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The Philippine Payment System: Efficiency and Implications for the Conduct of Monetary Policy

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Philippine Institute for Development Studies
Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas

The Philippine Payment System: Efficiency and Implications for the Conduct of Monetary Policy

Mario B. Lamberte

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THE PHILIPPINE PAYMENT SYSTEM: EFFICIENCY
AND IMPLICATIONS FOR THE CONDUCT
OF MONETARY POLICY

Mario B. Lamberte
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November 2001

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THE PHILIPPINE PAYMENT SYSTEM: EFFICIENCY AND IMPLICATIONS FOR THE CONDUCT OF MONETARY POLICY

*Mario B. Lamberte, Ph.D. **

Abstract

In a modern economy, the payment system is a major component of the country's infrastructure system. Indeed, no country nowadays can afford to take its payment system for granted. Advances in information technology and changes in laws, institutions and regulations in some countries have encouraged the emergence of new payment instruments as well as the delivery and processing arrangements for small and large value, time-critical payments. With e-commerce now in the mainstream of economic activities, we can therefore expect more major changes in the payment systems worldwide in the next five years than we have in the last five decades. Obviously, the Philippines cannot escape from this sea change.

This paper discusses key operational concepts involved in a payment system and describes the emerging payment systems in industrialized countries. This gives developing countries, like the Philippines, a preview of the likely evolution of their payment systems in the next few years as they deepen the integration of their economies with the rest of the world. The paper gives a detailed description of the existing payment system in the Philippines and discusses innovations in payments media, especially noncash payment instruments, and facilities for the clearing and settlement of payments. Areas for improving the efficiency and reducing risks in existing payment system have been identified.

Developments in the payment system have implications for the conduct of monetary policy. The second to the last section of this paper, therefore, deals with this issue. In particular, it discusses specific payment system innovations, such as the switch to RTGS system and use of electronic payments media, that can enhance or attenuate the effectiveness of traditional monetary tools. The last section presents some recommendations.

Key words: payment system; electronic payment system; credit transfer; debit transfer; electronic money; transmission mechanism; seigniorage; cheque clearing.

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I. INTRODUCTION

It is commonly known that a country's infrastructure system determines to a large extent the efficiency of the economy. In a modern economy, the payment system is a major component of the country's infrastructure system. Indeed, no country nowadays can afford to take its payment system for granted. Firms pay wages to their employees and purchase raw materials from their suppliers. In turn, they receive payments for the sale of their products and services. Consumers make payment transactions several times in a day. Needless to say, value is transferred among participants in the economy every minute of the day, and it increases as the economy grows. The country's payment system, therefore, must be efficient so that funds can quickly move among market participants for productive use, thereby promoting more activities in the economy. According to Humphrey *et al.* (2000), the resource cost of a nation's payment system can account for 3 percent of its GDP. Modernizing a country's payment system can certainly reduce that resource cost. Thus, while the country continues to spend on roads, bridges, power supply, etc., it must not neglect to invest in its payment system to improve the efficiency of economy, in general, and the financial system, in particular.

Through the years, payment systems have considerably changed as forms of payment have evolved from precious metals to currency and checks and recently to electronic payments. These changes have been made because of the need to facilitate voluminous transactions occurring in rapidly growing and increasingly more sophisticated economies. Customers naturally seek the most efficient payment method, while providers of payment services normally seek the most profitable payments system. Advances in information technology and changes in laws, institutions and regulations in some countries have encouraged the emergence of new payment instruments as well as the delivery and processing arrangements for small and large value, time-critical payments. With e-commerce now in the mainstream of economic activities, we can therefore expect more

major changes in the payment systems worldwide in the next five years than we have in the last five decades. Obviously, the Philippines cannot escape from this sea change.

Developments in the payment system have implications for the conduct of monetary policy. Well-functioning financial markets can improve the effectiveness of indirect instruments of monetary policy because it is through these markets that the signal of monetary policy is transmitted to the intermediate and ultimate targets of the policy (Johnson *et al.* 1998). The effective functioning of the financial market is, in turn, affected by the extent of the efficiency of the country's payment system. Also, rapid innovations taking place in the country's payment system can unpredictably alter the demand for and supply of money, thereby affecting the effectiveness of conventional monetary tools. Monetary authorities, therefore, cannot afford to be indifferent to the rapid innovations taking place in the payment system.

A country's payment system, no matter how advanced and sophisticated, is not immune to risks. One party in a payment transaction may not be able to receive or use the funds at a time when she needs them for another transaction for one reason or another (e.g., fraud, bank closure, clearing and settlement failures, etc). More importantly, failure of one participant to settle one large payment transaction could quickly spread to other transactions and institutions involved in the payment system, causing disruptions to the entire payment system. Systemic failure of the payment system can inevitably undermine the effectiveness of monetary policy and adversely affect the real sector of the economy. The monetary authorities, therefore, have great interest in promoting efficient and sound payment system and in seeking ways to minimize systemic risk in the payment system because it has important implications for the conduct of monetary policy, the soundness of the financial institutions and the functioning of the economy as a whole (Balino *et al.* 1996).

Recently, the Committee on Payment and Settlement Systems (CPSS) of the Bank for International Settlements (BIS) has developed core principles for systematically

important payment systems (see **Table 1**).¹ These are certainly relevant to emerging market and transition economies especially since they are in the process of improving their payment systems in order to better handle the growing payment flows within and across their borders. The development of these core principles clearly demonstrates the amount of attention currently given by developed as well as developing economies in modernizing payment system in light of increasing financial market integration worldwide.

This paper in general attempts to assess the efficiency of the existing payment system in the Philippines and its implications for the conduct of monetary policy. Section II discusses key operational concepts involved in a payment system. This provides a general background to the issues discussed in the subsequent sections. Section II discusses emerging payment systems in industrialized countries. Modern payment systems have evolved in industrialized countries and rapidly spread to developing countries, especially to those that have already substantially liberalized their financial markets. This evolution has continued in response to the growing volume and complexity of the transactions and as new technologies emerge. Thus, the emerging payment systems in industrialized countries provide developing countries, like the Philippines, a preview of the likely evolution of their payment systems. Section IV describes and makes an assessment of the existing payment system in the Philippines. Section V assesses the implications of the existing and likely evolution of the country's payment system for the implementation of monetary policy. The last section presents some recommendations.

¹ The BIS is an international organization, which fosters cooperation among central banks and other agencies in pursuit of monetary and financial stability and serves as the central bank of central banks. Its head office is in Basel, Switzerland and its representative office for Asia and the Pacific is in Hong Kong.

II. PAYMENT SYSTEM: GENERAL BACKGROUND

Economic transactions involve the *transfer of goods and services* and the corresponding *transfer of value*. As illustrated in **Figure 1**, these transfers flow in opposite direction. A payment system, which is indicated in the lower part of **Figure 1**, is a method of transferring value between buyers (payers) and sellers (payees).

In reality, a payment system is much more complex than what is suggested in the figure above. Guitian (1998) provides the following comprehensive description of a payment system:

“A payment system encompasses a set of instruments and means generally acceptable in making payments; the institutional and organizational framework governing such payments (including prudential regulation); and the operating procedures and communications network used to initiate and transmit payment information from payer to payee and to settle payments.”

This section discusses the functions, types of risks and payment instruments in a payment system.

A. Functions of a Payment System

Any payment transaction has essentially two parts: *the flow of information* providing payment instructions and *the flow of funds*. Both flows may have different timing and direction.² Each payment transaction requires some form of payment instrument to convey the information about the transactions, which may include the face value of the payment, the identity of the parties (i.e., the payer and the payee) and their intermediaries, the transaction date, and the value or settlement date. Regardless of the type of payment instrument used to effect payment, the payment system’s functions of *clearing* and *settlement* occur. **Clearing** is the process of transmitting, reconciling and in some cases confirming payment orders or security transfer instructions prior to settlement, possibly including netting of instructions and the establishment of final positions for settlement.

² This will be clarified further below.

Settlement is the act of transferring “good and final funds” between two parties. A payment is **settled with finality** when the payer can no longer revoke the transfer of funds to the payee and the funds have been delivered unconditionally to the payee. This is the ultimate objective of a payment system.

B. Various Types of Risk in a Payment System

A country’s payment system is usually exposed to **settlement risk** – the risk that settlement will not take place as expected. This risk comprises two types of financial risks - liquidity and credit risks (Johnson et al. 1998). **Liquidity risk** arises from the possibility that the payer or the payer’s financial institution may fail to meet its payment obligation on the due date because of insufficient liquid funds. Although the payee will eventually receive in full the principal amount of the payment from the payer in some future date, he will, however, likely forego interest income or incur interest costs if he borrows money to make some payment transactions while waiting for the receipt of his payment. **Credit risk**, on the other hand, arises from the possibility that the payer fails to meet his payment obligation on a due date because of insolvency. In this case, the likelihood of settling the payer’s obligation with the payee in the future is virtually nil, and the payee may lose all or part of the principal amount of the payment.

Liquidity or credit risk may lead to **systemic risk**, which is the possibility that the failure of one participant to meet his payment obligations on a due date will cause other participants in the payment system to fail to meet their payment obligations when due. This large-scale liquidity or solvency problem can undermine a country’s payment system, which, in turn, can adversely affect the whole economy. It is, therefore, understandable that monetary authorities are very much concerned about systemic risk facing their country’s payment system.

A payment system may also be exposed to operational, security and legal risks, which may give rise to liquidity or credit risks, and potentially to systemic risk. **Operational risk** arises from human error, equipment malfunctions, natural disasters, or

system design flaws, which can cause error in payment or disruption in the payment system. An example is the failure of a telecommunications system, causing terminals to be offline for a few minutes. **Security risk** refers to risk of fraud, which can leave a party subject to financial loss, or the risk to privacy when a third party illegally gains access to confidential payment information that can be used to exploit the financial position of another party. An example is forging a signature on a payment instruction such as a cheque. **Legal risk** arises from the absence or lack of clarity in the legal framework that causes some uncertainty about, and misinterpretations of, the legal enforceability of parties' rights and obligations. For example, weak bankruptcy law can easily give rise to disputes in the clearing and settlement of payment.

C. Types of Payment Instruments

Payment instruments can be generally categorized into two: **cash** and **non-cash**. In a modern economy, cash is the simplest form of payment instrument. Clearing and settlement are immediate upon transfer of cash instrument from the payer to the payee and none of the parties in the transaction are subject to financial risks. Because cash payment represents final payment, the payee can immediately use the money in another transaction. Cash payment is typically used for small-value, face-to-face transactions between individuals or between an individual and a vendor but is impractical for large-value transactions because of portability and security concerns (e.g., theft). Although currency notes are normally considered legal tender and are backed up by the government, however, they can be forged, giving rise to a risk to the payee that he cannot use the funds he receives from the payer in another transaction. Being responsible for printing and circulating notes, central banks all over the world continue to improve the security features of notes to discourage, if not entirely eliminate, the production and circulation of counterfeit notes.

Developments of various types of non-cash payment instruments have been very rapid in the last decade. The rules and processes involved in non-cash payment instruments are more complex than cash payment instruments. Unlike cash payment, non-cash

payment, such as cheque, requires clearing and settlement before the payee can make use of the funds transferred to his account.

Non-cash payment instruments can vary according to the payment flow, payment media, process flow and settlement (see **Table 2**). These are elaborated below.

Payment Flow: Debit Transfer vs. Credit Transfer

Non-cash payments can be either *debit* or *credit transfers*. The conventional way to distinguish them depends on who is actually initiating the transfer of funds from the payer's account to the payee's account. If the payment instruction is initiated by the payee, it is called a debit transfer; if it is initiated by the payer, it is called a credit transfer. However, in both cases, the information flows and funds are being transferred. **Figures 2 and 3** illustrate in a simple manner the operations of debit and credit transfer systems, respectively.³ In a debit transfer, the flow of information providing the payment instructions moves in opposite direction to the flow of funds. For example, the payer writes a cheque to the payee as payment for the goods or services being delivered to him. The cheque goes from the payer to the payee, to the payee's bank where the cheque is deposited, to the payer's bank who pays the cheque if there are sufficient funds in the payer's account.⁴ If the payer's account has insufficient funds, then the cheque is returned to the payer following the same route but in reverse order. This transfer system involves some risk to the payee, who may not be able to get paid for delivering his goods or services to the payer, and extra cost if the check is returned to the payer.

In a credit transfer, the flow of information providing the payment instructions and the flow of funds move in the same direction. It is similar in structure to direct transfer of cash from the payer to the payee, except that it involves a financial intermediary or a bank. In this case, the payer instructs his bank to transfer funds from his account to the payee's account either in the same bank as illustrated in **Figure 3** or in another bank.⁵ The credit

³ This draws on Humphrey and Sato (1995).

⁴ The involvement of a third party for clearing and settlement is excluded here.

⁵ The latter requires clearing and settlement facilities, which are not shown in Figure 3. This will be discussed in detail below.

transfer process proceeds only after the payer's bank has authenticated the payment order it received and has determined that there are sufficient funds or credit in the account of the payer. Thus, in a credit transfer, funds that are received in the payee's account are deemed good and final funds, that is, they can be immediately used. It solves one of the biggest problems associated with the use of debit-transfer, check-based system – return item problem. This makes credit transfer simpler operationally and less risky than debit transfer.

Payment Media

Non-cash payment medium can be paper-based or electronic-based. Cheque is a common paper-based, non-cash payment instrument. It is a debit transfer instrument. It may be used for face-to-face or remote transactions and for any sizes of payments. Processing of payment may be done manually or by high-speed computer if the cheque contains machine-readable characters. A paper-based money order is an example of a direct credit transfer instrument involving a payment to a specified recipient.

Electronic payment instruments involve the transmission of payment instruction through electronic means without reliance on paper processing or shipment.⁶ These are also generally called ***electronic money***, which includes electronic cash, among others.⁷ There are debit and credit transfers that can be done through paperless or electronic payment instruments. An example of an electronic debit transfer is *bills payment* pre-authorized by the payer. In this case, the transfer process is initiated by payment instructions from the payee. One example of an electronic credit transfer is *payroll payment*, in which the payer initiates the transfer of funds by giving instructions to his bank to transfer funds from his account to the payee's account at his bank. Bills payment can also be done through electronic credit transfer. In developed economies, large-value transfers are typically done electronically.

⁶ Garner (1995) pointed out that the first electronic funds transfer occurred in 1860 in the US, using the telegraph that was introduced 16 years before. The Fedwire started in 1918 as a Federal Reserve telegraph system.

⁷ Electronic cash is discussed below.

Another electronic payment media are the card-based payment instruments, such as the credit cards, charge cards and debit cards, which consumers use to make small payments at the point of sale (POS). They are substitutes for cash and checks as payments media. Credit cards are normally used for face-to-face payment in establishments that accept them.⁸ Some credit cards are used to make both in-country and cross-border payments. Credit card issuers are mostly banks under license from credit service organizations, such as Visa and MasterCard.

In the credit card system, the issuer gives cardholders a credit line. When a cardholder uses his credit card to purchase goods or services, he is in effect authorizing the credit card issuer to debit the credit-line account and transfer the value to the account of the vendor. His payment obligation with the credit card issuer may be fully settled within a specified billing period, usually 30 days at no interest charge, using other payment instruments, or fully or partially rolled into a revolving credit liability. Clearly, there is a risk that the credit card issuer will not be paid by the cardholder.

Charge cards are functionally similar to credit cards, except that they do not have pre-set credit limit and that they are supposed to be fully settled at the end of the billing period.

Debit cards were developed to allow consumers to have access to their deposits at banks to pay for their purchases. It is, therefore, understandable that issuers of debit cards are limited to banks. Some debit cards have multiple functions, such as withdrawing cash and bills payment through automated teller machines (ATMs) and making transaction payments directly and immediately to a vendor through POS terminals. When a consumer uses his debit card to pay purchases at the POS, an electronic instruction is sent to the customer's bank account to debit his account and credit the vendor's account in a bank. If the consumer's funds in his bank are insufficient, then the payment transaction will not be

⁸ Some retailers, such as gasoline stations, grocery stores, etc., issue to qualified customers their own credit cards or charge cards that can be used to purchase goods or services only from them. The growth of e-commerce has somewhat lessened the need for a face-to-face contact when using credit cards.

completed. Thus, unlike the paper-based debit system, such as the check, the card-based debit system at the POS allows the vendor the potential advantage of verifying in real time that available funds in the cardholder's account are sufficient to make payment. As pointed out by Johnson et al. (1998):

"A debit card system has attributes of both a debit transfer system and a credit transfer system. Because the payee sends the instruction through its own bank's system for authentication and settlement by the payer's bank, it resembles a debit transfer system. Because the payer's bank may authenticate the instruction before the transaction is processed, it also resembles a credit transfer system."

Debit card system is safer and less costly than the credit card system. Those who cannot qualify for a credit card can easily qualify for a debit card because the latter is merely a facility to allow customers to have access to their bank deposits.

The latest type of payment instrument that has emerged and has increasingly gained acceptance in various economies is electronic cash or ***e-cash*** for short. It is designed primarily for individuals to make small-value payments that are more convenient than using other payment instruments, such as notes and coins. ***E-cash*** products are "stored value or prepaid products in which a record of the funds or value available to the consumer is stored on a device in the consumer's possession" (BIS-CPSS 2000). *E-cash* comes in two forms: prepaid cards, which are also called ***electronic purses***, and prepaid network/software-based products, which are also called ***digital cash***.

The advantage of electronic purses over cash payment is that the user can pay the right amount of his purchases without need for change. She also does not have to stock her wallet with so many bills. The first generation card-based *e-cash* uses magnetic type technology, which contains limited information. Because of this, these card-based e-money products are single-purpose payment instruments. Usually, the card issuer and the goods/service provider are the same party, such as those used for telephones and public transport. In contrast, the latest generation *e-cash* products are chip-based payment cards. The chip in a smart card can contain several pieces of information, making it possible for the card to be used for various payment purposes or for storing valuable information about

the cardholder. Unlike the earlier generation e-money products, the latest generation e-money products are reusable cards. The consumer may transfer value from his deposit account in a bank to his *e-cash* card either through ATM or specially equipped instrument (home/public telephone or computer). He can then make payment transactions with a vendor using the latter's appropriate electronic transactions devices. During a transaction, money is transferred from the *e-cash* card to the vendor's terminal. The vendor can transfer the money into his bank account through telephone call from his terminal using a modem. Some *e-cash* products can allow transfer of value from one card to another using especially equipped instrument.

In the case of prepaid network/software-based *e-cash* products, funds are stored in electronic form on the hard disk of a computer and are transferred over communications networks such as the internet. It employs specialized software installed on standard computer hardware using standard operating system (BIS-CPSS 1996).

E-money products may be classified according to whether they are identified or anonymous and on-line or off-line. **Identified e-money** enables the bank to track the money withdrawn from its account as it moves through the economy, whereas **anonymous e-money**, just like cash, leaves no transaction trail after money is withdrawn from the bank. **Online e-money** requires one to interact with a bank to conduct a transaction with a third party, whereas **offline e-money** allows one to conduct a transaction without having to directly involve a bank. A combination of these features produces four types of *e-money* (Table 3). Type D *e-money* completely mimics the characteristics of cash.

Process Flow

There are two payment processing methodologies: batch and on-line. Batch processing method processes or transmits a group of payment orders at discrete intervals of time within the day, say, 10:00 A.M., 12:00 P.M. or 8:00 P.M. On-line processing accesses the customer account for each transaction when the payment is processed making the entries to the customer account simultaneous with the processing of the transaction. This is less risky and faster processing method but more costly than batch processing.

Settlement

Settlement finality refers to the method and timing by which settlement takes place. It can be *immediate* or *provisional settlement*, the difference being whether the funds are immediately and irrevocably available to the payee, as normally happens in a credit transfer, or the funds can be made available to him only at a later date after going through a confirmation process, as in the case of check payment. Settlement may take place on a gross or net basis. With **net settlement**, running balances are calculated on a bilateral or multilateral basis for each participant vis-à-vis the other participants, and only the net amounts are settled at the end of a clearing cycle. The net position at the settlement time, whether debit or credit position, is called the net settlement position. Final settlement may occur at one or more discrete, pre-specified settlement times during the processing day. Hence, it is called **designated-time settlement (DNS) system**. On the other hand, in a **gross settlement system**, settlement of funds occurs on a transaction-by-transaction basis without netting debits against credits, typically in real time. In other words, both processing and final settlement of funds transfer instructions take place continuously in real time. This is called **real time gross settlement (RTGS) system**.

Each of these settlement systems has strengths and weaknesses. In gross settlement, settlement risk - the risk that settlement in a transfer system will not take place as expected - is greatly reduced. Indeed, the RTGS can contribute to the reduction of settlement risk in securities and foreign exchange transactions by providing a basis for **delivery-versus-payment (DvP)** or **payment-versus-payment (PvP)** mechanisms. DvP system is a mechanism in an exchange-for-value settlement system that ensures that the final transfer of one asset (e.g., securities) occurs if and only if the final transfer of another asset (e.g., cash) occurs (BIS-CPSS 2000). PvP, on the other hand, is a mechanism in a foreign exchange settlement system that ensures that a final transfer of one currency occurs if and only if a final transfer of the other currency or currencies takes place. RTGS, however, requires a larger amount of intra-day reserves or settlement balances to facilitate prompt settlement of payment. In the case of net settlement, small amount of intra-day settlement balances is required because only net balances are settled. However, there is a risk that participants

with net obligations at the end of the clearing day will be unable to settle them. **Table 4** compares the *gross*, *bilateral* and *multilateral settlement systems*, while **Figure 4** illustrates the associated payment flows.⁹ The differences among these settlement systems can be seen from the number and value of transfers generated by each system. Gross settlement requires more number and value of transfers than the other two systems. On the other hand, multilateral net settlement system has the least number and value of transfers among the three systems.

⁹ This is adopted from the Bank of Canada and the Department of Finance (1997).

III. EMERGING PAYMENT SYSTEMS IN SOME INDUSTRIALIZED COUNTRIES

This section discusses the payment instruments and payments services currently available in some industrialized countries.

A. Payment Instruments

Cash is currently used in all countries along with other payment instruments, albeit at varying degrees. Currency is usually used for face-to-face retail payments. Although widely used, cash payment accounts for a much smaller share in the total value of retail payment. Industrialized countries usually rely less on cash for payment than developing economies because they have a wider menu of acceptable payment instruments. There is, however, no systematic information on the extent of cash usage in both industrialized and developing countries. In the absence of any survey data, the only proxy variable that can be used to describe the extent of cash usage in a country is the amount of notes and coins in circulation.

The amount of notes and coins or currency in circulation per person greatly varies across industrialized countries (see **Table 5**).¹⁰ Both Japan and Switzerland have the highest currency per person. The trends in currency per capita in these countries during the period 1990-1998 were mixed; that is, it rose in some countries and declined in others. Very low crime rate in Japan could partly explain why Japan has one of the highest cash per capita (Humphrey *et al.* (2001). What is notable though is that both Japan and the US realized a marked increase in the amount of currency per person during the indicated period. This does not necessarily mean that Americans and Japanese have increased their preference for holding cash over the years. It could be that a large portion of the US dollar and Japanese yen is held outside these countries.¹¹

¹⁰ These countries are members of G-10.

¹¹ Humphrey (1995) noted that anywhere from one-third to one-half of the value of dollars outstanding is held outside the country. More recently, the Japanese authorities have been promoting the internationalization of the yen.

The currency-to-GDP ratio is another measure of the extent of cash usage in the economy. This ratio ranges from 2.8 percent to 11.0 percent among industrialized economies. Japan has an exceptionally large amount of currency in circulation relative to the size of its economy. It is followed by Switzerland. Except Sweden and Switzerland, economies that realized an increase (decrease) in the amount of currency per person during the period 1990-1998 also experienced an increase (decrease) in the currency-to-GDP ratio.

The share of currency in narrow money is expected to decline over the years, especially during the period of rapid innovation in the payment system. This seems to be the general trend among industrialized countries during the period 1990-1998 with the exception of Italy and US. The share of currency in narrow money slightly rose in Italy, whereas it markedly rose in the US during the indicated period. Again, it should be pointed out that a large portion of the US dollar is used outside the country, which could have been caused by increasing dollarization occurring in many countries.¹²

Systematic information on usage of cashless payment instruments is available for industrialized countries. **Table 6** presents the volume, value and average value of the various types of cashless payment instruments for highly industrialized countries in 1998. In general, checks, payments by card, paper-based credit transfers and direct debits are used for retail payments, whereas paperless credit transfers are used for large value payments.

There are similarities as well as differences in the use of various non-cash payment instruments across industrial countries listed in Table 6. The US relies most heavily on cheques for retail payment, accounting for 71 percent of the total volume of cashless payments made in 1998. Canada, UK, France and Italy also show high reliance on check payment, albeit not as high as that of the US. In contrast, Japan, Netherlands, Sweden, Switzerland, Germany and Belgium are very low users of checks. The average value of checks issued greatly varies across countries, ranging from a low of US\$399 in the US to high of US\$38,068 in Japan. Interestingly, check payment accounts for 96.5 percent of the

¹² For the Philippine case, see Yap (2001).

total value of non-cash transactions in Canada, indicating that it has been used for medium-to large-value transactions.

Canada relies most heavily on payment by card, accounting for 48.5 percent of the total volume of its cashless payments. Other countries also show significant reliance on payment by card. The exception is Germany, whose share of payment by card in the total volume of cashless payments accounts for only 5.1 percent. The average value of payments by card ranges from US\$24.27 to US\$188.67.

Among the industrialized countries, Japan relies extensively on paper-based credit transfers, accounting for 33 percent of the total volume of cashless payments and averaging US\$343.86 per transaction. Switzerland is also a significant user of paper-based credit transfers. In contrast, other countries hardly make use of paper-based credit transfers.

The US and Canada are the lowest users of paperless credit transfers. Although the share of paperless credit transfers in the total volume of cashless payments is very low in the US, nevertheless its share in the total value of cash payments is very high at 88.5 percent owing to the large values of the transactions. In contrast, Japan and European countries, except Switzerland, are heavy users of paperless credit transfers. These transfers account for a significant share in both the total volume of cashless payments, ranging from 34.8 percent in Japan to 54 percent in Belgium, and value of total of cashless payments, ranging from 92.7 percent in Italy to 97.4 percent in Japan. The average value of paperless credit transfers widely varies across countries – the highest is more than US\$200,000 (US) and the lowest less than US\$1,000 (Canada).

Aside from credit transfers, both Switzerland and Germany also rely extensively on direct debit transfers, accounting for 49.9 percent and 39.5 percent, respectively, of the total volume of cashless payments. Direct debit transfers are convenient to use for recurring payments. The other significant users of direct debit transfers are Netherlands and the UK, accounting for 28.5 percent and 19.4 percent, respectively, of the total volume of cash transfers. The US appears to be the lowest user of direct debits. The average value of a

direct debit transfer is US\$5,576.68 for the US and varies between US\$158.23 and US\$1,274.51 for other countries. It has been noted that the relative share of direct debits in non-cash payments has risen while GIRO transfers have declined in those countries that utilize both payment instruments (BIS-CPSS 1999). The introduction of efficient electronic processing technology and overdraft lines on deposit accounts and the reduction in the number of restrictions on the functional use of pre-authorized debits (PADs) in European countries have facilitated the growth in direct debit transfers.

The discussions above point out that while it is well known that the debit transfer instruments, such as checks, involve more risk of fraud and loss than credit transfer instruments, industrialized countries still use both of them, albeit at varying degrees. For instance, the US and to a certain extent Canada and UK are using debit transfer instruments more extensively than credit transfer instruments, whereas Continental European countries and Japan rely more on credit transfer instruments - either paper-based or paperless - than debit transfer instruments. Humphrey *et al.* (1995) attribute the difference in the degree of reliance on the various payment instruments across countries to the structure of their banking system. A credit transfer system, such as the GIRO, requires either a concentrated banking system or a strong cooperation among banks to work properly.¹³ Some European countries have highly concentrated banking system, which significantly reduces the cost of credit transfers. In the absence of a highly concentrated banking system, some European countries have turned to national institutions, such as the postal service, which offers GIRO payments through a nationwide network of branches (BIS-CPSS 1999). Japan has also a nationwide postal savings banking system that supports GIRO payments. These conditions are absent in the US, which, because of regulations, has less concentrated banking system and its banks are either local or regional in scope. In a situation like this, it is very difficult to secure cooperation from widely dispersed banks.

Debit card systems have increasingly become more popular in industrialized countries and emerging market economies. **Table 7** shows that except for UK, European

¹³ The word GIRO is derived from the Greek and reflects the flow of funds around a ring, making a circle (Humphrey *et al.* 1995).

countries rely more heavily on cards with debit functions than cards with credit functions. The reverse is true in the case of the US and Japan.

E-money is lately gaining headway in industrialized countries and a few emerging market economies (see **Annexes A and B**). Most of the *e-money* products introduced are card-based with multi-functional payment features and can be loaded from ATMs. Only a few have multi-currency and transferability features.

The low value limit – mostly less than US\$400 - on card suggests that the *e-money* products are designed for consumers' retail transactions. The level of diffusion of the *e-money* products is already high for some countries, such as Austria (4.8 million cards or 0.59 card per inhabitant), Belgium (7 million cards or 0.68 card per inhabitant), Germany (60 million cards or 0.73 card per inhabitant), Hong Kong (5.6 million cards or 0.90 card per inhabitant), Netherlands (13 million cards or 0.83 card per inhabitant), Portugal (3.4 million cards or 0.35 card per inhabitant), Singapore (3.2 million cards or 0.94 card per inhabitant), Spain (5.7 million cards or 0.14 card per inhabitant), and Switzerland (3 million cards or 0.42 per inhabitant). These are supported by a number of merchant terminals, most of them in supermarkets, gasoline stations, and grocery stores.

Most popular among card-based e-money products are Mondex and Visa Cash. Mondex is chip-based and can support card-to-card transfers without going through any central clearing requirement. Visa Cash is similar to Mondex, except that payments are routed through a central facility, which is usually provided by a bank. eCash of Digicash, which collapsed in November 1999, is an example of network-based e-money products. It is similar to Visa Cash in that eCash can be transferred from one person to another through an intermediary bank. So far, only France, Spain, United Kingdom and United States have network-based *e-money* products, which are still on a very limited scale. Many are expecting that this will quickly spread the moment service providers are able to improve the security features of their products. For instance, it is estimated that as much as 20 percent of total household expenditure will be taking on the internet by 2005 (Holland and Cortese

1995). Most recently, Microsoft and AOL Time Warner are racing to develop internet-based e-wallets to corner a big share of this market.

B. Payments Services

Funds transfer systems differ considerably across industrialized countries in terms of type, ownership, participants, processing method, settlement system, membership rules, degree of centralization, pricing and closing time for same day transactions. **Table 8** gives a summary of the features of the existing funds transfer systems of industrialized countries. Most countries have two or more funds transfer systems. Although most funds transfer systems in these countries are dedicated to either retail or wholesale transactions, some accommodate both transactions. Some funds transfers systems have only direct participants, while others include both direct and indirect participants. *Large-value transfer systems (LVTS)* typically use RTGS, while retail transfer systems (RTS) usually utilize multilateral netting. In general, RTGS systems are owned and operated by the central bank, while DNS systems tend to be owned and operated by private banks. However, there are RTGS and DNS systems that are jointly owned and operated by the central bank and private banks. Most systems are centralized, i.e., one processing center only, and apply full cost pricing for their services. Closing time for same-day transactions varies considerably among the different funds transfer systems even within a country.¹⁴

One of the issues that arise in RTGS system for large-value transfers is the provision of central bank intra-day credit facility. The SIC of Switzerland and BOJ-NET of Japan do not have such credit facility. On the other hand, the ELLIPS of Belgium, TBF of France, EIL-ZV of Germany, BI-REL of Italy, TOP of the Netherlands, RIX of Sweden, CHAPS of UK and Fedwire of US have central bank intra-day credit through overdraft facility. Except for the Fedwire, overdraft facility is fully collateralized.

¹⁴ Aside from the countries enumerated in Table 7, RTGS systems are now in place in Thailand, Hong Kong, Korea, Australia, New Zealand, Saudi Arabia and Czech Republic.

Some innovations have recently been introduced to the processing procedure of cheques. Electronic cheque presentment (ECP) has been introduced for cheque collection and return, making the physical movement of cheques unnecessary. In Germany, cheques with a value of less than DEM 5,000 are cleared electronically and are no longer presented in paper to the drawee bank. A similar procedure is done in France for cheques with a value of less than FRF 5,000. France is planning to have all cheques exchanged electronically through SIT¹⁵ by 2002. Some countries, however, still require physical movement of paper cheques even if they use ECP. Other countries allow truncation of the physical movement of the check to reduce the costs associated with cheque collection and return.¹⁶ However, banks usually agree on the value limit of the cheques that would qualify for truncation. Some countries that allow cheque truncation for low-value items are Belgium, Germany, France, UK, Italy and USA. Here in Asia, Korea is planning to implement cheque truncation.

One may ask at this point the relative costs of using the various payment instruments. Unfortunately, studies on this issue are very few for lack of data. Wells (1990) attempted to compare the cost for paper-based (check) payment and electronic payment (automated clearing-house or ACH) in the US and found that the former totaled US\$2.93 (payor – US\$1.39; payee – US\$1.25; and bank US\$0.29), while the latter amounted to only US\$1.31 (payor – US\$0.80; payee – 0.23; and bank – 0.28). In Norway, Flatraaker and Robinson (1995) estimated that check payment cost US\$2.15 compared to only US\$0.63 for debit card electronic funds transfers at the point of sale (EFTPOS). According to Humphrey *et al.* (2001), Norway would have saved about 0.6 percent of GDP (or US\$188 per person) per year if it moves from an all paper-based noncash payment system to one where all noncash payments are electronic.¹⁷ There is, therefore, a great incentive for a country to switch from a predominantly paper-based to a predominantly electronic paper system. However, the speed of that switch can be affected by price and nonprice incentives. The latter includes clear legal framework and rules and regulations,

¹⁵ Interbank Teleclearing System.

¹⁶ The cheque is said to be truncated if the physical movement is halted at some point in the process (e.g., point of sale, the bank of first deposit or collection intermediary) before it reaches the paying bank.

¹⁷ This refers to savings in bank costs only.

the number of EFTPOS and *e-money* terminals, the number of firms accepting electronic payments, among others. In their study, Humphrey et al. (2001) found that users of payment instruments in Norway are quite sensitive to the price of payment services. The relatively low price of electronic payment system compared to paper-based payment system explained in part Norway's rapid shift from the latter to the former. More specifically, the share of noncash payment in electronic form in Norway rose from 10 percent in 1987 to 60 percent in 1996. The rapid technological advances and changes in legal framework aimed at supporting e-commerce will likely accelerate this process in developed and emerging economies.

E-cash is definitely more efficient than credit cards when it comes to small payments. It has been estimated that global transactions of less than US\$10 each amount to over US\$8 trillion a year (Akst 1996). This is the potential size of the market for *e-cash* providers.

IV. PAYMENT SYSTEMS IN THE PHILIPPINES

This section consists of three parts. The first part describes the payment instruments currently available in the Philippines. The second part discusses the services for noncash payments. The third part assesses the efficiency and risk of the existing payment system.

A. Payment Instruments

The Philippines currently uses both cash and noncash payment instruments. These are discussed in detail below.

1. Cash Payments

Currency is the most convenient and popular form of payment for everyday, low-value transactions in the Philippines. By law, the Bangko Sentral ng Pilipinas (BSP), which is the country's central bank, is the sole issuer of notes and coins in circulation. Coin is produced by the BSP mint facility in 5, 10, and 25 centavos, and 1 and 5 peso denominations.¹⁸ Notes are printed in 10, 20, 50, 100, 500 and 1000 peso denominations. Although the outstanding amount of currency in circulation and currency per capita had been rising during the period 1990-1999, however, the share of currency in M1 had been generally declining (**Figure 5**). This is consistent with the growing monetization of the economy and deepening of the financial market. As of December 1999, currency in circulation stood at PhP218.5 billion and accounted for 55 percent of M1 and 16 percent of M3. Currency per capita amounted to PhP2,845.

Table 9 compares the extent of cash usage in the Philippines with those of other East Asian economies. Currency per capita in US dollar terms rose during the period 1991-1999 in all six East Asian economies. It substantially differs across countries and seems to be correlated with per capita income. Singapore has the highest cash per capita, while Indonesia the lowest. The Philippines ranks second lowest in cash per capita. In contrast to

¹⁸ The BSP is currently mulling of minting 10-peso coins to replace the 10-peso bills.

highly industrialized economies, East Asian economies, with the exception of Singapore, generally hold lower currency per capita.

Cash as a percentage of GDP of East Asian economies is not substantially different from each other. It ranges from 5.3 percent to 10.1 percent in 1999, and is well within the ranges that obtain in industrialized countries. A remarkable difference though is the percentage of cash in M1, which is high in all the six East Asian economies compared to that of industrialized economies. This is to be expected of developing and emerging market economies.

The direction of the movement of the share of currency in M1 in East Asian economies during the period 1991-1999 was mixed. It rose sharply in Korea, Thailand and Indonesia while it declined markedly in Singapore, the Philippines and Malaysia. It is to be noted that the banking systems of Korea, Thailand and Indonesia were hardest hit by the East Asian financial crisis, which could partly explain the rising share of currency in M1 in these countries during the period indicated.

2. Non-Cash Payments

(i) Cheques

Cheques, either private or managers' cheques, are the most commonly used non-cash payment instrument in small-to-large value transactions in the Philippines. The volume of cheque payments processed by the Philippine Clearing House Corporation (PCHC) had been rising since 1991 (**Table 10**). It dipped in 1998 as a result of the East Asian financial crisis, but quickly recovered in the following year. In 2000, the PCHC processed 117.6 million cheques, or nearly half a million cheques per clearing day. The total clearing value of these cheques amounted to PhP16.1 trillion, which was five times the country's GDP.¹⁹ During the period 1991-2000, the number of cheques processed at the

¹⁹ This does not include the number of checks cleared through the BSP regional clearing units.

PCHC per person rose from 1.2 to 1.5. In Japan, the number of cheques written per person per year was about 3, while in the US, more than 200 (Humphrey 1995).

For 2000, the value of the cheques averaged PhP136,998 or about US\$2,745. This is significantly higher than those of some industrialized countries, such as the US, UK, France and Italy, which also heavily rely on cheque payment but mainly for small value transactions.

(ii) Electronic Payments

Although electronic payments in the country are still at their nascent stage, nevertheless they have been rapidly gaining popularity especially in the last five years for several reasons. First, the volume of financial transactions has increased tremendously in the 1990s and the number of domestic and foreign banks has increased following the deregulation of the banking sector, prompting the financial system to innovate its payment system. Second, new technologies for the payment system have become available at affordable prices. Third, the new liberal policy environment has promoted growth in ICT, which is an important infrastructure for electronic payment system. The discussion below focuses on five electronic payment instruments.

(a) Philippine Domestic Dollar Transfer System (PDDTS)

PDDTS is an electronic credit transfer facility that actually has two separate sub-systems: one that accommodates dollar transactions and the other, peso transactions. To avoid any confusion, PDDTS shall henceforth refer only to dollar transactions, while the facility for peso transactions shall be called Electronic Peso Clearing System (EPCS).

PDDTS accommodates both on-line, real time and end-of-day batch netting transfer. The former usually involves large value transactions done at the Philippine Dealing System

(PDS) while the latter includes mostly retail transactions.²⁰ For the real-time transactions, the Philippine Central Depository, Inc. reported that a total of 117,065 single-sided transfer instructions with a total value of US\$85.2 billion were processed for the PDDTS for the period July-December 1999. The average value per transaction was about US\$730 thousand. PCHC reports information on end-of-day batch netting transactions (**Table 10**). While the volume of transactions had remained stable at around 100,000 annually during the period 1994-1999, the total value of the transactions had risen to about US\$350 million a year in the last three years. In 1999, the value of the transactions averaged US\$3,667.

(b) Electronic Peso Clearing System (EPCS)

EPCS accommodates both wholesale and retail transactions executed by banks on behalf of their clients. This facility is usually used for recurring payments.

Both the volume and value of transactions through the EPCS system had been consistently rising during the period 1994-1999. A total of 478,537 transactions were recorded in 1999 with a total value of PhP147 billion (**Table 10**). The average value per transaction was PhP308,649 million.

(c) Multi-transaction Interbank Payment System (MIPS)

The Philippines has a very active interbank call loan market, which normally involves large value transactions. To support such transactions, MIPS1 was developed. It was an electronic funds transfer system that was used solely for interbank peso fund movements and replaced the paper-based interbank call loan funds transfer system. The number of matched transactions had been fluctuating during the period 1994-1999 (**Table 10**). In 1999, it reached 168,280 with a total value of PhP3.6 trillion or an average of

²⁰ In the Philippines, all spot dollar/peso transactions are executed electronically through the PDS, which can be accessed only by member-banks. At the PDS, the value of transactions averages about US\$150 million a day during normal times. The peso side of the deal is settled either through manager's cheques or through the electronic peso clearing system (see below).

PhP21.6 million per matched transaction. In July 2001, the BSP introduced MIPS2, which is an RTGS system.²¹

(d) **Payment Cards**

The use of plastic cards as a payment medium has become increasingly popular in the Philippines, especially after the liberalization of the banking system. With increasing competition in the wholesale credit market, banks have started to turn to the retail credit market and fee-based services as new sources of income.

Credit cards are issued mainly by banks. The most common are Visa, MasterCard, JCB and Diners Club. Some local banks issue their own credit cards (e.g., Unicard and Bankard). Although credit cards have become increasingly more popular, still information about the industry is hardly available to the general public. Presently, the BSP does not require banks or their credit card subsidiaries to report loan exposure to credit card holders. **Table 11** summarizes some information reported in Fuentes' book (1999). As of December 1997, there were about 2 million credit card holders, which constitutes 2.8 percent of the total population, and more than 120 thousand merchants accepting credit cards for payment of goods and services. Gross billings for the year 1997 amounted to PhP118.4 billion. BSP's survey results show that the exposure of commercial banks to credit cards (i.e., receivables) grew rapidly both in absolute terms - from PhP2.4 billion at end-1994 to PhP38.4 billion at end-1997 - and as a percent of their total loan portfolio – from 0.37 to 4.8 percent for the same period (**Table 12**).

Today, several large banks issue internationally accepted credit cards, such as Visa and MasterCard. Because of stiff competition, credit card issuers have relaxed some of their requirements, such as lower required minimum annual income of card applicants, lower annual dues, etc. Many have also added enhancements to their credit cards, such as link-up to card holders' savings and checking accounts, free medical check-up, easy repayment scheme, cash advance, etc., to attract more clients.

²¹ This is discussed in detail below.

Debit cards allow access to funds already in customers' accounts. In the Philippines, all commercial banks and a few thrift banks are issuers of debit cards, which can be used in Automatic teller machines (ATMs). ATMs allow cash withdrawals, deposits, balance enquiries, bills payment, transfers between accounts and ordering cheque books. The first ATM was installed by the Philippine National Bank in 1980. However, the Bank of the Philippine Island (BPI) was the first to integrate the ATMs with its banking services in 1983. Other banks soon followed suit, but it was only in the 1990 that some banks decided to form a shared ATM network system to minimize the cost of ATM operations. As of December 1999, there were three ATM networks, namely Megalink, BancNet and Expressnet, with a total of 70 member banks and 3,741 ATMs spread across the country. The number of cardholders significantly grew from 370,000 in 1990 or 0.006 per person to 11.09 million in 1999 or 0.14 per person. The total transaction volume likewise increased from 1.5 million in 1990 to 165.5 million in 1999 or from an average daily transaction volume of 6,167 to 456,544 (**Table 13**).²² Because of interconnection among ATM networks, several ATMs have a facility that allows access to ATM cardholders belonging to other ATM networks. ATM cardholders make ATM transactions using a personal identification number (PIN). We would particularly highlight here the significant growth in the level of *e-money* diffusion during the indicated period. Although it is still a far cry from the level of *e-money* diffusion found in some countries discussed in the previous section, nevertheless, it shows the country's large potential for further *e-money* diffusion in the coming years.

An ATM card used to be an instrument to facilitate cash withdrawal and, in some cases, deposit at any time in a place where there is an ATM unit without the user having to go to a bank that opens only for 6 to 8 hours a day for five days a week. Recently, the three ATM networks added a debit function to their ATM cards. The three ATM networks have developed their own point-of-sale (POS) system,²³ making it possible for cardholders to pay

²² The data have not been disaggregated. However, most of the ATM transactions are cash withdrawals, balance enquiries and transfers between accounts.

²³ Paylink for Megalink; for Bancnet; and Express Payment System for BPI.

their purchases in several retailers in the country by using their ATM cards to electronically transfer funds from their accounts to the retailers' accounts. All electronic funds transfers at point of sale (EFTPOS) in the Philippines are PIN-based and debit customers' accounts in real time. EFTPOS terminals are normally integrated with retailer cash registers. Data provided by Megalink show that there were 447,565 EFTPOS transactions in 1999 and 390,959 in 2000 or an average daily transaction volume of 1,224 and 1,067, respectively (**Table 14a**).²⁴ Bancnet, on the other hand, reported that it had 206,162 POS transactions as of 2000 or an average of 565 transactions per day. The total value of the transactions amounted to PhP173.7 billion or an average of PhP842.5 per transaction (**Table 14b**).

Recently, three banks in the country, namely Equitable PCI Bank, Union Bank of the Philippines, and Standard Chartered Bank, have introduced the Visa Electron, which is an international ATM and debit card linked to a depositor's savings or current account. The client's transactions abroad will be converted to pesos based on Visa's exchange rate at the time of transaction. Other big banks in the country that have many clients who make transactions abroad are expected to follow suit.

Aside from the EFTPOS system, the ATM networks have also developed a bills payment system (BPS), which allows ATM cardholders to pay their bills, such as credit card bills, telephone bills, electric bills, insurance bills, etc., through the ATMs. Bancnet ATMs receive an average of 50,000 bills payment per month, and the other two ATM networks are not far behind. Although there are already quite a number of clients using the BPS, still the number of users falls below banks' expectations. For Megalink, for instance, the number of debit bills transactions amounted to only 3,392 in 1999 or an average of 9.3 transactions per day and 3,051 in 2000 or an average of 8.4 transactions per day. Although some of the debit bills transactions were done through the Phonelink system of Megalink, still they constituted a small proportion of the total number of transactions through said system. Apparently, bank clients still feel secure if they can immediately obtain the official receipts upon payment of their bills.

²⁴ Data on the value of POS transactions were not made available to the author.

E-cash has just been introduced in the Philippines. So far, only *e-cash* in the form of prepaid cards have emerged. Most of these are single-purpose payment instruments and non-reusable. Examples of prepaid cards are the prepaid phonecards of telephone and cellular phone companies, the Metro Rail Transit Authority and recently, the Light Rail Transit Authority. One reusable prepaid card is the *e-pass* used for paying tolls at the South Super Hi-way. Motorists can re-load their *e-pass* at dedicated automatic teller machines located at Shell gasoline stations along said hi-way. Most recently, multi-purpose, reloadable *e-cash* has been introduced in the country. One example is the *BPI Express Cash* of the Bank of the Philippine Islands (BPI) that can be used in over 13,000 establishments nationwide. Anybody may apply for it and pay a one-time processing fee of PhP100. Once approved, the cardholder must load at least PhP500 but not more than PhP10,000 into her card and withdraw or reload cash either over-the-counter or through BPI and BPI Family Bank ATMs. Another example is the *Smart Money* card of Smart Communications, Inc., one of the leading cellular phone companies in the country, which offers the card to their Smart Buddy pre-paid subscribers. It is developed in cooperation with 1st e-bank, a sister company of Smart Communications and MasterCard. The cardholder may use it to reload airtime and text credits to her or someone else's cellular phone or transfer value to another Smart Money card. She can also use it for making face-to-face (in-store) or remote purchase goods and services by cellular phone. The card can be reloaded over-the-counter at designated centers or through a cellular phone. Both the *BPI Express Cash* and *Smart Money* cards are using the same MasterCard Electronic card technology. The procedure for using these cards in face-to-face transactions is similar to that of a debit card. The popularity of this technology among banks is the float they realize from it.

(e) Automatic Payroll Deposit (APD)

Employees used to receive their salaries either in cash or in cheque only. This is no longer the case today. Most medium- and large-sized firms as well as government agencies now use the automatic payroll deposit (APD) method. This payment method speeds up the payment of salaries and wages from businesses and government agencies to their

employees by placing the amounts due to employees each pay period on a computer diskette and delivering the diskette to a depository institution, where a computer transfers payroll amounts to each employee's deposit account. APD, therefore, is a debit payments system that bypasses the use of cash or check payment. There has been an increase in the use of automatic payroll deposit (APD) facility by businesses and government entities in the 1990s. APD normally uses savings deposit accounts of employers and employees, and in most cases banks automatically give employees ATM cards. With the convenience afforded by ATMs, depositors prefer to park their money in their savings account and withdraw only the amount needed for their transactions. The rapid use of the APD partly explains the significant rise of the share of savings deposits in total deposits in the 1990s.

B. Services for Noncash Payments

1. Cheque Clearing Operations

There are two cheque clearing systems in the Philippines. One is operated by the Philippine Clearing House Corp. (PCHC) and the other by BSP. Most of the cheques issued in the country are processed by the PCHC.

(i) PCHC Clearing Operations

PCHC is owned and operated by the Bankers Association of the Philippines (BAP). It is governed by a Board of Directors, which consists of 11 members including the chairman. The Board approves the rules, regulations and procedures of PCHC.

PCHC has three classes of participants: direct clearing participants, which include commercial banking institutions which are members of the BAP and non-commercial banking institutions; indirect clearing participants, which are non-commercial banks; and special category, which consists of non-commercial banks existing as "direct" or "indirect" participants prior to 13 May 1999. It has one processing site located at the BSP complex in

Manila. It is responsible for clearing cheques drawn on institutions in Metro Manila and nearby areas within 150 kilometers from Manila in coordination with the BSP for the net settlement. Only fully MICR-encoded cheques and other properly encoded demands are admitted by PCHC for clearing. It fully recovers its cost of operations by charging participants processing fees.²⁵ The following is the schedule of processing fees:

- | | |
|------------------------------|---------------|
| 1. Item Fee | |
| • Outward item | PhP 0.40/item |
| • Inward item | 0.40/item |
| • Inter-branch outward | 0.35/item |
| • Inter-branch inward | 0.35/item |
| 2. Minimum monthly charge | |
| • Greater Manila branch | 1,500/branch |
| • Regional branch | 800/branch |
| <u>Or</u> | |
| • Bank level charge of | 10,000/bank |
| whichever is higher | |

Clearing is done through the Electronic Cheque Clearing System (ECCS) of the PCHC. However, despite the electronic transmission, the physical cheques must still be delivered to the PCHC facilities to meet clearing requirements. A detailed description of the process is helpful.

Figure 6 outlines the processes involved in cheque clearing and settlement. A payer (individual or corporation) purchases goods from a payee (individual or corporation) on day $T+0$.²⁶ The former issues a cheque drawn against her account at a branch of a bank to the latter in return for the delivery of the goods. The payee deposits the same cheque in her account at a branch of another bank (payee's bank) in the same day before cut-off time and obtains a *provisional credit* in its account for the same value of the cheque.²⁷ The same branch collates all the cheques it receives before the cut-off time and sends them in batches to the bank's central clearing unit that handles several branches of the same bank. The branch's cut-off time for receiving cheques from their clients for clearing on the same day

²⁵PCHC does not receive any subsidy from the government. It pays rent for the space it occupies at the BSP complex.

²⁶ The days here refer to working days.

²⁷ The payee's bank is alternatively called "presenting bank" or "bank of first deposit", while the payer's bank is alternatively called "drawee" or "paying bank".

depends on its distance from the bank's central clearing unit. The latter, in turn, usually requires all physical cheques to be delivered to it not later than 3:00 PM. The bank's central clearing unit sorts out the cheques and groups them into 100 or less items for data entry and electronically transmit them in batches to PCHC not later than 4:00 P.M on the same clearing day. Other banks do the same. PCHC's ECCS processes the information, performs a multilateral netting and electronically sends each bank's total debit and credit to the BSP for settlement not later than 6:00 PM. Depending on the results of the day's clearing activity, the bank's demand deposit account (DDA) with the BSP will be debited/credited. The BSP broadcasts the DDA balances of each bank in the evening of the same clearing day.

In the meantime, the physical cheques are sent in bundles of 100 items or less to PCHC for processing not later than 5:00 PM on the same clearing day. All items are processed by high-speed document processors, which are equipped with the latest MICR read technology. Results are matched with the information electronically transmitted by the bank's central clearing unit. The physical cheques are available for pick-up by participating banks not later than 10:30 PM on regular days. The paying bank then processes all the inward cheques in its central clearing unit and electronically debits their clients' accounts including the payer's account mentioned above. The following day, T+1, the physical cheques are forwarded to the respective branches for inspection and verification. If the payer's account has sufficient funds and the cheque is deemed valid, then the process stops and the cancelled cheque is later sent to the payer by mail together with the monthly report on the balance of her checking account. However, the presenting bank can make the funds available to the payee only on T+2, although it gives value to the same deposit on T+0. In other words, the bank customer is given access to her funds three days after she deposited the cheques in her bank. In effect, the bank enjoys a 2-day float. In case of a regional cheque, that is, cheque drawn on an institution outside Metro Manila and nearby areas within 150 kilometers from Manila, the bank customer is given access to her funds seven days after she deposited the cheques in her bank in Metro Manila.

There are cases in which the drawee bank returns cheques to the presenting bank and the corresponding payments are reversed for the following reasons: they bear the forged or unauthorized signatures of the drawers; they are drawn against closed accounts; they are drawn against insufficient funds; payment thereof has been stopped; they are post-dated or stale-dated or out-of-date; they are cashier's/manager's/treasurer's cheque of the drawees which have been materially altered; and they are counterfeit/spurious cheques. The drawee bank places the return items in the MICR Document Carrier Envelopes and routes them back to the payee's bank through the PCHC. The reversal of payment is done through the same process described above, except for items that have been the subject of material alteration or items bearing a forged endorsement and/or lack of endorsement, which need to be returned by direct presentation or demand to the presenting bank.

In case of insufficient funds, the drawee bank normally contacts the cheque issuer concerned in the morning of T+1 and requests him to deposit an amount to cover the value of the cheque plus PhP650 penalty. If the cheque issuer complies with this requirement, the cheque will no longer be returned. Alternatively, the drawee bank may provide the payor a prearranged and automatic account overdraft for a fee so the cheques need not be returned unpaid.

There are specialized cheques that solve the return item problem. Examples are certified cheques issued by a bank and money order issued by a nonblank.

(ii) BSP Regional Clearing Units

BSP provides regional clearing facilities for all types of cheques and demand drafts drawn by regional and provincial branches of banks not covered by the PCHC clearing operations. The BSP regional clearing units operate under the rules, regulations and procedures drawn up by BSP for all participating banks/branches. PCHC participants are also the participants of the BSP clearing operations. Multi-lateral netting is done both intra- and inter-regional.

There are 27 BSP regional clearing units all over the country that have on-line connections with the BSP headquarters in Manila for settlement. Thus, clearing balances of participating banks or branches of banks are debited or credited, as the case may be, to the demand deposit accounts of banks' respective head offices in the BSP in the afternoon of the same day the demands are presented for clearing.

2. PDDTS

The overseas Filipino workers (OFWs) have been one of the biggest foreign exchange earners since the mid-1980s. To facilitate the handling of remittances of OFWs, the Bankers Association of the Philippines (BAP) and the PCHC established the Foreign Exchange Clearing and Settlement System (FXCSS). Clearing was done by PCHC and settlement by BSP. There was a cap on the amount of dollars per transaction that could be transferred. After the liberalization of the foreign exchange market, the financial community saw the need for expanding the FXCSS to accommodate large dollar transactions of banks and their clients. Thus, FXCSS was later replaced by PDDTS, which is an electronic funds transfer facility designed to move US dollar funds from one Philippine bank to another on the same day without having to go through correspondent banks in the US.²⁸ It is no longer limited to OFW transactions, but also include dollar transactions at the PDS.

PDDTS is jointly operated by the BAP, PCHC and Citibank-Manila. The latter acts as the settlement bank. All participants are required to have settlement accounts in US dollars with the Citibank.

As mentioned earlier, PDDTS accommodates both RTGS and end-of-day batch netting transfer systems with final settlement on the same day. The Philippine Central

²⁸ A cheque issued by a local bank, say Metro Bank, to a resident who deposits the same in his bank, say Union Bank, will be sent to the latter's correspondent bank abroad for clearing. It usually takes between 30 and 45 days for the same cheque to clear.

Depository, Inc. provides the electronic communications system for the RTGS, while PCHC handles the multilateral netting system.

Figure 7 shows the payment process under the multilateral netting system of the PDDTS. What makes the payment process of PDDTS different from the cheque payment process is that the flow of information and the flow of funds move in the same direction. The payer initiates the transaction by instructing his bank to transfer dollars from his account in his bank to the account of the payee in another bank. The banks' electronic transmission of dollar transfers to PCHC starts at 10:00 AM and ends at 4:00 PM. At about 4:15 PM, Citibank logs in into the computer of PCHC and checks the net position of each participant. Settlement is completed at about 4:45 PM. At the end of the day, Citibank consolidates the results of both systems to determine the final position of each participating bank and broadcasts the results.

The schedule of fees charged by PCHC on PDDTS transactions is as follows:

(1) Outward item fee	PhP 6.00/ item
(2) Inward item fee	6.00/item
(3) Minimum monthly bank level charge	500.00/bank

3. EPCS

This is an electronic funds transfer facility designed to transfer peso fund from one Philippine bank to another on the same day. It is jointly operated by BAP and PCHC. It was originally used for retail transactions until recently when a group of banks agreed to also use this facility for the peso side of the deals done at the PDS. The payment process under this system, which is illustrated in **Figure 8**, is similar to the PDDTS' multilateral netting system for dollars, except that BSP acts as the settlement bank instead of Citibank-Manila. Electronic transmissions of peso transfers occur between 10:00 AM and 4:00 PM and results of netting done at PCHC are transmitted to BSP at 5:00 PM for settlement. BSP immediately broadcasts the results of the position of each participating bank after settlement is completed.

4. Multi-transaction Interbank Payment System (MIPS)

Up until July 2001, MIPS1, which was an electronic multilateral net clearing system, was used for large value interbank call loan (IBCL) transactions and bank transfers. It was operated by the BAP and PCHC in coordination with the BSP. It had both direct and indirect participants. But the latter made their arrangements with former, which had computers and softwares connected to the PCHC.

Banks borrow or lend to each other overnight at the IBCL market for the purpose of funding their settlement balances with the BSP. Counterparties usually conduct the transactions by phone. Under MIPS1, once the borrowing and the lending banks agree on the terms of the transaction, each separately logs the transactions in their computer and electronically sends debit or credit instructions, as the case may be, to the PCHC. PCHC performed the matching and authentication of each IBCL transaction electronically. The transmission of instructions by banks to the PCHC opened at 8:30 AM and closed at 12:15 PM. However, PCHC provided the following three windows to banks to re-send or make corrections in their transmissions: first match – 10:00 AM; second match – 11:00 AM; and third match – 12:00 PM. PCHC processed all matched transactions and submitted the net results to the BSP for settlement at 1:00 PM. The settlement results were made available to all participating banks at 2:00 PM for them to know their settlement balances with the BSP. Transfer of funds was not effected by the BSP if the DDA of paying bank was not sufficient to meet the net amount to be debited from it. In such cases, BSP had to unwind the transactions affected on a “last in, first out” (LIFO) basis.

What was unique to the MIPS1 was that all transactions were automatically given value one day before the deal date. For example, if a bank borrows overnight on Wednesday (deal date) from another bank, its DDA with BSP will be credited for the value on Tuesday and debited on Wednesday. The opposite was done with the DDA of the lending bank. This convention enabled banks to know precisely their settlement balances with the BSP the previous day and funded any deficiency thereof without being penalized.

Any overdraft with the BSP would be charged 1/10th of 1 percent per day or the prevailing 91-day T-bill rate plus 3 percentage points, whichever is higher, and must be covered by the concerned bank not later than the next clearing day.

PCHC charged the following fees:

(1) Borrow transaction	PhP50.00/item
(2) Lend transaction	50.00/item
(3) Repayment transaction	50.00/item
(4) Acceptance transaction	50.00/item

In mid-July 2001, the BSP has partially implemented an RTGS system, dubbed MIPS2, which supplants MIPS1. MIPS2 is an RTGS system for interbank loan transactions among banks and non-bank financial intermediaries performing quasi-banking functions (NBQBs) and purchase and sale of government securities under repurchase agreements (GS/RP) between and among banks and NBQBs and BSP in connection with the latter's open market operations. Under this new system, the lender, in the case of lending/borrowing and purchaser in GS/RP transaction, and the borrower, in the case of collection/repayment and purchaser in a GS/RP transaction, electronically transmit an IBCL-MIPS fund transfer instruction to the PCHC, using its confidential ID and password.²⁹ PCHC verifies and authenticates the transactions and sends them electronically to the BSP.³⁰ The latter, in turn, settles in the deposit reserves maintained by participants in the BSP the individual interbank loan and GS/RP transaction. The BSP does not effect a transfer of funds if the deposit reserves of the transacting party whose account is to be debited in the BSP books are insufficient. Settlement is done by BSP according to the following time frame:

From 9:00 AM to 9:45 PM

Only lending/borrowing to cover shortfall in deposit reserves with BSP arising from the results of the AM Returned Checks and Other Clearing Items (COCI) Clearing

²⁹ Unlike MIPS1 wherein both lenders and borrowers send electronic instructions to PCHC which processed and matched them before sending to the BSP for settlement, MIPS2 requires only the lender to send electronic instructions to PCHC.

³⁰ This is taken from BSP Circular No. 266 Series of 2000 (6 December 2000). Although the PCHC processes the transactions in less than 30 seconds, this system is not strictly an RTGS one.

conducted pursuant to Circular 214, valued on the same date as the date of original presentation of COCI to PCHC and BSP regional clearing centers (RCCs).

From 10:00 AM to 4:00 PM

All interbank loan transactions and GS/RP transactions to be given value on the date of the loan grant/repayment and GS purchase/repurchase.

From 5:30 PM to 6:30 PM

Only lendings/borrowings to cover the shortfall in reserve deposits with BSP arising from losses arising from the regular afternoon check clearing to be given value on the date of the loan grant/repayment and GS purchase/repurchase.

The BSP has established a fully collateralized intra-day liquidity fund (ILF) to support the implementation of the RTGS through the MIPS2 only for the following transactions: (a) primary auction of government securities; (b) secondary trading of government securities; (c) peso netting from dollar-peso swap; and (d) lendings/borrowings and their collection/repayments.³¹ Eligible collaterals are the peso-denominated issues of the National Government with remaining maturity of at least 11 days up to 10 years, special Series Treasury T-bills, and US\$ denominated bonds issued by the National Government with remaining life of at least 11 days. The ILF can be accessed only within the 10:00 AM to 4:00 PM trading window described above. Each participant delivers to the pool of peso-denominated government securities, which are booked in the BSP ILF sub-account. The ILF limit for each participant depends on the amount of government securities it delivers to the pool. The BSP collects a commitment fee of 20 basis points per annum on the intraday bank limit and transaction fee of PhP100. However, if a bank is unable to settle ILF utilization at the end of the trading day, it may enter into an agreement with the BSP on either of the two options: (a) the BSP shall extend an overnight repurchase agreement at 600 basis points over the BSP's overnight lending rate;³² or (b) the BSP shall sell back to the bank only to the extent of the demand deposit balance and the bank shall issue an instruction to BTr to transfer the securities from the CSA-ILF of the BSP ILF principal securities account to BSP-TD regular principal securities account using *Confirmation of*

³¹ See BSP Circular Letter, 29 March 2001.

³² The BSP's overnight lending rate at the time of the writing of this paper was 11.25 percent.

Sale. Unpaid overnight repurchase agreement upon maturity date shall be converted into an absolute sale to BSP of the collateral.

C. Efficiency and Risk of the Payment Systems

As mentioned earlier, the role of a country's payment system is to facilitate the transfer of value from the payer to the payee so that the later can immediately use the funds in another transaction. Cash payment involves only two parties, the payer and the payee, and value is immediately transferred during the exchange between the two parties. In cash payment, the payee bears no risk, except if he receives counterfeit money from the payer. In the Philippines, it is not unusual to see counterfeit money circulating in the system. While banks have the equipment and skills to detect counterfeit notes, the general public does not have the proper equipment or skills to do it. Thus, the BSP in coordination with law enforcement agencies has been closely monitoring any clandestine production and circulation of counterfeit money and immediately warns the public whenever it observes counterfeit notes being circulated. It has continuously refined and added security features to the notes it prints to make counterfeiting much harder to do and easy to detect by the general public. Most recently, for instance, the BSP has issued new 1,000 peso notes that have more security features. Despite these efforts, the clandestine production and circulation of counterfeit notes cannot be completely ruled out. Indeed, there is a continuing race between regulators and counterfeiters.

Noncash payment, on the other hand, usually involves several layers of players. The more layers of players, the more inefficient and risky the payment system would be. In this case, settlement finality is important in assessing the efficiency and risk of the payment system. The figures presented above suggest that typically there are four layers of players involved in the non-cash payment systems: the payee and the payer; the payer's bank and the payee's bank; the clearing house; and the settlement bank. The efficiency and distribution of risk among these players depend on the kind of noncash payment system being utilized.

Presently, the country heavily relies on paper-based, debit transfer system. In cheque payment, the participants in the payment process are exposed to different kinds of risks. The payer, in particular, is exposed to security risk. Her signature could be forged, resulting in her checking account with her bank being debited without him knowing it. However, if she can demonstrate to the bank or in court that her signature was forged, then she can retrieve her money and the bank will have to bear the loss for clearing the payment. Like any depositor, the payer is subject to the usual risk of a failed bank.³³ If her bank fails before completing the settlement, then she still bears the liability to the payee. Ultimately, however, the payee bears the risk if the clearing and settlement cycle is not completed.

Failure of the cheque-reader/sorter machine to read cheques being processed can cause considerable delay in clearing and settling payments. At the PCHC, the average daily reject rate has been more than 1 percent of the average daily volume cheques being processed (**Table 15**). Error in printing and spoilage of cheques as well as inefficiency of the cheque-reader/sorter machine could lead to the failure of reading the cheques. Cheques rejected by the cheque reader/sorter machines of PCHC are nevertheless processed manually.

Returned cheques are one of biggest problems in a paper-based, debit transfer system. At the PCHC, the daily volume of returned items averaged between 7,898 and 11,188 during the period 1995-1999 (**Table 16**). The average daily clearing values of returned cheques, on the other hand, ranged from PhP241.3 million and PhP464.6 during the same period. The reversal of payments for returned cheques that occurs at T+1 can be abused by the presenting bank at the expense of the drawee bank because settlement is completed at the BSP at T+0. Suppose, for example, that an individual close to or in cahoots with the presenting bank opens a checking account at the drawee bank, and later closes the same account but keeps the check booklet. At T+0, he issues a cheque worth PhP5 million to somebody who deposits it in his account at the presenting bank. After clearing through PCHC at the end of the day, the BSP debits the drawee bank's demand deposit equivalent to the value of the cheque and simultaneously credits the presenting

³³He can fully recover his deposit from a closed bank if it does not exceed the maximum deposit coverage.

bank's DDA. Although the funds transfer is reversed the following day, it does not change the fact that the presenting bank's DDA at the BSP is credited PhP5 million, which could be used to fund withdrawals from the same bank. On the other hand, the drawee bank's demand deposit at the BSP is debited the same amount, which denies the drawee bank from using the fund to pay other withdrawals or from lending it to other banks in the interbank call loan market at a price. Thus, the presenting bank is in effect borrowing overnight money from the drawee bank for free.

This loophole was corrected when BSP issued a memorandum circular in October 1999 instructing PCHC to open a morning (AM) returns clearing window to process returned items in addition to the existing regular afternoon (PM) returns clearing window for Greater Metro Manila Clearing Region. The timeline for the AM returns clearing window is summarized in **Table 17**. Note that returned items presented in the AM returns clearing window shall be given value on the same date as the date of original presentation of the clearing item to PCHC. This effectively eliminates the incentive of the presenting bank to exploit the return items system. However, other returned items not presented in the AM returns clearing window shall be presented in the PM returns clearing window and shall be given value on the date the returned item was presented to PCHC.

Legal risk is real in the check payment system, and the inefficiency of the judicial system of the country can make the litigation cost very prohibitive. It is for this reason that the PCHC established in 1981 an Arbitration Secretariat "to provide the banking industry with a viable, specialized, and expedient alternative to the judicial trial courts..." (PCHC 2000). Notwithstanding this, long delay in settling arbitration cases still frequently occurs. As of December 2000, 38 arbitration cases remained outstanding, of which almost two-thirds were one year or over. The total amount involved was PhP14.3 million. This excluded the 16 cases already decided by the Arbitration Secretariat during the period 1997-1999 amounting to PhP32.4 million. The cost borne by the litigants in going through this process is not insignificant. The PCHC charges a fee ranging from a low of 0.5 percent to a high of 36 percent of the amount being litigated. On top of this, the banks have to shoulder other costs related to the case.

Sometimes, one of the parties to a dispute brings the case under arbitration to the regular court, and, if unsatisfied with the ruling of the lower court, makes an appeal all the way up to the Supreme Court. This further delays the resolution of the case. **Annex C** provides an example of how long it took the Supreme Court to make a decision on a case related to this topic.³⁴

Ambiguity of the law certainly contributes to legal risk. One example is the so-called “Bouncing Checks Law”³⁵ which punishes a person who issues a check without sufficient funds. More specifically, Section 1, paragraph 1 of said law provides a penalty of “imprisonment of not less than 30 days but not more than one year or by a fine of not less than but not more than double the amount of the check which fine shall in no case exceed Two Hundred Thousand Pesos, or both such fine and imprisonment at the discretion of the court.” The Supreme Court issued on 21 November 2000 Administrative Circular No. 12-2000 directing all courts and judges to take note of its policy on the imposition of penalties for violation of the “Bouncing Checks Law”. In two recently decided cases (i.e., *Vaca v. Court of Appeals* G.R. No. 131714, 16 November 1998, and *Lim v. People* of G.R. No. 130038, 18 September 2000), the Supreme Court deleted the penalty of imprisonment and sentenced the drawer of the bounced check to the maximum of the fine allowed by the law, which is PhP200,000, for reason that “such would best serve the ends of criminal justice.” Some quarters immediately raised concerns because the removal of the penalty of imprisonment for violators of the Bouncing Checks Law could undermine the public’s confidence in the credit system. Due to mounting criticism of said circular, the Supreme Court issued Circular 13-2001, dated 13 February 2001, stating that the “clear tenor and intention of Administrative Circular 12-2000 is not to remove imprisonment as an alternative penalty, but to lay down a rule of preference in the application of the penalties provided for in B.P. 22.” It stressed that “should the Judge decide that imprisonment is the more appropriate penalty, Administrative Circular 12-2000 ought not be deemed a

³⁴ This ruling was selected because it cites a particular fraudulent act known in banking as “kiting scheme” that went through the clearing and settlement process of the PCHC and mentions several cases in which petitioners tried to circumvent the arbitration process agreed upon by PCHC members.

³⁵ Bata Pambansa (BP) 22, 3 April 1979.

hindrance.” Thus, issuers of bouncing checks may still be jailed. However, others are still contending that B.P. 22 is in conflict with the constitutional provision forbidding imprisonment for debt.

Participation of poorly capitalized banks in large value payment network can pose systemic risk to the payment system. According to the Thrift Banks Act of 1995, a thrift bank with net assets of at least PhP20 million shall be allowed to directly clear its demand deposit operations with the BSP and PCHC. It is certainly prudent to raise that amount to a more comfortable level, possibly equivalent to at least 60 percent of the minimum level of capitalization of non-expanded commercial banks.³⁶ This, however, requires an amendment of the Thrift Bank Act.

Admittedly, much have already been done to improve the efficiency of the cheque clearing system. However, there is still some room for improvement. **Table 18** shows a breakdown of the cheques processed by PCHC by face value for two days. About 60 percent of the cheques processed have face values of PhP10,000 or less, accounting for less than 3 percent of the total value transferred. In this regard, the BSP together with the BAP may consider cheque truncation for low-value cheques.³⁷ The information presented in **Table 18** can be used as a starting point in determining the value limit for truncation. Indeed, collection and processing costs can significantly decline if electronic cheque presentment, which is currently used in the Philippines, is combined with cheque truncation. This, however, will require two things. First, digital imaging must be employed within banks for storage purposes. It is to be noted that some banks have already a digital imaging facility in their branches and have been compiling digital images of physical cheques before sending them to PCHC for clearing. Second, a law must be passed allowing truncation of low-value cheques and making microfilm copy of the cheque legally acceptable alternative for proof of payment. This should dissuade cheque writers from

³⁶ As of end-1999, the BSP fixed the minimum capital requirement for commercial banks at PhP2.4 billion.

³⁷ France, Germany, UK and the US have already implemented this program (BIS-CPSS 2000). Korea is mulling to implement cheque truncation (BIS-CPSS 1997).

wanting to continue receiving each month their canceled low-value cheques for record purposes.

Overdraft risk is another type of risk that arises in a payment system. A customer may have sufficient funds to be transferred to another customer through their respective banks, but her bank may not have sufficient settlement balances at the BSP. If a funds transfer is made, the customer's bank unintentionally obtains a credit from the BSP. There is also a risk that the bank fails before it settles its overdraft with the BSP. As of December 2000, overdrafts of banks with the BSP amounted to PhP1.8 billion, which is not an insignificant amount.

With the launching of MIPS2, daylight overdrafts could arise. Closure of a bank before it settles its daylight overdrafts poses a significant risk of loss to the BSP. Close monitoring, collateralization and intra-day bank limit discussed above are important risk control mechanisms for daylight overdraft under MIPS2. As the BSP gathers more experience with its ILF, it may consider the possibility of appropriately pricing daylight overdrafts in lieu of the 20 basis points per annum on the intra-day limit and transaction fee of PhP100 to reduce incentives of banks to run daylight overdrafts. In the US, the adjustment made by the Fed in the pricing of overdrafts had a dampening effect on the level of overdrafts without any perceptible market disruptions (Johnson et al. 1998).

The newly installed RTGS system for MIPS2 is a large improvement over MIPS1. However, it still has very limited coverage. It can be expanded to include the settlement of equities trading at the stock market, money market placements, government securities trading and foreign exchange market trading on DvP or PvP basis, as the case may be.

There is room for improving the efficiency and reducing the risks of transferring large-value, time-critical funds from one customer to another. Korea, for instance, has addressed this issue by establishing the Interbank Funds Transfer (IFT) System, which is an electronic funds transfer system for customers. Under this system, a customer may use any bank, regardless of whether she holds an account or not with it, for the transfer to a payee

holding an account at any bank (BIS-CPSS 1997). The transfer of funds is made by the remitting bank in real time to the payee's account in another bank through the IFT System. Upon receipt of the electronic instruction, the receiving bank immediately credits the payee's account and the payee can immediately access her funds. Under this system, both the float and settlement risk are reduced to nil.

The recent passage of the Electronic Commerce Act (R.A. No. 8792, 14 June 2000) and the accompanying Rules on Electronic Evidence issued by the Supreme Court on 17 July 2001 should support further developments of the electronic payment system. Since electronic documents are admissible in evidence if they comply with the rules of admissibility and are authenticated, they are then as good as paper-based documents. With this, payers and payees will be encouraged to make the bulk of large value payments through the RTGS instead of through cheques, thereby reducing systemic risk in the payment system. The same law can complement a law allowing cheque truncation and can also promote the growth of card- and software-based *e-money* products.

The use of *e-cash* will certainly grow geometrically in the next ten years, especially if the country quickly addresses basic infrastructure problems, such as electricity and telecommunications. *E-cash* providers will push their *e-cash* products harder as a new source of income. It is likely that industry leading *e-cash* products abroad will be introduced in the country as already happened in the past two years. These products have tried to address security risks that could arise in the consumer or merchant domains and in the financial institution domain, as well as in the network communications. This is enhanced by relatively low value limit on card, which is PhP10,000 for the existing *e-cash* cards. However, there is no system that is fully secure against all types of attacks. Thus, the BIS Task Force on the security of electronic money has concluded that "an integrated, overall risk-management approach to security, including independent security assessments, is an important component of the security of these new products." It has compiled a comprehensive inventory of specific security measures for card and software-based electronic money systems classified into four areas: prevention, detection, containment, and organizational (**Annex D**). It may well be for the Philippines to seriously consider these

security measures at this early stage when *e-cash* products are just starting to emerge in the local scene and determine the set of measures most suited for the country.

V. PAYMENT SYSTEM AND THE CONDUCT OF MONETARY POLICY IN THE PHILIPPINES

This section discusses the implications of the innovations taking place in the Philippine payment system for the conduct of monetary policy. Monetary policy may be aimed at achieving one or more economic objectives, such as price stability, full employment and stable balance-of-payments position. Achieving several objectives simultaneously may prove to be difficult. One reason is that these objectives often conflict. For instance, raising interest rate to stabilize prices and improve balance-of-payments position may lead to high unemployment rate. Having multiple objectives that have the potential to conflict each other makes the signals of the monetary policy less transparent to the public. Consequently, households and firms find it exceedingly difficult to formulate spending and investment plans in the short- to medium-term. To avoid this problem, many countries have decided to assign a single objective to their monetary policy – usually price stability – which makes the conduct of monetary policy transparent and the central bank accountable to the public.

In the case of the Philippines, the primary objective of monetary policy as spelled out in Section 3 of the New Central Bank Act of 1993 “is to maintain price stability conducive to a balanced and sustainable growth of the economy.”³⁸ This is not an easy task to do because monetary policy does not directly affect the price level. Instead, it works through various channels, which are collectively called “transmission mechanism.” Although economists as well as policymakers still do not agree on the relative importance of these channels, however, they agree on two points. One is that the links in the transmission mechanism are not a mechanical one. This is because they are affected by a host of factors, such as overall domestic economic policies, external environment and efficiency of the domestic financial market. The other is that monetary policy cannot bypass these channels. Therefore, lags between monetary policy decisions and their impact

³⁸ The previous charter assigned several objectives to the central bank without indicating a priori relative weights among these objectives.

on the ultimate target are inevitable. The problem is that these lags are not predetermined and they may vary from country to country.

The first part of this section briefly discusses the various channels of monetary policy.³⁹ The purpose is not to settle the debate on the relative importance of these channels, but to get a better appreciation of the impact of payments system innovations for the conduct of monetary policy – a topic discussed in the second part of this section.

A. Monetary Transmission Mechanism

Price stability calls for broadly balanced aggregate demand and supply in the economy. Monetary policy has an effect on real economic activity (i.e., GDP) in the short to medium run. However, it works mainly through its influence on aggregate demand and has little direct effect on production capacity. The aim of monetary policy, therefore, is to bring aggregate demand to a level that is broadly consistent with production capacity.

Aggregate demand is the sum of domestic spending - which consists of household consumption, government consumption and investment spending - and net exports, i.e., the balance of trade in goods and services.⁴⁰ Clearly, changes in spending decisions of households, firms and government can alter aggregate demand. The crucial issue being addressed in discussions about transmission mechanism is how the central bank can affect households' and private firms' spending decisions.

The BSP has in its arsenal monetary policy instruments, such as open market operations (OMO), rediscount window and reserve requirement. The use of these instruments affect the level and growth of base money, which, in turn, affects the level and growth of money banks can supply to firms and households.⁴¹ Although the BSP has

³⁹ The channels of monetary policy are extensively discussed in various papers (e.g., Cecchetti 1995, Neumann 1995, Mishkin 1996, among others).

⁴⁰ In the national income account, aggregate demand is equal to GDP at market prices.

⁴¹ Base money, which is also called high-powered money, monetary base or reserve money, consists of notes and coins in circulation and reserves of deposit money banks with the BSP.

increasingly emphasized the use of OMO in the last decade, it has also frequently made use of the other two instruments to complement its OMO. In the last three years alone, the BSP has changed the key policy rates, reserve requirement ratio, and rediscount rate several times to manage aggregate demand (see **Tables 19** and **20**).⁴²

Figure 9 provides a rough idea of the traditional “money view” of transmission mechanism of monetary policy. In the Philippine context, the BSP announces the policy rates it thinks consistent with its ultimate target.⁴³ The movements and changes in spread between the repo and reverse repo rates reflect the BSP’s monetary stance. Whenever the BSP decides to tighten monetary policy, it raises the key policy rates, which affect market rates and the lending rates banks charge their customers (households and firms).⁴⁴ Faced with higher cost of credit, customers hold down their borrowing and spending for both consumer goods and capital. This lowers the growth in aggregate demand, and hence relieves inflationary pressures.

The second channel of monetary policy is through asset prices. Households invest their surplus funds in securities, such as bonds and equities. Income from these investments can be used for consumption and investment in durable goods. A rise in market rates of interest caused by an upward movement of the BSP key policy rates lowers the market values of bonds, equities and other securities. Knowing that the present value of future income stream of securities has fallen, households reduce their consumption and investment in durable goods. Firms likewise reduce their spending in new plant and equipment. This is because the price of equity they will issue to finance expansion will be low relative to the cost of plant and equipment they plan to buy. Both changes in the spending behavior of households and firms lead to the reduction in aggregate demand.

⁴² The policy rates consist of repurchase agreement (repo) rate – the rate at which the BSP is willing to lend high-powered money to banks – and reverse repo rate – the rate at which it is willing to borrow from banks.

⁴³ This appears to be the current practice of many central banks (e.g., Bank of Canada).

⁴⁴ The market considers the 91-day Treasury bill rate as the bellwether rate. The BSP does not directly control the 91-Tbill rate, which is market-determined, but it can manage it indirectly through changes in its key policy rates.

The third channel is the exchange rate, which is the relative price of domestic and foreign monies. This has apparently become an important channel of monetary policy in the wake of the liberalization of trade and foreign exchange market in the early 1990s. Other things being equal, an increase in the BSP key policy rates makes domestic assets more attractive than foreign assets, causing the domestic currency to appreciate. The higher value of domestic currency relative to foreign currency makes domestic goods more expensive than foreign goods, which lowers net exports and hence aggregate demand. While exchange rate appreciation ultimately relieves inflationary pressures through aggregate demand, it also affects inflation via import prices.

The fourth channel is public's expectations of the future course of the economy, in general, and inflation rate, in particular. A change in monetary policy could shift public's expectations, resulting in the change in the firms' and households' borrowing spending plans. However, the reaction of firms and households to such policy change cannot be predicted with precision. For instance, households and firms may perceive the tightening in monetary policy as a sign that the economy is growing faster than originally thought, thereby creating expectations that the economy will continue to grow faster. Expectations of faster economic growth could encourage households and firms to revise their spending and investment plans upward. Alternatively, they may also perceive the same monetary stance as an indication that the BSP wants the economy to slowdown to achieve the inflation target, which would require a downward revision of their spending and investment plans. Indeed, this serves to emphasize the need for the central bank to make its signals clear and transparent so that market players would not be confused about the direction of monetary policy.

More recently, some economists have suggested an alternative theory of monetary transmission mechanism, which is called the "credit view".⁴⁵ Monetary policy works in similar fashion as above, but here it highlights the role of banks in the transmission mechanism. Banks are well suited to deal with asymmetric information problems in financial markets, which are typically more severe in developing economies than in

⁴⁵ See Bernanke (1993) and Bernanke and Gertler (1995).

developed economies. This explains why the banking system is the major source of funds for business and households in developing economies, not the capital market. In a bank-dependent economy, like the Philippines, credit extension has a significant impact on aggregate demand. This is why in the “credit view,” banks are deemed important in the economy not because they create money (deposits), but they make loans. Since loans and deposit liabilities are two sides of the bank’s balance sheet, deposit creation occurs when a bank makes a loan. If bank deposits are subject to reserve requirements, then deposit expansion resulting from an increase in bank loans raises the demand for reserves. Thus, credit expansion can materialize only if the central bank relaxes its monetary policy.

There is, however, an important point advanced by the “credit view” that has caught the attention of economists and policymakers in the wake of the East Asian financial crisis.⁴⁶ That is, shocks that affect households’ and firms’ borrowing and spending plans could originate from the banking system without any change in monetary policy. For example, a sudden rise in non-performing loans may prompt banks to be more cautious in lending, thereby causing a credit crunch. A situation like this calls for a cautious expansionary monetary policy to alleviate the credit crunch.

The discussions above suggest that monetary policy primarily works through the financial market. Whether one subscribes to the traditional “money view” or “credit view” of transmission mechanism, the central bank’s role as a monopoly supplier of base money is crucial (Friedman 1999). By virtue of its monopoly control of the supply of base money, the central bank is able to influence short-term interest rates that eventually affect private spending through various channels. However, that monopoly power matters only if the public has a demand for base money.

Under the Central Bank Act, the BSP has the “sole power and authority to issue currency within the territory of the Philippines.” The same Act also requires each bank or quasi-bank to maintain reserves “proportional to its deposit liabilities and shall ordinarily take the form of a deposit with the *Bangko Sentral*.” These reserves also “serve as the basis

⁴⁶ For example, see Ito and da Silva (1999) and Lamberte (2001).

for the clearing of checks and the settlement of interbank balances, ...” The demand for reserves by banks, therefore, stems from the need for meeting reserve requirements and settling interbank balances.⁴⁷ Because of its monopoly control over the supply of reserves, the BSP can create excess or deficiency in bank reserves. The ability of the BSP to determine the remuneration of excess reserves and penalty rate on borrowings by banks to cover shortfalls in reserves enables it to influence market rates.

B. Implications of Payment System Innovations for the Conduct of Monetary Policy

We now turn to the implications of innovations in the payment system for the conduct of monetary policy. We will focus on two issues: the central bank’s control of the reserve money and demand for reserve money.

1. Control Over Reserve Money

Large sums of money are transferred among firms and households through their banks and are settled at the BSP using the banks’ reserves. There are times in which banks incur overdrafts, that is, interbank payment account is debited by the BSP even though banks have no funds. In effect, the BSP extends credit to banks unintentionally. A daylight overdraft occurs if banks settle this unintended credit extension within the day and an overnight overdraft occurs when they carry a net debit overnight. The BSP sometimes allow overdrafts to occur to avoid any disruption in the payment system. However, overdraft has macroeconomic implications in that it unintentionally increases reserve money. In other words, the BSP will lose control over reserve money if banks frequently run huge overdrafts in an unpredictable manner. This may result in a money growth that is inconsistent with stable prices.

⁴⁷ Some countries, such as Belgium, Norway, Canada and Mexico, have either no reserve requirement or zero reserve requirement. Bank reserves are held mainly as precautionary balances for settling overnight interbank balances.

Between 1987 and 1992, banks incurred overdrafts of about PhP13 billion (**Table 21**). It dropped drastically to about PhP3 billion in 1993, but rose to more than PhP4 billion in 1998 and 1999 in the wake of the East Asian financial crisis, then settled at less than PhP2 billion in 2000. The share of overdrafts in reserve money posted at 22 percent in 1987. Since then, it has consistently declined, except during the East Asian crisis years. In 2000, overdrafts comprised only less than one percent of reserve money. In other words, bank overdrafts have become less of a threat to the BSP's control over base money in recent years. This is due to several factors. One is stricter policy and pricing of overdrafts. To discourage banks from frequently running huge overnight overdrafts with the BSP, Section 102 of the New Central Bank Act 1993 provides that:

"...any bank which incurs an overdrawn in its deposit account with the Bangko Sentral shall fully cover said overdraft, including interest thereon at a rate equivalent to one-tenth of one percent (1/10 of 1%) per day or the prevailing ninety-one-day treasury bill rate plus three percentage points, whichever is higher, not later than the next clearing day: Provided further, That the settlement of clearing balances shall not be effected for any account which continues to be overdrawn for five (5) consecutive banking days until such time as the overdrawn is fully covered or otherwise converted into an emergency loan or advance.... Banks with existing overdrafts with the Bangko Sentral as of the effectivity of this Act shall, within the such period as may be prescribed by the Monetary Board, either convert the overdraft into an emergency loan or advance with a plan of payment, or settle such overdrafts, and that, upon failure to so comply herewith, the Bangko Sentral shall take such action against the bank as may be warranted under this Act."

This may explain the huge drop in the amount of overdrafts in 1993. Another factor is improvement in the payment system. Because of the electronic cheque clearing system, banks get to know their settlement balances at the BSP in the evening of the same clearing day. The BSP allows banks to cover their deficiency in reserves by borrowing from the interbank market without being penalized. The interbank call loan market is an important mechanism for recycling reserves from reserve-surplus banks to reserve-deficient banks without the BSP having to supply additional reserves. The introduction of MIPS1 had definitely improved the efficiency of the interbank call loan market. The decision of the Monetary Board to adopt the lagged system in the measurement of a bank's or quasi-bank's reserve requirement effective October 2000 can further improve banks' ability to estimate the reserves they need to cover reserve requirements. This helps them in avoiding

overdrafts.⁴⁸ Thus, in this sense, it can be said that innovations in the payment system have enhanced BSP's capability to manage liquidity of the system.

The switch to MIPS2, which is an RTGS system, presents another challenge to monetary authorities. While the RTGS system for large-value payments can significantly enhance the efficiency and safety with which banks clear and settle transactions, it is reserve-intensive as demonstrated in Section II of this paper. In this situation, banks can easily run out of reserves to settle payments unless they are prepared to stock up large amounts of low-yielding reserves and choke the market off of funds. To prevent such situation to happen, MIPS2 provides an intra-day liquidity facility, which essentially allows banks to run daylight overdrafts. However, daylight overdrafts can easily reach staggering levels under the RTGS system, which may attenuate BSP's control over reserve money especially if they are not settled at the end of the day. Although the collateralized intra-day facility under MIPS2 reduces BSP's risk due to failure of participants, it does not necessarily eliminate the moral hazard problem in which banks view the BSP as the lender of first resort instead of borrowing reserves from other banks. Thus, a situation may arise in which the tightening in monetary policy can be frustrated by banks by running huge daylight overdrafts to the extent allowed by the amount of collateral they can put in the ILF. This will effectively turn government securities used as collateral in the intra-day liquidity facility into quasi-money.⁴⁹

As noted in Section III of this paper, some central banks do not provide intra-day credit to avoid conflict with their objective of managing liquidity. Others provide such facility, but with adequate controls, such as imposing individual debit caps combined with sophisticated queuing algorithms and appropriate pricing of daylight overdrafts to reduce the need for intra-day liquidity. It may well be for the BSP to impose individual debit caps in its ILF based on participants' capital and backed up by collateral and link the pricing of

⁴⁸ BSP Circular No. 254 (31 July 2000).

⁴⁹ The BSP does not have control over the supply of government securities.

its intra-day credit to a market rate of interest to reduce, if not completely avoid, the moral hazard problem.⁵⁰

The planned extension of the RTGS system to include the settlement of government securities on a DvP basis can certainly contribute to the deepening and liquidity of the market for government securities. Highly liquid government securities will provide banks with a superior substitute for central bank reserves. In other words, banks will no longer keep huge precautionary low-yielding settlement balances with the BSP, but instead will hold high-yielding government securities which they can quickly liquefy in the market whenever they need additional liquidity for on-lending or to cover shortfalls in bank reserves. This will ultimately facilitate BSP's conduct of open market operations to manage liquidity of the system.

2. Demand for Reserve Money

Financial innovations, specifically the emergence of new financial instruments that compete with currency and reservable deposits and alternative settlement systems, could weaken the connection between the expansion or contraction of reserve money and the expansion or contraction of economic activity, which, in the context of the transmission mechanism, threatens the effectiveness of traditional monetary tools. Indeed, this has been the subject of several investigations worldwide, which more recently have intensified in light of the introduction of electronic money. As Goodhart (2000) pointed out, “[T]he suggestion has now been made that the further development of e-commerce and associated computerization will attenuate, or even remove altogether, the demand for monetary base, notably for currency; and that such vanishing demand for monetary base will in turn limit, or even prevent, the Central Bank from setting nominal interest rates in such a system.”

As discussed in Section IV of this paper, these innovations have already reached the Philippine shores and are gradually creeping into the domestic financial system. The issue

⁵⁰ In Thailand, the interest rates for borrowing under the Intraday Liquidity Facility of the Bank of Thailand are tied up to the previous day's repurchase market rates (Johnson *et al.* 1998).

that should be raised at this point is whether they already have undermined the stability of the demand for reserve money. We have investigated this issue by estimating the following demand for reserve money function:

$$RM = f(y, r)$$

where RM = reserve money defined as currency issue plus demand deposits of deposit money banks with the BSP less cash in the vault of the Bureau of the Treasury;⁵¹

y = real GDP; and

r = real interest rate represented by the difference between the 91-day Treasury bill rate and inflation rate.⁵²

The equation above was estimated using a two-stage error correction model to capture the short-run dynamics of variables in the system for the period 1987:1-2000:4⁵³ (**Table 22**). In the first stage, we estimated a long-run equilibrium relationship for the equation above.⁵⁴ In the second stage, we estimated an error-correction model. The unit root test results confirm that the residual sequence is stationary for both the first and second stages. The adjusted R-squared for the first stage is 0.90 and the Durbin-Watson statistic is 1.79. For the second stage, the adjusted R-squared is 0.80 and the Durbin-Watson statistic is 1.74. The results conform to a priori expectations, i.e., the coefficients of y and r have the correct signs and are statistically significant at standard levels of significance. The estimated long-run elasticities of y and r are 1.03 percent and -0.004 percent, respectively. The coefficient of the error correction term is relatively large, 0.82, implying that reserve money adjusts faster towards equilibrium after a shock. The within sample period simulation analysis

⁵¹ Theoretically, reserve money and base money should be the same. However, in the Philippines, the BSP distinguishes reserve money from base money, which includes reserve money, reserve eligible government securities and reserve deficiency. Thus, the latter is a much broader measure of monetary aggregate than the former. Valdepeñas (2001) pointed out that data on reserve money are available after a 5-day lag, while base money, after a 1-month lag and the latter exceeds the former on the average by PhP22.98 billion during the period 1987:1-2001:2.

⁵² The use of nominal interest rate did not yield the expected results.

⁵³ The author is grateful to Dr. Celia M. Reyes and Ms. Sheila Wagan-Buenafe for their help in specifying and running the model.

⁵⁴ Visual inspection of the data and results of the preliminary runs led us to conclude that a dummy variable be included in the first stage, with the years 1990-1997 taking the value of 1 and the rest zero.

shows that the simulated values of reserve money closely track the actual figures, except in only one case – 1999:4 (**Figure 10**). The conclusion that can be drawn from the results is that the demand for reserve money has been fairly stable during the period indicated.⁵⁵

The results obtained above may be due to the fact that payments system innovations taking place in the country are not yet as extensive as in industrialized economies and they have not yet reached the point where they can undermine the stability of the demand for base money. However, one has to look forward and consider their implications, particularly the possibility of a much wider circulation of *e-money* products, in the near future. As an old adage goes: Money can be made by making money. *E-money* definitely provides issuers with new opportunities for seigniorage.

Seigniorage, i.e., the profit earned by creating money, is a privilege formally given to central banks. We have calculated the seigniorage realized by the BSP during the period 1995-1999 using two alternative methods. The first method calculates revenue from the activities of BSP by taking the change in base money and expressing it as a percent of GDP. Since we did not adjust it for the remuneration given to bank reserves, the calculated seigniorage should be considered as an upper limit. The second method calculates seigniorage as the inflation tax – the reduction in the purchasing value of the outstanding stock of base money. The results shown in **Table 23** suggest that the BSP had earned on average equivalent to 1 percent of GDP during the indicated period if Method 2 is used and 2 percent if Method 1 is used. It means that in 1999, the government earned roughly PhP30 billion from money creation. Indeed, the large potential for earning money by making money provides a strong incentive to both banks and non-banks operating in the country to promote their *e-money* products, such as those that are rapidly gaining acceptance in industrialized economies.

⁵⁵ In his comments to an earlier draft of this paper, Valdepeñas (2001) pointed out that this is consistent with his earlier studies on the demand for money using the traditional monetary aggregates M1 and M2. This, however, runs counter to the results obtained by Guinigundo for the RM equation (undated).

E-money may not completely replace central bank-issued money. History tells us that various forms of money can coexist. However, once market participants gain a choice among competing currencies, which include privately issued *e-money*, the demand for reserve money could be de-linked from the supply of reserve money, making the monopoly of the central bank over the control of reserve money irrelevant in implementing monetary policy.⁵⁶ As pointed out by Friedman (2000), “The real question is not whether bank deposits will disappear altogether, but whether plausible alternatives not backed by bank deposits (stored value cards, credits on the books of the telephone company, and so on) will weaken the connection between the expansion or contraction of reservable bank deposits and the expansion or contraction of economic activity to an extent that threatens the efficacy of monetary policy.”⁵⁷ Bouts of inflation could frequently occur in this situation, making sustainable real economic growth impossible to achieve.

To regain the effectiveness of the traditional monetary tools, the central bank may in the future impose regulations on *e-money* products, such as requiring reserves or declaring itself as the sole supplier of *e-money* (Freedman 2000). The attitude of industrialized countries with regard to this possible policy response has been mixed simply because the diffusion of *e-money* has not yet currently reached a level that can impair the conduct of their monetary policy. However, some have already started to collect statistical data on *e-money*, such as the number of cards in circulation, the value loaded, the value and volume of payments made, the outstanding value available, and the number of terminals, and reported them separately from monetary aggregates (e.g., Canada, France, Finland). They are carefully monitoring the growth of *e-money* products to calibrate their monetary policy response. Others, however, have already included them as part of monetary aggregates and are subject to minimum reserves (e.g., Germany, Austria, Italy).

⁵⁶ In his comment to an earlier draft of this paper, Valdepeñas (2001) found this expectation too optimistic. He stressed the point that what may be technologically efficient may not necessarily be economically efficient. Thus, “[T]his may be the clue to the puzzlement why electronic bill payment share in this market remained at 2.5% of the consumer dollar payments as late as 1997, going by the *Nilson Report* (Issue 680, November 1998). That year, cash and checks payments made up 70.2% of all the consumer dollar payments across retail markets in the United States.” The same view was aired by Woodford (2000) and Goodhart (2000).

⁵⁷ The same issue is raised in the case of currency substitution (see Yap 2001).

Although the level of diffusion of *e-money* in the Philippines is still negligible, the fact is they are already here. It is therefore necessary to anticipate major issues relative to the imposition of regulations on *e-money* products once such become more widely circulated. And the legal framework is a good place to start with. At present, there is no specific regulation governing *e-money*. However, before rushing to suggest to have one, it maybe necessary to revisit some provisions of existing laws, such as the New Central Bank Act, the General Banking Law of 2000, the Electronic Commerce Act of 2000, among others, to find out if they adequately address major issues regarding the treatment of *e-money* and supervision of *e-money* issuers. For instance, Section 62 of the New Central Bank Act gives the Monetary Board the power to define monetary aggregates, which may include *e-money*. If the BSP is going to treat *e-money* as “on-balance-sheet” liability of the issuing institution similar to demand deposits, one has to examine whether Section 58 of the same Act is satisfactory. Section 59 of the General Banking Act of 2000 together with some provisions of the New Central Bank Act and the E-Commerce Act may be sufficient to regulate *e-money* providers. There are other policy issues that must be addressed, such as whether limiting the issuance of *e-money* to banks for prudential reasons or allowing non-banks as well to enhance competition, deposit redemption, security, deposit insurance and other consumer protection issues.

The greatest irony recorded in the history of financial system development is that regulations result in more financial innovations to exploit potential money that could be made by making money. Thus, imposing regulations on *e-money* may just give incentives to financial innovators to devise new forms of *e-money* that can escape the regulatory net, thereby fueling more races between regulators and private issuers of money. Thus, the issue of whether the central bank can still effectively implement monetary policy without base money, i.e., leaving money creation and settlement of balances completely in the hands of the private sector, has been raised. Again, going back to the transmission mechanism, the central issue is whether the central bank can influence short-term interest rates in the absence of base money. One camp (Freedman 2000, Goodhart 2000, Henckel et al. 1999, and Woodford 2000) argues that the central bank can still influence short-term interest rates even if money creation and settlement of interbank balances are completely

with private hands, but that it has to change the way it implements monetary policy. The other camp (Friedman 2000 and King 1999) expresses an opposite view, basically arguing that at the end of the day, central bank's intention must be backed up by the ability to create reserves, which can be used for settlement of interbank balances and are closely linked with the demand for base money. Since *e-money* is a fairly recent phenomenon, appealing to facts at this point can hardly help in narrowing the differences in views between the two camps.

VI. CONCLUDING REMARKS AND RECOMMENDATIONS

This paper has reviewed key operational concepts involved in payment system and the emerging payment systems in industrialized countries, described and assessed the existing payment system in the Philippines and discussed the implications of payments system innovations for the conduct of monetary policy. Although the country's existing payment system is still far from those that can be found in industrialized countries, however, it has been changing rapidly especially in the last few years as the BSP and BAP strive to make it more efficient and less exposed to systemic risks, taking advantage of new technologies and best practices elsewhere especially in the clearing and settlement of large-value transfers. Non-cash, electronic payment instruments are now making headway into the domestic financial system and compete with the traditional payment media, such as cash and cheque. Recent changes in legal framework, particularly the passage of the New Central Bank Act, the General Banking Act and the Electronic Commerce Act, provide a wholesome environment for further innovations in the payment system.

Notwithstanding these recent positive developments, the paper has identified some areas for enhancing the efficiency and reducing systemic risk of the country's payment system. For small-value transfers, the possibility of increasing usage of electronic credit transfers (e.g., debit card system) may be explored to reduce clearing costs and settlement risk. Inertia needs to be overcome through the application of existing technologies and pooled information drive. Under adequate regulatory framework, *e-cash* can considerably reduce costs in making retail financial transactions. The security measures for *e-money* compiled by the BIS Task Force should be seriously considered at this early stage when *e-money* products are just starting to emerge in the local scene.

Participation of small thrift banks in large value payment network can pose systemic risk to the payment system. The Thrift Bank Act may have to be amended to ensure that only highly capitalized thrift banks, i.e., those whose capital is at least equal to 60 percent of the minimum capital requirement of commercial banks, will be allowed to directly participate in the large value payment network.

Legal risk is real in the cheque payment system, and the inefficiency of the judicial system can easily compound it. The PCHC, therefore, must improve its efficiency in settling arbitration cases to deter contending parties from by-passing the arbitration process and sending instead the cases directly to the regular courts. Ambiguity of certain laws, specifically the “Bouncing Checks Law”, can contribute to legal risk. Given the intensity of the debate on this issue, there is an urgent need to revisit such law.

Cheque collection and processing costs can be significantly reduced if electronic cheque presentment is combined with cheque truncation. This, however, requires a passage of new law that will allow truncation of low-value cheques and make the microfilm copy of the cheque legally acceptable alternative for proof of payment. Cheque truncation seems to be the trend in other jurisdictions.

The newly installed RTGS system for MIPS2 indeed addresses some of the major problems with large-value transfers that may give rise to systemic risks. The system could be expanded by accommodating transfers of large-value, time-critical funds from one customer to another customer. Needless to say, the planned expansion of the present RTGS system to include the settlement of equities trading, money market placements, government securities trading and foreign exchange market on DvP or PvP basis, as the case may be, has to be accelerated.

As regards the implications of payments system innovations for the conduct of monetary policy, the paper first examines overdraft risk and the ability of the BSP to control reserve money. Due to reforms in the pricing of overdrafts and the improvement cheque clearing and settlement system, bank overdrafts have declined significantly in recent years, thereby enhancing the ability of the BSP to control reserve money. The switch to MIPS2, however, presents another problem in that the collateralized intra-day facility can easily undermine the ability of the BSP to control reserve money. Thus, it is recommended that the BSP impose individual debit caps in its ILF based on the participants’ capital and

backed up by collateral, and link the pricing of its intra-day credit to a market rate of interest rate to reduce, if not completely avoid, the moral hazard problem.

The paper goes on to examine the impact of payments system innovations on the demand for reserve money. The results show that payments system innovations that have occurred in the domestic financial system have so far not undermined the stability of the demand for reserve money, implying that traditional monetary tools have remained effective. Looking forward, however, the imminent widespread acceptance and use of privately issued *e-money* may weaken the connection between expansion or contraction of base money and the expansion or contraction of economic activity. To regain the efficacy of monetary policy, regulations may have to be imposed on *e-money*. At present, there is no specific regulation governing *e-money*. Before rushing to have one, it maybe necessary to revisit first some provisions of existing laws, such as the New Central Bank Act, the General Banking Act and the Electronic Commerce Act, to find out if they adequately address major issues regarding the treatment of *e-money* and supervision of *e-money* issuers. There is also a need to clarify at the outset whether non-financial institutions will be permitted to issue *e-money* products.

Finally, there is a need for the BSP to immediately start collecting systematically and on a regular basis statistical data on new payment instruments. Some of these data (e.g., exposures of banks or their subsidiaries to credit card business, EFTPOS transactions, *e-cash* products) are useful to BSP for its supervision function and to the general public who are concerned about the health of financial institutions. They are also useful in the formation of monetary policy as they sometimes provide leading indicators of private spending behavior.

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Table 1. The Core Principles and Central Bank Responsibilities

**Public Policy Objectives: Safety and Efficiency
In Systemically Important Payment Systems**

Core Principles for systemically important payment systems

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

* Systems should seek to exceed the minima included in these two Core Principles.

Responsibilities of the central bank in applying the Core Principles

- A. The central bank should define clearly its payment system objectives and should disclose publicly its role and major policies with respect to systemically important payment systems.
 - B. The central bank should ensure that the systems it operates comply with the Core Principles.
 - C. The central bank should oversee compliance with the Core Principles by systems it does not operate and it should have the ability to carry out this oversight.
 - D. The central bank, in promoting payment system safety and efficiency through the Core Principles, should cooperate with other central banks and with any other relevant domestic or foreign authorities.
-

Source: Committee on Payment and Settlement Systems, Bank for International Settlements, "Core Principles for Systemically Important Payment Systems," January 2001.

Table 2
Variations of Payment Instruments

Payment Flow	Payment Mode	Process Flow	Settlement
Debit Credit	Paper Electronic Telecommunications Plastic Card	Batch On-Line	Immediate Provisional Net Gross

Source: Listfield et al. (1994).

Table 3. Different Types of E – Money

	Identified	Anonymous
<u>Online</u>	<i>A</i>	<i>B</i>
Offline	<i>C</i>	<i>D</i>

**Table 4. The Arithmetic of Payments Netting
(in Pesos)**

To By	Gross due Matrix			Total Due From Matrix			Total Due To Matrix		
	A	B	C	Gross	Bi-Net	Multi-Net	Gross	Bi-Net	Multi-Net
A	-	90	90	180	70	60	120	10	-
B	20	-	-	20	-	-	130	110	110
C	100	40	-	140	50	50	90	-	-

- Gross equals the sum of rows and
- columns.
 - Bi-Net* equals the net of the entries for each pair of banks in the Gross Due matrix:
{e.g. (A to B) - (B to A) = 90 - 20 = 70}.
 - Multi-Net* equals the net of the Bi-Net entry for each bank in the Total Due To and *Total Due From* matrices: [e.g. (To A) - (By A) = 10 - 70 = -60]

Note: Adopted from Bank of Canada and the Department of Finance.

Table 5
Notes and Coins in Circulation in Developed Economies

	1991	1998
	USD per inhabitant	
Belgium	1,331	1,244
Canada	646	681
France	863	800
Germany	1,411	1,682
Italy	1,168	1,210
Japan	2,789	3,727
Netherlands	1,432	1,283
Sweden	1,587	1,207
Switzerland	2,802	3,117
United Kingdom	509	655
United States	1,070	1,717
	As a percentage of GDP	
Belgium	6.2	4.8
Canada	3.1	3.5
France	3.7	3.1
Germany	6.0	6.4
Italy	5.4	5.6
Japan	9.4	11.0
Netherlands	6.8	4.9
Sweden	5.3	4.6
Switzerland	8.0	7.9
United Kingdom	2.7	2.8
United States	4.6	5.3
	as a percentage of narrow money¹	
Belgium	31.2	23.8
Canada	46.1	15.2
France	15.8	13.2
Germany	28.4	23.3
Italy	14.2	16.1
Japan	33.1	25.3
Netherlands	28.6	14.9
Sweden	11.5	10.2
Switzerland	21.8	15.5
United Kingdom	5.6	4.5
United States	29.5	41.4

¹ Narrow Money: M1: except for Sweden (M3) and the United Kingdom (M2)

Source: Bank for International Settlements, "Statistics on Payment Systems in the Group of Ten Countries," 1998.

Table 6
Indicators of Use of Various Cashless Payment Instruments:
Volume and Value of Transactions, in US Dollars
as of 1998

	US			Canada			Japan		
	Volume (%)	Value (%)	Average Value (US\$)	Volume (%)	Value (%)	Average Value (US\$)	Volume (%)	Value (%)	Average Value (US\$)
Checks	70.76	10.18	1,179.10	34.6	96.5	7,678.35	8.6	2.5	38,067.89
Payments by Card	24.56	0.18	60.02	48.5	0.8	44.79	23.7	0.0	188.67
Paper-based credit transfers	-	-	-	1.8	0.1	129.98	33.0	0.1	343.86
Paperless credit transfers	3.05	88.53	237,802.39	7.7	2.0	715.47	34.8	97.4	365,107.57
Direct debits	1.63	1.11	5,576.68	7.4	0.7	246.98	-	-	-
Others	-	-	-	-	-	-	-	-	-
Total	100	100	8,194.25	100.0	100.0	2,756.47	100.0	100.0	130,305.40

Source of raw data: Bank for International Settlements, "Statistics on Payment Systems in the Group of Ten Countries," 1998 and

Table 6 (cont'd)

	United Kingdom			Germany			Italy			Belgium		
	Volume	Value	Average	Volume	Value	Average	Volume	Value	Average	Volume	Value	Average
	(%)	(%)	Value (US\$)	(%)	(%)	Value (US\$)	(%)	(%)	Value (US\$)	(%)	(%)	Value (US\$)
Checks	28.1	3.7	399.03	4.8	1.4	3,295.51	27.2	2.8	2,144.83	7.0	3.2	4,582.83
Payments by Card	33.1	0.3	24.27	5.1	0.0	92.55	14.2	0.1	96.03	27.4	0.2	64.43
Paper-based credit transfers	4.6	0.8	563.67	0.0	0.7	5,292,663.52	0.1	2.9	1,136,334.44	0.0	0.0	1,377.45
Paperless credit transfers	14.8	94.2	19,557.07	50.6	95.1	20,754.39	38.9	92.7	48,728.88	54.0	96.3	17,658.50
Direct debits	19.4	1.0	158.23	39.5	2.7	761.37	9.2	0.3	710.37	9.4	0.3	304.12
Others	0	0	0	0	0	0	10.5	1.1	2,078.47	2.3	0.0	4.49
Total	100.0	100.0	3,064.62	100.0	100.0	11,044.22	100.0	100.0	20,442.83	100.0	100.0	9,897.35

Source of raw data: Bank for International Settlements, "Statistics on Payment Systems in the Group of Ten Countries," 1998 and International Financial Statistics Yearbook, 1999.

Table 6 (cont'd)

	France			Netherlands			Sweden		
	Volume (%)	Value (%)	Average Value (US\$)	Volume (%)	Value (%)	Average Value (US\$)	Volume (%)	Value (%)	Average Value (US\$)
Checks	40.7	2.6	529.10	1.9	0.0	82.22	0.3	0.1	209.65
Payments by Card	18.2	0.1	51.45	24.5	0.1	47.95	22.3	1.7	83.86
Total credit transfers and direct debits									
Paper-based credit transfers	0.1	1.0	6,053.78	-	0.0	-	19.7	17.9	1,011.33
Paperless credit transfers	16.4	96.0	48,807.09	45.0	99.2	18,413.78	50.1	77.6	1,672.87
Direct debits	13.3	0.6	404.16	28.5	0.7	192.78	8.1	2.7	356.97
Others	11.4	0.7	465.05	0	0	0	-	-	-
Total	100.0	100.0	8,319.29	100.0	100.0	8,354.37	100.0	100.0	329,102.67

Source of raw data: Bank for International Settlements, "Statistics on Payment Systems in the Group of Ten Countries," 1998 and International Financial Statistics Yearbook, 1999.

Table 6 (cont'd)

	Switzerland		
	Volume (% of grand total)	Value (% of grand total)	Average Value (US\$)
Checks	1.0	16.9	1,514.76
Payments by Card			
through banks	18.6	20.4	98.16
through the postfinance	4.8	3.2	59.12
Total credit transfers and direct debits			
through banks	30.3	97.2	157,192.45
through the postfinance	45.2	2.7	2,579.81
Paper-based credit transfers			-
through banks	26.8	-	
through the postfinance		no data	
Paperless credit transfers			
through banks	3.5	97.1	155,917.94
through the postfinance		no data	
Direct debits			
through banks	49.9	0.1	1,274.51
through the postfinance		no data	
Others	-	-	-
Total for banks	49.9	97.3	83,921.83
Total for the postfinance	50.1	2.7	2,336.78
Grand Total	100.0	100.0	43,086.86

Source of raw data: Bank for International Settlements, "Statistics on Payment Systems in the Group of Ten Countries," 1998 and International Financial Statistics Yearbook, 1999.

Table 7
Number of Payment Cards in Circulation
(at 1998 year-end, in millions)

Particulars	Belgium	Canada ¹	France ¹	Germany ¹	Italy ¹	Japan ^{1,2}	Netherlands ¹	Sweden ¹	Switzerland ¹	United Kingdom ¹	United States ¹
Cards with a cash function	12.014	56.6	33.86	n.a.	17.989	293.34	23.168	6.95	7.104	106.1	710.3
Cards with debit/credit function	12.014	72.3	30.267	91.345	27.15	256.783	4.1	6.87		84.1	748.0 ⁵
of which											
cards with a debit function	9.277	35.2	30.267	76.145	17	11.873	n.a. ³	5.229	4.671	2.5	242.4
cards with a credit function	2.737	37.1	1.038	15.2	10.15	244.91	4.1	1.641	2.654	41.6 ⁴	505.6
cards with a prepaid function	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.953	n.a.	
Cards with a cheque guarantee function	4.746	0	n.a.	43.845	4.88	n.a.	0.705	n.a.	4.76	54.9	n.a.
Memorandum item:											
Retailer cards	1.564	n.a.	n.a.	5	n.a.	63.71	n.a.	n.a.	n.a.	18.6	617.3
Oil company cards	n.a.	n.a.	n.a.	n.a.	n.a.		n.a.	n.a.	n.a.	n.a.	113.1
Total	18.324										

1 A card with multiple functions may appear in several categories. It is, therefore, not meaningful to add the figures. 2 Figures at end-March except for cards with a debit function which uses figures at the end of March the next year. 3 Only includes cards that can only be used at POS terminals. Such cards were discontinued after 1996. 4 Bank VISA and MasterCard and travel & entertainment (charge cards) cards only.

Sources: Bank for International Settlements, "Statistics on Payment Systems in the Group of Ten Countries, 1998"; Center for Financial Industry Information Systems; The Nilson report (HSN Consultants Inc., Oxnard, CA); Bank Network news and Debit Card News (Faulkner & Gray, New York, N.Y.).

Table 8
Features of selected interbank funds transfer systems (Figures related to 1988)

Country/ Funds Transfer Systems	Type ¹	Owner/ Manager ²	No. of participants		Processing ³	Settlement ⁴	Membership ⁵	Degree of centralization ¹³	Pricing ¹⁴	Closing time for same-day transactions ¹⁵
				of which direct						
Belgium										
ELLIPS	L	B+CB	103	20	RTT	RTGS	RM	C	F	16.45
Clearing house	L+R	B+CB	103	23	M	N	O	D	V	15
CEC	R	B+CB	105	23	ACH	N	O	C	F	15
Canada										
IIPS	L	B+AS	63	19	-	-	RM	D	N	16.3
France										
SAGITTAIRE	L	CB	57	57	RTT	N	RM	C	F	13
CH Paris ⁶	L+R	AS	388	30	M	N	RM	C	F	15
CH Provinces ⁷	R	CB	380 ⁸	208 ⁸	M	N	O	C	N	11
SIT	R	CB+B/AS	311	22	RTT	N	RM	C	F	13.3
CREIC	R	CB	16	16	ACH	N	O	C	F	NO
Card payments	R	B/AS	209	11	RTT	N	RM	C	F	13.3
TBF	L	CB	216	216	RTT	RTGS	O	C	F	18.15
SNP	L	B	26	10	RTT	N/BN	RM	C	F	16
Germany										
MAOBE	R	CB	5202	5202 ⁹	ACH	GS	O	D	V	NO
EMZ (former DTA)	R	CB	5202	5202	ACH	GS	O	C	V	NO
ELS (former EIL-ZV)	L	CB	2773	2773	RTT	RTGS	O	C	F	15
Konventionelle Abrechnung ¹⁷	L+R	CB	38	38	M	GS	O	D	F	13
EAF (former EAF 2)	L	CB	66	66	RTT	N	RM	C	F	12.3
Italy										
Local clearing	R	CB	n.a.	130	RTT ¹⁰	N	O	D	V	12.3
Retail	R	CB ¹¹	952	213	ACH	N	O	C	F	NO ¹⁹
BI-REL ¹²	L	CB	769	769	RTT	RTGS	O	C	V	16.2

¹ L=Large-value system, R=Retail system. ² Owner/Manager: B = Banks, CB = Central Banks, AS = Payment Association. ³ Processing method: M = Manual, ACH = Automated Clearing House (offline), RTT=Real-Time Transmission. ⁴ N = multilateral Netting, BN = Bilateral Netting, RTGS = Real-Time Gross Settlement, GS = other Gross Settlement. ⁵ O = Open membership (any bank can apply) or RM = restricted membership (subject to criteria). ⁶ Clearing House in Paris. ⁷ Clearing Houses in the provinces. ⁸ All institutions on which cheques are drawn or at which bills of exchange are payable are bound by regulations to participate in the local clearing houses, through an agent in certain cases. ⁹ Number of accounts. ¹⁰ Transactions can also be submitted on floppy disk. ¹¹ System managed by the Interbank Society for Automation in the name and on behalf of the Banca d'Italia. ¹² In 1998, BI-REL replaced Electronic Memoranda and Ingrosso (SIPS). The number and the value of transactions include those related to Electronic Memoranda and Ingrosso as long as they had worked. ¹³ Geographical access to the system: C = Centralised (one processing centre only) or D = Decentralised. ¹⁴ Prices charged to participants: F = Full costs (including investments), V = Variable costs, S = Symbolic costs (below variable costs), N = No costs. ¹⁵ Closing time for same-day transactions (NO=no same-day transactions). ¹⁶ These data are included in the SIT data. ¹⁷ Reporting change in 1995: number of delivery envelopes cleared instead of individual payments contained therein. ¹⁸ Except for the credit transfers entered before 12.00 which are settled on the same day.

Source: Bank for International Settlements.

Table 9 Notes and Coins in Circulation in Selected East Asian Economies		
	1991	1999
	USD per inhabitant	
Indonesia	26	39
Korea	249	366
Malaysia	216	288
Philippines	40	70
Singapore	1,572	1737
Thailand	103	200
	as a percentage of GDP	
Indonesia	3.7	5.3
Korea	3.7	4
Malaysia	8.3	8.3
Philippines	5.6	7.3
Singapore	10.0	7.9
Thailand	6.0	10.1
	as a percentage of narrow money	
Indonesia	35.5	46.8
Korea	36.4	43.9
Malaysia	41.1	34.4
Philippines	68.5	55.4
Singapore	45.6	36.4
Thailand	67.1	82.2

Sources of raw data: ADB Key Indicators of Developing Asian and Pacific Countries, 1998 and International Financial Statistics, 1999 and March 2000.

Table 10
Non-Cash Instruments Processed by PCHC

Particulars	1991	1992	1993	1994	1995
1. Checks					
Volume of Clearing items	73,323,325	79,324,070	85,364,603	94,847,248	101,782,109
Clearing Values ¹ (in billion pesos)	3,904.40	4,837.80	5,684.20	6,966.00	8,851.50
2. Philippine Domestic Dollar Transfer System (PDDTS)					
a. US Dollar Transactions					
Transaction count	-	-	-	97,559	101,856
Value (in million US dollars)	-	-	-	237.7	316.3
b. Peso Transactions					
Transaction count	-	-	-	243,803	263,536
Value (in billion pesos)	-	-	-	5.6	9.0
3. Interbank Call Loan (IBCL)					
a. No. of matched Transactions	-	-	-	-	-
b. Value (in billions)	-	-	-	-	-

Particulars	1996	1997	1998	1999	2000
1. Checks					
Volume of Clearing items	111,975,405	116,713,082	112,838,020	116,209,901	117,594,603
Clearing Values ¹ (in billion pesos)	11,921.80	15,536.00	15,911.3	17,001.1	16,110.20
2. Philippine Domestic Dollar Transfer System (PDDTS)					
a. US Dollar Transactions					
Transaction count	96,364	99,985	100,986	97,936	
Value (in million US dollars)	297.4	351.0	347.1	359.1	
b. Peso Transactions					
Transaction count	311,910	377,018	452,986	478,537	
Value (in billion pesos)	18.7	65.7	71.5	147.7	
3. Interbank Call Loan (IBCL)					
a. No. of matched Transactions	146,514	129,667	119,920	168,280	
b. Value (in billions)	1,578.23	1,651.01	1,776.68	3,630.16	

¹ Daily average clearing value x no. of clearing days

Source: Philippine Clearing House Corporation

Table 11
The Philippine Credit Card Industry
Data as of December 1997

Name of Card	Active CH Base	Merchant Base	Gross Billings (In million pesos)
Diners Club International	83,000	21,000	4,872
Bankard	284,269	19,007	5,620
RCBC Card	70,000	18,700	1,263
Solid Bank Credit Card	38,000	na	903
Standard Chartered Bank	51,000	na	680
Unicard	90,000	14,000	3,612
American Express Credit Card	38,000	no data	no data
BPI Card	168,000	11,379	3,787
Citibank Credit Card	525,000	22,600	17,000
Equitable Card	570,000	22,600	28,000
FarEast Card	114,000	11,621	4,387
Hongkong Bank Credit Card	28,000	1,800	750
MBf Card	12,000	no available data	107
Total	2,071,269	142,707	70,981
% of Total Population	2.82%		

Source: Fuentes (1998).

Table 12
Commercial Banks' Exposure to Credit Cards*

Year	P M	% Increase	Ratio to Total Loan Portfolio (in %)
1994	2,445.00		0.37
1995	11,685.00	377.90	1.32
1996	18,165.00	55.50	1.43
1997	38,403.00	111.41	4.80

* Includes subsidiaries of banks

Source: *Bangko Sentral ng Pilipinas*

Table 13
SELECTED ATM INDICATORS
1990-1999

ATM Network	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Bancnet										
Number of Member Banks	9	11	11	11	14	19	23	32	35	36
Number of ATMs	120	334	440	584	672	809	990	1,196	1,322	1,468
Number of Cardholders (in millions)	0.06	0.70	1.00	1.20	1.80	2.30	2.70	3.30	3.36	3.89
Total Transaction Volume	742,434	4,836,064	11,128,295	18,258,325	29,633,495	44,994,610	51,981,792	61,852,999	73,397,501	85,940,338
Average Daily Transactions	4,035	13,249	30,405	50,023	81,188	123,273	142,027	169,460	201,089	235,453
Average Monthly Transactions	61,870	403,005	927,358	1,521,527	2,469,458	3,749,551	4,331,816	5,154,417	6,116,458	7,161,695
Megalink										
Number of Member Banks	8	11	15	16	19	22	25	27	27	28
Number of ATMs	180	323	435	551	642	774	963	1,146	1,242	1,300
Number of Cardholders	0.31	0.70	1.08	1.33	1.77	2.28	2.83	3.80	3.50	4.00
Total Transaction Volume	767,466	3,887,744	9,116,359	15,307,899	24,814,800	39,276,596	46,458,062	56,806,303	69,701,436	79,592,792
Average Daily Transactions	2,132	10,799	25,323	42,522	68,930	109,102	129,050	157,795	193,615	221,091
Average Monthly Transactions	63,956	323,979	759,697	1,275,658	2,067,900	3,273,050	3,871,505	4,733,859	5,808,453	6,632,733
Expressnet										
Number of Member Banks	-	-	-	-	-	-	-	-	-	6
Number of ATMs	-	-	-	-	-	-	-	812	889	973
Number of Cardholders	-	-	-	-	-	-	-	-	-	3.2
TOTAL										
Number of Member Banks	17	22	26	27	33	41	48	59	62	70
Number of ATMs	300	657	875	1,135	1,314	1,583	1,953	3,154	3,453	3,741
Number of Cardholders (in million)	0.37	1.40	2.08	2.53	3.57	4.58	5.53	7.10	6.86	11.09
Percent of Total Population	0.60%	2.20%	3.18%	3.78%	5.20%	6.52%	7.69%	9.66%	9.13%	14.44%
Total Transaction Volume	1,509,900	8,723,808	20,244,654	33,566,224	54,448,295	84,271,206	98,439,854	118,659,302	143,098,937	165,533,130
Average Daily Transactions	6,167	24,048	55,728	92,545	150,118	232,375	271,077	327,255	394,704	456,544
Average Monthly Transactions	125,826	726,984	1,687,055	2,797,185	4,537,358	7,022,601	8,203,321	9,888,276	11,924,911	13,794,428

Sources: Bancnet, Inc., Megalink and Expressnet.

Table 14a
NUMBER OF MEGALINK TRANSACTIONS
January 1999-December 2000

DATE	INTRA-MEGALINK			NETLINK TRANSACTIONS						EXPRESSLINK TRANSACTIONS						TOTAL	
	COUNT			ACQUIRER			ISSUER			ACQUIRER			ISSUER			APP	OVERALL
	APP	REJ	TOTAL	APP	REJ	TOTAL	APP	REJ	TOTAL	APP	REJ	TOTAL	APP	REJ	TOTAL		
Jan-99	2,694,428	444,569	3,138,997	1,180,349	170,502	1,350,851	752,204	320,786	1,072,990	268,193	34,685	302,878	208,585	74,043	282,628	5,103,759	6,148,344
Feb-99	2,395,862	400,886	2,796,748	1,226,944	195,473	1,422,417	752,709	202,341	955,050	202,933	30,039	232,972	146,536	75,123	221,659	4,724,984	5,628,846
Mar-99	2,621,786	494,655	3,116,441	1,419,602	257,134	1,676,736	862,147	250,146	1,112,253	265,363	46,019	311,382	233,380	39,433	272,813	5,402,278	6,489,625
Apr-99	2,230,490	484,563	2,715,053	1,282,391	262,359	1,544,750	762,127	226,219	988,346	284,233	62,898	347,131	209,952	39,577	249,529	4,769,193	5,844,809
May-99	2,631,463	402,512	3,033,975	1,490,757	199,810	1,690,567	898,764	245,900	1,144,664	285,937	42,684	328,621	237,937	49,496	287,433	5,544,858	6,485,260
Jun-99	2,527,330	428,375	2,955,705	1,422,597	232,547	1,655,144	833,857	331,241	1,165,098	355,256	54,238	409,494	236,557	40,407	276,604	5,375,597	6,462,045
Jul-99	2,583,405	563,486	3,146,891	1,634,796	344,360	1,979,156	923,874	285,423	1,209,297	312,853	79,935	392,788	183,844	82,695	266,539	5,638,772	6,994,671
Aug-99	2,555,633	431,181	2,986,814	1,719,408	253,138	1,972,546	927,639	222,726	1,150,095	274,730	39,204	313,934	172,046	98,187	270,233	5,649,456	6,693,622
Sep-99	2,419,936	416,106	2,836,042	1,697,660	253,320	1,950,980	944,706	204,452	1,149,158	317,568	49,471	367,039	206,021	56,061	262,082	5,585,891	6,565,301
Oct-99	2,528,061	473,295	3,001,356	1,813,917	310,677	2,124,594	953,660	226,205	1,179,865	357,766	64,969	422,735	205,728	54,753	260,481	5,859,132	6,989,031
Nov-99	2,514,980	474,769	2,989,749	1,765,983	308,992	2,074,975	940,350	255,284	1,195,634	423,397	70,084	493,481	212,882	44,772	257,654	5,857,592	7,011,493
Dec-99	2,960,193	525,145	3,485,338	2,131,527	315,199	2,446,726	1,027,009	262,581	1,289,590	561,221	78,826	640,047	245,739	48,460	294,199	6,925,689	8,155,900
1999 Total	30,663,567	5,539,542	36,203,109	18,785,931	3,103,511	21,889,442	10,579,046	3,033,304	13,612,040	3,909,450	653,052	4,562,502	2,499,207	703,007	3,201,854	66,437,201	79,468,947
Jan-00	2,173,680	345,976	2,519,656	1,634,681	217,690	1,852,371	864,457	148,376	1,012,833	393,071	55,536	448,607	211,555	32,468	244,023	5,277,444	6,077,490
Feb-00	2,282,555	325,462	2,608,017	1,733,233	209,583	1,942,816	916,408	189,420	1,105,828	434,987	52,898	487,885	224,431	34,484	258,915	5,591,614	6,403,461
Mar-00	2,435,423	356,202	2,791,625	1,902,230	230,982	2,133,212	999,197	183,656	1,182,853	476,549	60,356	536,905	236,158	37,795	273,953	6,049,557	6,918,548
Apr-00	2,245,466	370,666	2,616,132	1,761,775	237,675	1,999,450	899,266	209,491	1,108,757	496,892	68,513	565,405	212,775	31,597	244,372	5,616,174	6,534,116
May-00	2,325,983	346,677	2,672,660	1,883,804	231,797	2,115,601	950,606	222,404	1,173,010	556,588	61,302	617,890	226,959	36,132	263,091	5,943,940	6,842,252
Jun-00	2,187,540	455,363	2,642,903	1,814,600	327,520	2,142,120	916,446	240,759	1,157,205	564,313	73,789	638,102	216,484	32,711	249,195	5,699,383	6,829,525
Jul-00	2,263,850	451,057	2,714,907	1,999,758	319,476	2,319,234	998,863	216,799	1,215,662	599,690	76,715	676,405	233,553	36,473	270,026	6,095,714	7,196,234
Aug-00	2,364,965	457,418	2,822,383	2,012,560	332,175	2,344,735	1,005,606	253,808	1,259,414	619,156	84,861	704,017	265,966	36,597	302,563	6,268,253	7,433,112
Sep-00	1,880,791	754,825	2,635,616	1,894,717	322,468	2,217,185	947,621	248,066	1,195,687	651,873	93,268	745,141	276,067	44,723	320,790	5,651,069	7,114,419
Oct-00	1,764,803	572,527	2,337,330	1,926,386	371,759	2,298,145	927,812	270,463	1,198,275	666,042	103,682	769,724	299,640	46,767	346,407	5,584,683	6,949,881
Nov-00	1,882,553	397,180	2,279,733	1,924,540	354,576	2,279,116	952,304	332,852	1,285,156	646,081	106,891	752,972	304,198	75,428	379,626	5,709,676	6,976,603
Dec-00	2,349,802	528,325	2,878,127	2,155,038	494,689	2,649,727	1,077,473	406,645	1,484,118	872,906	168,665	1,041,571	332,802	69,708	402,510	6,788,021	8,456,053
2000 Total	26,157,411	5,361,678	31,519,089	22,643,322	3,650,390	26,293,712	11,456,059	2,922,739	14,378,798	6,978,148	1,006,476	7,984,624	3,040,588	514,883	3,555,471	70,275,528	83,731,694

Source of raw data: Megalink

Table 14b
Bancnet POS Transactions
Volume and Value for the Year 2000

Month	Volume	Value (in pesos)	Average Value (in pesos)
Jan	13,555	8,189,478.96	604.17
Feb	14,406	9,024,568.94	626.45
Mar	15,829	11,252,156.54	710.86
Apr	17,058	12,238,022.62	717.44
May	18,032	15,943,265.56	884.17
Jun	17,932	14,799,388.24	825.31
Jul	19,229	16,724,717.28	869.77
Aug	19,012	19,524,817.48	1,026.97
Sep	6,401	6,372,824.18	995.60
Oct	18,493	16,400,677.88	886.86
Nov	18,978	16,973,552.36	894.38
Dec	27,237	26,244,772.31	963.57
Total	206,162	173,688,242.35	
Average	565	475,858.20	842.48

Source: Bancnet, Inc.

Table 15
Rejected Rate Statistics

Year	Average Daily Volume	Reject Rate (%)
1995	410,893	1.57
1996	446,237	1.59
1997	471,379	1.39
1998	449,975	1.23
1999	453,383	1.12
2000	458,648	no data

Source: Philippine Clearing House Corporation.

Table 16
Returned Cheques Statistics

Year	Volume		Value (in P M)		
	Daily Average	% of Previous Day's Clearing Items	Clearing Values	Returns	% of Total
1995	8,269	2.0	35,691.6	241.3	0.68
1996	10,560	2.4	47,687.0	320.3	0.67
1997	11,188	2.4	62,645.0	464.6	0.74
1998	9,989	2.3	64,158.6	440.4	0.69
1999	8,005	1.8	67,733.4	324.6	0.48
2000	7,898	1.7	64,440.8	324.6	0.58

Source: Philippine Clearing House Corporation.

Table 17
Timeline for the Morning (AM) Returns Clearing Window

Time	PCHC	BSP
7:30 AM	Start receiving returned items	
9:00 AM	Receiving cut-off time	
	Processing/Netting operation and transmission of net results to BSP	
10:00 AM		Update Banks' DDA
11:00 AM		Broadcast updated banks' DDA balance

Source: Philippine Clearing House Corporation, CHRR 2000.

Table 18
Cheque Clearing Transaction Statistics - Breakdown by Amount Range

Range (In Pesos)	Sept. 28, 2001				Oct. 1, 2001			
	Count		Value		Count		Value	
	No.	%	P M	%	No.	%	P M	%
a) 10,000 and below	241243	63.48	819.8	0.9	525785	57.75	1957.2	2.30
b) 10,001 - 100,000	110565	29.09	3225.0	3.6	318442	34.98	9372.5	11.01
c) 100,001 - 1,000,000	23256	6.12	6360.7	7.1	59087	6.49	15187.3	17.85
d) 1,000,001 - 10,000,000	4012	1.06	10457.6	11.7	6238	0.69	15258.8	17.93
e) 10,000,001 - 20,000,000	305	0.08	4080.2	4.6	353	0.04	4623.9	5.43
f) 20,000,001 - 50,000,000	272	0.07	8019.1	9.0	290	0.03	8528.5	10.02
g) Above 50,000,000	375	0.10	56505.4	63.2	218	0.02	30173.9	35.46
Total	380028	100.00	89467.8	100.0	910413	100.00	85102.1	100.00

Source: Philippine Clearing House Corporation.

TABLE 19. LEGAL RESERVE REQUIREMENTS: COMMERCIAL BANKS, 1997-2000
AGAINST PESO DEPOSIT LIABILITIES OF COMMERCIAL BANKS
(In Percent)

Effective Date	Circular Number	Total	Regular Reserve					Liquidity Reserves
			Demand	Savings	Time	Deposit	"NOW"	
Substitutes Accounts								
January 3, 1997	119	15	13	13	13	13	13	2
July 4, 1997	136	17	13	13	13	13	13	4
July 31, 1997	139	18	13	13	13	13	13	5
August 15, 1997	140	21	13	13	13	13	13	8
August 28, 1997	141	20	13	13	13	13	13	7
September 5, 1997	141	19	13	13	13	13	13	6
October 15, 1997	144	18	13	13	13	13	13	5
November 15, 1997	144	17	13	13	13	13	13	4
March 20, 1998	158	17	10	10	10	10	10	7
May 29, 1998	166	15	8	8	8	8	8	7
October 2, 1998	180	17	10	10	10	10	10	7
February 1, 1999	188	16	10	10	10	10	10	6
March 1, 1999	188	15	10	10	10	10	10	5
April 16, 1999	197	14	10	10	10	10	10	4
July 2, 1999	205	12	9	9	9	9	9	3
October 13, 2000	260	14	9	9	9	9	9	5
October 20, 2000	262	16	9	9	9	9	9	7
July 27, 2001	286	18	9	9	9	9	9	9
August 10, 2001	288	20	9	9	9	9	9	11

Source: Statistical Bulletin, Bangko Sentral ng Pilipinas

TABLE 20. REPURCHASE, REVERSE REPURCHASE and DISCOUNT RATES OF THE CENTRAL BANK, 1997-2000			
	Repurchase Rates	Reverse Repurchase Rates	Rediscount Rates
Jan-97	n.t.	10.5	10.7
Feb-97	n.t.	10.5	9.7
Mar-97	12.8	10.2	9.6
Apr-97	12.7	10.0	8.5
May-97	13.6	15.8	9.4
Jun-97	15.3	14.4	9.9
Jul-97	24.7	25.7	10.0
Aug-97	22.0	15.6	12.6
Sep-97	n.t.	12.0	13.2
Oct-97	15.7	12.1	14.0
Nov-97	16.0	12.0	16.2
Dec-97	15.4	11.5	14.6
Jan-98	15.7	12.4	17.0
Feb-98	15.1	13.1	18.3
Mar-98	15.0	13.0	16.6
Apr-98	15.1	13.0	14.9
May-98	15.4	13.3	13.7
Jun-98	15.1	13.1	12.9
Jul-98	15.1	13.1	13.1
Aug-98	17.1	16.7	13.2
Sep-98	18.0	16.0	13.0
Oct-98	15.9	13.9	12.8
Nov-98	15.6	13.7	12.5
Dec-98	15.4	13.4	12.4
Jan-99	15.2	13.1	12.5
Feb-99	14.5	12.5	12.1
Mar-99	14.0	12.1	11.5
Apr-99	13.8	11.0	10.8
May-99	n.t.	10.3	9.2
Jun-99	11.2	9.5	8.7
Jul-99	11.0	9.0	7.8
Aug-99	n.t.	9.0	7.4
Sep-99	n.t.	9.0	7.6
Oct-99	n.t.	9.0	7.5
Nov-99	11.0	8.8	7.7
Dec-99	11.8	8.8	7.9
Jan-00	11.8	8.8	7.9
Feb-00	n.t.	8.8	7.9
Mar-00	11.0	8.8	7.8
Apr-00	11.0	8.8	7.9
May-00	11.8	9.5	7.7
Jun-00	12.3	10.0	8.0
Jul-00	12.3	10.0	7.9
Aug-00	12.3	10.0	7.9
Sep-00	13.3	10.8	7.9
Oct-00	16.1	13.0	8.3
Nov-00	17.3	15.0	8.9
Dec-00	16.3	13.8	13.8

n.t. = no transactions

Source: Bangko Sentral ng Pilipinas

Table 21
Overdrafts and Reserve Money
(In Million Pesos)

Year	Overdrafts	Reserve Money	Overdrafts as % of Reserve Money
1987	12769	57738	22.12
1988	12903	67282	19.18
1989	13039	92876	14.04
1990	12973	108721	11.93
1991	12739	129363	9.85
1992	12803	144838	8.84
1993	2982	171746	1.74
1994	2967	182413	1.63
1995	2948	212735	1.39
1996	2866	243258	1.18
1997	3561	266460	1.34
1998	4118	239828	1.72
1999	4476	321726	1.39
2000	1816	308207	0.59

Source: *Bangko Sentral ng Pilipinas*

Table 22. Estimated Demand for Reserve Money

First Stage:

Dependent Variable: LOG(RM/CPI94)

Method: Least Squares

Date: 10/05/01 Time: 16:17

Sample(adjusted): 1987:2 2000:4

Included observations: 55 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.070394	0.316110	-16.03999	0.0000
LOG(GDP)	1.033627	0.058206	17.75815	0.0000
TBILL-INFL	-0.004478	0.002237	-2.001896	0.0506
D9097	0.175074	0.016127	10.85569	0.0000
R-squared	0.900529	Mean dependent var	0.423139	
Adjusted R-squared	0.894678	S.D. dependent var	0.177179	
S.E. of regression	0.057501	Akaike info criterion	-2.804094	
Sum squared resid	0.168623	Schwarz criterion	-2.658106	
Log likelihood	81.11259	F-statistic	153.9037	
Durbin-Watson stat	1.793347	Prob(F-statistic)	0.000000	

Unit Root Test:

ADF Test Statistic	-6.210610	1% Critical Value*	-3.5572
		5% Critical Value	-2.9167
		10% Critical Value	-2.5958

*MacKinnon critical values for rejection of hypothesis of a unit root.

The test shows that the residual for the 1st stage is stationary.

Second Stage:

Dependent Variable: D(LOG(RM/CPI94))

Method: Least Squares

Date: 10/05/01 Time: 16:18

Sample(adjusted): 1987:3 2000:4

Included observations: 54 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.001361	0.007575	0.179648	0.8582
D(LOG(GDP))	0.985348	0.093968	10.48599	0.0000
D(TBILL-INFL)	-0.006988	0.003908	-1.788157	0.0798
RESID01(-1)	-0.824900	0.138218	-5.968123	0.0000
R-squared	0.805462	Mean dependent var	0.011268	
Adjusted R-squared	0.793790	S.D. dependent var	0.121775	
S.E. of regression	0.055298	Akaike info criterion	-2.880960	
Sum squared resid	0.152895	Schwarz criterion	-2.733628	
Log likelihood	81.78592	F-statistic	69.00636	
Durbin-Watson stat	1.738155	Prob(F-statistic)	0.000000	

Unit Root Test:

ADF Test Statistic	-5.260089	1% Critical Value*	-3.5598
		5% Critical Value	-2.9178
		10% Critical Value	-2.5964

*MacKinnon critical values for rejection of hypothesis of a unit root.

The test shows that the residual for the 2nd stage is stationary.

Table 23
Seigniorage

Year	Method 1	Method 2
1995	1.48	0.96
1996	3.82	1.07
1997	-0.85	0.83
1998	0.23	1.15
1999	3.97	0.72
Average	1.73	0.94

Note:

Method 1:

$$\text{Seigniorage} = (M_t - M_{t-1}) / \text{GDP}_t$$

Method 2:

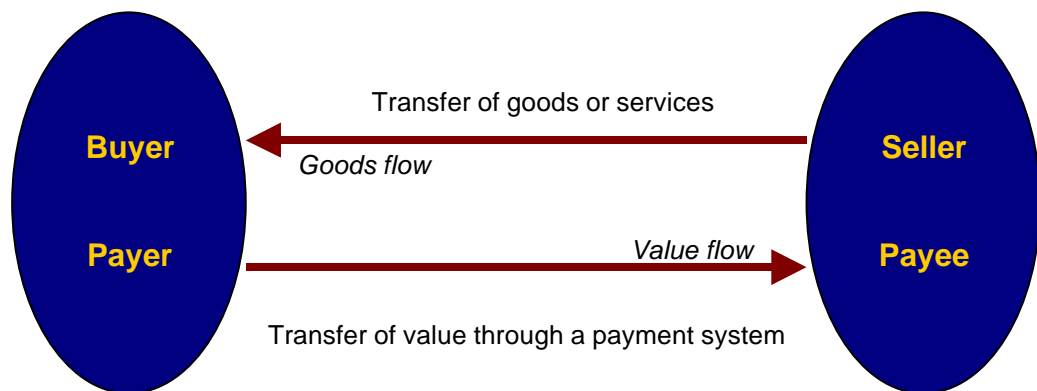
$$\text{Seigniorage} = \Pi_t (M_{t-1} / \text{GDP}_t)$$

where:

- M_t = base money, current period
- M_{t-1} = base money, previous period
- GDP_t = gross domestic product, nominal
- Π_t = inflation rate
- M_{t-1} = base money, previous period

Source of basic data; Bangko Sentral ng Pilipinas.

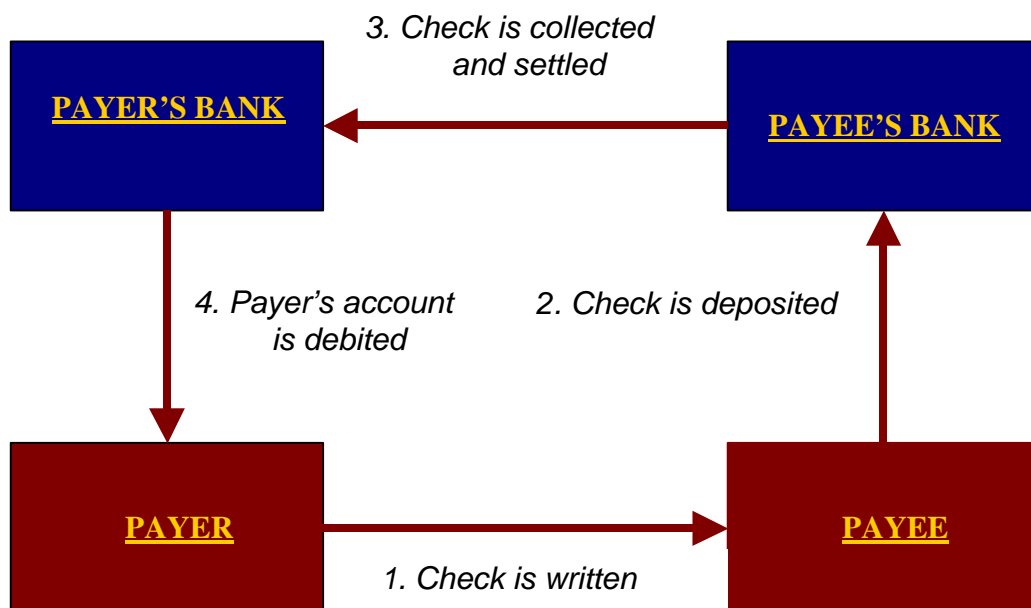
Figure 1
Buyers and Sellers, Payers and Payees



Source: Humphrey (1995)

Figure 2
Illustration of a Debit Transfer

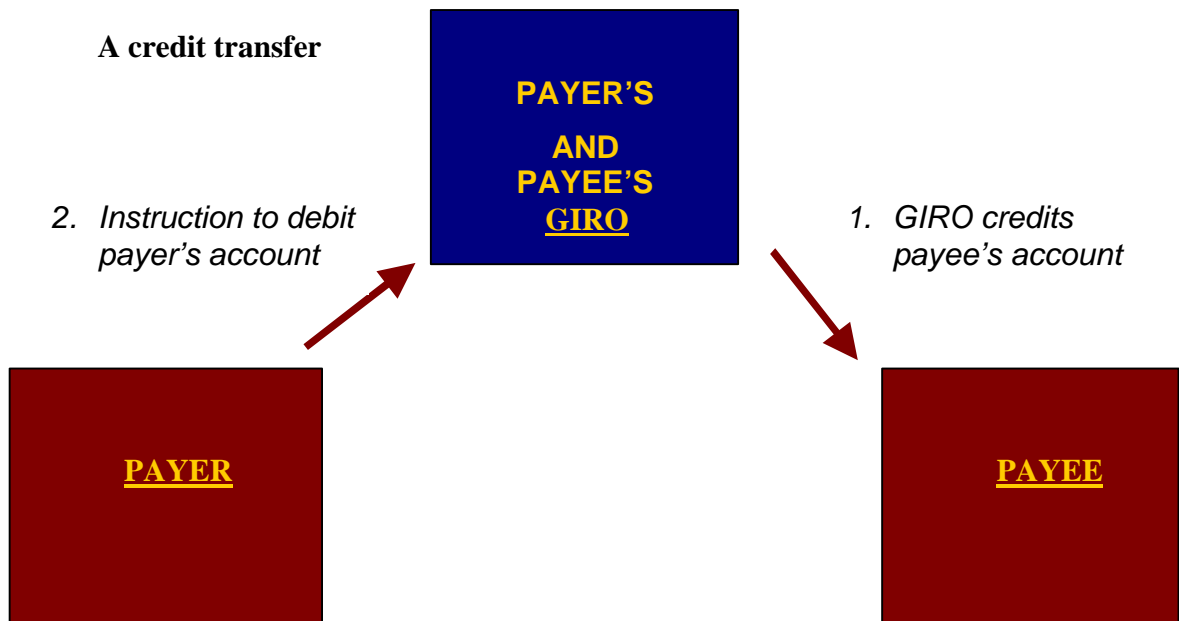
Check: A debit transfer



Solid line: Route of forward collection, points 1 to 4.
Route of returned items, point 4 to point 1.

Source: Sato and Humphrey (1995).

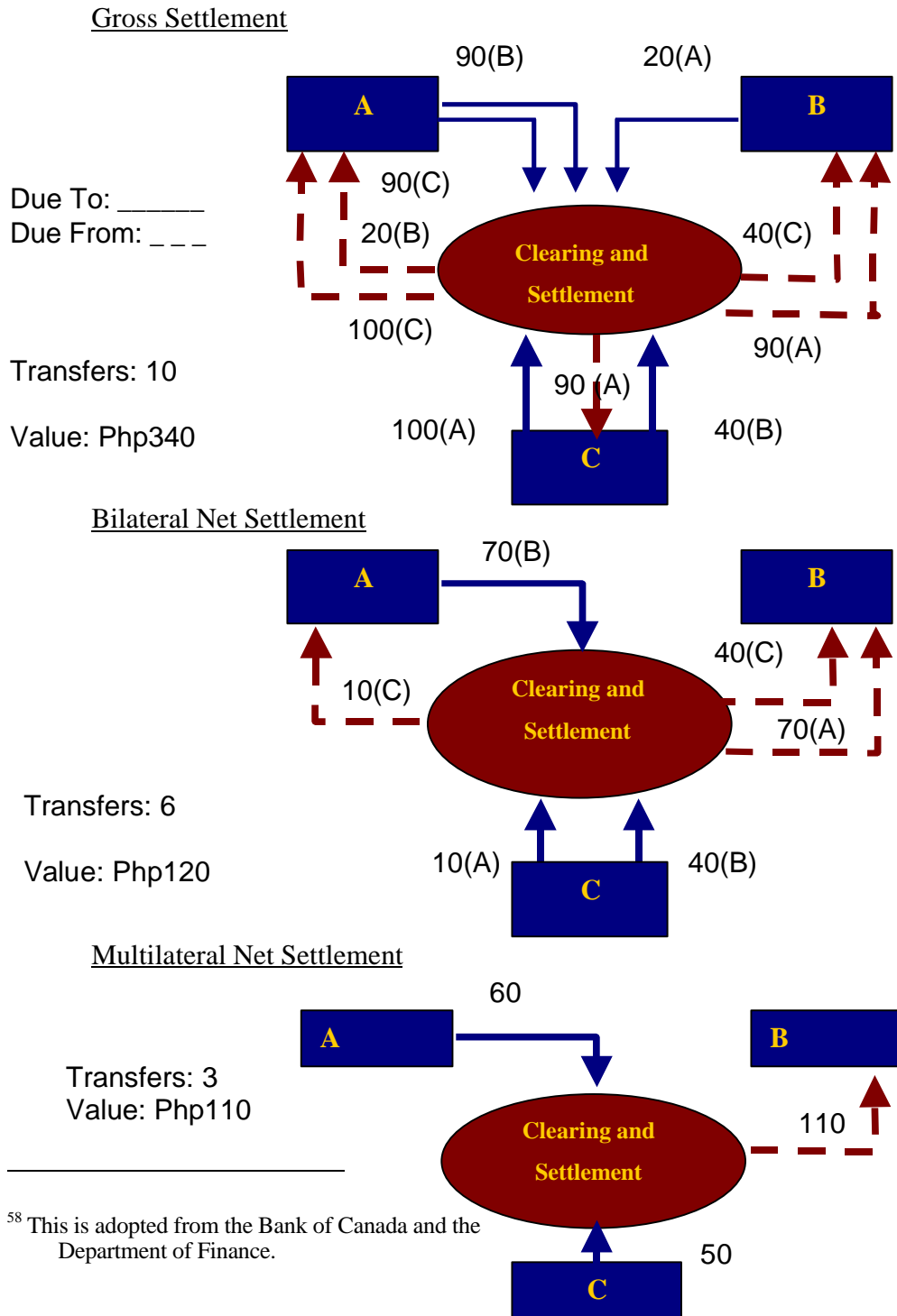
Figure 3
Illustration of a Credit Transfer



Solid line: Route of forward collection points 1 to 2. There are no return items.

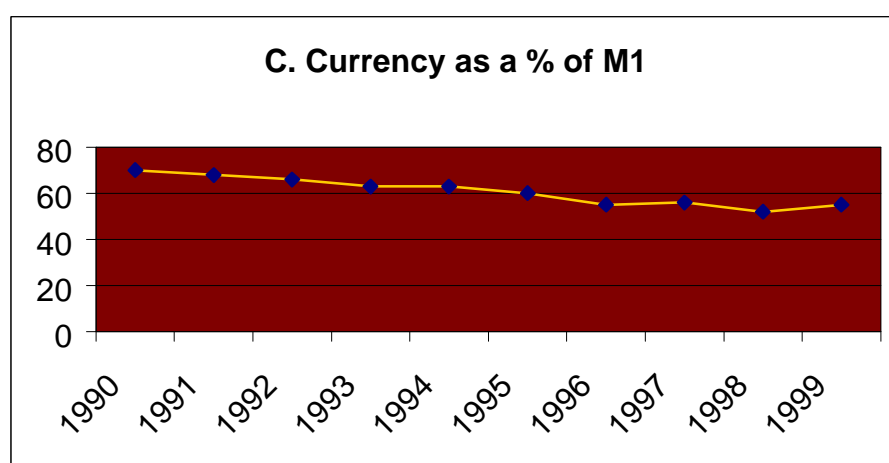
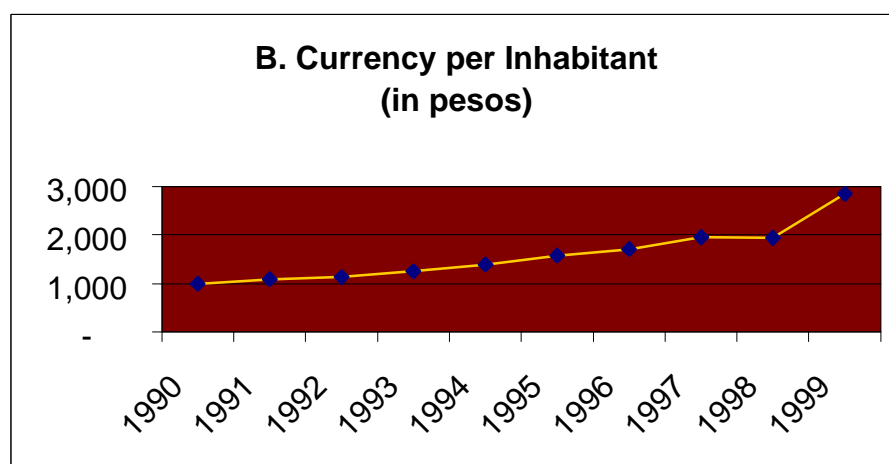
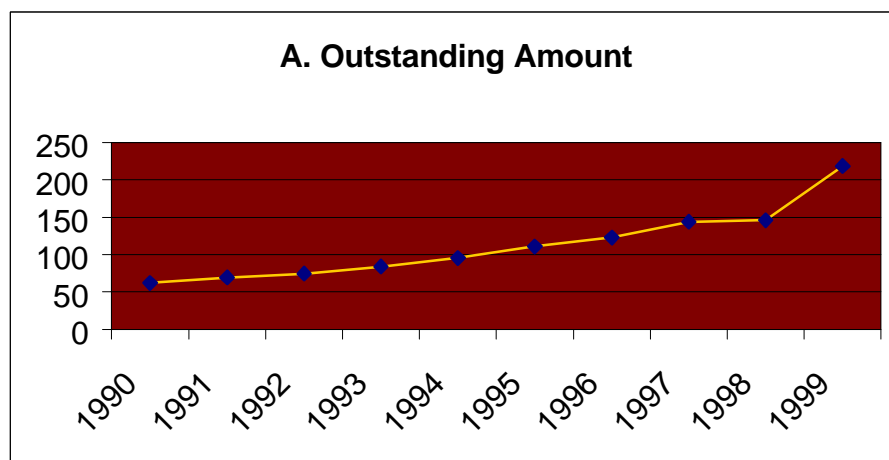
Source: Sato and Humphrey (1995).

Figure 4
Gross vs. Net Settlement Systems⁵⁸
[In Pesos]



⁵⁸ This is adopted from the Bank of Canada and the Department of Finance.

**Figure 5. Currency in Circulation, 1990-1999
(In billion pesos)**



Source of basic data: Bangko Sentral ng Pilipinas

Figure 6

**Cheque Payment:
Clearing and Settlement**

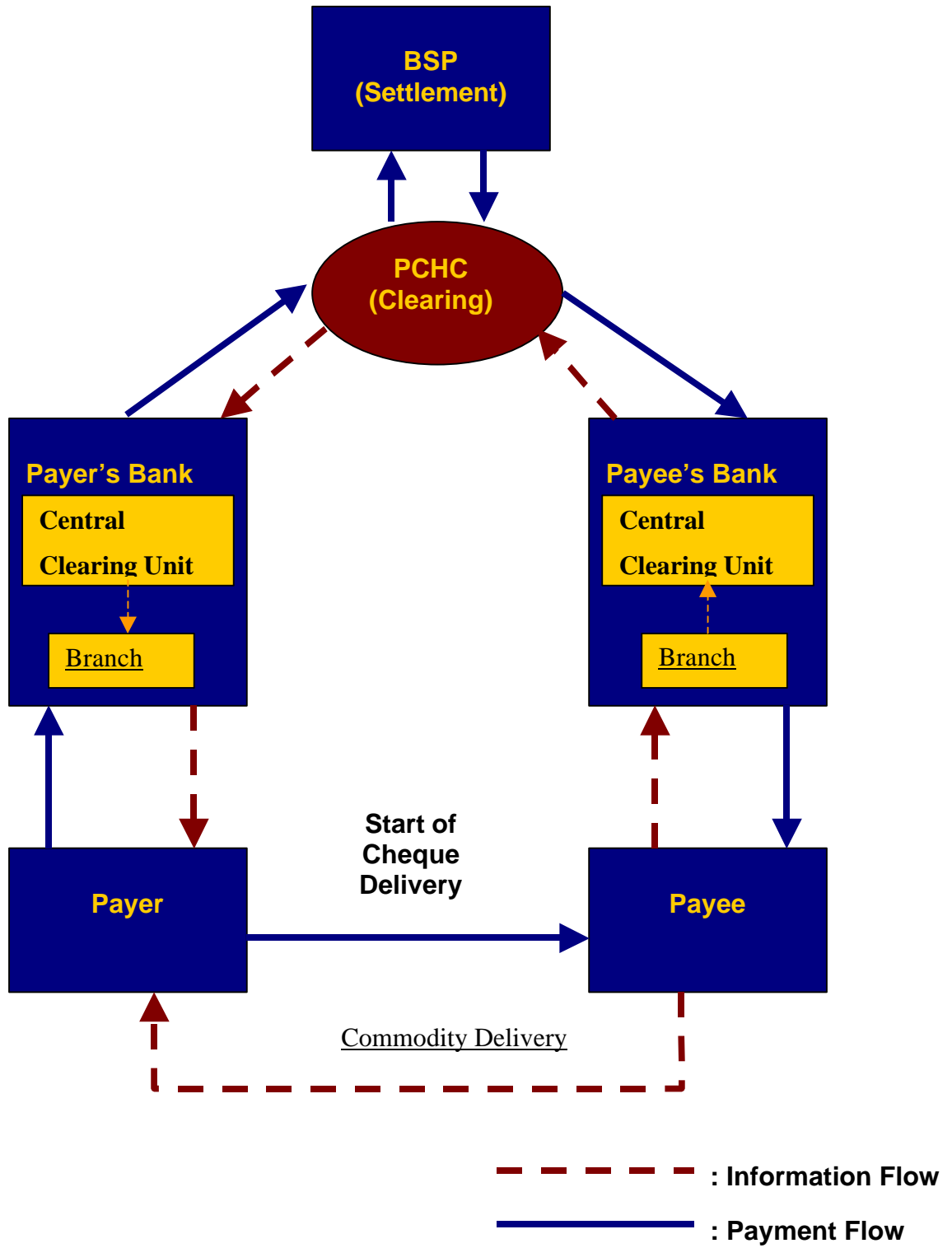


Figure 7

**Philippine Domestic Dollar Transfer System:
Direct Credit Transfer (Netting Sub-system)**

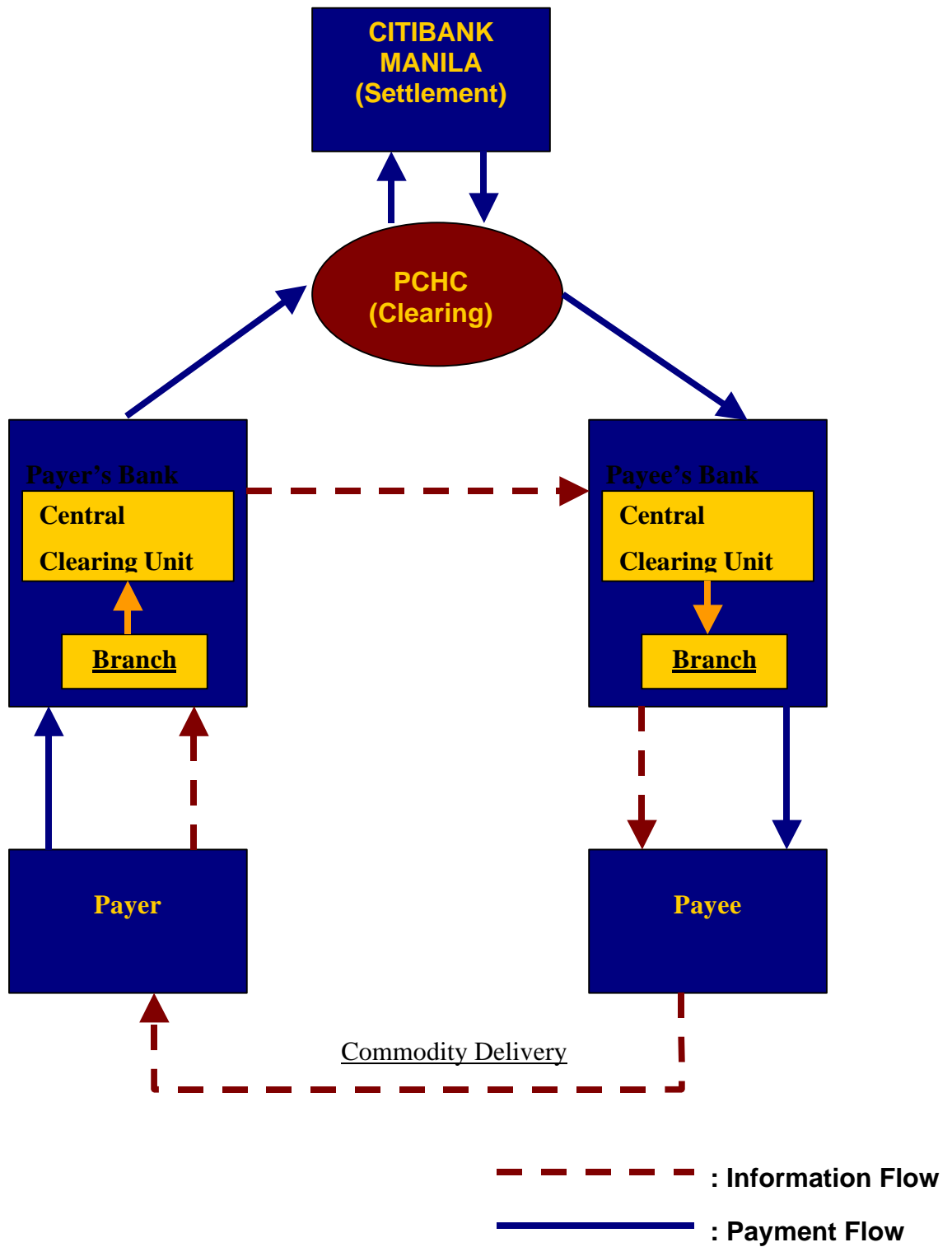


Figure 8

Electronic Peso Clearing System:
Direct Credit Transfer (Netting Sub-system)

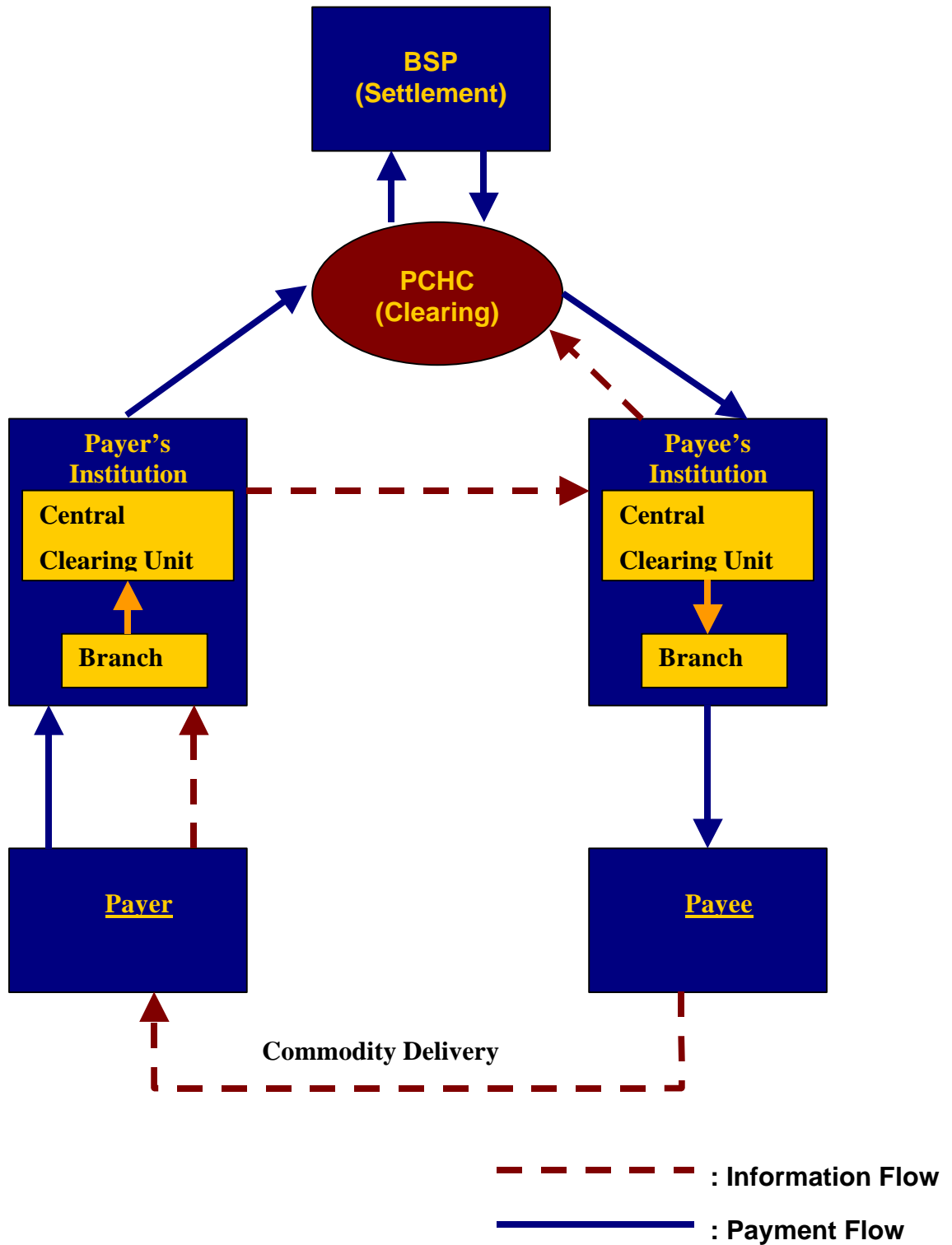
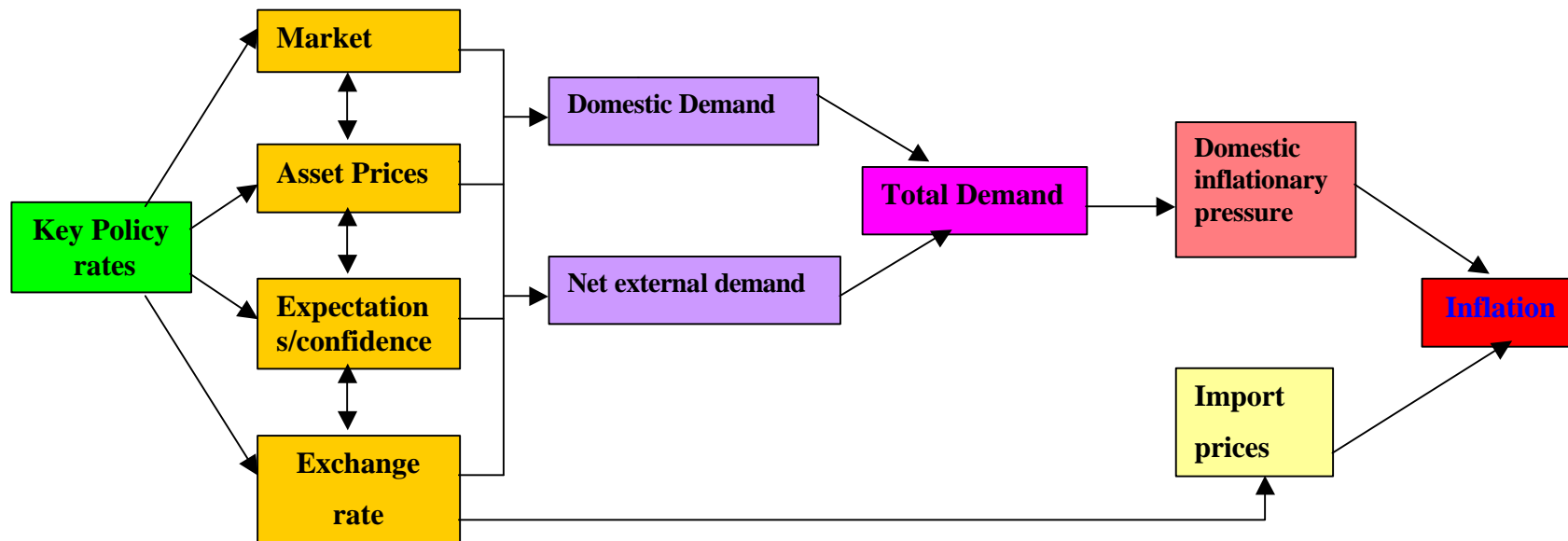


Figure 9. The Transmission Mechanism Of Monetary Policy

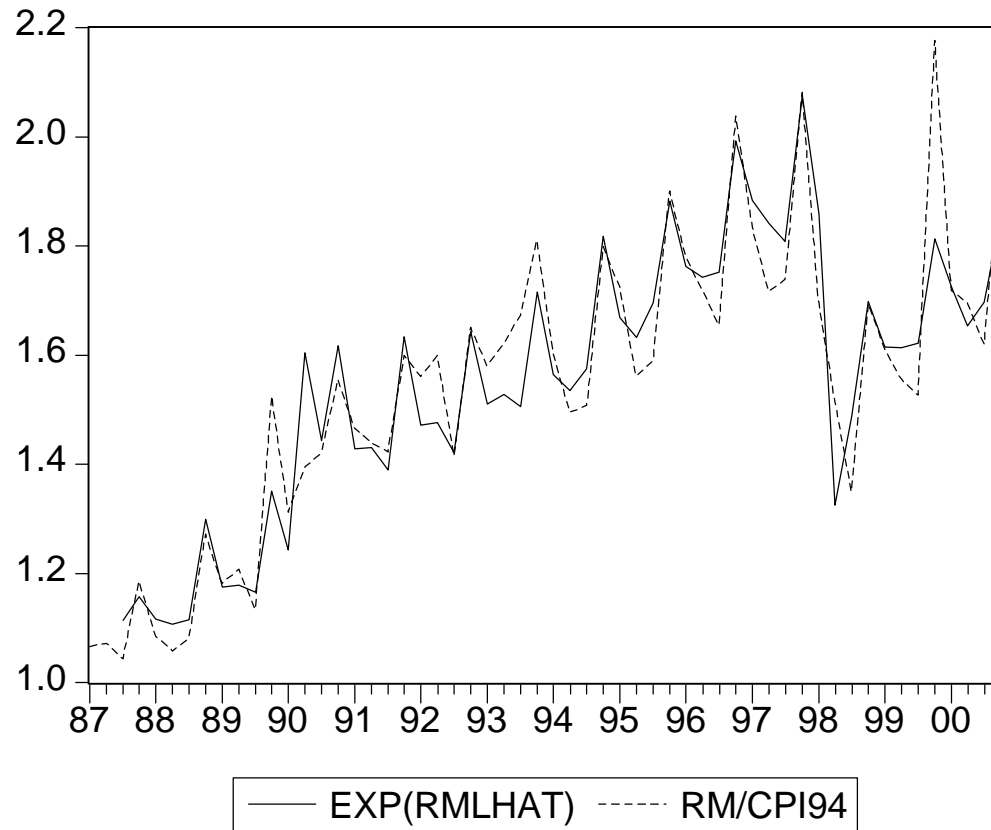


**Figure 10. Simulation Results: Demand for Reserve Money
Comparison of $\exp(\text{RMLHAT})$ and $(\text{RM}/\text{CPI94})$**

where $\text{RMLHAT} = \text{RMLF}(-1) + \text{DRMLF}$

RMLF = simulated values for 1st stage

DRMLF = simulated values for 2nd stage



MAPE = 4.37

Annex A

Specific features and statistics of e-money products - A

Country	Name of system	Type of system	Number of issuers	Loading procedures	Value limit on card or consumer software (USD)	Transferability among end-users	Adapted for network payment	Multicurrency features	Multifunctional payment features
Austria	Quick	Card-based	1	ATM	170	No	No	No	Yes
Belgium	Proton	Card-based	38	ATM, phone	133.8	No	Piloted	No	Yes
Brazil	VISA Cash	Card-based	14 ^{1,2}	ATM, phone, internet	51-154	No	Considered	No	Yes
	SIBS	Card-based	1 ³	ATM, phone, internet	307	No	No	No	Yes
Canada	Mondex Canada Pilot Program 1	Card-based	3	Phone (residential and public), ATMs, other Mondex cards	335 ⁴	Yes	No	No	No
	Mondex Canada Pilot program 2	Card-based	2	Phone (residential), ATMs, other Mondex cards, internet, specialised loading units	335 ⁴ (average)	Yes	Considered	No	Yes
	VISA Cash	Card-based	1	Specialised loading units, internet	335 ⁴ (average)	No	Considered	No	Yes
Costa Rica	Futura 3000	Card-based	16	Phone, ATM, internet	102	Yes	Yes	No	Yes
	Mondex (Credomatic)	Card-based	1	Phone, ATM, internet	330	Yes	Yes	No	Yes
Finland	Avant II	Card-based	4	ATM, network since autumn 1999	362	No	Yes	FIM and euro	Yes

Country	Name of system	Type of system	Number of issuers	Loading procedures	Value limit on card or consumer software (USD)	Transferability among end-users	Adapted for network payment	Multicurrency features	Multifunctional payment features
Finland (cont.)	Matkahuolto	Card-based	1	Other	150	No	No	No	Yes
	Rovaniemi Citycard	Card-based	1	Other	150	No	No	No	Yes
	Vaasa Citycard	Card-based	1	Other	170	No	No	No	Yes
	Seinäjoki Citycard	Card-based	1	Other	n.a.	No	No	No	Yes
	UniCard	Card-based	1	Other	170	No	No	No	Yes
France	Kleline	Network-based	1	Internet	80	No	(Yes)	Yes	Debit/credit card
Germany	GeldKarte	Card-based	3,500	ATM	240	No	No	No	Yes
Hong Kong	Octopus	Card-based	1	Self-service add-value machines, ticketing office automatic add-value with subsequent deduction from bank accounts	129	No	No	No	No
	Mondex	Card-based	2	ATM	400	Yes	Yes	Available but not yet currently used	Available but not yet currently used
	VISA Cash	Card-based	15	ATM	385	No	No	No	Yes
Italy	Cassamat	Card-based	29	ATM, bank branch	300	No	No	No	No
	MINIpay	Card-based	56	Bank branch, ATM, phone	180	No	Yes	Experimental	No
	VISACash	Card-based	1	Non-reloadable	30	No	No	No	No
Lithuania	ImparCard	Card-based	1	ATM	No limit	No	Piloted	Yes	Yes

Country	Name of system	Type of system	Number of issuers	Loading procedures	Value limit on card or consumer software (USD)	Transferability among end-users	Adapted for network payment	Multicurrency features	Multifunctional payment features
Mexico	Visa Cash	Card-based	6	Bank branch loaded device	250 ⁵	No	No	No	No
	Monedero Electronico Inbursa (Proton)	Card-based	1	Branch load device, phone and internet	100	No	No	No	No
Netherlands	Chipknip	Card-based	67	Terminals at banks (7,000), portable phone-load devices	250	No	Yes	-	Debit cards
	Chipper	Card-based	6	Public phones (20,000), portable phone-load devices	250	No	Yes	-	Debit cards
Portugal	PMB (Porta-Moedas Multibanco)	Card-based	26	ATM	341	No	No	No	Debit and/or credit card functions; ATM access
Singapore	Cash Card	Card-based	5 ⁶	Bank terminals, Home NETS ⁷	297	No ⁸	Yes ⁹	No	ATM and debit cards
Spain	Monedro 4B	Card-based	124	ATM	Minimum 170.72 Maximum 239.10	No	Yes	No ¹²	Yes
	VISA Cash	Card-based		ATM ¹⁰					
	Euro 6000	Card-based		ATM ¹¹					
	Virtual C@sh	Network-based		n.a.					
Switzerland	Cash	Card-based	Approx. 350	ATM	204 per card (680 per day)	No	No	No	Yes
	e-cash TM	Network-based	1	Internet	3,401 per month	No	Yes	No	No

Country	Name of system	Type of system	Number of issuers	Loading procedures	Value limit on card or consumer software (USD)	Transferability among end-users	Adapted for network payment	Multicurrency features	Multifunctional payment features
Thailand	MicroCash	Card-based	1	Offline loading device	130	No	No	No	2 types: - e-purse only - ATM/credit cards/e-purse
	SCB Smart Card	Card-based	1	Online loading device	Unlimited	No	No	No	2 types: - e-purse only - ATM/credit cards/e-purse
Turkey	Akilli Bayi Kartlari (Smart Retailer Cards)	Card-based	1	EPROM	6,597.11	No	Yes (through the bank network)	No	No
	Parakart (Money card)	Card-based	1	Bank branches or ATM	60	No	No	No	No
UK	Barclaycoin ¹³	Network-based	1	Value loaded from debit or credit card at Barclaycoin website	n.a.	No	Yes	No	-
	Mondex	Both	3 ¹⁴	ATM (for loading from current or credit card account)/specific machine (for loading by cash)	165	Yes	Limited	No (although planned later)	ID and access control. No other payment function at present, but planned later.
	Visa Cash	Card-based	6	ATM (for loading from bank account)/specific machine (for loading from credit card). Trialling phone	83	No	No	No (although planned later)	Debt/ credit/ cheque guarantee/ ATM card

Country	Name of system	Type of system	Number of issuers	Loading procedures	Value limit on card or consumer software (USD)	Transferability among end-users	Adapted for network payment	Multicurrency features	Multifunctional payment features
UK (cont.)	Magex Wallet	Network-based	1	Value loaded from credit card at central Magex website	n.a.	No	Yes	No	-
USA	Visa Cash ^{15, 16} (New York)	Card-based	1	ATM	500	n.a.	n.a.	No	ATM
	Mondex ^{15, 17} (New York)	Card-based	1	ATM	200	n.a.	n.a.	No	ATM
	eCash ¹⁸ Technologies	Network-based	n.a.	n.a.	n.a.	n.a.	Yes	No	No
	CyberCoin	Network-based	n.a.	Checking account or credit card	80	No	Yes	No	n.a.

¹ Unibanco, Banestado, Sudameris, Banespa, Boston, Brazil, Real, Noroeste, CEF, Finasa, HSBC Bamerindus, Itaú, Bradesco, Fininvest. ² Comparing to the 1998 survey, the lower number is due to one bankruptcy. ³ Bradesco. ⁴ The limits quoted refer to the limit a loading device will permit. The maximum limit on the chip for both Mondex and VISA Cash is USD 670. ⁵ Santander Mexicano's value limit on Card is 2,500 pesos (USD 250). ⁶ In November 1998, DBS bank acquired POSB bank. Both banks were part of the original six CashCard issuing banks. ⁷ Handheld terminal which allows CashCard top-ups at home via the telephone line. ⁸ Presently, purse-to-purse transactions are not possible. ⁹ The CashCard can be used to make small-value payments for purchases on the internet. This scheme is known as CashCard for Open Network E-commerce or C-One. ¹⁰ Although at a very early stage, several devices called Self-service EFT have been tested in member Cis. No cash withdrawals can be done but the loading of e-money products. ¹¹ There is also the possibility of loading the electronic purse (previous cash payment) in special devices placed inside any branch of the issuer. ¹² Cards with a single-currency feature (pesetas or euro). ¹³ Note that the Barclaycoin trial closed at the end of 1999. ¹⁴ Mondex value can be purchased from three different banks, although the value is initially used by the UK originator and the issuing banks purchase Mondex value from the originator to sell on to their customers. ¹⁵ Joint experiment by Mondex and Visa Cash. An average of USD 38 in stored value was loaded onto user's cards, and more than USD 1 million in user purchases had been electronically deposited into merchants' accounts by the close of the programme. ¹⁶ The only current US Visa Cash programmes involve several military bases as well as Visa USA's corporate campus and corporate campuses at several Visa member banks. ¹⁷ Although Mondex e-money programmes exist outside the United States, no e-money projects are currently in operation within the United States. ¹⁸ eCash Technologies purchased Digicash's "blind signature" technology and other assets in 1999. From October 1995-September 1998, Digicash operated a programme using this technology that involved 300 merchants and 5000 PC users.

Source: Bank for International Settlements, "Survey of Electronic Money Development," May 2000.

Annex B										
Specific features and statistics of e-money products - B										
Country	Name of system	Type of system	Number of cards issued (or home PC users)	Number of merchant terminals (or merchant PCs)	Float outstanding (in USD millions)	Volume of daily (purchase) transactions	Volume of daily (purchase) transactions (in USD)	Average value of (purchase) transactions (in USD)	Memo Item	
									Reporting period	Launch date of product
Austria	Quick	Card-based	4.8 million	28,000	3.3	5,800	43,900 ¹	6.00	October 1999	1994
Belgium	Proton	Card-based	7,000,000 ²	64,000	44.4	149,261	596,437	4.00	December 1999	February 1995
Brazil	VISA Cash	Card-based	95,000	1,050	44.2 (monthly average)	334	1,477	4.42	December 1996-September 1999	December 1996
	SIBS	Card-based	40,100	690	23.6 (monthly average)	960	3,073	3.20	September 1996-September 1999	September 1996
Canada	Mondex Canada Pilot program 1	Card-based	15,000	550	0.0289 (at termination) 0.0747 ³ (average over project life)	n.a.	3,045.45 ³	4.00 ³	At termination ⁴	February 1997, terminated October 1999
	Mondex Canada Pilot program 2	Card-based	10,000 ³	650	0.0597 (launch value)	n.a.	4,060.61 ³	n.a.	As of 31 October 1999 ⁴	26 August 1999
	VISA Cash	Card-based	48,000 ³	320	0.03283	n.a.	n.a.	2.85 ³	As of 31 October 1999 ⁴	October 1997
Costa Rica	Futura 3000 (BCIE)	-	79,306	4,322	n.a.	n.a.	n.a.	n.a.	31 October 1999	-
	Mondex (Credomatic)	-	14,766	458	n.a.	n.a.	n.a.	n.a.	31 October 1999	-
France	Kleline	Network-based	15,000	400	n.a.	266 ⁵	320 ⁶	1.2 ⁷	November 1999	September 1996
Germany	Geldkarte	Card-based	60,000,000	60,000	70.8	58,000	208,671	3.60	August 1999	1996

Country	Name of system	Type of system	Number of cards issued (or home PC users)	Number of merchant terminals (or merchant PCs)	Float outstanding (in USD millions)	Volume of daily (purchase) transactions	Volume of daily (purchase) transactions (in USD)	Average value of (purchase) transactions (in USD)	Memo Item	
									Reporting period	Launch date of product
Hong Kong	Octopus	Card-based	5.6 million	8,000	Confidential	3.9 million	3.67 million	0.94	31 August 1999	September 1997
	Mondex	Card-based	about 0.2 million	about 7,000	about 4	n.a.	n.a.	n.a.	31 August 1999	November 1997
	VISACash	Card-based	about 0.31 million	about 4,000	confidential	n.a.	n.a.	2.55	31 August 1999	August 1996
Italy	Cassamat	Card-based							1998	October 1994
	MINIpay	Card-based	442,000	3,867	0.77	846	5,267	6.2	1998	June 1996
	VISA Cash	Card-based							1998	December 1996
Lithuania	ImparCard	Card-based	53,000	1,165	3.6 (at end-1998)	937	21,942	23.4	January-September 1999	May 1996
Mexico	Visa Cash	Card-based	25,000	380 ⁸	n.a.	n.a.	n.a.	1.3	October 1999	May 1998 ⁹
	Monedero Electronico Inbursa (Proton)	Card-based	2,500	78 ⁸ 27 ¹¹ 1230 ¹³	n.a.	n.a.	n.a.	.37 ¹⁰ 4.39 ¹²	October 1999	June 1998 ⁹
Netherlands	Chipknip	Card-based	13,000,000	150,000	28	n.a.	n.a.	8	April-November 1999	October 1996
	Chipper	Card-based	7,000,000	150,000		n.a.	n.a.		April-November 1999	June 1997
Portugal	PMB (Porta-Moedas Multibanco)	Card-based	3,433,679 ¹⁴	58,634	1.5	13,606	17,654	1.3	January-September 1999	April 1995
Singapore	CashCard	Card-based	3,156,637	12,909	15.46	276,133	177,199	0.62	August 1999	November 1996

Country	Name of system	Type of system	Number of cards issued (or home PC users)	Number of merchant terminals (or merchant PCs)	Float outstanding (in USD millions)	Volume of daily (purchase) transactions	Volume of daily (purchase) transactions (in USD)	Average value of (purchase) transactions (in USD)	Memo Item	
									Reporting period	Launch date of product
Spain	Monedero 4B	Card-based								End-1996
	VISA Cash	Card-based	5,690,036	99,335	10.628	6,112	19,111	3.12	January – December 1998	Second half of 1996
	Euro 6000	Card-based								Early 1997
	Virtual C@sh	Network-based								End-1996
Switzerland	Cash	Card-based	3,000,000	17,800	n.a.	n.a.	n.a.	n.a.	October 1998	January 1997
	e-cash™	Network-based	3,400	28	n.a.	n.a.	n.a.	n.a.	June 1998- November 1999	June 1998- December 1999 (pilot)
Thailand	MicroCash	Card-based	58,710	734	0.18	413	1,600	4	January- September 1999	November 1996
	SCB Smart Card	Card-based	17,000	60	n.a.	750	1,000	330	January – October 1999	1998 ¹⁵
Turkey	Akilli Bayi Kartlari (Smart Retailer Cards)	Card-based	227	14 (POS terminals)	neg.	3	286.92	102.09	September 1999	November 1998
	Parakart (Moneycard)	Card-based	3,132	38 (POS terminals at 31 merchant stores)	neg.	- (use of product halted)	-	-	January – October 1999	10 December 1997

Country	Name of system	Type of system	Number of cards issued (or home PC users)	Number of merchant terminals (or merchant PCs)	Float outstanding (in USD millions)	Volume of daily (purchase) transactions	Volume of daily (purchase) transactions (in USD)	Average value of (purchase) transactions (in USD)	Memo Item	
									Reporting period	Launch date of product
UK	Barclaycoin	Network-based								October 1997 ¹⁸ (closed 1999)
	Mondex	Both	140,000 ¹⁶	1,642 ¹⁷	0.263	507	8,284	16.34	1998	July 1995 ¹⁸
	Visa Cash	Card-based								October 1997 ¹⁸
	Magex Wallet	Network-based								October 1999 ¹⁸
USA	Visa Cash (New York)	Card-based	96,000	600	n.a.	n.a.	n.a.	n.a.	October 1997-December 1998 (discontinued December 1998)	October 1997
	Mondex (New York)	Card-based		600	n.a.	n.a.	n.a.	n.a.	October 1997-December 1998 (discontinued December 1998)	October 1997
	eCash Technologies	Network-based	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	May 2000
	CyberCoin	Network-based	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	January 1997-May 1999 (discontinued May 1999)	January 1997

¹ Estimated on the basis of monthly data. ² Cards that have been loaded at least once. ³ Estimates. ⁴ Unless otherwise indicated. ⁵ 2000 including all payment features. ⁶ USD 204,000 including all payment features. ⁷ USD 102 including all payment features. ⁸ Number of participating merchants. ⁹ Pilot program. ¹⁰ Vending machines. ¹¹ Number of vending machines. ¹² Merchants. ¹³ Number of public phones for loading. ¹⁴ At present, 261, 136 of which have positive value and for the rest value can be loaded later. ¹⁵ E-money function has been added since May 1999, while the project was launched in 1998 with identity and ATM/debit card functions in its initial stage. ¹⁶ Individual data for each scheme is not available, therefore aggregated data is provided. ¹⁷ Number of purchase terminals. ¹⁸ All schemes are still in the pilot stage, or were at the reporting date (end-1998).

SECOND DIVISION

[G.R. No. 115412. November 19, 1999]

HOME BANKERS SAVINGS AND TRUST COMPANY, petitioners vs. COURT OF APPEALS and FAR EAST BANK & TRUST COMPANY, respondents.

DECISION

BUENA, J.:

This appeal by certiorari under Rule 45 of the Rules of Court seeks to annul and set aside the decision¹ [Penned by Justice Cezar D. Francisco and concurred in by Justices Manuel C. Herrera and Cancio C. Garcia.] of the Court of Appeals² [Special Fifth Division.] dated January 21, 1994 in CA-G.R. SP No. 29725, dismissing the petition for certiorari filed by petitioner to annul the two (2) orders issued by the Regional Trial Court of Makati³ [Branch 133. Presided by Judge Buenaventura J. Guerrero, now Associate Justice of the Court of Appeals.] in Civil Case No. 92-145, the first, dated April 30, 1992, denying petitioner's motion to dismiss and the second, dated October 1, 1992 denying petitioner's motion for reconsideration thereof.

The pertinent facts may be briefly stated as follows: Victor Tancuan, one of the defendants in Civil Case No. 92-145, issued Home Bankers Savings and Trust Company (HBSTC) check No. 193498 for P25,250,000.00 while Eugene Arriesgado issued Far East Bank and Trust Company (FEBTC) check Nos. 464264, 464272 and 464271 for P8,600,000.00, P8,500,000.00 and P8,100,000.00, respectively, the three checks amounting to P25,200,000.00. Tancuan and Arriesgado exchanged each other's checks and deposited them with their respective banks for collection. When FEBTC presented Tancuan's HBSTC check for clearing, HBSTC dishonored it for being "Drawn Against Insufficient Funds." On October 15, 1991, HBSTC sent Arriesgado's three (3) FEBTC checks through the Philippine Clearing House Corporation (PCHC) to FEBTC but was returned on October 18, 1991 as "Drawn Against Insufficient Funds." HBSTC received the notice of dishonor on October 21, 1991 but refused to accept the checks and on October 22, 1991, returned them to FEBTC through the PCHC for the reason "Beyond Reglementary Period," implying that HBSTC already treated the three (3) FEBTC checks as cleared and allowed the proceeds thereof to be withdrawn.⁴ [Rollo, p. 128.] FEBTC demanded reimbursement for the returned checks and inquired from HBSTC whether it had permitted any withdrawal of funds against the unfunded checks and if so, on what date. HBSTC, however, refused to make any reimbursement and to provide FEBTC with the needed information.

Thus, on December 12, 1991, FEBTC submitted the dispute for arbitration before the PCHC Arbitration Committee,⁵ [Docketed as PCHC Arbitration Case No. 91-069.] under the PCHC's

Supplementary Rules on Regional Clearing to which FEBTC and HBSTC are bound as participants in the regional clearing operations administered by the PCHC.⁶ [*Ibid.*, at p. 129.]

On January 17, 1992, while the arbitration proceedings was still pending, FEBTC filed an action for sum of money and damages with preliminary attachment⁷ [Docketed as Civil Case No. 92-145.] against HBSTC, Robert Young, Victor Tancuan and Eugene Arriesgado with the Regional Trial Court of Makati, Branch 133. A motion to dismiss was filed by HBSTC claiming that the complaint stated no cause of action and accordingly "...should be dismissed because it seeks to enforce an arbitral award which as yet does not exist."⁸ [Rollo, p. 131.] The trial court issued an omnibus order dated April 30, 1992 denying the motion to dismiss and an order dated October 1, 1992 denying the motion for reconsideration.

On December 16, 1992, HBSTC filed a petition for certiorari with the respondent Court of Appeals contending that the trial court acted with grave abuse of discretion amounting to lack of jurisdiction in denying the motion to dismiss filed by HBSTC.

In a Decision⁹ [*Ibid.*, at p. 127.] dated January 21, 1994, the respondent court dismissed the petition for lack of merit and held that "FEBTC can reiterate its cause of action before the courts which it had already raised in the arbitration case"¹⁰ [*Ibid.*, at p. 135.] after finding that the complaint filed by FEBTC "...seeks to collect a sum of money from HBT (HBSTC) and not to enforce or confirm an arbitral award."¹¹ [*Ibid.*, at p. 131.] The respondent court observed that "(i)n the Complaint, FEBTC applied for the issuance of a writ of preliminary attachment over HBT's (HBSTC) property"¹² [*Ibid.*, at p. 136.] and citing section 14 of Republic Act No. 876, otherwise known as the Arbitration Law, maintained that "(n)ecessarily, it has to reiterate its main cause of action for sum of money against HBT (HBSTC),"¹³ [*Ibid.*] and that "(t)his prayer for conservatory relief (writ of preliminary attachment) satisfies the requirement of a cause of action which FEBTC may pursue in the courts."¹⁴ [*Ibid.*, at p. 138.]

Furthermore, the respondent court ruled that based on section 7 of the Arbitration Law and the cases of National Union Fire Insurance Company of Pittsburgh vs. Slolt-Nielsen Philippines, Inc.,¹⁵[184 SCRA 682 (1990)] and Bengson vs. Chan,¹⁶[78 SCRA 113 (1977)] "...when there is a condition requiring prior submission to arbitration before the institution of a court action, the complaint is not to be dismissed but should be suspended for arbitration."¹⁷ [Rollo, p. 139.] Finding no merit in HBSTC's contention that section 7 of the Arbitration Law "...contemplates a situation in which a party to an arbitration agreement has filed a court action without first resorting to arbitration, while in the case at bar, FEBTC has initiated arbitration proceedings before filing a court action," the respondent court held that "...if the absence of a prior arbitration may stay court action, so too and with more reason, should an arbitration already pending as obtains in this case stay the court action. A party to a pending arbitral proceeding may go to court to obtain conservatory reliefs in connection with his cause of action although the disposal of that action on the merits cannot as yet be obtained."¹⁸[*Ibid.*, at p. 140.] The respondent court discarded *Puromines, Inc. vs. Court of Appeals*,¹⁹[220 SCRA 281 (1993)] stating that "...perhaps *Puromines* may have been decided on a different factual basis."²⁰ [Rollo, p. 141.]

In the instant petition,²¹[Petitioner's memorandum was filed on February 17, 1995.] petitioner contends that first, "no party litigant can file a non-existent complaint,"²²[*Rollo*, p. 314.] arguing that "...one cannot file a complaint in court over a subject that is undergoing arbitration."²³[*Ibid.*, at p. 315.] Second, petitioner submits that "(s)ince arbitration is a special proceeding by a clear provision of law,²⁴ [Petitioner referring to section 22 of Republic Act No. 876.] the civil suit filed below is, without a shadow of doubt, barred by *litis pendentia* and should be dismissed *de plano* insofar as HBSTC is concerned."²⁵[*Rollo*, p. 318.] Third, petitioner insists that "(w)hen arbitration is agreed upon and suit is filed without arbitration having been held and terminated, the case that is filed should be dismissed,"²⁶ [*Ibid.*] citing *Associated Bank vs. Court of Appeals*,²⁷ [233 SCRA 137 (1994)] *Puromines, Inc. vs. Court of Appeals*,²⁸ [220 SCRA 281 (1993)] and *Ledesma vs. Court of Appeals*.²⁹ [211 SCRA 753 (1992)] Petitioner demurs that the *Puromines* ruling was deliberately not followed by the respondent court which claimed that:

"xxx xxx.

It would really be much easier for Us to rule to dismiss the complainant as the petitioners here seeks to do, following *Puromines*. But with utmost deference to the Honorable Supreme Court, perhaps *Puromines* may have been decided on a different factual basis.

xxx xxx."³⁰ [*Rollo*, p. 141.]

Petitioner takes exception to FEBTC's contention that *Puromines* cannot modify or reverse the rulings in *National Union Fire Insurance Company of Pittsburgh vs. Stolt-Nielsen Philippines, Inc.*,³¹ [184 SCRA 682 (1990)] and *Bengson vs. Chan*,³² [78 SCRA 113 (1977)] where this Court suspended the action filed pending arbitration, and argues that "(s)ound policy requires that the conclusion of whether (a) Supreme Court decision has or has not reversed or modified (a) previous doctrine, should be left to the Supreme Court itself; until then, the latest pronouncement should prevail."³³ [*Rollo*, p. 320.] Fourth, petitioner alleges that the writ of preliminary attachment issued by the trial court is void considering that the case filed before it "is a separate action which cannot exist,"³⁴ [*Ibid.*, at p. 323.] and "...there is even no need for the attachment as far as HBSTC is concerned because such automatic debit/credit procedure ³⁵ [Under the arbitration system of the PCHC, an award results in a mere automatic debit/credit procedure.] may be regarded as a security for the transactions involved and, as jurisprudence confirms, one requirement in the issuance of an attachment (writ of preliminary attachment) is that the debtor has no sufficient security."³⁶ [*Rollo*, p. 324. Citation omitted.] Petitioner asserts further that a writ of preliminary attachment is unwarranted because no ground exists for its issuance. According to petitioner, "...the only allegations against it (HBSTC) are that it refused to refund the amounts of the checks of FEBTC and that it knew about the fraud perpetrated by the other defendants,"³⁷ [*Ibid.*] which, at best, constitute only "incidental fraud" and not causal fraud which justifies the issuance of the writ of preliminary attachment.

Private respondent FEBTC, on the other hand, contends that "...the cause of action for collection [of a sum of money] can coexist in the civil suit and the arbitration [proceeding]"³⁸ [*Ibid.*, p. 278.] citing section 7 of the Arbitration Law which provides for

the stay of the civil action until an arbitration has been had in accordance with the terms of the agreement providing for arbitration. Private respondent further asserts that following section 4(3), article VIII.39 [Article VIII, section 4(3) provides:

"xxx xxx; Provided, that no doctrine or principle of law laid down by the court in a decision rendered en banc or in division may be modified or reversed except by the court sitting en banc.] of the 1987 Constitution, the subsequent case of *Puromines* does not overturn the ruling in the earlier cases of *National Union Fire Insurance Company of Pittsburg vs. Stolt-Nielsen Philippines, Inc.*⁴⁰ [184 SCRA 682 (1990)] and *Bengson vs. Chan*.⁴¹ [78 SCRA 113 (1977)] hence, private respondents concludes that the prevailing doctrine is that the civil action must be stayed rather than dismissed pending arbitration.

In this petition, the lone issue presented for the consideration of this Court is:

"WHETHER OR NOT PRIVATE RESPONDENT WHICH COMMENCED AN ARBITRATION PROCEEDING UNDER THE AUSPICES OF THE PHILIPPINE CLEARING HOUSE CORPORTION (PCHC) MAY SUBSEQUENTLY FILE A SEPARATE CASE IN COURT OVER THE SAME SUBJECT MATTER OF ARBITRATION DESPITE THE PENDENCY OF THAT ARBITRATION, SIMPLY TO OBTAIN THE PROVISIONAL REMEDY OF ATTACHMENT AGAINST THE BANK, THE ADVERSE PARTY IN THE ARBITRATION PROCEEDINGS."⁴² [Rollo, pp. 310-311.]

We find no merit in the petition. Section 14 of Republic Act 876, otherwise known as the Arbitration Law, allows any party to the arbitration proceeding to petition the court to take measures to safeguard and/or conserve any matter which is the subject of the dispute in arbitration, thus:

Section 14. Subpoena and subpoena duces tecum. - Arbitrators shall have the power to require any person to attend a hearing as a witness. They shall have the power to subpoena witnesses and documents when the relevancy of the testimony and the materiality thereof has been demonstrated to the arbitrators. Arbitrators may also require the retirement of any witness during the testimony of any other witness. All of the arbitrators appointed in any controversy must attend all the hearings in that matter and hear all the allegations and proofs of the parties; but an award by the majority of them is valid unless the concurrence of all of them is expressly required in the submission or contract to arbitrate. The arbitrator or arbitrators shall have the power at any time, before rendering the award, without prejudice to the rights of any party to petition the court to take measures to safeguard and/or conserve any matter which is the subject of the dispute in arbitration. (emphasis supplied)

Petitioner's exposition of the foregoing provision deserves scant consideration. Section 14 simply grants an arbitrator the power to issue subpoena and subpoena *duces tecum* at any time before rendering the award. The exercise of such power is without prejudice to the right of a party to file a petition in court to safeguard any matter which is the subject of the dispute in arbitration. In the case at bar, private respondent filed an action for a sum of money with prayer for a writ of preliminary attachment. Undoubtedly, such action involved the same subject matter as that in arbitration, i.e., the sum of P25,200,000.00

which was allegedly deprived from private respondent in what is known in banking as a "kiting scheme." However, the civil action was not a simple case of a money claim since private respondent has included a prayer for a writ of preliminary attachment, which is sanctioned by section 14 of the Arbitration Law.

Petitioner cites the cases of *Associated Bank vs. Court of Appeals*,⁴³ [233 SCRA 137 (1994)] *Puromines, Inc. vs. Court of Appeals*,⁴⁴ [220 SCRA 281 (1993)] and *Ledesma vs. Court of Appeals*⁴⁵ [211 SCRA 753 (1992)]. This case involves the application of the Katarungang Pambarangay Law (P.D. 1508)] in contending that "(w)hen arbitration is agreed upon and suit is filed without arbitration having been held and terminated, the case that is filed should be dismissed."⁴⁶ [Rollo, p. 318.] However, the said cases are not in point. In *Associated Bank*, we affirmed the dismissal of the third-party complaint filed by Associated Bank against Philippine Commercial International Bank, Far East Bank & Trust Company, Security Bank and Trust Company and Citytrust Banking Corporation for lack of jurisdiction, it being shown that the said parties were bound by the Clearing House Rules and Regulations on Arbitration of the Philippine Clearing House Corporation. In *Associated Bank*, we declared that:

"xxx xxx. Under the rules and regulations of the Philippines Clearing House Corporation (PCHC), the mere act of participation of the parties concerned in its operations in effect amounts to a manifestation of agreement by the parties to abide by its rules and regulations. **As a consequence of such participation, a party cannot invoke the jurisdiction of the courts over disputes and controversies which fall under the PCHC Rules and Regulations without first going through the arbitration processes laid out by the body.**"⁴⁷ [*Associated Bank vs. Court of Appeals*, 233 SCRA 137, 142-143 (1994)] (emphasis supplied)

And thus we concluded:

"Clearly therefore, petitioner Associated Bank, by its voluntary participation and its consent to the arbitration rules cannot go directly to the Regional Trial Court when it finds it convenient to do so. The jurisdiction of the PCHC under the rules and regulations is clear, undeniable and is particularly applicable to all the parties in the third party complaint under their obligation to first seek redress of their disputes and grievances with the PCHC before going to the trial court."⁴⁸ [*Ibid.*, at p. 145.] (emphasis supplied)

Simply put, participants in the regional clearing operations of the Philippine Clearing House Corporation **cannot bypass the arbitration process laid out by the body and seek relief directly from the courts.** In the case at bar, undeniably, private respondent has initiated arbitration proceedings as required by the PCHC rules and regulations, and pending arbitration has sought relief from the trial court for measures to safeguard and/or conserve the subject of the dispute under arbitration, as sanctioned by section 14 of the Arbitration Law, and otherwise not shown to be contrary to the PCHC rules and regulations.

Likewise, in the case of *Puromines, Inc. vs. Court of Appeals*,⁴⁹ [220 SCRA 281 (1993)] we have ruled that:

"In any case, whether the liability of respondent should be based on the sales contract or that of the bill of lading, the parties are nevertheless obligated to respect the arbitration provisions on the sales contract and/or bill of lading. Petitioner being a signatory and party to the sales contract cannot escape from his obligation under the arbitration clause as stated therein."

In *Puromines*, we found the arbitration clause stated in the sales contract to be valid and applicable, thus, we ruled that the parties, being signatories to the sales contract, are obligated to respect the arbitration provisions on the contract and cannot escape from such obligation by filing an action for breach of contract in court without resorting first to arbitration, as agreed upon by the parties.

At this point, we emphasize that arbitration, as an alternative method of dispute resolution, is encouraged by this Court. Aside from unclogging judicial dockets, it also hastens solutions especially of commercial disputes.⁵⁰ [*Allied Banking Corporation vs. Court of Appeals*, 294 SCRA 803, 812 (1998)] The Court looks with favor upon such amicable arrangement and will only interfere with great reluctance to anticipate or nullify the action of the arbitration.⁵¹ [*Puromines, Inc. vs. Court of Appeals*, 220 SCRA 281, 290 (1993)]

WHEREFORE, premises considered, the petition is hereby DISMISSED and the decision of the court a quo is AFFIRMED.

SO ORDERED.

Bellosillo (Chairman), Mendoza, Quisumbing, and De Leon, Jr., JJ. concur. 1/10/00 11:38 PM.

Annex D

Table of Security Measures

The following table provides an overview of the security measures commonly applied in card and software-based money systems.

The first part of the table sets out the security measures that are available to prevent, detect and contain the general fraud risks in such systems. It also describes some organizational measures that would provide protection against those risks. The second part of the table presents the security and organizational measures that are available to counter certain specific risks.

The distinction made between these measures (prevention, detection, containment and organizational) is sometimes arbitrary. It is obvious that some measures might be considered under more than one category. For example, measures that lead to the detection of fraud constitute a deterrent for potential criminals and might, therefore, also be considered as prevention measures.

It should be underlined that this table is not to be seen as a list of mandatory security measures but rather as an inventory of security measures which the Task Force encountered in its investigation of electronic money system. That is, not all systems utilize all measures.

	Prevention	Detection	Containment	Organizational
	General Measures			
	<p>Devices containing secret or sensitive information provide protection (tamper-resistance against analysis and non-authorized changes)</p> <p>Cryptography is used to authenticate transactions and devices and to protect data confidentially and integrity</p> <p>Load transactions and sometimes payment transactions are authorized online by the issuer</p>	<p>Transaction details are collected enabling the verification of financial and security data</p> <p>Certain factors require the devices to interact with the central system so that security parameters or transaction logs can be checked and certain parameters updated.</p> <p>Limits are placed on the transferability of stored-value balances so that fraudulent balances</p>	<p>Limits are set for the maximum balance(s) that a device can store. Limits are set for transaction amounts.</p> <p>Expiration dates are applied to devices, balances and security parameters.</p> <p>Sharing of secret cryptographic keys is avoided.</p> <p>Devices are linked to an account and device holders are registered.</p> <p>In the even of large-scale fraud the</p>	<p>Strict manufacturing and software development procedures are implemented.</p> <p>Security evaluation of components and procedures is carried out by third parties.</p> <p>Responsibilities of the participants are clearly defined.</p> <p>The initialization, personalization and distribution of devices are strictly controlled.</p>

	Prevention	Detection	Containment	Organizational
		<p>can be detected more rapidly.</p> <p>Statistics on payment flows are collected and compared with certain predefined norms.</p> <p>List of suspicious cards are maintained by the issuers and kept by merchants.</p>	system is suspended.	The system is audited regularly.
Measures against specific threats				
<u>Duplication of devices</u>				
	<p>The manufacture of fraudulent devices and in particular of IC chips requires theft of hardware and software design, which are very well protected, and necessitates very substantial capital investment.</p> <p>Essential parts of the IC chip are physically protected against optical or electrical reading, and therefore cannot simply be copied or reverse-engineered.</p> <p>The secret data on the card needed to duplicate it are logically protected via encryption, scrambling or scattering.</p>	<p>All devices are registered.</p> <p>All devices contain a unique identification number certified by the issuer as well as unique cryptographic keys.</p> <p>Devices are authenticated during transactions.</p> <p>Devices are monitored by the central operator when they interact with it.</p>	<p>Merchant terminals hold lists containing the numbers or range of numbers of suspicious cards.</p> <p>Devices can be blocked or disabled by the central system.</p>	<p>The manufacturing, initialization and personalization processes are strictly controlled and carried out by different organizations.</p> <p>Inside these organizations, there is separation of staff responsibilities.</p> <p>Security evaluation of devices is carried out by third parties.</p>
Alteration or duplication of data or software				
Generic Measures	Data and software are stored in tamper-resistant devices	Devices contain indicators of tampering attempts (tamper evidence) that are monitored when the device	<p>Devices can be blocked or disabled by the central operator.</p> <p>Devices have</p>	

	Prevention	Detection	Containment	Organizational
		<p>interacts with the central operators</p> <p>Detection of suspicious parameters by a merchant terminal might force the purchase transaction to be authorized online.</p>	<p>expiration dates.</p> <p>The loading and collection processes are used by the central operator for updating the security parameter in the devices.</p>	
Duplication of electronic notes		Notes are verified online.		
Creation of electronic notes	Notes are cryptographically certified by the issuer	Notes are verified online.		
Creation of transactions	<p>Payment transactions are digitally signed using the key unique to the card.</p> <p>Transactions are authorized online.</p> <p>Devices are mutually authenticated.</p>	<p>Transaction sequence numbers are verified</p> <p>Shadow-balance accounts are maintained.</p> <p>Unusual payment patterns are detected.</p>		
Alteration of application, operating system software and static data (maximum amount, etc.)	Application and operating system software are stored in physically protected memory areas (ROM) and are logically protected through scrambling or encryption.	Software checksums show evidence of alteration.		
Alteration of electronic value balance	Balance can only be modified upon the instruction of an authorized device.			
Alteration of messages				
Modification of messages	<p>Challenge-response mechanisms are used to initiate the transaction.</p> <p>The message exchange is controlled by the transaction protocol and by the use derived session keys</p>	<p>Shadow-balance accounts are maintained.</p> <p>Electronic signatures are verified.</p> <p>Transaction sequence numbers are verified.</p>		

	Prevention	Detection	Containment	Organizational
	<p>Message integrity is verified by a hash algorithm or a Message Authentication Code (MAC)</p> <p>Messages are authenticated by MAC or electronic signatures</p>	Transaction time-stamps are verified.		
Replay or duplication of transactions	<p>Unique session keys are used</p> <p>A PIN is required for load and deposit transactions by consumers.</p>	<p>Transaction sequence numbers are verified.</p> <p>Transaction time-stamps are verified.</p> <p>Shadow-balance accounts are maintained.</p> <p>Unusual payment patterns are detected.</p>		
Theft or repudiation				
Theft of devices	<p>Load transactions require the input of a PIN.</p> <p>Cards are actively polled by the issuer or the central operator.</p>		<p>Cards can be locked by their holders with a PIN.</p> <p>Cards can be blocked or disabled by the issuer.</p> <p>Limits are set on transactions or card amounts.</p>	
Theft of electronic notes	See duplication of electronic notes.			
Repudiation	<p>Transactions are logged by the issuers.</p> <p>A certain number of transactions are logged on the card and can be checked by the cardholders.</p> <p>Transactions are identified by sequence numbers and are time-stamped.</p>			

	Prevention	Detection	Containment	Organizational
	<p>Transactions are cryptographically signed by clients and merchants.</p> <p>A certification authority (CA) maintains a database of certified public cryptographic keys.</p>			
Malfunctions				
Transactions in an unbalanced state	Transaction protocols ensure that transactions are either carried out successfully or cancelled.	Errors during the transaction will be logged by both devices and corrected afterwards.	After a certain number of errors the device will be blocked and forced to interact with the central operator.	
Cryptographic attack				
Theft of cryptographic keys	<p>Devices containing cryptographic keys are tamper-resistant</p> <p>Secret keys are generated in a highly secure environment.</p> <p>Secret keys transported over networks are encrypted.</p> <p>Asymmetric cryptosystems, which do not require secret keys to be transported over networks or to be shared by devices, are used.</p>	Terminals hold a list of (ranges of) compromised keys.	<p>Secret keys and algorithms are changed regularly or can be changed in an emergency.</p> <p>Keys have an expiration date.</p> <p>In symmetric cryptosystems:</p> <ul style="list-style-type: none"> - devices use different symmetric keys for specific purposes. - keys are derived; - master keys are partitioned among multiple devices; - session keys are used. 	<p>Strict key management is implemented.</p> <p>Cryptosystems are subject to third-party evaluation.</p> <p>Procedures are submitted to external audit.</p> <p>Published algorithms are used.</p>
Breaking of cryptographic keys	Keys of a sufficient length are used.			

	Prevention	Detection	Containment	Organizational
Use for criminal activities, in particular money laundering				
		<p>The transactions are uniquely identified.</p> <p>The transactions are signed electronically.</p> <p>The transactions (load or payment) are verified and authorized online.</p> <p>The devices are forced to interact with the banking system.</p> <p>Specific payment patterns are investigated.</p>	<p>Limits are set for the transferability of value.</p> <p>Limits are set for the maximum amount per device and per transaction.</p> <p>The devices holding value are registered and possibly linked to an account.</p> <p>The device holders are known.</p>	<p>Consumers and merchants are checked for criminal records.</p> <p>Financial institutions participating in electronic money systems are monitored.</p>

Source: BIS, "Security of Electronic Money," Report by the Committee on Payment and Settlement Systems and the Group of Computer Experts of the Central Banks of the Group of Ten Countries, Basle, August 1996.