

# ***BANCO DE GUATEMALA***



## **PAYMENT SYSTEM OF GUATEMALA: EVALUATION AND MODERNIZATION PROPOSAL**

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# I N D E X

<b>INTRODUCTION.....</b>	<b>1</b>
<b>I. CONCEPTUAL AND PHILOSOPHICAL ASPECTS OF A PAYMENT SYSTEM.....</b>	<b>2</b>
1. Generalities.....	2
1.1 Definition.....	2
1.2 Importance.....	3
1.3 Characteristics .....	3
1.4 Components of a modern payment system.....	5
1.4.1 Real Time Gross Settlement Systems -LBTR- .....	5
1.4.2 Banking Clearing Houses .....	5
1.4.3 Automated Clearing Houses -ACHs- .....	6
1.4.4 Cross-border Payments.....	6
1.4.5 Value Settlement System .....	6
2. Payment system and monetary policy.....	7
2.1 Link between the payment system and monetary policy.....	7
2.2 Payment system in an economy where several currencies circulate.	8
3. Institutional infrastructure.....	9
3.1 The role of a central bank .....	9
3.2 Other participating institutions.....	10
4. Liquidity.....	11
5. Risks.....	12
6. Oversight of the payment and value settlement systems.....	13
7. Trends of the payment systems.....	15
<b>II. PRINCIPLES OF THE PAYMENT SYSTEMS .....</b>	<b>16</b>
<b>III. THE PAYMENT SYSTEM OF GUATEMALA.....</b>	<b>19</b>
1. Operative aspects.....	19
1.1 Generalities.....	19
1.2 Instruments and operation.....	22
1.3 Operations in foreign currency.....	26
1.4 Inter-bank transfers.....	28
1.5 Operations of the public sector.....	28
1.6 Settlement of security titles .....	29
2. Decisions of constitutional and legal order related with the payment system .....	32
<b>IV. INTERNATIONAL EXPERIENCE IN MATTERS OF PAYMENT SYSTEMS (Chile, Mexico, Costa Rica and Colombia).....</b>	<b>34</b>

<b>V.</b>	<b>PROGRESS AND INTEGRAL STRATEGY OF MODERNIZATION OF GUATEMALA'S PAYMENT SYSTEM .....</b>	<b>37</b>
1.	Advances carried out in the modernization of the payment system.....	37
1.1	Regulation of the Banking Clearing House .....	38
1.2	Real Time Gross Settlement System -LBTR- .....	41
2.	Structure, operational scheme, instruments and mechanisms of the payment system of Guatemala .....	42
2.1	Purpose.....	43
2.2	Structure .....	43
2.2.1	Institutional frame.....	43
2.2.2	Normative and oversight framework .....	44
2.3	Operational framework .....	46
2.4	Mechanisms of risk administration in a Real Time Gross Settlement System .....	48
2.4.1	Administration of the liquidity risk.....	48
2.4.2	Administration of credit risk.....	48
2.4.3	Administration of operational risk.....	49
2.4.4	Administration of legal risk.....	50
<b>VI</b>	<b>MATRIX OF THE MODERNIZATION PROJECT.....</b>	<b>52</b>
<b>VII.</b>	<b>RECOMMENDATIONS.....</b>	<b>55</b>
	ANNEX 1.....	56
	ANNEX 2.....	68
	List of abbreviations .....	71
	References .....	73

# **PAYMENT SYSTEM OF GUATEMALA: EVALUATION AND MODERNIZATION PROPOSAL**

## **INTRODUCTION**

This document has as its main objective to present a general evaluation of the payment system of Guatemala and propose the integral strategy of the modernization of said system. According to the above-mentioned, the document includes conceptual and philosophical aspects that include, among others, the generalities of a payment system, the link of said system with the monetary policy, the role that a central bank must play in the system, as well as regarding liquidity and the inherent risks of the payment systems. On the other hand, reference is made to the Basic Principles for the Systemically Important Payment Systems, carried out by the Bank of International Settlements (BIS).

Also the current operation of the Guatemalan payment system is described, emphasizing the operational and legal aspects, in national and foreign currency, as well as in the settlement of security titles; in inter-bank transfers and of the public sector.

Later, regarding the international experience in matters of payment systems, there appears a description of cases such as Chile, Mexico, Costa Rica and Colombia, which are in the process of modernizing their payment systems, and for the effect, the structure, payment instruments and achievement of reform projects in said countries is mentioned.

Finally, taking as a reference the vision of a modern payment system and the experience of other central banks regarding the implementation of real time gross settlement systems, the integral modernization strategy of the country's payment system is described; therefore, the present document includes a modernization matrix of said system, which contains the activities to be carried out, which are contracted to the strengthening of the normative frame of the payment system, to the implementation and modernization of the payment system and to the institutional cooperation that said modernization requires.

## I. CONCEPTUAL AND PHILOSOPHICAL ASPECTS OF A PAYMENT SYSTEM

### c) 1. Generalities

#### 1.1 Definition

The Bank of International Settlements in its Glossary of Terms used in the payment and settlement systems of January 2001, revised in March 2003, defines that *“a payment system consists of a set of instruments, banking procedures and, typical inter-bank funds transfer systems that ensure the circulation of money.”* On the other hand, The Core Principles for the Systemically Important Payment Systems issued by the BIS indicate that: *“a payment system is a set of instruments, procedures and norms for funds transfers among the participants of the system. This usually means that there is an agreement between a defined group of the system’s participants and the operator of the same and that the funds transfer is made through a previously agreed technical infrastructure”*.

The preceding definitions warn that all payment systems allow the economical agents to transfer funds from one place to another, among people or financial institutions. In this case, its main elements, according to David Sheppard<sup>1</sup>, are the following:

- a) A means of authorization and initiation of the payment, this is the means through which the payer authorizes his bank to transfer funds.
- b) A means of transmission and interchange of payment instruction among the involved banks, which is habitually mentioned as clearance.
- c) A settlement means among the involved banks, in other words, the payer’s bank must clear the beneficiary’s bank, bilaterally or through accounts that banks maintain with a settlement agent to third parties, usually (but not always) the central bank.

#### 1.2 Importance

The payment system, while facilitating the economic transactions and funds movement, becomes an important factor for the good operation of the economy.

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<sup>1</sup> Sheppard, David, “Payment Systems”, Essay No. 58, *Center for Central Banking Studies, Bank of England*, and CEMLA (1996).

Also and mainly, these systems help in the effectiveness of the monetary policy, in the development of financial and goods markets and in the financial and monetary stability. In matters of monetary policy, in the payment systems the operations of the central bank are carried out in the money market in order to adjust the liquidity in said market. Besides the importance that they have in the financial sector, the payment systems have a strong impact on the real activity, because they are the means that strengthen the public's confidence in the national currency and because they facilitate the productive activity.

The effectiveness and reliability of the payment systems contributing in the economic efficiency as the funds transferred from the customer's account in the payer bank to the beneficiary's account in the recipient bank are available. In that way, they help the economic agents of funds assignment, for productive purposes, to make decisions opportunely, because the money flow can be administered in an efficient manner.

### **1.3 Characteristics**

The payment systems show characteristics that keep relation with the value of the operations, settlement modality and frequency.

#### **a) Value of the operations**

Regarding the operations' value, they can be classified as retail or large value. The theory does not offer clear criteria to differentiate between retail or large-value payments, rather, said separation is an empiric problem that must be solved paying attention to the proper conditions of each economy.

In practice, a reference value is established for said differentiation, depending on the demand of transactions and the processing capacity of the available system. Another classification can be made taking into account the means used for the settlement. In this case, those that are performed directly among banks affecting the accounts in the central bank are considered of large value, while those that require going through a clearance process, manually or electronically, are considered of retail value.

**b) Settlement modality**

Regarding the settlement form, the payment systems operate under two basic forms: gross and net. In the first one, each payment instruction is channeled from the payer bank to the recipient bank through the current account that each of them had in the central bank, carrying out said registries per each transaction. In the second, a prior netting process is carried out, bilaterally or multilaterally, among the receipt and fund payment operations of each participant carrying out at the end a single registry in the account that each of them has in the central bank.

**d) Settlement frequency**

Regarding the frequency in which they operate, it is important to mention that this can be in real time or deferred. In the first case, the operations are settled when they are entered, whenever there are enough funds for its settlement; while in the second case, the operations carried out in different times are considered valid or settled after they are registered.

**1.4 Components of a modern payment system**

In general terms, there are several components that integrate a modern payment system, which, mainly, depend on the development grade of each economy. Actually, five subsystems linked through a payment system of large value can be identified, which are mentioned below:

**1.4.1 Real Time Gross Settlement System -LBTR-**

This is the most important component of a modern payment system. The LBTR, while supporting the operation settlement of the inter-bank market, constitutes the fundamental payment subsystem of the country's economy. The efficient security and operation of the money and capital markets is mainly due to the good operation of said subsystem. In effect, the LBTR allows supporting the development of the different subsystems that integrate a modern payment system, which are used for the settlement of the operations that are carried out in the

security market, for the clearance process of checks and automated clearing houses, as well as the financial operations abroad.

### **1.4.2 Banking clearing houses**

In spite of the growing trend of electronic payments in some countries, the check is still an important payment instrument, for large and retail-security transactions; therefore, within a modern payment system it is important to include the check clearing house as another important subsystem of the payment system. The use of checks will mainly depend on the preference of the economic agents regarding the use of the same and on each country's custom; however, the financial institutions can through some incentives guide the use of electronic payment instruments, which helps to ease the operative processes the banks use to provide payment services.

### **1.4.3 Automated clearing houses-ACH's-**

They constitute another subsystem to be considered within a modern payment system, due to the variety of potential payment instruments that can arise as a result of technological development. In that sense, the ACH's process the clearance and settlement of inter-bank operations derived from retail payments. Nevertheless, the financial institutions can establish their own systems to operate and settle the transactions derived from said payment instruments; the infrastructure of the ACH's guarantees its customer a large acceptance of the payment service, because it facilitates, for example, the use of universal networks of credit and debit card readers, as well as automated teller machines.

### **1.4.4 Cross-border payments**

A modern payment system must dispose of a channel that facilitates carrying out payments to and from foreign countries; an element that guarantees

the insertion of the country in the economy and global markets. In this regard, the interaction rate and commercial relations that the financial system and local companies maintain with foreign financial institutions and companies is important, which necessarily involves the use of international banking infrastructure to settle the transactions. For a small and open economy, the payment operations of the public sector abroad are also important, which are mainly linked with the obtainment of funding through loans and debt instruments as well as the later fulfillment of said obligations.

#### **1.4.5 Securities Settlement System**

This channel subsystem, essentially large-security payments derived from the negotiation process of securities (tiles, stocks, bonds and others), are carried out through the stock exchange or directly with the central bank, in its different primary and secondary markets. To operate on the infrastructure of a LBTR system has helped some countries to carry out the security settlement on a delivery versus payment framework; this means, that the securities must be delivered if, and only if, the payment has been made simultaneously.

### **e) 2. The payment system and the monetary policy**

#### **2.1 Link between the payment system and monetary policy**

The link between the payment system and monetary policy is determined by the relation between the monetary stability and financial stability. In that sense, it is easy to see how a failure in the payment system can have a serious impact on the financial markets. Therefore, if that failure is not solved in time, it would result not only in losing confidence in that financial market, but also the monetary policy would be seriously affected.

A payment system that fulfills the Core Principles for the Systemically Important Payment Systems favors the financial stability and reduces the possibility of a financial crisis, helping toward monetary stability and the efficacy of the monetary policy. On the contrary, when the payment system is insecure and

poorly developed, the financial stability is weak; therefore, it is difficult for the central bank to increase or shorten the liquidity in order to reach its objective of monetary policy. For this reason, the central banks have special interest in the existence of safe financial institutions and stable financial markets.

It is important to highlight the explicit relation between the monetary and financial stability. In that regard, Anna Schwartz<sup>2</sup> indicates that a financial crisis generally leads to drastic reductions of the money offer. If the cash of the public demand increases, then the monetary multiplier reduces and, therefore, the monetary offer is reduced. If the monetary offer is quickly reduced, due to the financial instability, the central bank will have to issue larger large-security money in order to provide liquidity to the economy and then restore the monetary stability. At this rate, it will be more difficult to reach monetary stability, even in the short term; consequently, when there is financial instability it is very probable that there is monetary instability.

Last, it is important to indicate that the payment system is an integral part of the monetary policy management and economic structure, because it increases the efficiency of the economic activity.

### **2.2 Payment systems in an economy in which several currencies circulate**

Due to the fact that in some countries the transactions can be settled in national and foreign currency, it is convenient to know the implications of this bi-monetary regimen on the payment system. In that regard, Garry J. Schinasi<sup>3</sup> indicates that the central banks have, among their functions; to guarantee the financial stability, because due to its nature only the central bank can issue legal money without an inherent value, but of generalized acceptance, that gives a definitive character to payments. Additionally, due to the fact that the central bank is the sole issuer, it can provide, through the financial system, immediate liquidity to the payment system, in part, reducing the systemic risk.

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<sup>2</sup> Schwartz, Anna J. "Real and Pseudo Financial Crises" In Financial Crises and the World Banking System (1986)

<sup>3</sup> Schinasi, Garry J., Responsibility of Central Banks for Stability in Financial Markets (June 2003).

In the case of an open economy in which the transactions can be carried out in national and foreign currency, it is important that the central bank maintains the monetary stability, in order to avoid that the operations in national currency are substituted or settled in foreign currency. If this is the case, the central bank would see its faculty of unique issuer limited and consequently, it would be a last resort lender, losing its capacity of providing immediate liquidity to the payment system and to avoid banking running.

### **f) 3. Institutional infrastructure**

#### **3.1 The role of a central bank**

Within the institutional structure of the payment system, the central bank performs several important functions, such as regulator, administrator, surveillance, participant and settlement.

##### **a) Regulator**

As a regulator, the central bank must establish the principles under which the payment agreements can operate among the economic agents, and its involvement is essential in the establishment and recommendation of the normative of the clearance and payment settlement arrangements among the economic agents.

##### **b) Administrator**

Taking into account that the main objective of a central bank is to maintain the stability in the general rate of prices and that the achievement of said objective can be obstructed by a bad operation of the payment system, the central bank has a determining role in the administration of said system, specifically because the same must operate in an efficient and secure manner.

##### **c) Surveillance**

Regarding its function as overseer, the central bank should fulfill and must make others fulfill the rules, decisions and resolutions regarding the payment

system, in order to ensure that the participating entities opportunistically and adequately attend the obligations derived from the payment settlement in the economic transactions, regarding the interests that the public relies on in its administration.

### **d) Participant**

The participation of the central bank in the payment system, in addition to acting as participant, bears important responsibilities, because, on the one hand, it has a high response capacity before unforeseen situations and, on the other hand, it has a better position than any other participant of the payment system to know the conditions under which the other institutions operate, and, therefore, avoid systemic problems. Besides, while functioning as participant in said system, it can obtain the necessary information to know the status of the liquidity of the financial system, which helps it carry out its essential function of oversight of the payment system.

### **e) Settlement**

Last, it is important to highlight that its function as the guarantor of the daily settlement of the operations of the payment system is a function that the Central Bank cannot evade, in order to reduce risks, increase the efficiency of the system and provide security to the participants, among others.

## **3.2 Other participating institutions**

In the structure of a payment system, other banks also participate (national and foreign), financial companies, the non-banking credit institutions (savings and loans cooperatives, mutual funds, pension funds, companies that issue credit cards), the stock exchange and public entities, among others.

In a systemically important payment system<sup>4</sup>, the participating institutions can transmit negative effects or create systemic alterations to the whole financial sector. In that sense, the participation is subject to certain factors, such as the possibility of having an account in the central bank, access to the central bank's credit facilities, legal framework of the country and the structure of the financial industry. In some countries, for example, the securities societies can participate in order to guarantee the safe settlement of operations with securities, though they might have restrictions such as not having access to liquidity facilities available for banks.

The participating institutions must keep a close relation among them, which facilitates the role that they must play in the payment system. For example, the institutions in charge of supervising, regulating and administering the payment system must ensure a high cooperation level among the participants, so that the implemented policies lead to the good operation of the payment system. Notwithstanding, all participants must pursue to improve the efficiency, reduce risks and potential losses, increase the operative security and accelerate the procedures of the systems in which they are involved.

#### **4. Liquidity**

The liquidity of the payment system is a fundamental element for the clearance and settlement of payments and securities. In that sense, due to the fact that all the participants can demand liquid funds there must be the adequate mechanisms to cover the deficiencies that might emerge. It is important to indicate that the liquidity can be provided by the participating banks and central banks according to the mechanisms established in the payment system.

Each payment system needs different liquidity. The real-time gross settlement systems, by nature require higher liquidity for their adequate operation, aspect that has been solved by different mechanisms that on the one hand

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<sup>4</sup>According to the Basic Principles of the Systemically Important Payment Systems, a system is systemically important when, in the case that it is not adequately protected against risks, an alteration in the system would detonate or transmit negative effects on a major scale among participants or cause systemic alterations in the whole financial sector.

guarantee the opportune provision of liquidity and, on the other hand, the efficient administration of the liquid funds that the participating entities have. On the other hand, the net settlement payment system need less liquidity due to the fact that, generally, the settlement is made at the end of the day and is subjected to a multilateral clearance process.

It is important to indicate that among the mechanisms to administrate liquidity in a payment system there are the queues, intraday credit, decisions about the cash requirements, access to the accounts constituted in the central bank and those that promote the inter-bank credit.

### **5. Risks**

The risks of the payment system can be classified as financial, operative and legal.

#### **a) Financial risks**

These are the risks that arise from financial transactions, which are divided into credit, liquidity and systemic risks.

##### **i) Credit risk:**

It refers to the risk that a party will not settle an obligation or deliver a security, when due or at any time thereafter. In effect, when a recipient bank makes an income of an incoming payment instruction available for its customer; it does so under the assumption that the remittent bank will fulfill its net settlement obligation at the end of the day.

##### **ii) Liquidity risk:**

It is generated when a participant in the system cannot cash an asset to fulfill its settlement obligation on the due date.

##### **iii) Systemic risk:**

It refers to the default from one or more participants, which causes other participants in the system to be unable to meet their obligations when due.

**b) Operational risk:**

It is derived from errors in the information and administration systems or organization of the payment transfer system or security settlement, as well as due to legal or operational deficiencies.

**c) Legal risk:**

It is the risk of loss a party suffers due to laws or regulations that do not support the rules of the securities settlement system, the performance of related settlement agreements, or the property rights and other interests held through the settlement system. Legal risk arising from the application of laws or regulations is unclear.

Besides, it is important to mention that in the general risk management of the clearance and settlement systems, there are strategic factors that can affect the systems' exposure rate, such as the market structure, government and institutions that are responsible of the same.

## **6. Oversight of the payment systems and securities settlement**

Due to the fact that systemic problems can arise in the payment systems, it is important that countries count on an adequate oversight of the payments and securities clearance and settlement. In that case, according to the Bank of International Settlements<sup>5</sup>, the central bank must exercise its function as surveillance party of the payment system, in order to achieve efficient, stable and trustworthy operations.

It must be recognized that the central banks cannot have surveillance alone rather they need to look for the cooperation of other institutions. For example, if after evaluating the fulfillment of the Core Principles in which a payment system is supported, the central bank concludes that said fulfillment is deficient, in some cases, as overseer it can solve problems through amendments made to rules or

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<sup>5</sup> Committee of Payment and Settlement Systems (CPSS), Core Principles for the systemically important payment systems, Bank of International Settlements (2001).

taking administrative actions, but in other cases it can conclude that it is necessary to amend the legal framework, which would involve the participation of other entities, such as the Congress of the Republic.

Additionally, the oversight on the large-security payment systems is especially relevant due to the huge interconnection capacity of the modern payment systems, because it is oriented to reduce the risk of systemic disruption transmission; while for retail systems, it would be more important to guarantee the protection of users and promote confidence in the system.

Regarding the securities settlement, the central bank and regulators must mutually cooperate for its regulation and oversight. For that reason, the Recommendations for the Securities Settlement Systems issued by the Committee of Payments and Settlement and International Organization of Securities Commissions must be considered. Said recommendations constitute a guide of the best practices related to the design, operation and government of the securities clearance and settlement systems and its objective is to promote the implementation, from the securities settlement systems, of measures to reduce risks, increase the efficiency and provide safeguards for investors.

1. **Legal framework.** It must have a well-established, clear and transparent legal base.
2. **Confirmation of the negotiation.** Since the negotiation (T+0 but not later than T+1).
3. **Settlement cycles.** Fixed term after the negotiation, lower than T+3.
4. **Entities of central counterparty (ECC).** Evaluate benefits and costs due to default.
5. **Security loans.** Availability to accelerate settlement and insure risks.
6. **Central securities depository (CDV).** The securities must be dematerialized.
7. **Delivery versus Payment (ECP).** The principal risk must be eradicated.
8. **Settlement stability time.** No later than the end of the settlement day.
9. **Risk controls of the CDV.** To treat the default in the settlement of the participant.
10. **Assets for cash settlement.** It must have little or no credit or liquidity risk.
11. **Operational Credibility.** The operational risk must be identified and reduced.
12. **Protection of the customers' securities.**
13. **Corporative government.**
14. **Access.** Fair and open, with objective and public participation criteria.
15. **Efficiency.**
16. **Adequate communication procedures and standards in order to facilitate the settlement.**

**17. Transparency.** To identify and evaluate risks and costs.

**18. Regulation and oversight.** The systems must be subjected to transparent and effective regulation and oversight. The central banks and regulators must cooperate mutually.

**19. Risks in the cross-border links.** The design and operation must reduce risks. Delivery versus payment.

### **g) Trends of the payment system**

The globalization and integration of the markets and the growth in the private capital flow have motivated the revision and reform of the payment systems and securities settlement to ensure that the transactions are carried out efficiently and opportunely. The industrialized countries are concerned about the systemic risk, the new developed risks and the legal and regulatory structure of the arbitrage. In countries of middle and low income, the specialized large-security systems are being implemented in order to face the volume and security of the payment transactions with speed and reliability; besides, the securities settlement systems are being integrated. On the other hand, in the transitional economies, the modernization of the payment systems pursues reducing fraud and credit risk.

Lawrence Sweet and Massimo Cirasino<sup>6</sup> among the main trends mention the search for better efficiency and operability; the risk administration; the continuity and flexibility; government; the access, monitoring and supervision of the payment systems; and security settlement. Besides, they indicate that the implementation of standards and common protocols are currently being promoted; the compatibility of operational hours and to count on a solid legal structure; to reduce credit, liquidity, legal, operative and systemic risks; to support the financial system to avoid tensions that can affect the financial stability and promote the security, efficiency and objectiveness of the payment system; to ensure the competence of its participants; and, to define the monitoring and supervision systems from the monetary authorities, mainly, responsibilities, norms and procedures.

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<sup>6</sup> Sweet, Lawrence and Cirasino, Massimo, World Bank and Federal Reserve of New York (2003).

In the international field, regarding the modernization of the payment systems, it highlights the trend toward a higher application of the international standards, of the Core Principles for the Systemically Important Payment Systems, of the recommendations for the Securities Settlement Systems and of the Code of Good Practices on Transparency in Monetary and Financial Policies. Besides, the reduction of the risks associated with exchange transactions through the Continuous Linked Settlement System<sup>7</sup> (-CLS-) initiative has been emphasized.

The international trend is that the large-security payment systems as well as the retail security or retailers, operate based on dematerialized securities and with online information of the instrument's issuer. In the more advanced financial systems, most of the payments of retail customers have migrated from paper instruments, like the check, to online electric schemes that use credit and debit cards, automated payments and electronic transfers made through the internet. Also, the use of cash has started to be replaced by electronic money.

Consistent with the international tendencies, the central banks promote the payment systems' reforms to make them converge, as soon as possible, with the current higher international standards, as well as to update the systems' institutional and operational structure before the variety of financial payment instruments, the automatization of the clearance and settlement processes, the new participants in the market, the necessary legal and regulatory provisions and the market's structure, infrastructure and behavior.

## **II. PRINCIPLES OF THE PAYMENT SYSTEMS**

There are ten Core Principles that must be considered in the design and operation of the Systemically Important Payment Systems. Said principles were approved in January 2001 by the BIS, in consensus with the Committee of Payment and Settlement Systems of the Central Banks of the Group of Ten, European System of Central Banks, International Monetary Fund and World Bank. The Core Principles are addressed to increase the security and efficiency of the

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<sup>7</sup> The CLS was founded in 1997 to create the first world real time settlement system, eradicating the liquidity risk in the exchange market and in which 69 of the world's larger banks participate.

payment systems, to promote ways to reduce the systemic risk and to create implementation mechanisms, so that its application is not onerous.

The ten Core Principles constitute a mechanism that allows evaluating the Systemically Important Payment Systems that already operate or that are being implemented in the countries. Therefore, they are used to analyze the breach in the fulfillment of said principles, as well as the effort that must be made to bring a high level of security and efficiency to the payment systems that are in operation. Some of the Core Principles appear below.

<b>CORE PRINCIPLES FOR THE SYSTEMICALLY IMPORTANT PAYMENT SYSTEMS</b>	
I.	Existence of a solid legal base in all the pertinent jurisdictions.
II.	The norms and procedures must allow the participants to clearly understand the impact on the system of each of the financial risks in which they incur.
III.	Procedures clearly defined about the administration of credit and liquidity risks that specify the corresponding responsibilities of the system's operator and participants that stimulate the management and risk control.
IV.	Fast final settlement in the value day, preferably during the day and as a minimum at the end of the day's journey.
V.	The multilateral net settlement systems must be capable, as a minimum, of ensuring the punctual finalization of the daily settlements, although in extreme cases the participant does not fulfill the major settlement obligations.
VI.	The financial assets used for the settlement should constitute a deposit in the central bank. In case other assets are used, the credit or liquidity risk must be null or minimum.
VII.	Existence of high security and operational reliability and contingency plans in order to punctually complete the daily processing of the operations.
VIII.	Use of payment means that are practical for the user and efficient for the economy.
IX.	Objective and transparent admission criteria that allow fair and open access.
X.	Establishment of effective, responsible and transparent mechanisms for the good management of the system.
<hr/>	
Source: Bank of International Settlements.	

As can be seen, some Core Principles are linked with legal aspects (principles I, II and IX), which have as their objective to guarantee the stability and irrevocability of the payments, giving certainty to the payment system and reducing the legal risk and consequently, the systemic risk.

Another group of principles (principles III, IV, V, VI) are related with the minimization and administration of financial risks (basically, credit and liquidity risks) which are inherent to the payment systems; when these risks are administered, helping the good operation of the payment system, minimizing the systemic crises. There is also a principle related with the administration of operational risk (principle VII), another that is oriented to fomenting the competence and efficiency of the participants in a payment system (principle VIII) and a last one that refers to the good management of the system (principle X).

In conjunction with the approval of the Core Principles of the Systemically Important Payment Systems, four responsibilities of the central banks in the application of said principles were approved, which, due to their importance, are mentioned below:

- A.** The central bank must clearly define its objective in matters of payment system and notify its role and most important policies regarding the systemically important payment system.
- B.** The central bank should ensure that the system that it operates fulfills the Core Principles.
- C.** The central bank must supervise the fulfillment of the Core Principles for the systems that it does not operate and must be authorized to perform said supervision.
- D.** The central bank, while promoting the security and efficiency of the payment systems through the Core Principles, must cooperate with other central banks and with any other pertinent national or foreign authority.

Due to the fact that the payment systems can be immersed in a variety of legal norms and organizational schemes, it is necessary for the central banks to

define and promote responsibilities A, B and C among the public. Finally, the responsibility described in literal D, explicitly recognizes that the central bank cannot act alone in the fulfillment of the Core Principles.

### **III. THE PAYMENT SYSTEM OF GUATEMALA**

#### **h) 1. Operational aspects**

##### **1.1 Generalities**

The payment system of Guatemala is integrated by the Central Bank, banks and financial societies, public and private sector and other participating agents.

The Central Bank provides the financial and public sector the payment services that they require, through the money deposit accounts constituted in it, in national currency as well as in dollars of the United States of America. Said accounts are divided in current and transferable accounts, channeling through them all the inter-banking and governmental operations, as well as the ones that are directly performed in the Central Bank, which are registered and settled through the System of Accounting and Financial Information -SICOF-<sup>8</sup>.

The Central Bank also provides services of checks clearance and settlement through the Banking clearing houses, the objective of which is to clear the checks received from each of the system's banks that are in charge of other banks. Besides, it renders services of international electronic transfers through the SWIFT<sup>9</sup> and national electronic transfers through the Transfer Inter-bank Mechanism -MIT-, in which the system's banks and private financial societies perform, by fax or other electronic means, inter-bank fund transfers, affecting the cash or legal deposit accounts. Besides, to fulfill the established in the Organic Law of the *Banco de Guatemala*, regarding the official deposits, as well as the

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<sup>8</sup> Accounting Integrated System of *Banco de Guatemala* that registers the patrimony of the institution and provides accounting and financial information.

<sup>9</sup> Society for Worldwide Inter-bank Financial Telecommunication -SWIFT-. Is a cooperative society owned by the world's banks and provides services of remittance and reception of financial messages standardized among worldwide financial institutions. In Guatemala 12 banks are connected to SWIFT, including the central bank.

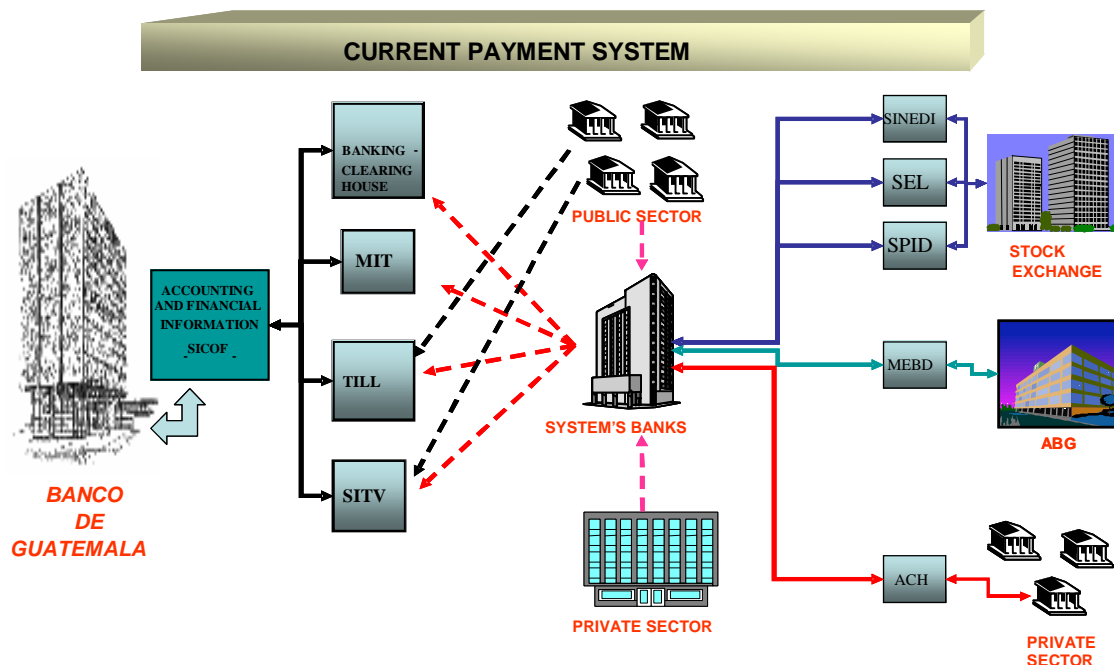
cash accounts of the system's banks, the Central Bank within the SICOB has a special module for the registration of payments and deposits made by these agents. Besides, the *Banco de Guatemala* counts with the Titles-Securities System-SITV-, the purpose of which is to register and control its term deposit fund-raising operations and, as the State's Financial Agent, the control of the bonded debt.

On the other hand, other agents such as the stock exchange, the *Asociación Bancaria de Guatemala* -ABG- (Guatemalan Banking Association) and private companies participate in the payment system. The *Bolsa de Valores Nacional*, S.A. (National Stock Exchange) offers within its services the Electronic Foreign Currency Negotiation System -SINEDI-, the Institutional Private Currencies System-SPID- and the Electronic Settlement System -SEL-. In the SINEDI, which objective is to carry out purchase and sale negotiations of foreign currency, the settlement is carried out in the following modalities: document in *quetzales* versus document in foreign currency, document in *quetzales* versus transfers in foreign currency and, debit in cash or legal deposit account versus electronic transfer. Regarding the SPID, which has as its objective, on one hand, to purchase and sell foreign currency and, on the other hand, to provide online information about the participants' operations; the settlement is made through the delivery of documents in *quetzales* versus documents in foreign currency, with the difference that in this system, unlike the SINEDI, all the operations carried out are completely anonymous. Lastly, in the SEL, the objective is to register and settle the operations that are carried out with public and private security titles, observing the modality of delivery versus payment.

The participation of the ABG in the Payment System is made through the administration of the Electronic Banking Table of Money-MEBD-, the objective of which is to offer banks and financial institutions the means for the negotiation of credit titles, as well as the transfer of the corresponding funds, which are settled in the *Banco de Guatemala* through their cash or legal deposit accounts and, less frequently, through checks.

On the other hand, it is important to mention that currently an Automated Clearing House is operating, which is administered by a private company and used by the banking system in order to clear the operations that are carried out through automated teller machines and transactions that are carried out through credit and debit cards. In this case, the payment of the net balances of those operations is made through checks.

In order to observe the structure and operation of the Guatemalan payment systems; below is a diagram that generally shows the systems, mechanisms, participants and their relation:



The previous diagram shows that the payment system of Guatemala is not an integrated system, because when it is composed by subsystems that act alone, with independent regulation and, mainly, with manual and semiautomatic processes for clearance and negotiation, causes to use several payment instruments in the operation settlement, and, consequently, they are settled in a differed way, in different periods. In general terms, it generates risks in the

operations settlement process, besides due to its operational process it produces a diphase in the provision of financial information for the economic agents.

## **1.2 Instruments and operation**

This section describes the main instruments used in the national payment system, as well as the way in which they are settled.

### **a) Cash**

In Guatemala cash is one of the main payment instruments used by individual people.

It is important to indicate that most of the payment operations that require cash are made in local currency and it is the responsibility of the central bank, as issuing institution, to maintain the monetary issue that satisfies the economic agents' demand.

Added to the operations in national currency, cash operations in US dollars are made, which are based on Decree number 94-2000 of the Congress of the Republic, Law of Free Negotiation of Foreign Currency, that in article 1 stipulates that in Guatemala it is free, among other aspects, to collect and pay with or in foreign currency and the utilities, losses and risks derived from the operations carried out in that sense will be at the account of each individual and legal person, national or foreign.

The empiric experience reflects that in Guatemala the cash is the payment instrument that has fewer difficulties in commercial transactions, due to the fact that its settlement is instant.

### **b) Checks**

The check is also considered a payment instrument that is highly used in the Guatemalan economy for all types of operations. One fraction of the issued checks are deposited or collected in the drawn banks and another part correspond to the checks deposited in different banks, which are presented for collection through the Banking Clearing Houses and settled in the current accounts that the system's banks have in the central bank. The Commerce Code of Guatemala establishes, in

chapter VII of Book III, aspects related with the check and it is important to mention those that correspond to its creation, form, presentation and payment, as well as those considered special checks.

Recently, in order to increase the automatization grade of this payment instrument, measures have been implemented such as the standardization of the check, the magnetic ink character recognition (MICR<sup>10</sup>) technology, images and other procedures.

### **c) Credit cards**

Credit cards were introduced in Guatemala during the eighties, supported by article 757 of Decree number 2-70 of the Commerce Code; the issue and operation of this payment instrument was under the responsibility of non-banking mercantile companies. Most of the credit cards issued in the countries are affiliated to foreign credit card issuer companies. There are also national companies that issue and support the issue of their own credit cards.

Regarding banking institutions, until the end of 1993 they were not authorized to issue and operate credit cards, because said operation was not explicitly foreseen in the banking and financial laws. However, within the Modernization Program of the National Financial System, the Monetary Board, in resolution JM-752-93 dated November 5, 1993, authorized the banking institutions to issue and operate credit cards, which allow the banks to enlarge their products and services in order to fulfill their role as financial intermediaries and propitiate competence with companies of the non-banking financial sector. It is important to mention that the issue and operation of credit cards is currently regulated in article 41 of Decree number 19-2002, Law of Banks and Financial Groups.

The settlement process of credit cards can be performed in two ways according to its use; the first one is when the affiliated commercial institution presents the collection vouchers to the issuer bank, which processes the same and gives a check as payment means. The second one is used when the customer withdraws money from the automated teller machines, in this case the ACH

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<sup>10</sup> Magnetic Ink Character Recognition

intervenes, which, through a clearance process, establishes the multilateral net positions and starts the collection of said positions through a check.

### **d) Debit cards**

The use of debit cards has been generalized among the economic agents. Commonly, the debit card is linked to a monetary deposits account, and the payments are made through them in affiliated companies that have the point of sale (-POS-) technological structure. The settlement of this payment instrument is carried out similar to credit cards. The settlement process of debit cards can be made in two ways regarding its use, on one hand, when the affiliated commercial establishment presents the collection vouchers to the issuer bank, which issues a check as a payment mean or accredits an account; on the other hand, is carried out when the customer withdraws cash from the automatic teller machines, in this case the ACH intervenes, through a clearance process, establishes the multilateral net positions and starts the collection of said positions through a check.

### **e) Fund Transfer**

A common payment instrument in large-security operations is the funds transfer, though in Guatemala, in general terms, this modality is only used among persons, legal or individual, that have accounts in the same bank. Due to the fact that the necessary mechanisms to perform and settle this type of transactions at an inter-banking level have not been developed yet, currently the funds transfer to a beneficiary that has their account in a bank different from the customer's is not possible.

The banks of the national system have innovated the funds transfer service offered to their customers, such as the operations made on the internet; however, as indicated, this service is offered only to transfer funds among accounts constituted in the same bank.

### **f) Direct debits**

A direct debit is an instrument specifically developed to facilitate the customers' periodical payments. The direct debit payments are pre-authorized by the payer customer, who authorizes the bank to debit his account based on the instruction of the recipient customer or beneficiary.

Currently in Guatemala the direct debit operation can only be operated if the person or company, that makes the collection, has an account in the same bank of the debtor.

### **g) Direct credits**

This payment instrument is used to make massive payment of obligations that the institutions, corporations or individuals might have due to salaries, pensions or, in general, any payment transaction that any individual or legal persona must perform. This is a mechanism through which an individual or legal person requires the bank in which he has an account, to perform the payment of his obligations, accrediting the beneficiaries' accounts.

In Guatemala, the direct credit service is provided by banking institutions, when the parties have accounts in the same bank; therefore, the operations settlement is made in the same banking institutions.

Lastly, due to its relevance, it is important to point out the mechanism of automated teller machines, because through them some of the mentioned payment instruments can be used. In effect, there are five mercantile entities within the national payment system that offer the service of automated teller machines that allow the account-holders of the affiliated banks, through any automated teller machines network, to perform operations in their accounts through credit and debit cards.

The clearance and settlement of the inter-banking operations that are carried out through automated teller machines (ATMs) operate through multiple agreements among the network operators that exist in Guatemala. The settlement of the net multilateral result of the automated teller machines is made using the check as payment instrument, which is issued by the debtor bank in favor of the operator of the referred network, at the same time the operator issues a check in

favor of the supplier bank, it cashes the check in the *Banco de Guatemala* and proceeds to reimburse cash in each of the automated teller machines that it has in charge.

### **1.3 Operations in foreign currency**

#### **a) Local payments**

As indicated, in Guatemala the disposition, holding, trading, remittance, transfer, purchase, sale, collection and payment of and with foreign currency is free, and in the same way, the holding and management of deposits and accounts in foreign currency is free, as well as the financial intermediation operations, in national and foreign banks.

In that sense, it is legally possible to perform payments, through checks as well as through funds transfer, of transactions in foreign currency previously agreed due to rendering of services, purchase and sale of goods, leases and subscription of contracts. The above-mentioned has allowed determining that the payments made with funds transfers in foreign currency are generally used to carry out large-security operations and that payments made through checks are to carry out retail payments.

The clearance and settlement of checks in foreign currency are made in the Banking Clearing Houses, in the same session in which the clearance in national currency is made. On the other hand, the clearance and settlement of funds transfers in foreign currency, like those in national currency, are made among the customers or companies' accounts constituted in the same bank.

#### **b) Cross-border payments**

The cross-border payments are services rendered by local banks to their customers in order to carry out payments abroad, using their correspondent banks as intermediaries, using money orders through the SWIFT system and telex. Said services are used for the payment of importations, settlement of credit lines and credit letters, payment for services, as well as acquisition of goods and constitution of investments.

When the payment is made through banking money order or electronic funds transfer, the clearance and settlement is carried out in the account that the issuer bank or transfer customer has in the respective correspondent bank abroad.

The cross-border payments that the *Banco de Guatemala* carries out on behalf of the Government of the Republic and its entities, are related, among others, with the service of foreign debt, importation of goods and services, wages and salaries of employees that work abroad, subsidies, honorariums and credit letters, using for their settlement the accounts expressed in national currency as well as in foreign currency, which are constituted in the central bank and the accounts that it has in its correspondent banks.

### **1.4 Inter-bank transfers**

The Inter-bank Transfer Mechanism is used by the system's banks and private financial societies to transfer funds, through the remittance of an authenticated fax or by other electronic means, message that must be previously confirmed by the *Banco de Guatemala*. The inter-bank fund transfers affect, exclusively, the cash accounts or legal deposit accounts, as it corresponds, that are constituted in the Central Bank.

### **1.5 Operations of the public sector**

#### **a) Fiscal income fund-raising**

The fund-raising of the State's fiscal income due to taxes, fines, rents, royalties and utilities of governmental companies is carried out through the system's banks. Said fund-raising has been carried out, mostly, through inter-bank electronic transfers and, less frequently, in cash and checks. Later, the system's banks transfer said funds to the account denominated "Government of the Republic –Common Fund", that the *Ministerio de Finanzas Públicas* (Equivalent to the Department of the Treasury) has in the *Banco de Guatemala*, carrying out the settlement through the SICOF.

## **b) Payments of the State**

The pay sheet, payment of pensions, payment to providers and the refund of the fiscal credit to exporters is mainly carried out through transfers to the cash accounts of the system's banks, so at the same time they accredit the funds to the accounts that the beneficiaries have in the referred bank. This service, offered by the banking system, is not subjected to the tariffs collection of the State; however, within the contractual conditions is that the funds transfer destined for the payment of salaries must be made two days prior.

The retirement of the internal bonded debt of the central government is paid through the *Banco de Guatemala*, as the State's financial agent, in that effect, most of the payments are carried out through funds transfers; payment through check is also possible.

The payment of the foreign debt is entirely abroad, through electronic transfers carried out by the Central Bank, at the request of the debtor entities, charged to the accounts that the *Banco de Guatemala* has in the corresponding foreign banks. The settlement for the equivalent in national currency is made debiting from the accounts that the debtor entities have in the *Banco de Guatemala*.

### **1.6 Settlement of security titles**

The negotiation of security titles in Guatemala is performed in the primary as well as in the secondary market.

The primary market has as objective the negotiation of new security titles issued, the issuers of which can be the central bank, the public and private sector; while in the secondary market the titles that are already in circulation are negotiated; these transactions are mainly carried out in the stock exchange. It is important to indicate that in this last market the major volume of transactions is constituted by repurchase agreements.

### a) Settlement in the primary market

The settlement of operations carried out in the primary market, derived from issue of the private sector's economic agents, can be made through the stock exchange that operates in the country. In this sense, in the stock exchange, the payment of security titles and the delivery of the same can be made electronically or manually, using for such effect the available modalities of delivery versus payment and direct remittance. For the first case (delivery versus payment), the *Bolsa de Valores Nacional, S.A.* (National Stock Exchange, Stock Company) has developed an electronic settlement through which it is guaranteed that any of the parties that has intervened in an operation cannot dispose of the money or security titles that guarantee the operation while the other party has not settled its part, according to its position in the operation; on the other hand, the *Bolsa de Valores Global, S.A.* (Global Stock Exchange, Stock Company) performs it manually. For the second case (direct delivery), this allows any of the parties to dispose of money or security titles without previous settlement of their part.

The payment instruments used for the settlement of this type of operations is generally a cashier's check or certified check, which are settled through the Banking Clearing Houses or through a banking deposit

It is important to highlight that currently in the country the custody services of security titles is rendered by two entities: the Stock Till that functions as a department of the *Bolsa de Valores Nacional, S.A.* (National Stock Exchange, Stock Company); and the *Central de Valores, S.A.* (Central Values, Stock Company) that belong to the *Corporación Bursátil, S.A.* (Stock Corporation, Stock Company).

Other settlement operations that are carried out in the primary market, due to their relevance regarding their magnitude, are the ones carried out by the *Banco de Guatemala*, on its own account or in its quality of financial agent of the State, which it carries out through public bids in the stock market. In this case, the Central Bank's delegates appear in each participating stock for the reception of checks used as payment instruments of the awarded bids (investments), which are issued against accounts of the Trust of the *Bolsa de Valores Nacional, S.A.* (National

Stock Exchange, Stock Company), and Trust of the *Bolsa de Valores Global, S.A.* (Global Stock Exchange, Stock Company). Simultaneously, they deliver certified copies of the custody income of the corresponding deposit certificates. On the next working day of the date of investment, in which the checks received are cashed, the corresponding titles are remitted to the participating stock exchanges.

The settlement of operations carried out by the *Banco de Guatemala* directly in the Electronic Banking Table of Money is made during the same day. The payment is made through the written authorization to debit the cash or legal deposit account constituted by the corresponding financial institution in the *Banco de Guatemala*, proceeding to the delivery of the respective titles.

The private bids settlement carried out in the primary market by the *Ministerio de Finanzas Públicas* [Equivalent to the Department of the Treasury] is carried out two days after its awarding. In the case of financial institutions, it is made through a letter authorizing to debit the cash or legal deposit account constituted in the *Banco de Guatemala*, in *quetzales* or US dollars, and in the case of other investors, it is made through documents in favor of the *Banco de Guatemala* (cashier's check, banking money order or electronic funds transfer). The security titles can be remitted physically or can be kept under the custody of the *Banco de Guatemala*, at the request of the investor.

Other investment operations that can be mentioned in this context are the ones carried out directly in the counter of the *Banco de Guatemala*; the payment, in case of a public entity, is made through debit in the account constituted in the Central Bank, through a written authorization. The investments of the non-financial private sector in the *Banco de Guatemala* are made using the check as a payment instrument. In this last case, the delivery of security titles is carried out until the funds are confirmed, initiating the physical delivery of titles or their custody in the *Banco de Guatemala*, at the request of the investor.

On the other hand, in the investment of security titles issued by the system's banks, carried out by different economic agents, the operation settlement is carried out according to the established among the involved parties; therefore, regarding

the payment of the same, it can be made through any agreed means; in other words, cash, check, funds transfer and others.

### **b) Settlement in the secondary market**

The settlement of operations carried out in the secondary market, derived from the issue of the private sector's economic agents, as well as the issue of the public sector, can be made through the stock exchange that operates in the country, using the same infrastructure, as well as the same mechanisms used in the primary market's settlement.

### **i) 2. Decisions of constitutional and legal order regarding the payment system**

Article 133 of the Political Constitution of the Republic decides that the Monetary Board will have the determination of the country's monetary, exchange and credit policy under its responsibility and will watch for the liquidity and solvency of the national banking system ensuring the stability and strengthening of the national savings.

According with the above-mentioned constitutional mandate, article 3 of the Organic Law of the *Banco de Guatemala* establishes as the main objective of the Central Bank to contribute in the creation and maintenance of the more favorable conditions in the organized development of the national economy; for that reason, it will propitiate the monetary, exchange and credit conditions that promote the stability in the general level of prices.

On the other hand, article 4 of the cited law, mentions as one of the main functions of the *Banco de Guatemala* to pursue the good operation of the payment system. Besides, articles 26 and 70 of said law, within other attributions of the Monetary Board, considers the establishment of the Banking Clearing Houses or any other instrument or mechanism that pursues the same purpose.

The above-mentioned decisions of constitutional and legal order are mentioned in order to evidence that the Organic Law of the *Banco de Guatemala* contains several decisions that allow the Monetary Board, as well as the Central Bank, to issue regulations that guide the operation of the payment systems, which

at the same time helps the Monetary Board to fulfill the constitutional mandate of supervising the liquidity and solvency of the national banking system, ensuring the stability and strengthening of the national savings.

It is also important to highlight, on one hand, that other decisions that regulate the payment system are contained in other legal corps, and, on the other hand, the need, as mentioned above, to promote reforms or to issue new ordinary laws.

It is important to mention that article 70 of the Organic Law of the *Banco de Guatemala* foresees, on one hand, that the banking cash, as well as other funds that are deposited by the banks in the *Banco de Guatemala*, or in other entities contracted for this effect, will serve as a basis for the check clearing system, through a clearing house, and, on the other hand, that the Monetary Board will establish the clearing house, public or private, and that the *Superintendence of Banks* supervises that the participants of said house fulfill the respective regulation.

In fulfillment of the referred legal mandate, in resolution JM-51-2003, dated April 23, 2003, the Monetary Board approved the Regulation of the Banking clearing houses and the Instruction booklet for the Standardization of Checks in the National Banking System, establishing that for the electronic processing of checks the MICR technology must be used, technological aspect that will allow, in the mid-term, to generalize the automatic process of the operations of check clearance.

#### **IV. INTERNATIONAL EXPERIENCE IN MATTERS OF PAYMENT SYSTEM<sup>11</sup>**

Due to the recent international financial crises, several Latin American countries started to make reforms in their financial systems<sup>12</sup>. Within said reforms, it is important to mention the modernization of the payment system, in order to administer and reduce risks associated to the payment settlement process. A common characteristic of said reforms was the introduction of the differentiation of

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<sup>11</sup> A more detailed development of this section can be consulted in Annex 1.

<sup>12</sup> The FSAP (Financial Stability Assessment Program -FSAP-) programs established by the International Monetary Fund and World Bank in May 1999 have been useful in identifying strengths and vulnerability of the financial systems in order to prevent financial crisis.

operations of large and retail security. In that case, in most countries the introduction of the real term gross settlement system has been promoted, through which large security operations are settled in the economy, allowing the check clearing house to settle retail security operations.

The experience of the analyzed countries (Chile, Mexico, Costa Rica and Colombia) shows a similar development in their payment systems; in other words, they have a clearing house, have adopted a LBTR system, as well as a securities settlement and clearing system. Besides, it was established that the payment instruments used are the same in the referred countries, which are cash, checks, direct debits and credits, payment cards and electronic transfers. Also, it was determined that the national payment systems fulfill the current international standards and Core Principles of the Systemically Important Payment Systems promoted by the BIS and provide a modern, efficient and secure payment system to the financial system, that guarantee quality and credibility in the settlement of financial transactions.

### INTERNATIONAL EXPERIENCE IN PAYMENT SYSTEMS

COUNTRY	CHILE	MEXICO	COSTA RICA	COLOMBIA
CHARACTERISTICS				
STRUCTURE	Clearing house Real Time Gross Settlement System Securities Settlement and Clearing system	Clearing house Real Time Gross Settlement System Securities Settlement and Clearing system	Clearing house Real Time Gross Settlement System Securities Settlement and Clearing system	Clearing house Real Time Gross Settlement System Securities Settlement and Clearing system
PAYMENT INSTRUMENTS	Cash Check Guarantee receipt Direct debits and credits Payment cards Electronic transfers	Cash Check Direct debits and credits Payment cards Prepaid cards Electronic transfers	Cash Check Direct debits and credits Payment cards Prepaid cards Electronic transfers	Cash Check Direct debits and credits Payment cards Prepaid cards Electronic transfers
ACHIEVEMENT OF THE PROJECT	To adopt an action plan that allows, in the short term, the national payment systems to concur with the current higher international standards. Besides, to adopt all the measures, actions and norms that allow counting on an online inter-bank payment system, where the payments can be settled in gross form and in real time, in the current accounts constituted in the central bank.	As a guideline to be followed in the reform, the BIS' core principles for the systemically important payment systems will be adopted. It is estimated that the reform will be finalized around 2005. Within the strategy it is considered to retire the settlement guarantees from the large-security systems and inject liquidity only in the system where the current accounts of the financial agents are performed.	The purpose of the payment system is to provide an efficient and secure modern payment system to the financial system, through which quality and reliability in the generation of financial transactions are guaranteed, the monitoring and provision of information that support the development of other activities.	The most important initiative has been the establishment of a LBTR that operates through the national inter-bank net. Currently it is in the process of modernization of the systems of value negotiation, which will affect the clearance and settlement processes; in the first phase, the integration of the operations in a single stock exchange and in the second phase, a new negotiation system for the operations of fixed lease.

Regarding the minimization and administration of the credit risk, it can be seen that in the four countries the LBTR is being operated; this system does not generate credit risk when settling the operations under the modalities delivery versus payment and payment versus payment.

The deferred net payment settlement systems of Chile and Mexico are characterized by carrying out the settlement, as a maximum, at the end of the day. On the other hand, Costa Rica carries out the settlement partially, while Colombia does not settle its operation during the day.

The check is a payment instrument that bears credit risk; therefore, this kind of credit title issued for large amounts might affect the final settlement; nevertheless, none of the mentioned countries establishes a maximum amount to issue checks.

Regarding the establishment of guarantee funds to settle operations in the payment system, only Costa Rica operates one, which, as determined, was established with contributions from the banks that participate in the system, while Chile considers incorporating it in the near future.

In order to reduce and administer the liquidity risk, it is considered, in general, that the mentioned countries have a securities central; the security titles are unmovable and dematerialized and only operate in the stock exchange. Besides, it is observed that in the payment systems of those countries, it is settled with deposits constituted in the central bank and that there are intraday liquidity facilities for the participants.

It is important to indicate that in the case of Mexico the required cash rate is zero per cent; therefore, to assist and settle the operations of the payment system the *Banco de México* uses the System of Account-holders Services, in which the participants constitute current accounts denominated *unique settlement accounts in national currency*. In this case, the banks can register overdrafts in their current accounts, which have a limit established by the *Banco de México* and that is according to the net capital of the banks. Besides, to carry out inter-bank operations, the financial institutions also use the bilateral credit lines mechanism.

Regarding the settlement of foreign currency, the fund transfer is made through the Bank of America, which acts as settlement agent.

A summary of the main characteristics of the analyzed payment systems is shown in the following table:

**COMPARATIVE TABLE OF THE INTERNATIONAL EXPERIENCE OF SELECTED COUNTRIES IN MATTERS OF PAYMENT SYSTEMS**

<b>Country</b> <b>Characteristic</b>	<b>Chile</b>	<b>Mexico</b>	<b>Costa Rica</b>	<b>Colombia</b>	<b>Observations</b>
<b>Real Time Gross Settlement System -LBTR-</b>	Operates since 2004	Operates since 1998	Operates since 1999	Operates since 1998	Reduces and administers the credit risk
<b>Deferred net settlement at the end of the day, as a maximum</b>	Yes	Yes, systemically important	Partially, According to the Service's cycle	No	
<b>Maximum limit in the checks value</b>	No	No	No	No	
<b>Guarantee fund constituted by the participating banks</b>	No, but it is expected to have it in the future	No	Yes	No	
<b>Securities Central</b>	Yes	Yes	Yes	No	Reduces and administers the Risk of liquidity
<b>Unmovable and dematerialized security titles</b>	Yes	Yes	Unmovable	Yes	
<b>Stock exchange</b>	Two	One	One	One	
<b>It is liquidated based on deposits in the central bank</b>	Yes	Yes	Yes	Partially	
<b>Intraday liquidity facilities to participants</b>	Yes	Yes, collateral	Yes, through Inter-bank	Yes	
<b>Legal cash</b>	Yes	No	Yes	Yes	

## **V. ADVANCES AND INTEGRAL STRATEGY OF MODERNIZATION OF THE PAYMENT SYSTEM OF GUATEMALA**

Taking into account the general conceptual and philosophical aspects, the Core Principles for the Systemically Important Payment Systems, the study of the operational and legal aspects of the payment system of Guatemala and the analyzed international experiences, below are shown the advances observed in the modernization of the payment system, which would serve as a basis to state the structure, design and mechanisms and instruments to implement an integral modernization strategy of the payment system of Guatemala.

**j) 1. Advances in the modernization of the payment system**

The Monetary Board, in resolution JM-235-2000, approved the Matrix of the Strengthening Program of the National Financial System, in which among other aspects, the modernization of the payment system was included. In that sense, the *Banco de Guatemala* considers in its Strategic Institutional Plan, among others, a strategy to modernize the payment system, from which the project “Modernization of the Payment System was derived.”

Within the above context, the strengthening of the national financial system and the modernization of the payment system constitute key fundamentals for the *Banco de Guatemala* to pursue the good operation of the payment system that is established in clause c) of article 4 of its organic law, and, therefore, to reach its fundamental objective, that is to contribute in the creation and maintenance of the more favorable conditions for the organized development of the national economy; for that reason, it will provide the monetary, exchange and credit conditions that promote the stability in the general level of prices.

In order to establish a modern payment settlement system, according to the international trends based on the Core Principles for the Systemically Important Payment Systems, the advances of the *Banco de Guatemala* in the execution of the modernization project of the payment system has generated the approval of the Banking Clearing House regulation; the contracting of a private administrator for the administration of the check clearing process; the acquisition, through public bids, of a Real Time Gross Settlement System<sup>13</sup>, which is in the process of development, installation and interconnection; and, the contracting of a private communication network for the operations settlement at a national rate.

**1.1 Regulation of the Banking clearing houses**

Regarding the modernization of the Banking clearing houses, the enforcing of the “Regulation of the Banking clearing houses” approved in resolution of the

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<sup>13</sup> System acquired through public bid BG-01-2003, Montran Corporation, a company with headquarters in New York, United States of America and founded in 1979 in order to develop integrated payment systems, settlement and clearing settlement and related product, for the industry of financial services.

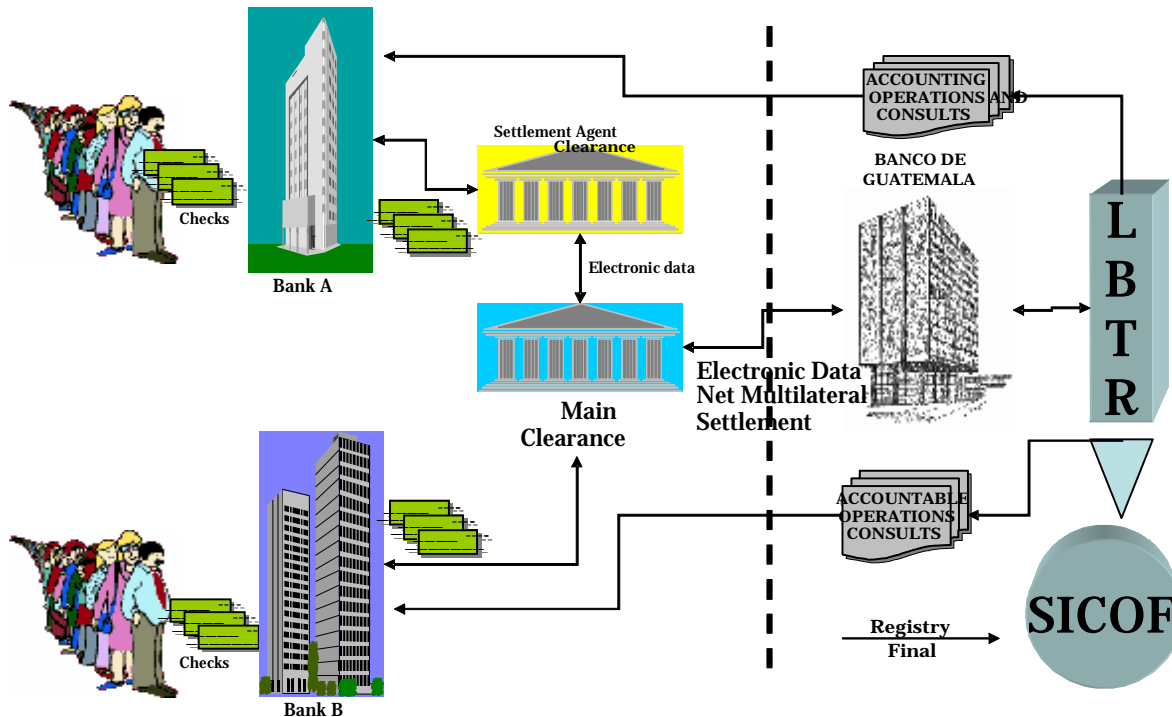
Monetary Board JM-51-2003 was emphasized. Said regulation describes the operation of the clearing house, stipulating that its general direction will be under the responsibility of the *Banco de Guatemala* and that it can be administered by the same or by a private entity. At the same time, the administrator can contract the services of entities that operate as clearing houses that will be in charge of carrying out the check clearing process through electronic means. It is important to indicate that the mentioned regulation constitutes a regulatory framework that will allow developing and implementing an automated and integrated clearing system. The above will allow the participants to obtain better use of the human resource and will reduce the clearing process time.

Another important aspect of the Banking clearing house regulation is the instruction manual for the Standardization of the Check in the National Banking System, which has as its objective to establish the norms for the use of magnetic characters, the zone distribution of areas in the body of the check and measurements and composition of the check's form, characteristics of the checks that are based on the standard "E-13B", through which a special series of numbers and symbols under the MICR technology is known.

It is important to add that, due to its nature, the checks clearing and settlement correspond to a system of retail operations and, as indicated, the clearing process will be administered by a private entity and, due to the fact that the settlement will be made in the central bank, said system will interact in the LBTR system.

The automated check clearing and settlement process, in the short term, will operate in the following way:

### OPERATION OF THE CHECK CLEARING AND SETTLEMENT HOUSE



As can be observed in the above diagram, each economic agent will go to a bank in the system to carry out operations with checks. Said banks will receive the checks and will transfer them to the main clearing house or clearing agent, so that the clearance will be carried out electronically and with the characteristic that it will be made in a net multilateral way through the Banking clearing houses. After the clearing process, the result will be transfer to the LBTR system for the corresponding settlement through the cash accounts registered in the central bank; later, the banks, through electronic means, will transfer to the main clearing house the information of the non-redeemable checks, which would be processed by said clearing house for the corresponding rejection to the banks in the system that presented it for collection. After the net positions are settled, the *Banco de Guatemala* will have the information of the operations registered in the LBTR

system available for the participating banks, and at the closure of every day's operations, it will transfer the final registries to the SICOF.

As a result of the actions carried out to implement the automated checks clearing and settlement process, according to article 5 of the Regulation of the Banking clearing houses, the *Banco de Guatemala* subscribed a contract of service rendering with the Banking Association of Guatemala for the administration of the check clearing process. In that sense, said association is processing the contracting of an entity that functions as a clearing agent, which will have the responsibility of carrying out the check clearing in national currency and in US dollars.

On the other hand, the *Banco de Guatemala* has carried out technical tests concerning the operation of the check clearing system, mainly, in order to ensure the transmission of information between this and the clearing agents, having obtained satisfactory results. In general terms, it is considered that the automated check clearing process will be finalized in December 2004.

### **1.2 System of Real Time Gross Settlement -LBTR-**

Another advance observed in the modernization of the payment system is related with the development of a LBTR system based on the Core Principles for the Systemically Important Payment Systems. Through this system, the banks, financial societies, stock exchange, public entities and other economic agents will settle their transactions in real time, in national as well as in foreign currency; therefore, the LBTR will interact with the internal systems of the *Banco de Guatemala* that affect the monetary deposit accounts in the Central Bank. Besides, the operational design considers linking the negotiation and clearing systems developed by private companies with the LBTR system, because they perform payments in the financial system and settle them using the check as a payment instrument or written payment instructions.

In general terms, as result of the advances in the modernization of the payment system, the following decisions and actions have been adopted:

- Through General Management Agreement number 6-2002, dated August 6, 2002, the Payment System Committee was created which is responsible for the coordination and follow up of the project, integrating the corresponding Technical Work Committee for said purpose.
- The *Banco de Guatemala*, for the acquisition of the Real Time Gross Settlement System for the National Payment System, promoted public bid number BG-01-2003, which was awarded to the Montran Corporation. Said awarding was approved by the Monetary Board in resolution number JM-147-2003 dated November 12, 2003.
- In private document dated July 16, 2004, the *Banco de Guatemala* contracted the services of *Transacciones Universales, Sociedad Anónima - BANCARED-*, related with the access, electronic and communication uses for the financial operations carried out in the Real Time Gross Settlement System.

Lastly, it is important to indicate that according to the corresponding work plan, the implementation of the LBTR contemplates two phases. The first one, refers to the initiation of electronic operations in said system, that will involve all the institutions of the national financial system, which is foreseen for January 2005; while in the second phase, the stock exchange, entities of the public sector, ACHs and other participants will be incorporated; the finalization is foreseen for December 2005.

**k) 2. Structure, operational scheme, instruments and mechanisms of the payment system of Guatemala**

The objective of this section is to define the structure, design, mechanism and instruments that help the modernization of the payment system of Guatemala.

## 2.1 Purpose

To establish a payment system that fulfills the international financial standards and the Core Principles for the Systemically Important Payment Systems.

## 2.2 Structure

### 2.2.1 Institutional Framework

#### **The role that the *Banco de Guatemala* and the participants have in the payment system**

The Organic Law of the *Banco de Guatemala*, enforced as of June 1, 2002, assigns the central bank, within other functions, the function to pursue the good operation of the payment system. In that sense, the *Banco de Guatemala* has an active participation as owner-administrator and operator of several services in the payment system, which is fundamental within its responsibilities, specifically, as facilitator in the mechanism of the payment settlement. In that context, it is necessary to propose the regulation that allows implementing a global legal framework that provides security to the operations and participating institutions, including the regulation of the same; to define the organizational structure of the payment system; and, to provide liquidity facilities for the participants in order to provide continuity to the payment chain, and that the operation does not affect the administration of the liquidity in the economy or the power of the Central Bank as a last resort lender.

On the other hand, the *Banco de Guatemala*, as user of the payment system, will take the necessary steps to carry out the operations of the open market, exchange market and public debt in the LBTR system. As settlement agent, the Central Bank will provide the facility to settle the operations electronically, charging the accounts that the participants in the payment system have in the *Banco de Guatemala*; besides, in fulfillment of the Core Principles, it will act as watcher and administrator of the Systemically Important Payment Systems.

Additionally the central bank, in conjunction with other participants, will promote the creation of an entity that might function as national council of the payment system that among other attributions will be responsible for strengthening the integral strategy of the national payment system.

Regarding banks, financial societies and stock exchange are expected to contributing in promoting the use of electronic payment instruments, as a key element to achieve the efficiency of the payment system, which will result in real benefits for their customers and economy in general.

On the other hand, the participants of the public sector while operating, as is possible, all their operations through the LBTR system, mainly those related with fund-raising public leases, as well as the payment to providers and salaries, will allow strengthening their internal control and optimize the management of their treasuries.

In general, the participants should support the modernization of the payment system, implementing the required technology to interact with the LBTR system in their operative systems; observe the fulfillment of international standards, national laws and specific regulations that are issued to regulate the operations in the payment system; promote specific training programs for their personnel; and, promote the advantages and benefits that their customers will obtain while performing their operations in the LBTR system.

### **2.2.2 Normative and oversight framework**

#### **a) National scheme**

According to the considerations of the mission of the Payment and Securities Clearing and Settlement initiative of the World Bank Western Hemisphere<sup>14</sup>, as a result of the evaluations carried out recently in the national payment system, it was indicated that a safe and proper legal framework is generally considered as the basis for an efficient payment system; so that, said

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<sup>14</sup> The Mission of the Payment and Securities Clearing and Settlement of the World Bank Western Hemisphere with the participation of the *Centro de Estudios Monetarios Latinoamericanos -CEMLA-*, at the request of the *Banco de Guatemala*, carried out, from January to February 2004, an evaluation of the national payment system; the results are contained in April 2004 report, issued by said Mission.

mission recommends incorporating aspects that protect the final settlement of payments systems from the bankruptcy procedures in the Guatemalan legal framework; a legal base for custody agreements, for netting agreements, for documents and electronic signatures, for the central bank's oversight; and, the coordination that in matters of payment system must be given among authorities of the financial sector.

It is important to mention that the recommendations that said Mission formulated within the regulatory framework are congruent with the expected in the project regarding the need of strengthening the Guatemalan regulatory framework. In that case, the *Banco de Guatemala* has not received objections from the World Bank<sup>15</sup> for the contracting of a foreign legal advisor responsible for preparing the necessary regulation that allows opportunely implementing the basic regulator framework for the good operation of the payment system. On the other hand, the *Banco de Guatemala* prepares the regulation of the Real Time Gross Settlement System in which, among other aspects, will establish that regarding the administration, participation, operation and continuity of said system.

### **b) Regional scheme**

An initiative of the Central American Monetary Council, dated January 9, 2004 the Executive Secretary of said Council and the Inter-American Development Bank signed an agreement of technical non-reimbursable cooperation to support the development of the national payment systems of the countries that are members of the council, to strengthen the legal security of the same and create the necessary conditions for a platform of regional payments. Besides, the agreement pretends to support and complement the programs that are being carried out in each of the countries regarding the modernization of the payment systems for the stability and security of the financial systems.

Said project has foreseen to benefit Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Dominican Republic in the following areas: to increase

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<sup>15</sup> Funding of the project "Technical Assistance to the Financial Sector" granted by the International Bank for Reconstruction and Development to the Government of the Republic of Guatemala, according to loan agreement number BIRF-7129-GU.

the legal security of transactions; to create the mechanisms of risk management, to reduce the vulnerability of the payment systems; to define the minimum standards to harmonize the payment mechanisms; to promote the development, for countries that do not have it, of large-security payment systems with real time gross settlement; and, design and establish a uniform technological platform of regional application.

In conclusion, the project foresees developing a regulatory framework and risk management of the payment systems, a technological infrastructure for the real time settlement system and a training plan for users of the payment system.

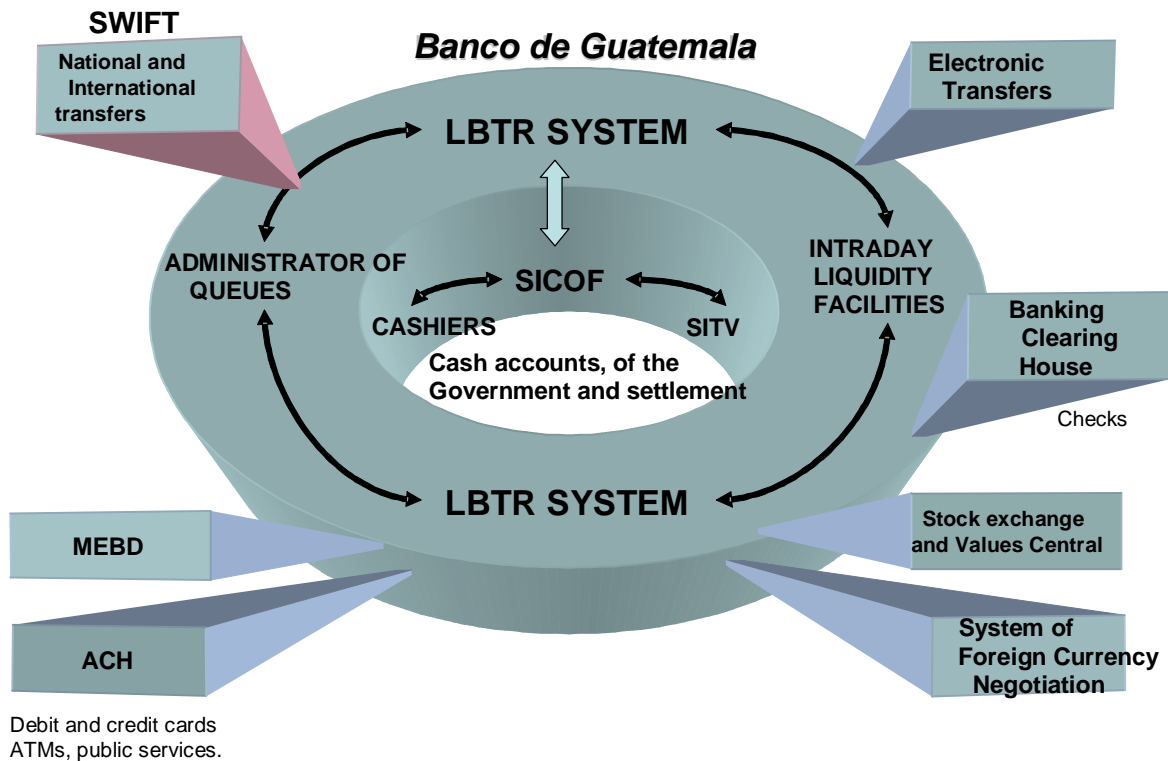
### **2.3 Operational framework**

The modernization of the payment system of Guatemala has been conceived under a focus that will allow its participants to carry out and settle large and retail security operations. Regarding the retail security operations, they will be cleared through the clearing houses (Banking clearing houses and ACHs), that would be operated by private entities and will be automatically settled in the LBTR system; while the large security operations<sup>16</sup>, due to the fact that they have an individual treatment, will be settled directly in the system. Shown below is the operational framework referred to in this section.

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<sup>16</sup> Among the large security transactions are the following: National and International Transferences through SWIFT, MEBD, Electronic Transfers, Stock Exchange and System of Foreign Currency Negotiation.

## PAYMENT SYSTEM OF GUATEMALA



The referred operational framework contemplated the use of efficient and secure communication mechanisms for the continuation of business and policies to access the system; aspects that would propitiate the reduction of the settlement periods, operation processing and to reduce, or eventually eradicate, the use of paper and manual procedures.

As indicated, for the operation of the payment system, according to the presented scheme, in the *Banco de Guatemala* the provider company is installing and adapting the Real Time Gross Settlement System and the corresponding inter-phases with the internal systems of each institution and with the systems of the participants, actions that will allow, in the short term, carrying out the corresponding tests for the operation of said system, at the national inter-bank system level, and later, at the participants level.

## **2.4 Mechanisms of risk administration in a Real Time Gross Settlement System**

In order to reach the objectives of modernization and taking into account the Core Principles for the Systemically Important Payment Systems, the central bank will pursue the maintenance of an adequate administration of risks inherent to the payment systems, through the following actions:

### **2.4.1 Administration of the liquidity risk**

To settle the operations in the Real Time Gross Settlement System, the *Banco de Guatemala* will use the banking cash, legal deposit and other settlement accounts.

Another resource or action defined to neutralize the risks related with the settlement process that will be used in the LBTR, in the priority order, is the system of queues, mechanism through which the transfer orders acquire the condition of pending operation, until there are enough funds in the corresponding settlement account and the window mechanism that provides a period of time to a financial institution that has liquidity problems, in order to normalize its situation before the closing of operations in the settlement system.

Additionally, within the modernization strategy of the payment system, the adoption of mechanisms to grant intraday liquidity facilities will be evaluated, among them, the repurchase agreement operations<sup>17</sup> can be mentioned, due to their viability.

### **2.4.2 Administration of credit risk**

To reduce the credit risk, the *Banco de Guatemala* will supervise that the clearing houses settle during the day and as a maximum at the end of the day; it will also promote the use of the Real Time Gross Settlement System at a national level, so that the economic agents can carry out their large-security operations through this system. On the other hand, in order to help reduce this risk, it is important to mention that, as it occurs in countries with modern payment systems, it is important to have a guarantee fund constituted with funds of the participating

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<sup>17</sup> Sale and purchase agreement with the obligation of reselling or accompanying it with a sale pledge, or simply, a double sale and purchase, separated in time but linked by the same contract.

banks, which would be only used to guarantee the settlement, as a maximum at the end of the day, of the operations of the clearing houses, in case one of the participants does not have enough funds to settle the same. As indicated, the use of the referred fund would be different from the mechanism of intraday liquidity facility, which pursues granting immediate liquidity to the participants that perform the large-security operations in the LBTR system.

### **2.4.3 Administration of the operative risk**

In order to fulfill the Core Principles for the Systemically Important Payment Systems that, among other aspects, stipulate that the system must ensure a high level of operational reliability and count on contingency plans to punctually complete the daily processing of operations. The *Banco de Guatemala* is implementing a LBTR system that was developed with recent technology, using standards of the computer applications industry, the characteristics of which are scalability, high levels of reliability, with emphasis on the data integrity and security and follow up for audit; recovery mechanisms through equipment; and, contingency plans.

Regarding the contingency plans, the *Banco de Guatemala* includes among the projects approved in the Revenue and Expenses Work Plan and Budget of 2004, the denominated Alternate Operation Site, which in its first phase contemplates the construction of a building especially conditioned to shelter a complete alternate computer center and an operation room with 30 work stations, estimating that the alternate site will be in full operation in about 3 years. In the meantime, while the referred project begins operations, a leasing contract with a private company for the leasing of a physical space especially conditioned to locate the institution's equipment has been celebrated, in order to render the basic computer applications services of a Contingency Computer Center, which will operate by the end of October of the current year.

#### 2.4.4 Administration of legal risk

It is necessary to have norms that regulate the electronic settlement of the operations in national and foreign currency, such as, funds transfer in a gross and in real time, direct debits and credit, cash withdrawal, settlement of bilateral and multilateral net results, settlement of operations under the modality of delivery versus payment and payment versus payment, intraday facility, collection of rates and/or commissions in favor of the *Banco de Guatemala* for services rendered in the settlement of operations, consult and generation of files, reports and statistical information.

In that sense, it is important to mention that the Monetary Board, as it was mentioned in previous sections, supported by articles 133 of the Political Constitution of the Republic of Guatemala, 3, 4, 26 and 70 of the Organic Law of the *Banco de Guatemala*, is competent to issue regulations as mentioned in the previous paragraph; for that reason, a preliminary regulation plan has been prepared, formerly denominated Regulation of the Electronic Operations Settlement, which is being internally analyzed and discussed by the institution's technical team to subsequently present it for the approval of the Monetary Board. Besides, the monetary authority would also have competence to issue specific normative that regulates the settlement of other payment instruments.

Regarding other regulations necessary for an efficient payment system, it is required to issue or reform certain ordinary laws, mentioning, among others, the Law of the Securities and Merchandise Market in order to adequately regulate the aspects that keep close relation with the payment system, such as the ones related with the "centralized securities deposits" and decisions that regulate the dematerialization of security titles.

The use of the electronic document and signature, recognizing and granting it the same strength and effects than the handwritten signature is also considered fundamental, which must be supported on clear decisions and secure interpretations. In this regard, it is important to mention that several countries have issued electronic trade laws and digital signatures, taking as reference the model law of the United Nations Commission for International Mercantile Right (CNUDMI)

on electronic trade. In Guatemala, efforts have been made in order to incorporate in the country's legislation, aspects regarding digital signature and electronic trade. In effect, the Presidential Commissioner for the State's Reform, Decentralization and Citizen Participation -COPRE- recently summoned several entities to integrate an inter-sector commission<sup>18</sup> that would participate in the preparation of a law project for the promotion of the electronic trade and protection of the digital signature, which, as it is known, will be discussed in the legislative agenda in the short term.

The incorporation of another aspect in the country's legislation is being considered, because it is closely related with the international trend observed in the processing of checks; this aspect is that regarding counting on norms that foresee the possibility of reducing the physical movement of paid checks, which can be achieved with the regulation known as *truncation*, and that, in some way, improves the security and efficiency of the payment systems. Before said situation, it is indispensable to count on ordinary norms that should take part of the Commerce Code of Guatemala and of the Civil and Mercantile Processing Code.

It is important to indicate that the objective of an efficient administration of the previous risk is to reduce the systemic risk and help in the financial and monetary stability.

## VI. MATRIX OF THE MODERNIZATION PROJECT

Based on the expressed in the above paragraphs, it can be concluded that the modernization of the national payment system bears a series of activities that include the revision of the normative framework in general; the definition of the operative processes, the development and implementation of electronic systems for the clearance and settlement of retail and large securities operations.

Taking into account that said activities, regarding their complexity, nature and benefits, at a national level, require the involvement and support of all the participants, the *Banco de Guatemala*, in fulfillment of its function to pursue the

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<sup>18</sup> Currently, said project is being supported by the Banking Association of Guatemala, the Chamber of Commerce, the *Ministerio de Economía*, the *Banco de Guatemala*, Bancared and Telgua.

good operation of the payment system, assigned by its organic law, in addition to the actions that it has been carrying out, has prepared a modernization matrix of said system that contains the most important activities, which are contracted for the strengthening of the normative framework of the payment system; to the implementation of a modern payment and to the institutional cooperation that said modernization requires.

## **MATRIX OF MODERNIZATION OF THE PAYMENT SYSTEM**

<b>TOPIC</b>	<b>PERIOD FORESEEN FOR ITS CONCLUSION</b>
<p><b>1. STRENGTHENING OF THE NORMATIVE FRAMEWORK OF THE PAYMENT SYSTEM.</b></p> <p><b>OBJECTIVE:</b> To count on a legal and regulatory base founded on the Core Principles for the Systemically Important Payment Systems that contribute in the efficiency and transparency of the financial operations that are carried out in said system.</p> <p><b>a. Prepare the regulation of the Electronic Operations Settlement System</b></p> <p>i. To establish the transactions operation carried out in the Electronic Operations Settlement System.</p> <p><b>b. Promote the issue of rules that contribute in the administration of risks inherent to the payment system</b></p> <p>i. Liquidity risk: Issue the normative that allow the creation and operation of the mechanism of intraday liquidity facilities.</p> <p>ii. Credit risk: To promote the normative to constitute a guarantee fund that ensures the settlement of operations of the Banking Clearing Houses, as a maximum at the end of the day, as well as that the automated clearing houses (ACHs) settle, as a maximum, at the end of the day.</p> <p>iii. Operative risk: To promote the issue of rules and procedures to guarantee the security, reliability and operational continuation of the system.</p> <p><b>c. Participate in the revision of the Law of Security and Merchandise Market, Decree number 34-96 of the Congress of the Republic</b></p> <p>i. To give an opinion, in matters of competence, of the monetary authority about the corresponding preliminary law plan.</p> <p>ii. To participate in different forums regarding the revision of said regulatory framework.</p> <p><b>d. Participate in the discussion of the preliminary law plan for the Promotion of the Electronic Trade and Protection of the Digital Signature.</b></p> <p>i. To give an opinion, in matters of competence, of the monetary authority about the corresponding preliminary law plan.</p> <p>ii. To participate in different forums regarding the revision of said</p>	<p>First semester 2005</p> <p>First semester 2005</p> <p>Second semester 2005</p> <p>Second semester 2004</p>

## The Payment System of Guatemala: Evaluation and modernization proposal

<p>regulatory framework.</p> <p><b>e. To promote the preparation of a preliminary law plan to regulate that regarding the payment system.</b></p> <ul style="list-style-type: none"> <li>i. Approval from the Monetary Board of the preliminary law plan that regulates the operation of the national payment system.</li> <li>ii. To transfer the preliminary law plan to the Executive Organism, to transfer it to the Congress of the Republic, as a law initiative.</li> </ul> <p><b>f. To contract foreign advisory that provides strategic advise to the <i>Banco de Guatemala</i> in the legal area, in matters of payment system.</b></p>	<p>Second semester 2005</p> <p>Second semester 2004</p>
<p><b>2. IMPLEMENTATION OF A MODERN PAYMENT SYSTEM</b></p> <p><b>OBJECTIVE: To count on modern technological tools to improve the efficiency in the settlement of operations, using international standards.</b></p> <p><b>a. Real Time Gross Settlement System</b></p> <ul style="list-style-type: none"> <li>i. To implement in the national payment system a Real Time Gross Settlement System.</li> <li>ii. To incorporate in the LBTR system the financial institutions of the public and private sector.</li> <li>iii. To incorporate the negotiation and clearing systems that operates in the country in order to settle their operations in the LBTR system.</li> <li>iv. To create and implement an alternate operational site for the payment system.</li> </ul> <p><b>b. Banking clearing houses</b></p> <ul style="list-style-type: none"> <li>i. To conclude the automatization process of the check clearing.</li> <li>ii. To promote the checks truncation<sup>19</sup>.</li> </ul> <p><b>c. To contract foreign advisory that provides strategic advise to the <i>Banco de Guatemala</i> in the technical operational area, in matters of payment system.</b></p>	<p>First semester 2005</p> <p>First semester 2005</p> <p>Second semester 2004</p>
<p><b>3. INSTITUTIONAL COOPERATION FOR THE MODERNIZATION OF THE PAYMENT SYSTEMS.</b></p> <p><b>OBJECTIVE: To promote the discussion process with the system's participants in the country to count on modern payment system, as well as with the central banks of the rest of the region, in order to harmonize the payment systems of the Central American countries and Dominican Republic.</b></p> <p><b>a. Cooperation of the participants in the strengthening of the payment system</b></p> <ul style="list-style-type: none"> <li>i. To promote among the system's users the use of electronic payment instruments.</li> <li>ii. To observe and supervise the fulfillment of the Core Principles for the Systemically Important Payment Systems.</li> </ul>	<p>Second semester 2005</p>

<sup>19</sup> According to the BIS, truncation is a procedure through which the physical movement of paper payment instruments (vg., paid checks or credit transfers) within a bank, among banks or between a bank and its customers is reduced or eradicated, being partially or totally replaced by electronic registries for later processing and transmission.

<b>b. To create a National Council of the Payment System</b> <ul style="list-style-type: none"><li>i. To promote the creation of the council constituted by the system's participants.</li><li>ii. Issue the normative that contemplates the functions of said council.</li></ul> <b>To participate in the modernization and harmonization project of the regional payment systems that is promoted by the Central American Monetary Council.</b>	Second semester 2005  Second semester 2005
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## **VII. RECOMENDATIONS**

Due to the above mentioned the subscriber departments and the Legal Advise of the *Banco de Guatemala* recommend the following to the Monetary Board.

1. To approve the Matrix of Modernization of the Payment System, as proposed in section VI of the present document, which contains the group of activities and efforts toward the modernization of the referred system; this is congruent with the best practices that currently prevail in matters of payment system, with the consulted international practice and with the own needs of the Guatemalan economy.
2. To instruct the *Banco de Guatemala* to inform the participants in the national payment system of the present document, as well as to motivate the same to contribute and support the finalization of the payment system modernization project, in order to finalize the transition process that allows counting on a system that fulfills the Core Principles for the systemically important payment system.
3. To instruct the *Banco de Guatemala* to implement the necessary actions that allow carrying out the modernization of the national payment system; therefore, it must coordinate the participation of the public sector institutions that are closely linked with the normal operation of the country's payment system.

4. To instruct the *Banco de Guatemala* to promote the creation of an entity that can act as the National Council of the Payment System that will be integrated by the system's participants.

## **ANNEX 1**

### **INTERNATIONAL EXPERIENCE IN MATTERS OF PAYMENT SYSTEM**

#### **1. PAYMENT SYSTEM OF CHILE<sup>20</sup>**

##### **a) Structure**

The payment system of Chile has the following components: Clearing House, Real Time Gross Settlement System and entities that carry out the clearance and settlement operations in the security market.

Regarding the clearing house, it is indicated that it clears checks and other securities in national currency, as well as documents in foreign currency, through an automated clearing center.

The Real Time Gross Settlement System initiated its operations at the beginning of 2004. Said solution considers, due to its systemic importance, the creation of an electronic large-security payment system, in national currency, oriented to grossly and in real time settle, in the accounts that the institutions have in the central bank, the inter-bank payments and to support the complementary systems.

Currently, there are two stock exchanges in that country; there is also a security clearing house and a securities central deposit, which is the sole securities central depositor and carries out the clearance and settlement of the operations.

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<sup>20</sup> Source: Payments and Securities Clearing and Settlement Initiative of the World Bank Western Hemisphere and the *Centro de Estudios Monetarios Latinoamericanos*, Payments and Securities Clearing and Settlement Initiative in Chile (December 2000).

**b) Means and payment instruments**

In Chile the payment instruments of common use are cash, check, guarantee slips, direct debits or credits, electronic transfers and payment cards, such as debit, credit and commercial cards. The banks and other financial institutions used, until the introduction of the LBTR system, physical or materialized payments means for large-security payments, such as sight vouchers and clearing scrip.

The check constitutes the payment instrument per excellence and is issued in Chilean pesos as well as in US dollars. The paid checks are not delivered to the account-holders; the drawn bank keeps them in custody for 10 years. The Banking Association and Financial Institutions standardized the check, while the Superintendence of Banks and Financial Institutions established the code of magnetic characters.

On the other hand, in that country the payment mean is constituted by the guarantee slip, which is a deposit of money in favor of the beneficiary. Besides, it is an irrevocable document that does not allow an endorsement from the beneficiary, but only its cancellation in case of cashing it. The direct debit is another habitual instrument, implemented 10 years ago and allows the public to pay their obligations periodically.

It is indicated that the direct credit has existed as of several years ago and under this mechanism the payment of remunerations, pensions, payment of dividends of joint-stock companies and tax refunds are operated.

**c) Progress of the reform of the payment system project**

The Directive Council of the Central Bank of Chile decided to adopt an action plan that in the short term, allows converging the national payment system to the current highest international standards. Besides, it would adopt all the measures, actions and rules that would allow counting on an online inter-banking payment system, in which the payments would be settled in gross manner and in real time in the current accounts in the central bank. The above-mentioned has been practiced with the introduction of the Real Time Gross Settlement System;

however, the implementation of the Clearing Houses is still pending, which will be private entities administered by an operator and regulated by the normative of the central bank. Said clearing houses must operate under financial and operational security conditions according to the international standards, so that they contribute in the stability of the financial system and economy.

## **2. PAYMENT SYSTEM OF MEXICO<sup>21</sup>**

### **a) Structure**

Mexico maintains two payment systems. The first one denominated Electronic Payment System of Ample Use (SPEUA), facilitating the settlement of the operations of the bank's customers while the second, denominated Interactive System of Securities Deposit (SIDV), settles the securities transactions through the mechanism of delivery versus payment. In both systems, the transactions are settled as soon as there are funds (or credit), and, sometimes, securities in the respective accounts. The *Banco de México* established limits for the credit that it grants to the participants and required to establish guarantees in all the systems.

It has been pursued with these changes to reduce the dependence of the payment systems on the settlement guarantee of the *Banco de México* and, at the same time that they provide adequate incentives to the participants in order to achieve careful behavior to contribute in the stability of the financial system. In order to reach the above, the mechanisms and procedures that face the lack of liquidity from some of the participants of the payment system or that one or several banks could not settle their obligations within the agreed period has been clearly defined. It has also pursued an adequate equilibrium between the security of the systems and the operation of the markets.

On the other hand, the System of Account-holders Service (SIAC) is a system through which the current deposit accounts that banks and other financial

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<sup>21</sup> Source: Payments and Securities Clearing and Settlement Initiative of the World Bank Western Hemisphere and the *Centro de Estudios Monetarios Latinoamericanos*, Payments and Securities Clearing and Settlement Initiative in Mexico (March 2003).

institutions have in the central bank, such as stock exchange houses, administrators of withdrawal funds (AFORE), investment funds operator societies and some insurance companies. This system does not offer facilities to carry out operations on their own or on behalf of third parties.

The *Banco de México* is the owner and operator of the SPEUA and started operations in order to substitute the large security checks and reduce the credit risks that the settlement process generated in the *Banco de México*, as well as for credit institutions and for the public in general. Only the banks have access to said system and this allows carrying out large security payments with value date of the same day among account-holders of different banks. The SPEUA does not operate directly with the current accounts of the banks in the SIAC, but it communicates with them and, every day, at the closing of operations, the balances of the same are transferred for their settlement to this last system.

Regarding the deferred settlement payment systems, the Banking Clearing Center is a company that belongs to the commercial banks and offers check clearing services in the entire country, in Mexican pesos and in US dollars, as well as the clearance of the operations derived from the use of credit and debit cards. Regarding the foreign currency settlement, the fund transfer is made through the Bank of America, which acts as settlement agent.

As indicated in the consulted source, this new structure of inter-bank clearing and settlement mechanism favors the efficiency in the payment services that the financial institutions offer to their customers. Besides, it has been possible that the rules and procedures of the payment systems help the participants to clearly understand the financial impact in which they incur when participating in it, which allows them to improve the risk administration. Besides, the central bank does not provide special credit support to the deferred settlement payment systems; however, it administers a process that determines the exercise of credit lines that the banks grant themselves. In case a bank cannot opportunely meet its obligations, it is excluded from the settlement process.

**b) Payment means and instruments**

The main payment means and instruments in Mexico are the check, credit and debit cards, payment cards that are issued by commercial companies, and the use of prepaid cards for consumption of fuel and phone services is common.

Regarding automated teller machines, there are three interconnected networks with national coverage in Mexico, which belong to the country's banking institutions. The settlement of operations with credit and debit cards is similar to the operations carried out in the automated teller machines. These operations are processed by the referred interconnected networks and the company *Promoción y Operación, S. A. de C.V.* clears the payments, while a participating commercial bank settles them in the SPEUA.

The cash transfer through telegraphic money orders in the *Telecomm Telégrafos* Company, property of the State, is also common. Besides, the service of cash transfer from Mexican citizens that reside in the United States of America is also important.

**c) Projects and policies in the implementation process**

The *Banco de México* is in the process of reforming the payment system. Within the main changes searches, on one hand, to reduce the moral risk and distortions that arise from the credit granted to the participants in the payment systems, and, on the other hand, to modernize the technological infrastructure of the systems. For that reason, the *Banco de México* will centralize all the credit that it grants to facilitate the payment settlement in the SIAC. Besides, it will change the rules through which the participants obtain liquidity during the day. The main duties will be focused to establish a new way to inject liquidity through repurchase agreement operation due at the end of the day and to eradicate the overdraft orders during the day, unless they are supported by net deposits in the *Banco de México*.

On the other hand, the changes planned in the SPEUA include a new technological platform and a change of name, through which it pretends to reach the following objectives:

- To require each participating bank to constitute guarantees for an amount equal to 1.25 times that the credit line of higher amounts granted to other participants.
- To establish clear rules to cash the guarantees, fast.
- To allow the banks, at any time, to reduce the credit lines granted to other banks, without reducing the acquired obligation up until before the reduction.
- To eradicate the possibility of carrying out net transfers outside of the SPEUA.
- To establish limits to the bilateral net balances among participants.

Also, the *Banco de México* will change the credit granting system to settle operations in the SIDV and to keep the system operating in an efficient way; it will maintain the connection between said system and the SIAC. The changes to the payment systems will have important effects on the operation of the participants' treasuries; therefore, it must be gradually applied so that the banks and stock exchange houses have enough time to adequate the operational practices to the new environment and to avoid troubles in the operation of the financial system.

### 3. PAYMENT SYSTEM OF COSTA RICA<sup>22</sup>

#### a) Structure

The Inter-bank Negotiation and Electronic Payments System -SINPE- is a technological platform, developed by the Central Bank of Costa Rica -BCCR- with the support and collaboration of the national financial sector. This system operates through a private telecommunications network and the institutions that constitute the national financial sector have been able to be electronically interconnected, in order to mobilize, among them, their own funds and their customers', fast and securely.

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<sup>22</sup> Source: Checks and Securities Clearing and Settlement initiative of the World Bank Western Hemisphere and the *Centro de Estudios Monetarios Latinoamericanos*, Payments and Securities Clearing and Settlement of Costa Rica (June 2002).

On the other hand, the payment system is integrated by the Clearing House and by the Real Time Gross Settlement System. Regarding the Clearing House, it settles the following operations: checks clearing and settlement, clearance and settlement of other securities, clearance of direct credits and debits, tax settlement and settlement of foreign services.

Regarding the Real Time Gross Settlement System, the services are configured under one of the schemes defined by the BIS, which incorporates the possibility that the destination entity has to reject the transfer, foreseen situations such as: incorrect amount, information of erroneous detail, incorrect currency, cancellation due to the origin and that the message has been sent after the due date.

### **b) Payment means and instruments**

The payment instruments that are commonly used in Costa Rica are the following: check, direct debit and credit, payment cards, credit and debit cards, automated teller machines and terminals of sale point, prepaid cards, intelligent cards –electronic purse-, electronic fund transfers and payments of the government in different cash instruments.

The check is the payment instrument that is more commonly used in the country, though in recent years traders have preferred to receive payments on the account of credit or debit cards, mainly due to security.

Within the structure of the different services that have been currently developed for the financial system, there are some services in which the clearing processes of operations received and sent by each entity are carried out; therefore, after finalizing each process only one transaction is made in each entity, credit or debit.

On the other hand, the BCCR has established the liquidity and systemic risks for the multilateral net clearing services, a guarantee scheme based on the principle of *defaulter pays* as a control measure. The characteristics of the guarantee mechanism are the following: the amount is the softened movable average of the last 60 natural days of the net debit positions of each participant in

the net multilateral clearing services; the type of guarantee is the debt security issued by the Central Bank of Costa Rica or the *Ministerio de Hacienda*, considered according to its market value; the securities custody are the securities deposited in the *Central de Valores (CEVAL)* pledged in favor of the central bank and they can only be withdrawn with the authorization of the same; and, the security of the amount to be guaranteed is the amount calculated weekly and informed to the participants through the SINPE. Also a daily valuation of the securities market price is carried out; and if necessary it must be adjusted by the participants.

In case there is illiquidity in any financial entity during the settlement process of any of the multilateral net clearing services, the central bank automatically carries out a repurchase agreement operation with the guarantees constituted in its favor, by the participating banks, under the following conditions: i) Credit amount: up to 80% of the negotiable value of the securities deposited by the participant; ii) Term: One (1) day extendible to seven (7), if the participants so request, and iii) Cost: rate previously defined by the Directive Board of the Central Bank of Costa Rica and it is increased in 2 percentage points in matters of default interests.

### **c) Progress of the reform of the payment system project**

In recent years, important efforts have been made to increase the efficiency and security of the payment system in Costa Rica, in the large security as well as in the retail security systems. In that sense, it is important to indicate that the most important initiative has been the implementation of the SINPE.

Among the most important innovation in the reform, the introduction of the Customer Account or financial domicile, which constituted the base for the efficient development of a series of collection and payment services among the financial entities, was highlighted. The Customer Account consists of the standardization<sup>23</sup>

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<sup>23</sup> The Customer Account constitutes an identification number of 17 digits assigned by each financial entity to each of the current and savings accounts, in national or foreign currency of their customers, where said number has a standard structure recognized by the entire National Financial Sector. The Customer Account is used to identify the financial domicile of the customer, so that the system can redirect any transaction toward a determined entity as it corresponds, besides, when related to a standardized structure it allows carrying out

of all the accounts of funds at sight (current and saving accounts) of financial institutions' customers, in order to carry out transactions of payment and collection to the accounts of these customers in any financial institution of the country, in a fast and exact way, reducing costs and risks.

The Central Bank's duty is not limited to the introduction of the main services for the funds transfer, but it has also tried to introduce a series of services that satisfy the different needs of the sectors and that contribute in improving the different processes that are carried out in the payment system. Within the services to be rendered in the future are the following: auxiliary custodies of cash; cash market; electronic money window; electronic security window; electronic security bid; cancellation and settlement of expirations; and, importation and exportation of foreign currency.

#### **4. PAYMENT SYSTEM OF COLOMBIA<sup>24</sup>**

##### **a) Structure**

The payment system in Colombia is integrated by a Clearance House, the Real Time Gross Settlement System -LBTR- and the System of Clearance and Settlement of Securities.

The check clearing is a service rendered at a national level in a unique way by the *Banco de la República de Colombia* through the System of Electronically Clearing Checks -CEDEC- and clearing houses of other operations. In the agencies where the CEDEC is not operated, the bilateral positions are reported by each entity in pay sheets that are later registered in the electronic clearing system provided by the *Banco de la República*. In markets where there are more than four banking entities and where the *Banco de la República* is not presented, it is operated through a system of delegates clearing entities, through which one of the

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certain validations from the origin of the transaction, which guarantee the quality of the information included in the system.

<sup>24</sup> Source: Payments and Securities Clearing and Settlement initiative of the World Bank Western Hemisphere and the *Centro de Estudios Monetarios Latinoamericanos*, Payments and Securities Clearing and Settlement of Colombia (August 2001).

participating entities carries out the exchange, calculates the respective multilateral net positions and reports them to the closest agency to the *Banco de la República*.

The *Banco de la República*, in order to facilitate the settlement of the inter-bank large security operations and the operations carried out with security titles deposited in the Security Box Deposit, has an automated deposit accounts system, which operates through remote and online connections that are offered by the Electronic System of the *Banco de la República* -SEBRA-.

In the same way, the referred entity uses a real time gross settlement mechanism for the payment of all the operations made through the same and facilitates the consult online of the available balance in the deposit accounts. Said mechanism does not have the facility of administering operation queues therefore, the operations that are not settled are rejected and, at the same time, are registered in the system under a state denominated “pending to be activated”. Later, the operator reprocesses such operations, as necessary, so that when there are funds available the same can be settled.

The SEBRA offers online information to its users, during work hours everyday, of their accounts balances, but the detail of the operations is only informed through a report that must be requested by each requiring entity, subjected to a tariff scheme that allows recovering the incurred costs.

On the other hand, the Securities Clearing and Settlement System, according to the results of the settlement, clears and settles the stock exchange negotiations; registers, settles and clears the term operations; determines the balances of each participant daily; and, receives and delivers the corresponding securities and cash.

### **b) Payment means and instruments**

In the Colombian legal scheme no foreign currency is recognized as a payment means for the payment of obligations among the country’s residents. On the other hand, the checks are still a payment instrument widely used in Colombia; nevertheless, the volume of checks issued during the last years show that their use has been reduced.

The implementation of the Automated Clearing House services of Colombia has opened the possibility of carrying out electronic credit and debit operations; among them are pay sheet payments, pensions, providers, and, in general, all types of goods and services. The collection of service tariffs such as electricity, phone and prepaid medicine is also contemplated.

In Colombia, the debit cards were initially offered by savings and housing corporations as a strategy to overcome the inconvenience of not being able to use checks to draw against the savings accounts. The debit card is used in sale points when the purchase amount is automatically debited from the customer's savings account and, at the same time, this amount is transferred in favor of the dealer.

The automated teller machine networks were created under the guardianship of a legal resolution, which authorized the entities of the financial sector to constitute technical and administrative companies in order to carry out operations in the fields of systematization, administration, organization and connection of automated teller machine networks, information management, processing and data transfer.

### **c) Progress on the reform of the payment system project**

In the last few years important efforts have been made to improve the security and efficiency of the payment systems in Colombia. In effect, the most important initiative has been the establishment of a Real Time Gross Settlement System, which operates through the national inter-bank net SEBRA. Also, the *Banco de la República* has initiated the Electronic Deposit Accounts System -CUD- which intends to completely replace the SEBRA, if the same allows the financial intermediaries to consult the transaction made in their deposit account online and to consult on the screen; in addition, to counting on new functions as the automated management of support accounts and the funds transfer among sub-accounts. It is also important to mention that in the mentioned system transactions such as operations in the open market, treasury payments, and operations of the inter-bank monetary market, settlement of funds in the security operations and balances of the clearing house systems take place.

## ANNEX 2

### A) RELEVANT ASPECTS OF THE SOFTWARE

The Real Time Gross Settlement System -LBTR- has been developed under an open architecture based on internet technology, using JAVA as the programming language, Oracle 9i as the data base manager and Crystal Reports 10 as the reports generator. On the other hand, the servers use Microsoft Windows Server 2003 Standard Edition as an operative system and Websphere MQ Series as software and interface for use with the foreign systems.

The subsystems of LBTR are:

1. **SETS:** Settlement System where the accounts of the participants will be set and will be updated, through which the liquidity in a daily processing cycle will be managed and controlled.
2. **PACS:** Systems through which the *Banco de Guatemala*, the *Ministerio de Finanzas Públicas* [Roughly equivalent to the Department of the Treasury] and other participating public entities will instruct its payment.
3. **BILL:** Invoicing System to be used for the collection of the services rendered to the participants.
4. **PS:** System through which a participant in the LBTR can instruct its payments.

These subsystems, at the same time, are divided into six modules:

1. **Routing Module:**  
It will manage the interaction between the LBTR and SWIFT.
2. **Settlement Module:**  
It will carry out the main functions of the LBTR, including the availability of funds, payment instructions in queues and use of transactions in the accounts of the participants.

3. **External module:**

It will provide the *Banco de Guatemala*, as administrator of the LBTR system, the facility to enter any transaction.

4. **Payment module:**

It will manage the payments, receipts and disbursement.

5. **Accounting module:**

It will maintain the control of the accounts.

6. **Messages module:**

It will manage all the system's messenger service.

### B) RELEVANT ASPECTS OF THE HARDWARE

Currently, we count on the installation of hardware, operative systems and other software elements necessary for its operation, as described below:

a) Production System

An IBM server X Series Model x255

Dos CPU X 2Ghz Intel Xeon ®

Four G bytes RAM

Storing capacity: 300 GB (RAID 1 o 5)

Two Ethernet cards

b) Contingency System

An IBM server X Series Model x255

Dos CPU X 2Ghz Intel Xeon ®

Four G bytes RAM

Storing capacity: 300 GB (RAID 1 o 5)

Two Ethernet cards

c) Test system

An IBM server X Series Model x345

A CPU X 2Ghz Intel Xeon ®

One G byte RAM

Storing capacity: 70 GB (RAID 1)

- Two Ethernet cards
- d) Back Up system

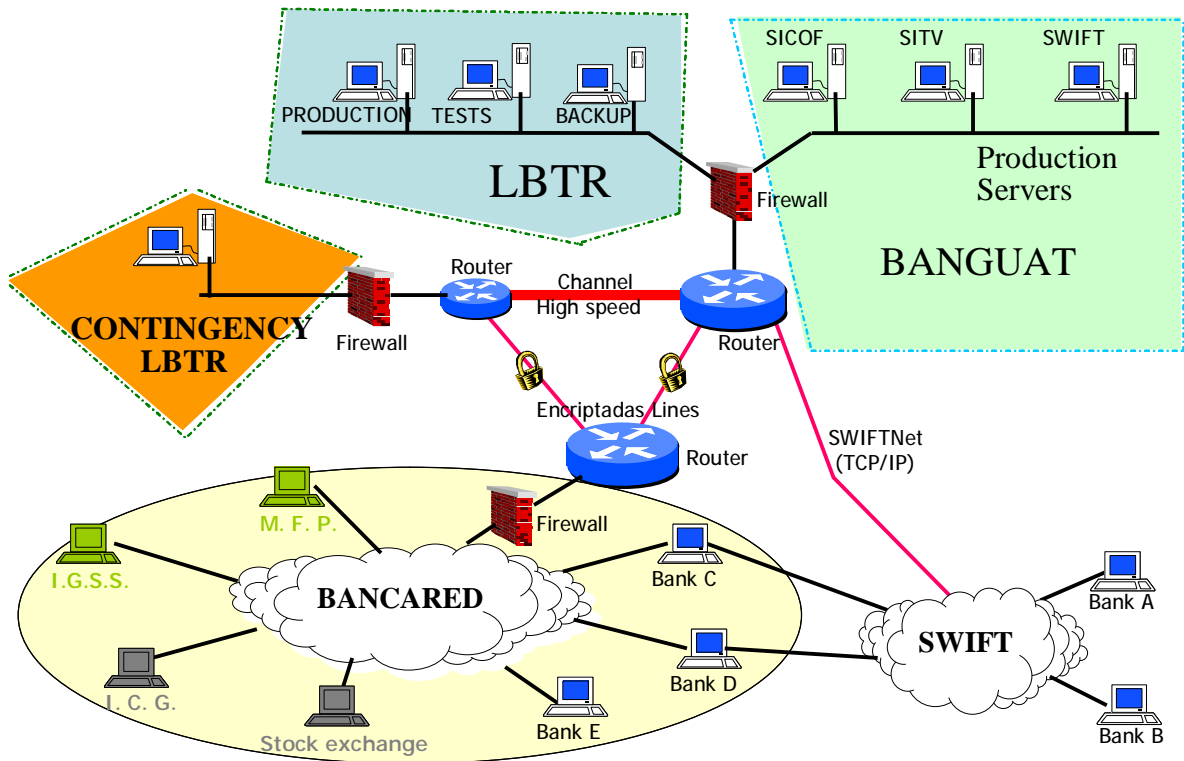
An IBM server X Series Model x305

Back up device LTO IBM Ultrium 3580-L23 (Linear Tape Open, generation 2)

With storing capacity of 200/400 G Bytes.

For the full recognition of users, all the participants that have access to the system must use a SmartCard device, in which the Digital Certificate issued by the *Banco de Guatemala* will be stored.

## Technological Scheme



## LIST OF ABBREVIATIONS

ABG	Banking Association of Guatemala
ACH	Automated Clearing House
ATM	Automated Teller Machine
BCCR	<i>Banco Central de Costa Rica</i>
BIS	Bank for International Settlements
CEDEC	Electronic Check Clearing
CEMLA	<i>Centro de Estudios Monetarios Latinoamericanos</i> (Center for Latin American Monetary Studies)
CEVAL	<i>Central de Valores</i> (Values Central)
CLS	Continuous Linked Settlement
CNUDMI	United Nations Commission for International Mercantile Right
COPRE	<i>Comisión Presidencial para la Reforma del Estado, la Descentralización y la Participación Ciudadana</i> (Presidential Commission for State Reform, Decentralization and Citizen Participation)
CPSS	Committee on Payment and Settlement Systems
CPU	Central Process Unit
CUD	Electronic System of Deposit Accounts
DCV	Safe Deposit
ICG	Computerized Images of Guatemala
IGSS	<i>Instituto Guatemalteco de Seguridad Social</i> (Guatemalan Social Security Institute)
JM	Monetary Board
LBTR	Real Time Gross Settlement

MEBD	Electronic Money Banking Table
MFP	<i>Ministerio de Finanzas Públicas</i> [Roughly equivalent to the Department of the Treasury]
MICR	Magnetic Ink Character Recognition
MIT	Inter-banking transfer mechanism
POS	Point of Sale
RAID	Redundant Array of Independent Disks
RAM	Random Access Memory
SEBRA	Electronic Transfer System of the <i>Banco de la República</i>
SEL	Electronic Settlement System
SIAC	System of Account-holder Services
SICOF	System of Accounting and Financial Information
SIDV	Interactive System for Securities Deposit
SINEDI	System of Electronic Foreign Currency Trading
SINPE	Inter-banking Negotiation and Electronic Payment System
SITV	Security Titles Integrated System
SPEUA	Electronic Payment System of Ample Use
SPID	Foreign Currency Institutional Private System
SWIFT	Society for Worldwide Inter-bank Financial Telecommunication

## REFERENCES

Banco de Pagos Internacionales, Principios Básicos para los Sistemas de Pago de Importancia Sistémica (Enero 2001). [Bank of International Settlements, Core Principles of the Systemically Important Payment System. January 2001.]

Banco de Pagos Internacionales, Glosario de Términos Utilizados en los Sistemas de Pago y Liquidación (Marzo 2003). [Bank of International Settlements, Glossary of Terms used in the Payment and Settlement Systems. March 2003]

Bernal R. Joaquín, IV Taller de Política Monetaria y Sistemas de Pagos (Julio 2002), [IV Workshop of Monetary Policy and Payment Systems. July 2002.]

Cirasino Massimo, El Banco Central y la Vigilancia del Sistema de Pagos. (Septiembre 2001). [The Central Bank and the Oversight of Payment System. September 2001.]

Crockett Andrew, Why Is Financial Stability a Goal of Public Policy (1997).

European Central Bank, Systemic Risk: A Survey (November 2000).

Gerson Odir Larios y Cesar Roney Fuentes, Lineamientos para la Modernización del Sistema de Pagos de El Salvador (2002). [Guidelines for the Modernization of the Payment System of El Salvador.]

Iniciativa de Compensación y Liquidación de Pagos y Valores del Hemisferio Occidental, Banco Mundial y el Centro de Estudios Monetarios Latinoamericanos Sistemas de Compensación y Liquidación de Pagos y Valores en Colombia (Agosto 2001). [Payments and Securities Clearing and Settlement Initiative of the World Bank Western Hemisphere and the *Centro de Estudios Monetarios Latinoamericanos*, Payments and Securities Clearing and Settlement Systems in Colombia. August 2001.]

Iniciativa de Compensación y Liquidación de Pagos y Valores del Hemisferio Occidental, Banco Mundial y el Centro de Estudios Monetarios Latinoamericanos Sistemas de Compensación y Liquidación de Pagos y Valores en Costa Rica (Junio 2002). [Payments and Securities Clearing and Settlement Initiative of the World Bank Western Hemisphere and the *Centro de Estudios Monetarios Latinoamericanos*, Payments and Securities Clearing and Settlement Systems in Costa Rica. June 2001.]

Iniciativa de Compensación y Liquidación de Pagos y Valores del Hemisferio Occidental, Banco Mundial y el Centro de Estudios Monetarios Latinoamericanos Sistemas de Compensación y Liquidación de Pagos y Valores en Chile (Diciembre 2000). [Payments and Securities Clearing and Settlement Initiative of the World Bank Western Hemisphere and the *Centro de Estudios Monetarios*

*Latinoamericanos*, Payments and Securities Clearing and Settlement Systems in Chile. August 2001.]

Iniciativa de Compensación y Liquidación de Pagos y Valores del Hemisferio Occidental, Banco Mundial y el Centro de Estudios Monetarios Latinoamericanos Sistemas de Compensación y Liquidación de Pagos y Valores en México (Marzo 2003). [Payments and Securities Clearing and Settlement Initiative of the World Bank Western Hemisphere and the *Centro de Estudios Monetarios Latinoamericanos*, Payments and Securities Clearing and Settlement Systems in Mexico. August 2001.]

Koponen, R. Y Kimmo Soramaki, Intraday Liquidity needs in a Modern Inter-bank Payment System (1998).

Núñez Susana y Leyva María Luisa, La Contribución de los Sistemas de Pagos a la Estabilidad Financiera. El Caso Español (2003). [The contribution of the Payment Systems in the Financial Stability. The Spanish Case.

Schwartz, Anna J. Real and Pseudo Financial Crises, In Financial Crises and the World Banking System (1986).

Schinasi Garry J., Responsibility of Central Banks for Stability in Financial Markets. (june 2003).

Sheppard David, Sistemas de Pago (Mayo 1996). [Payment Systems.]

Sweet Lawrence y Cirasino Massimo, Banco Mundial y Reserva Federal de Nueva York (2003).

World Bank, Project Design for Payment Systems (March 1995).