to the exporters and the activated credit facility. While this may differs in time for seasonal trades and ... but at the end of period there would be some banks which in average they where lending the network. Here it is proposed that these banks to be compensated from the source of benefits of liquidity pool. This subject is discussed by more details in section 17.3.4.

17.2.4 Negligible Cost

Considering every detailed cost associating with ERPS is neither rational nor applicable. Here some costs are ignored to be calculated since they may not affect the analysis by measurable amounts. Secure messaging costs is one of these mentioned since already the

members are paying some amounts which may be subject to little changes. Also end of period settlement costs could be ignored claimed as a little part of socio-economic benefits.

17.2.4.1 *Settlement Cost*

At the end of clearing period there would be an amount of transactions required to be settled out of network. Since the new amount is a sum of transactions during a year and the settlement would be handled only by settlement bank at one shot and during a short time period, this amount could be ignored.

17.3 Model of benefit evaluation of ERPS

Establishing a regional payment system can address the difficulties faced by developing countries in obtaining hard currency needed for imports. Developing nations especially need access to a clearing mechanism which would eliminate the transaction costs associated with obtaining hard currency, and reduce the opportunity costs of holding foreign reserves.

In direct use of local currencies in the implementation of foreign trade there is no need to conduct exchange operations in local currency of importer country to dollar and again dollar to local currency of exporter country. Thus, it is reducing the cost of transactions, both financial and administrative.

Member states' central banks or any nominated low risk enough large commercial or state-owned bank can guarantee payment for intra-regional trade and thereby eliminate the need for use of correspondent banks outside the region. Through clearing house, traders don't have to use letters of credit and hence it results in lower cost of trade.

Reducing the time and cost of transactions will ultimately lead to the development of trade between member countries. Regional payment system can function like a common external tariff scheme, demand for extra regional goods declined as the prices of intra-regional goods became more favourable.

17.3.1 Different type of benefits

The benefits of a payment system could be mentioned in two main categories:

- Socio-economic (qualitative) benefits
- Financially measurable (quantitative) benefits.

Here the first category, like trade promotion, employment improvements, increase in countries GDP and, ... is not considered for calculating benefits.

The second category could be divided to two main components¹: Transaction cost reduction (which is a benefit for importer) and delay cost reduction (which is a benefit for exporter). These two components are discussed in section 17.3.2 and 17.3.3.

¹ Reducing the amount of WAC reserve also could be mentioned as a benefit but it is negligible and in some cases the countries need the same reserve despite changing the route to ERPS for part of their transactions.

17.3.2 Transaction cost reduction

Transaction cost is a representation for different costs and concerns through completing a transaction. The transaction cost should cover the intervening businesses' opportunity cost, compliance risk¹ of parties, operational cost of network and banks and

In the model the countries are categorized to 4 types based on their international trade value and their difficulties in handling transactions. The difficulties in handling transactions are noted as Low/High Speed countries and the trade value as High/Low Value.

Table 7 categorizing criteria

	High Value	Low Value
High Speed	HVHS	LVHS
Low Speed	HVLS	LVLS

Table 8 countries transaction categories

Country	Category
Afghanistan	LVHS
Azerbaijan	LVHS
Iran	HVLS
Kazakhstan	HVHS
Kyrgyzstan	LVHS
Pakistan	HVHS
Tajikistan	LVHS
Turkey	HVHS
Turkmenistan	LVHS
Uzbekistan	LVHS
China	HVHS
Russia	HVHS

Between the above-mentioned countries Iran is in the category of Low Speed with High Value and others are in High Speed either Low/High Value.

The transaction costs reductions are calculated as the benefits of importer.¹ The importer transaction cost reduction depends on the its own category and the exporting country. Table 9

¹Compliance risk is exposure to legal penalties, financial forfeiture and material loss an organization faces when it fails to act in accordance with industry laws and regulations, internal policies or prescribed best practices. Compliance risk is also sometimes known as integrity risk.

illustrates a sample table for calculating transaction cost reduction benefits based on category type of importing and exporting countries.

Table 9 Rate of Benefit Transaction cost between different types of countries

	HV HS	LV HS	HV LS	LV LS
HV HS	0.70%	1.02%	1.77%	2.20%
LV HS	1.02%	1.38%	2.20%	2.67%
HV LS	1.77%	2.20%	3.18%	3.72%
LV LS	2.20%	2.67%	3.72%	4.30%

Fees for cross-border payments where volumes are high usually average 2 percent to 3 percent, but can exceed 10 percent where payment volumes and values are low and there are some difficulties like sanctions available. It should be mentioned that the above benefits are could vary based on the implementation policy of ERPS and the existing mechanism between countries.²

The reduction of transaction cost of import of a country therefore would be calculated from the below formula:

$$RTC_{ij} = \text{Reduction in Transaction Cost of the Participant i import from j}$$

$$RTC_{ij} = IV_{ij} \times RRTC_{ij}$$

Where:

¹ In economic price analysis almost always, this is the buyer that collects the surplus and then every cost addition and reduction in the exchange procedure directly affects the buyer.

² The table parameters are available to be changed in the Excel file. The criteria for calculating the factors are described here. It should be mentioned that this model is totally theoretical to provide 2 factors instead of 16 tunable factors.

$RRTC_{ij}$ = Rate of Reduced Transaction Cost Between Participant i and j

W_i = Weight of Participant i

W_j = Weight of Participant j

S = Scale Parameter; to be used in Excel

M = Move Parameter; to be used in Excel

$$RRTC_{ij} = (W_i + W_j)^2 \times S + M$$

		HV HS	LV HS	HV LS	LV LS
	Weight	1	1.25	1.75	2
HV HS	1	$(1 + 1)^2 \times S + M$	$(1+1.25)^2 \times S + M$	$(1 + 1.75)^2 \times S + M$	$(2 + 1)^2 \times S + M$
LV HS	1.25	$(1 + 1.25)^2 \times S + M$	$(1.25+1.25)^2 \times S + M$	$(1.25+1.75)^2 \times S + M$	$(2 + 1.25)^2 \times S + M$
HV LS	1.75	$(1 + 1.75)^2 \times S + M$	$(1.25 + 1.75)^2 \times S + M$	$(1.75+1.75)^2 \times S + M$	$(2+1.75)^2 \times S + M$
LV LS	2	$(1 + 2)^2 \times S + M$	$(2 + 1.25)^2 \times S + M$	$(2 + 1.75)^2 \times S + M$	$(2 + 2)^2 \times S + M$

$$RRTC_{ij} = \text{Rate of Reduced Transaction Cost Between Participant i and j}$$

$$IV_{ij} = \text{Import Value of i from j};$$

Then the total benefit of country i would be:

$$RTC_i = \text{Reduction of Transaction Costs for Participant i}$$

$$RTC_i = \sum_j RTC_{ij} = \sum_j IV_{ij} \times RRTC_{ij}.$$

17.3.3 Reduction of Delay cost

According to proprietary McKinsey research and analysis (2015) on cross-border payments, the average time to complete a cross-border transaction is three to five business days, we consider average four calendar days as an average benefit for sending a cross-border transaction via ERPS. Here we should mention that the benefit of reducing delay cost would be for exporting party who is waiting for receivable funds.

Followings are the model by with the calculations are handled in the model:

$$DCR_i = \text{Delay Cost Reduction for Participant i}$$

$$EV_i = \text{Export Value of participant i to ECO region}$$

$$EV = \text{Trade Value of the ECO member states}$$

$$DB_i = \text{Delay of receivables by participant i Before Implementatio Of ERPS}$$

$$DA = \text{Delay After Implementation Of ERPS}$$

$$DI = \text{delay benefit; := 4 days}$$

$$R = \text{interest rate}$$

$$DCR_i = \frac{EV_i(DB - DA)}{365} \times R = \frac{EV_i \times DI}{365} \times R$$

This benefit could be captured either by contributing banks or the trade partners.

17.3.4 Benefits from Liquidity Pool Income

As per mentioned, the nominated bank in some countries may face net crediting position and therefore should be compensated.¹ The source for these costs are the benefits from investing the liquidity pool. After compensating the nominated crediting banks if there were any remaining interests of LP then it would be divided between member states proportional to their contribution in LP.

The benefit for every nominated bank liquidity pool income will be calculated as follows:

$$ADB_j = \text{Average Daily Balance of Participant j};$$

$$EDB_{ij} = \text{Excess Daily Balance Participant j in ith day};$$

$$MSfLI_j = \text{Maximum Share from Liquidity pool Interest};$$

¹ We would neglect charging debiting (importing) nominated bank as a bonus for improving the trade.

LPI = Liquidity Pool Interest;

LP = Liquidity Pool;

α = Interest Rate

SfLI_j = Share from Liquidity Pool Interest participant j;

$$ADB_j = \sum_{i=1}^{365} \frac{EDB_{ij}}{365}$$

$$MSfLI_j = \max (ADB_j(LIB + 0.05), 0)$$

$$LPI = LP \times \alpha$$

$$\text{if } \sum_j MSfLI_j \leq LPI ; SfLI_j = MSfLI_j \forall j$$

$$\text{if } \sum_j MSfLI_j > LPI ; SfLI_j = \frac{LPI \times MSfLI_j}{\sum_j MSfLI_j} \forall j .$$

18 Calculation results of the cost-benefit of the ERPS

The previous section developed models are implemented in a dynamic Excel file. The results are simply illustrating via Table 10 to Table 14.

18.1 Expenses

Table 10 and Figure 26 illustrates establishment cost of ERPS. The total cost for establishing ERPS would be equal to almost \$4 million.

Table 10 Establishment Costs

Establishment Costs (\$ Thousand)	
Total	3,387
Equipment	605
ERPS Design and Implementation	1,000
System Customization	1,000
Others	782

Figure 26 Establishment Costs

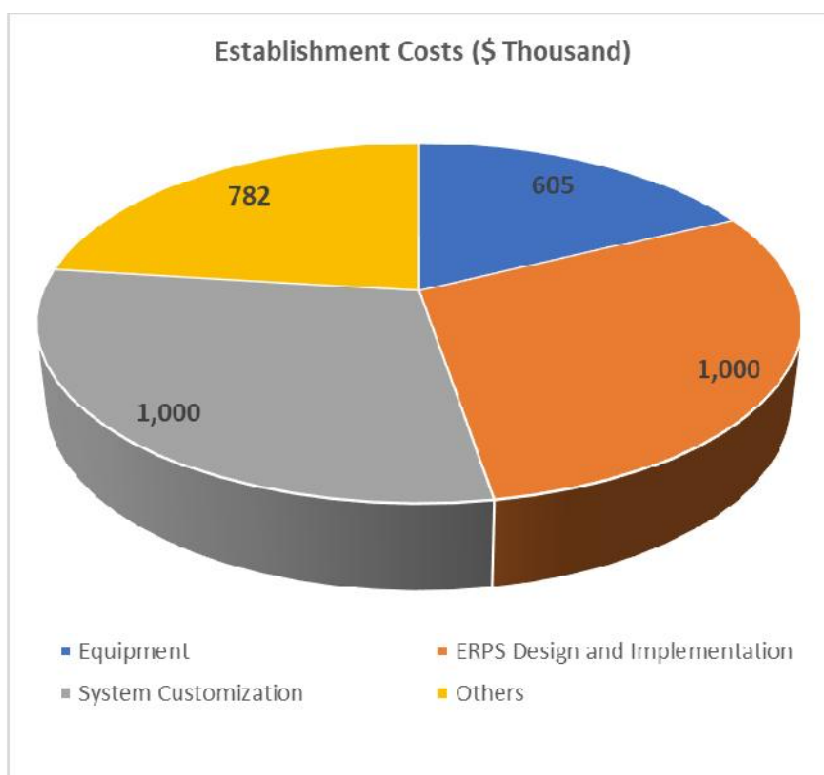


Table 11 and Figure 27 illustrates net idle fund cost for each member states where all of the member states are participating to ERPS. The opportunity cost for idle-fund would be equal to almost \$600 million.

Table 11 Net idle fund cost for each member states

Net Opportunity Cost of LP (\$ Thousands)	
Totals	609,358
Afghanistan	30,280
Azerbaijan	21,588
Iran	75,156
Kazakhstan	108,652
Kyrgyzstan	37,129
Pakistan	79,804
Tajikistan	17,043
Turkey	184,003
Turkmenistan	10,534
Uzbekistan	45,168

Figure 27 Net idle fund cost for each member states

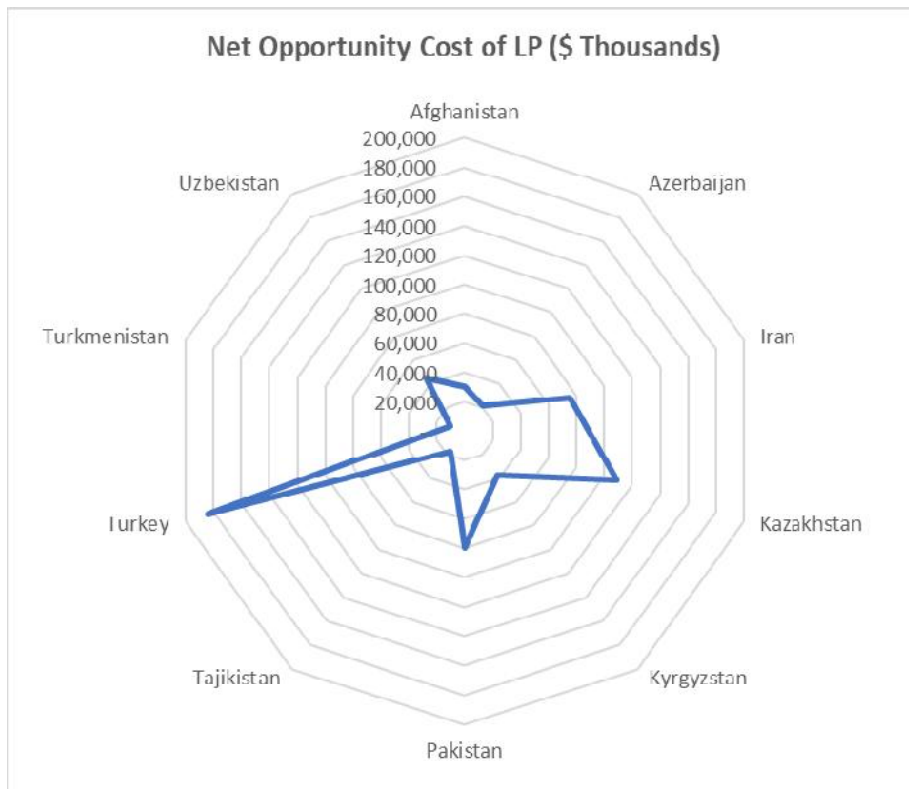
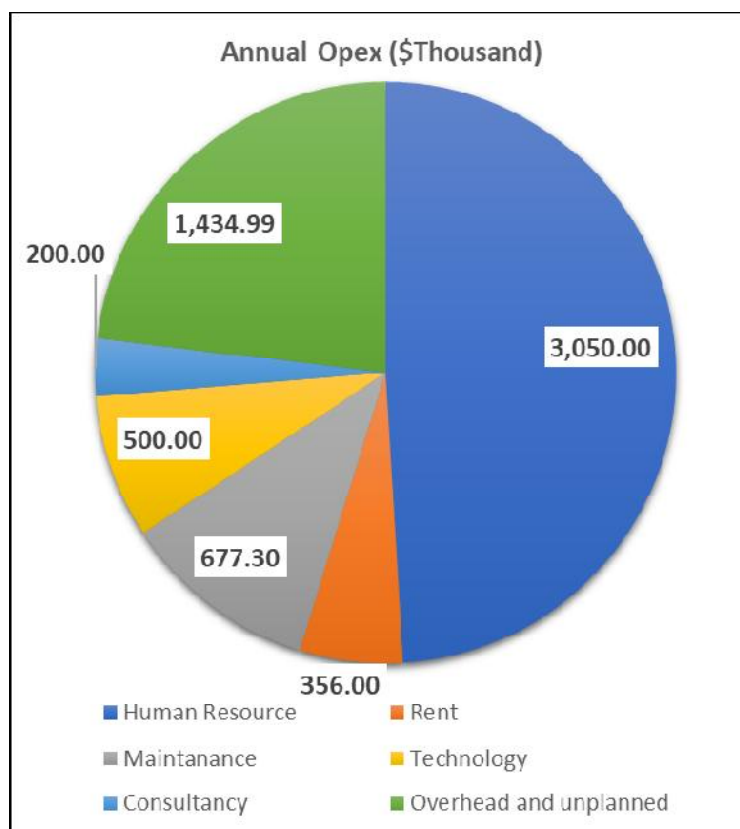


Table 12 and Figure 28 illustrates annual Opex where all of the member states are participating to ERPS. The annual Opex would be equal to almost \$6 million.

Table 12 Annual Operational Expenditures of ERPS

Annual Opex (\$ thousand)	
Total	6,218
Cost Type	Amount
Human Resource	3,050
Rent	356
Maintanance	677
Technology	500
Consultancy	200
Overhead and unplanned	1,435

Figure 28 Annual Operational Expenditures of ERPS



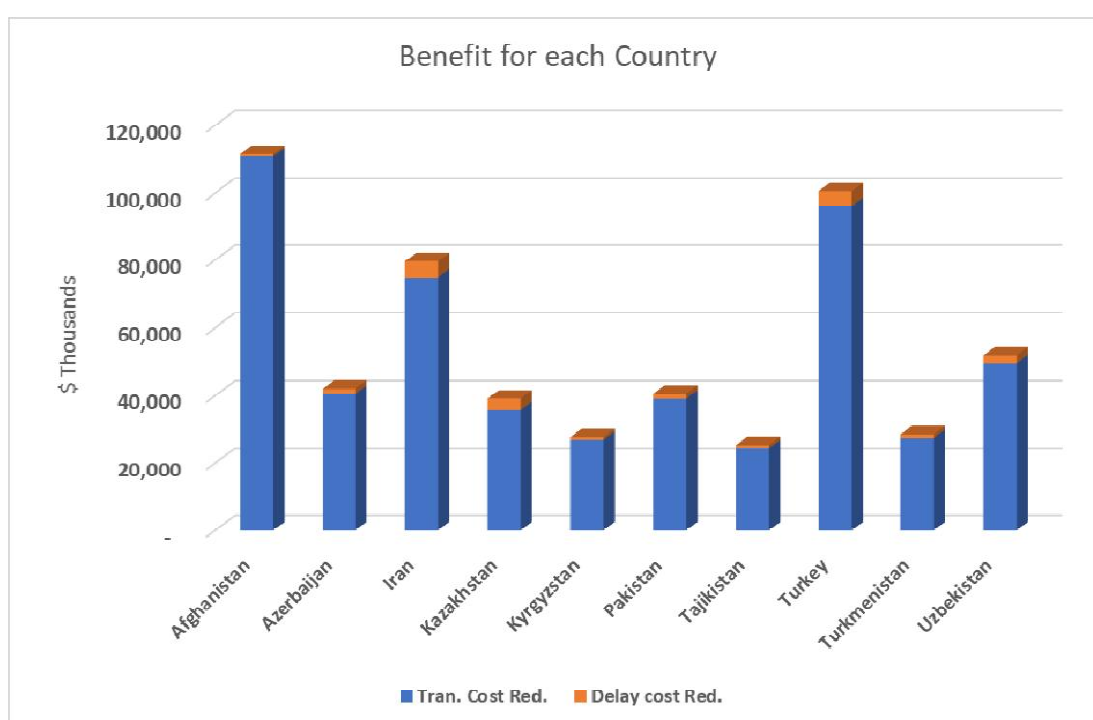
18.2 Benefits

Table 13 and Figure 29 are illustrating the detailed benefits of ECO member states where all members are participating in ERPS without China and Russia. The total benefit would be more than \$540 million.

Table 13 Benefit for each country

Benefit for each Country (\$ thousand)			
Country	Tran. Cost Red.	Delay cost Red.	Total Benefit
Afghanistan	110,805	733	111,537
Azerbaijan	40,431	1,600	42,031
Iran	74,818	4,732	79,550
Kazakhstan	35,735	3,390	39,125
Kyrgyzstan	26,928	810	27,738
Pakistan	39,053	1,487	40,541
Tajikistan	24,435	967	25,402
Turkey	96,164	4,407	100,571
Turkmenistan	27,455	1,086	28,541
Uzbekistan	49,588	2,246	51,834
Totals	525,412	21,458	546,869

Figure 29 Benefit for each country



18.3 ECO Plus Calculations

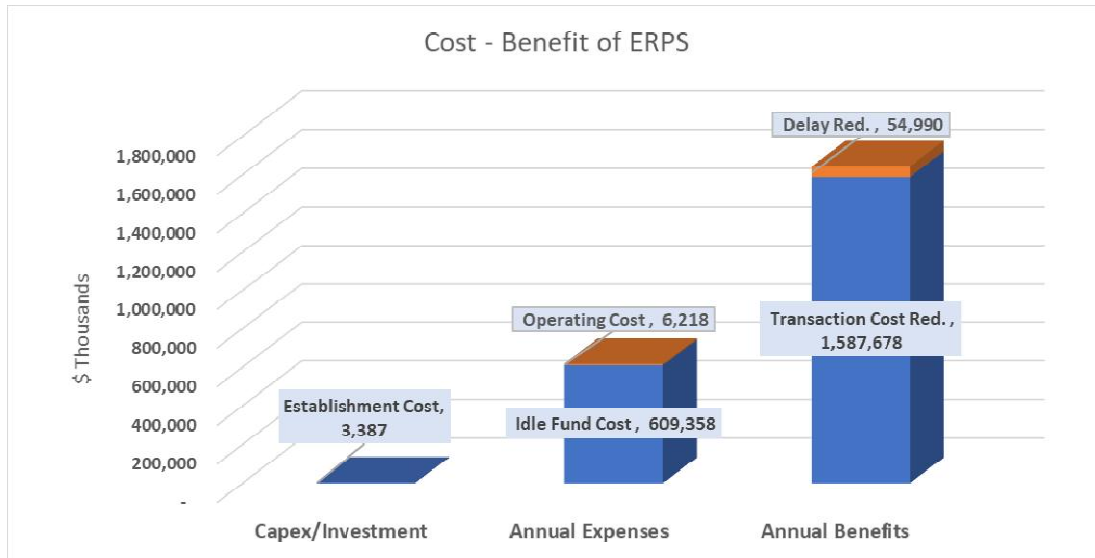
As per mentioned ERPS could be promoted to a higher level where the trade of region with China and Russia are both handled via ERPS. In this scenario the benefits are exposed to big change and expenses are subject to little changes.

Since China and Russia have considerable trade with ECO member states, when adding them, calculating LP needs a change in formula and criteria. In this document and the Excel files of calculation LP would ignore China and Russia effect on LP.

Table 14 Costs and Benefits of ERPS in ECO-Plus

Cost-Benefits (\$ Thousands)		
Capex/Investment	Establishment Cost	
3,387	3,387	
Annual Expenses	Idle Fund Cost	Operating Cost
615,576	609,358	6,218
Annual Benefits	Transaction Cost Red.	Delay Red.
1,642,668	1,587,678	54,990

Figure 30 Costs and Benefits of ERPS in ECO-Plus



19 Sole member states' benefit

During previous sections the benefit models was developed in such a way that the economic profit could be measured almost separately for each member state, although that may not be precise enough.

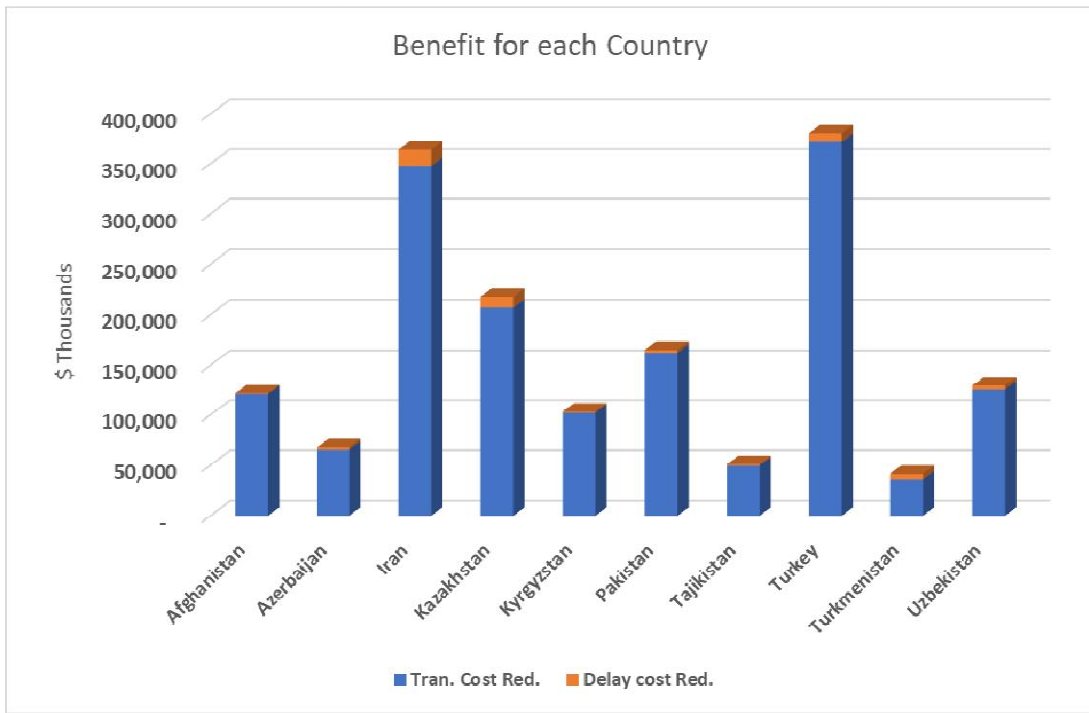
Table 13 illustrates each member states benefits in the scenario where all of ECO member states are participating the ERPS with considering China and Russia. Other scenarios could be analysed using the electronic (Excel) file provided with the report.

Table 15 and Figure 31 are illustrating the detailed benefits of ECO member states where all members are participating in ERPS and also China and Russia. The total benefit would be more than \$1.6 billion.

Table 15 Benefits of ERPS by Countries (all members joining+China and Russia)

Benefit for each Country (\$ thousand)			
Country	Tran. Cost Red.	Delay cost Red.	Total Benefit
Afghanistan	120,855	859	121,714
Azerbaijan	65,184	2,342	67,527
Iran	347,502	16,695	364,197
Kazakhstan	206,885	11,075	217,959
Kyrgyzstan	102,135	1,085	103,221
Pakistan	162,155	2,963	165,118
Tajikistan	49,654	1,142	50,796
Turkey	372,029	8,888	380,917
Turkmenistan	35,662	5,730	41,392
Uzbekistan	125,616	4,212	129,828
Totals	1,587,678	54,990	1,642,668

Figure 31 Benefits of ERPS by Countries (all members joining)



20 Conclusion

As described in the first section, clearing unions have almost the same building blocks everywhere in the world. The purpose of this study was to check the possibility of set up a system similar to a clearing union, say, an RPS, with minimum governmental involvement, and participation of commercial banks, rather than central banks, of course under the supervision of central banks. While we are talking about minimum government role, it should be thought about resources to fund the expenses of the system. The feasibility study of the system was provided in detail in final section.

It is strongly recommended to move forward to implement an experimental RPS between interested members states, rather than extending the depth and breadth of the study.

Set up a clearing house nowadays is much easier than the past. Thanks to the information technology instruments, it is possible to design and implement software to fill the role of clearing house and manage debits and credits and reports back periodically. The RUNC Co. has the capability to design and implement such systems in a pilot scale.

The legal framework of cooperation between the clearing house and commercial banks is proposed as “RUNC-BANK” agreement¹.

Since commercial banks are authorized to open nostro accounts with each other and also with clearing house of RPS, the clearing role of the central banks could be assigned to commercial banks. It is worth to mention that in a clearing union like ACU, commercial banks are able to handle balanced portion of trade between the two countries without intervention of central banks.

In order to open correspondent (nostro) accounts with each other, commercial banks also need a legal framework, which is proposed as “BANK-BANK” agreement².

Although design and implementation of technical infrastructure is a separate project of its own, some pieces of the puzzle such as messaging system is currently implemented and is operational and could be offered to commercial banks in the member states to use it at least in experimental mode.

The way forward to bring the idea of ERPS to reality is suggested as follows:

1. The ECO secretariat shares the report with member states and asks for the delivery of the report to commercial banks.
2. ECO secretariat provides a negotiation environment for RUNC to talk to commercial banks in the member states and get their feedbacks and comments on the idea of an RPS and suggested legal frameworks.
3. Member states which are interested in participating in a pilot implementation of RPS would nominate at least one commercial bank to join the plan.

¹A copy of such agreement is attached to the report for the consideration of member starts.

² A copy of this agreement is also attached.

4. The nominated commercial banks would setup the technical and legal infrastructure of RPS. That includes access to financial messaging system of RPS, which is provided by RUNC, in addition to inspecting the “BANK-BANK” agreement and establishing direct business connections to nominated banks in other member states.

5. The pilot RPS would operate for a period of time, one year for example, and inspection of the idea in practice will be reported to ECO secretariat and relevant officials in the member states.

This experiment will definitely pave the way to establish anRPS in the ECO region. By getting feedback from nominated commercial banks, central banks and officials of the countries which were involved in the pilot RPS, member states would have a better perspective of functionality of an RPS, and coming to consensus about implementing an RPS in ECO region might finally become possible.

21 References

- ACU. (2009, March). *Introduction to the Asian Clearing Union (ACU)*. Retrieved from <https://www.rma.org.bt/EXTERNALWEB/admin/ACU%20awareness%20materials.pdf>
- ACU. (2019, July). *Asian Clearing Union: Annual Report 2018*. Retrieved from <https://www.asianclearingunion.org/Portals/0/Annual-Report/Annual%20Report%202018.pdf?ver=2020-01-15-122144-050>
- Asian Clearing Union (ACU). (n.d.). Retrieved from <https://www.asianclearingunion.org/History.aspx>
- BANK OF MAURITIUS. (2012, October). *Regional Payment and Settlement System*. Retrieved from <https://www.mcci.org/media/1274/repss2.pdf>
- Central Bank of Egypt. (n.d.). *Regional Payment and settlement System (REPSS)*. Retrieved from <https://www.cbe.org.eg/en/PaymentSystems/Pages/REPSS.aspx>
- CMA. (n.d.). *Regional Payment and Settlement System*. Retrieved from <https://www.cma.se/public/>
https://www.cma.se/sites/all/themes/cma/gui/pdf/COMESA_paper.pdf
- COMESA. (2012, March). Retrieved from https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/14.%20Mahmood%20Mansoor%20COMESA_ENGLISH.ppt
- Eichengreen, B., & Braga de Macedo, J. (2001, March). *The European Payments Union : History and Implications for the*. Retrieved from <http://www.jbmacedo.com/oecd/triffin.html>
- European Central Bank. (2010). Retrieved from <https://www.ecb.europa.eu/pub/pdf/other/paymentsystem201009en.pdf>
- FLAX-DAVIDSON, R. H. (1985). *The ALADI Treaty and Letter of Credit Transactions in Latin America*. Retrieved from <https://scholar.smu.edu/cgi/viewcontent.cgi?article=3823&context=til>
- Fritz, B., Mühlich, L., Biancareli, & André. (2012). *Regional payment systems: A comparative perspective on Europe and the developing world*. Retrieved from <https://www.econstor.eu/handle/10419/57830>
- Gakunga, M. (2020, April). *Over \$100m Transacted Through the Regional Payment System*. Retrieved from <https://www.comesa.int/over-100m-transacted-through-the-regional-payment-system-2/>
- Higginson, M. (n.d.). *How Blockchain Could Disrupt Cross-Border Payments*. Retrieved from <https://www.theclearinghouse.org/banking-perspectives/2016/2016-q4-banking-perspectives/articles/blockchain-cross-border-payments>

- Ponsot, J.-F. (2009, June). New Financial Architecture and Regional Monetary. *INTERNATIONAL CONFERENCE "INTERNATIONAL POLITICAL ECONOMY AND THE NEW REGULATIONS OF GLOBALISATION"*. Poitiers, France. Retrieved from <https://halshs.archives-ouvertes.fr/halshs-00390436/fr/>
- Swift Institute. (2014, November). *Cross-border Low Value Payments and Regional Integration: Enablers and Disablers*. Retrieved from https://www.swiftinstitute.org/wp-content/uploads/2014/11/SWIFT-Institute-Working-Paper-No-2014-005-Cross-border-LVP-Regional-Integration-Lipis_v4-FINAL.pdf
- Xinhua Net. (2018, September). *COMESA decries low uptake of regional payment system for intra-regional trade*. Retrieved from http://www.xinhuanet.com/english/2018-09/07/c_137452457.htm