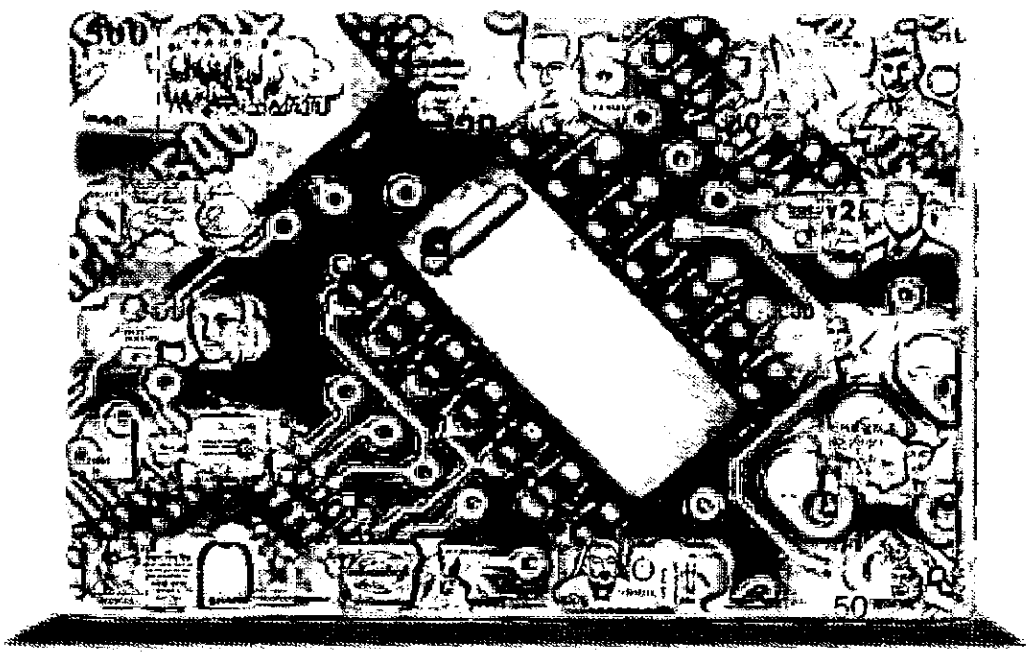
The South East Asian Central Banks (SEACEN)
Research and Training Centre

CENTRAL BANK RESPONSES AND REGULATORY FRAMEWORK OF E-MONEY:

A Comparative Review of Central Bank Practices

Bambang Kusmiarso



The SEACEN Centre
Kuala Lumpur, Malaysia

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by

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FOREWORD

The emergence of new technology-driven payment products such electronic money (e-money) has attracted the attention of central banks and policy makers since these products may replace currency for payments of small-value purchases and the potential of e-money to establish itself as a major retail payment instrument in the future. Money has had a history of evolving through time and will continue to evolve especially with increases in the standard of living and with growing need.

In light of this, central banks and policy makers have been keen to understand the potential impacts of e-money on the economy and the financial system. There are real worries about central banks' ability to conduct monetary policy effectively and maintain price stability as a result of e-money's influence on monetary aggregates and money supply. The potential of e-money to fully replace currency could reduce the ability of central banks to raise seigniorage revenue as well.

While central banks have to watch the development of e-money closely given its potential to hamper the effectiveness of monetary policy and disrupt the payment and settlement system, it is nonetheless important that authorities should avoid excessive policies or regulations which could stifle useful innovations and experimentation, given the degree of uncertainty about future technology and market development of e-money.

This paper focuses on central banks' responses to the emergence of e-money as well as the regulatory frameworks. Given the recent emergence of e-money, the study is exploratory in nature, relying on literature review of work done in advanced economies (especially those of the Committee of Payment and Settlement System of the BIS) as well as information from member banks that have started e-money schemes. The paper is divided into 2 parts: the first part consists of the integrative report and regional analysis authored by Mr. Bambang Kusmiarso, Project Leader and Senior Economist at the SEACEN Centre who is seconded from Bank Indonesia, while the second part consists of country chapters authored by country researchers from the participating member central banks.

The author wishes to gratefully acknowledge the contribution of Ms Luchia Christova from the Secretariat of the Committee on Payments and Settlement Systems (CPSS), Bank for International Settlements (BIS), for her assistance and valuable comments on the final draft paper. He would also like to express his deep gratitude to all the country researchers for preparing their respective country studies and to

the Directors of Payment System of the respective member banks/monetary authorities for their useful comments and suggestions on the final draft paper. The views and conclusions stated in the paper, however, are those of the authors and do not necessary reflect those of the SEACEN Centre or its member central banks.

Dr. Subarjo Joyosumarto
Executive Director
The SEACEN Centre

July 2004

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

Chapter 16: Central Bank Responses and Regulatory Framework of E-Money in Taiwan

LIST OF FIGURES

LIST OF APPENDICES

EXECUTIVE SUMMARY

E-money is still very much in its infancy stage in most SEACEN countries, in spite of the fact that it has gained more acceptance in Europe. Among the SEACEN member countries, 5 countries have started e-money schemes while 2 countries have products that are very similar to e-money. Although the growth of e-money in some countries is quite impressive, the volume of e-money is still insignificant. As a consequence, the development of e-money is not expected to pose serious systemic risks or have much impact on central banking functions in the near future. Consequently, many central banks have not taken any serious actions but have rather closely monitored its development.

Like the product itself, the regulation of e-money is still at the early stage and is evolving. Regulatory authorities have a choice concerning the timing of the introduction of any possible regulatory measures. Two different regulatory approaches in terms of timing have been adopted – the early approach as adopted by European countries, or a more relaxed 'wait and see' approach as adopted in the United States. One may argue that establishing a comprehensive framework at an early stage would risk stifling innovation. However, others argue that there may be risks that the overall cost of regulation will be significantly higher if there is a substantial delay in implementing measures that ultimately prove necessary. Harmonising minimum rules to ensure that institutions issuing e-money are stable and sound would promote confidence amongst business and consumers as well.

With regard to the regulatory framework, most SEACEN member countries stress the importance of having new draft legislations since the existing regulations are not adequate to regulate e-money. Designing an appropriate regulatory framework for e-money schemes involve many aspects including system design and security, financial integrity of the issuers, consumer protection, and promotion of competition and innovation. The European countries recommend several minimum requirements for the framework for the issuance of e-money, namely (i) E-money issuers are subject to prudential supervision, (ii) solid and transparent legal arrangements, (iii) adequate technical, organisational and procedural safeguards, (iv) protection against criminal abuse, (v) monetary statistics reporting, (vi) redeemability of e-money into central bank money at par and (vii) possibility of reserve requirements. Further issues are interoperability between different systems and putting in place appropriate guarantees, insurance or loss-sharing schemes.

PART I :
INTEGRATIVE REPORT

CHAPTER 1: INTRODUCTION

By
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The SEACEN Centre

1. BACKGROUND

As a result of rapid technology and world commerce in 1990s, a modern payment instrument, namely electronic money (e-money), has emerged. This new product is intended by the issuers to be primarily a replacement for notes and coins and for making small-value payment through the Internet. It contains real purchasing power in which the user creates electronic spending units in advance by making a prepayment. These units are stored on a technical device such as a chip card or computer memory. These two forms are often referred to as stored value cards and network money respectively. Since it has been speculated that e-money may replace cash and that software-based money may have the potential to flow freely through the Internet, some say that it will bring about a much more efficient and user-friendly payment system. There are obvious efficiency advantages in terms of ease of handling.

As there are obvious benefits to be garnered, this new form of money has the great potential to be in vast circulation in the future. If it is widely accepted by the customers, e-money could gain the same general acceptability presently enjoyed by currencies. As we know, money has taken different forms over time. The form of money has always evolved significantly with increases in living standard and growing need. For that reason, it is possible that if experiments with e-money succeed, coins and banknotes may become as obsolete as cowry shells and cattle, the 'primitive money' that were once widely accepted as units if exchange. This new payment instrument holds a great deal of promise to consumers, merchants and issuers. The major attraction for customers relates to its convenience. Consumers take readily to the convenience of not having to carry and find change. E-money may prove to be attractive to merchants since it would save time and money in handling the cash and it would offer access to the global market. Issuers like it because it would give 'a float' value relating to the unused balance on the card, on which they can earn interest. Along with these benefits, however, e-money activities may carry risks for payment system stability thus endangering financial stability. E-money may have effects on the efficiency of monetary policy and financial stability. Moreover, payment systems have always been considered as very sensitive in which customers' confidence plays a very important role.

Given these backgrounds, many central banks and policy makers have been trying to understand the impacts of this new payment instrument on central banking functions and the stability of the financial system. There were real worries that e-money will distort monetary aggregates and slash profits of central banks. Central bank and policy makers have also been trying to understand the potential impact of electronic money on the efficiency and operations of payment systems. This has always been an area of concern for central banks due in main part to their overall responsibility for overseeing payment systems and promoting their smooth functioning. Systemic failures should be prevented in order to avoid a loss of confidence in payment systems.

Even though e-money has not made its presence felt in a significant way in the world until recently, a thorough evaluation of the appropriate regulatory, nature of risks and policy responses is required. Accordingly, central banks in the SEACEN region would do well to prepare itself for this imminent development. Obviously, the innovation of e-money raises numerous legal and regulatory issues that must be addressed. The relevant ones are consumer protection, interoperability of products, possible use of electronic money for criminal purposes[1], the safety and soundness of e-money schemes, the applicability of deposit insurance schemes and the cross-border provision and use of e-money[2]. Given the potential of electronic money schemes to attain widespread acceptance, central banks need to formulate their views on the issues raised by this payment instrument. Once such schemes have been introduced and are widely used, redressing undesired situations may be much more difficult.

The central bank's primary role, therefore, is to make sure that an e-money scheme is being developed and operated in a safe and sound manner. The focus of these actions would be to design an appropriate regulatory framework. The financial integrity and the operations of e-money issuers must hence be secure. A loss-sharing arrangement may have to be agreed on by all participating institutions to manage the effects of a default of one participant in the scheme. As for the technical operations, scheme operators should be able to provide both a security policy and a thorough risk analysis.

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1. See Howcroft, 1996.
2. See BIS (Bank for International Settlements) 1996.

2. OBJECTIVES AND LIMITATIONS

Since central banks are concerned with the smooth and efficient functioning of payment and settlement systems, it is important that they should closely watch the development of e-money. Emerging electronic products may require regulatory adjustment or intervention which will arise from (i) the need to limit the systemic and other risks which may threaten the stability of, and confidence in, the national payment systems, (ii) the need to provide consumers with adequate protection from unfair practices, fraud and financial loss and (iii) the need to ensure the central bank's ability to conduct monetary policy. Nevertheless, given the degree of uncertainty about future technology and market development in e-money, it is important that supervisory authorities should avoid policies that hamper useful innovations and experimentation.

The study focuses on the policy aspects of electronic money and also on the formulation of the regulatory frameworks as well as on policy responses of central banks to the emergence of e-money. It will draw from the experiences of developed countries, as well as the SEACEN countries, which have already started, or are preparing to start, the use of e-money. Specifically, the study covers:

1. Current Development of E-money in General and in the SEACEN Countries.
2. Assessment of Risks Associated with E-money.
3. Assess the Impact of E-money on Monetary Policy.
4. Collate and Analysis the Policy Responses With Respect To Regulatory Framework.

3. RESEARCH DESIGN AND REPORT STRUCTURE

The project conducts an extensive literature review and collects information of e-money schemes in the SEACEN member countries and some advanced countries. Given the recent emergence of e-money, the study is exploratory in nature, relying on literature of work done in advanced economies (especially those of the Committee of Payment and Settlement System of the BIS) as well as information from member banks that have started e-money. In light of the fact that the research is a comparative review of central bank practices and extensive data and information are required on individual countries, it has been designed as a collaborative project with assistance from member banks in the preparation of the country chapters. For member countries that do not have e-money schemes, they were asked to update the development of their payment systems including recent payment systems innovations.

The Paper consists of 2 parts - the first part presents the integrative report of country experiences while the second part presents the country chapters where e-money schemes in the individual countries are detailed by the respective country researchers. The first chapter of the first part presents the background and the objectives of the research project. The second chapter provides some basic background of e-money. The third chapter deals with the development of e-money in general and in the SEACEN member countries. The fourth chapter discusses the impacts of e-money on central banking functions. The fifth chapter discusses the policy responses and regulatory framework while the sixth chapter identifies and analyses e-money risks and measures to manage these risks. The seventh chapter concludes the research with some recommendations.

CHAPTER 2: SOME BASICS OF E-MONEY

1. DEFINING E-MONEY

As it is still developing, it is difficult to have a single consensus of the definition of e-money. Up to now, there is still no unified definition of e-money. Different institutions have described and categorised e-money products in different ways. As pointed out in the Group of Ten Report on electronic money, it is difficult to provide a precise definition of e-money, in part because technological innovations continue to blur distinctions between forms of prepaid electronic mechanism[3].

However, the term of electronic money usually refers to a stored value or prepaid payment mechanism in which a record of the funds is stored on electronic device in the consumer's possession. The European Central Bank (ECB) broadly defines e-money as an electronic store of monetary value on a technical device that may be widely used for making payments to undertakings other than the issuer without necessarily involving bank accounts in the transaction, but acting as a prepaid bearer instrument[4].

This definition highlights some important aspects of e-money[5]. These are: (i) the fact that it stores monetary value on a technical device with a capacity to be used widely for making payments; (ii) its role as a prepaid bearer instrument, excluding account-based electronic payment instruments such as credit and debit cards and electronic fund transfer (EFT) payments; (iii) its use to cover payments to undertakings other than the issuer, essential to differentiating e-money products from single purpose prepaid cards like telephone cards; and, (iv) its ability to by-pass bank accounts or any other financial service providers' authorisation.

E-money is best thought of as an electronic substitute for coins and bank notes and for small value payments through the Internet. It is stored on an electronic device such as a chip card or a computer memory and is generally intended to make payments of a limited amount. At the moment, e-money takes two main forms. The first is a card-based product. It is defined as a plastic card that contains real purchasing power, for which the customer has paid in advance some value of money. The second form of electronic money products is a software-based product. It employs specialised software on a personal computer, typically allowing the electronic value to be transferred via telecommunication networks, such as the Internet.

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3. See BIS (Group of Ten) 1997.
4. See European Central Bank 1998.
5. See Yang 2000.

By contrast, debit cards and credit card, are not e-money. Although a debit card allows its holder to make payments, the monetary value is not stored in an electronic device. The card contains only the data necessary to identify its holder and to link the holder to his/her bank account. At present, these data are little more than a bank number. But even when debit cards use chip and pin technology there is still no electronic money held on the card. Credit cards, therefore, do not constitute e-money as they, by definition, do not represent pre-paid value.

Single purpose prepaid cards are not also considered as e-money. Company specific payment cards such as the traditional phone cards or canteen cash-cards are also not e-money as these are only accepted by the sole issuer. Such cards have not raised central bank concerns because the value embedded in them do not have a wide range of uses and, therefore, do not have the characteristics of money. These schemes just represent a prepayment mechanism. Similarly, wire transfers of cash also do not constitute e-money.

E-money is also different from e-banking, which many people are making use of now. Since there is a tendency to confuse e-money with e-banking, it is better explained by Figure 2.1. This Chart, as presented by the IMF[6], may be helpful to understand electronic money and its relation with other new payment system terms such as electronic banking, electronic finance, and electronic finance. E-money is a one way to settle payment in e-commerce and is also significantly different from e-banking. While e-money is new, e-banking has been around for some time in the form of automatic teller machines (ATM) and telephone banking. More recently, it has come in the form of Internet banking.

2. WHY E-MONEY INTEREST THE PUBLIC?

Electronic money offers some features that make it an attractive alternative over other payment mechanisms. For all parties involved, the use of electronic money theoretically may have advantages. Consumers would need to carry less loose change, merchants would have fewer cash handling activities and would have the assurance of their payment claims, and issuers would be benefit from the float involved. E-money is ideal for micro-payment or transactions for small value. Micro-payments are generally not economical with credit cards or electronic fund transfer, primarily because of the high overhead costs in processing those transactions. E-money makes small payments of just a few cents possible and profitable for both the merchant receiving the payment and the issuer of the e-money.

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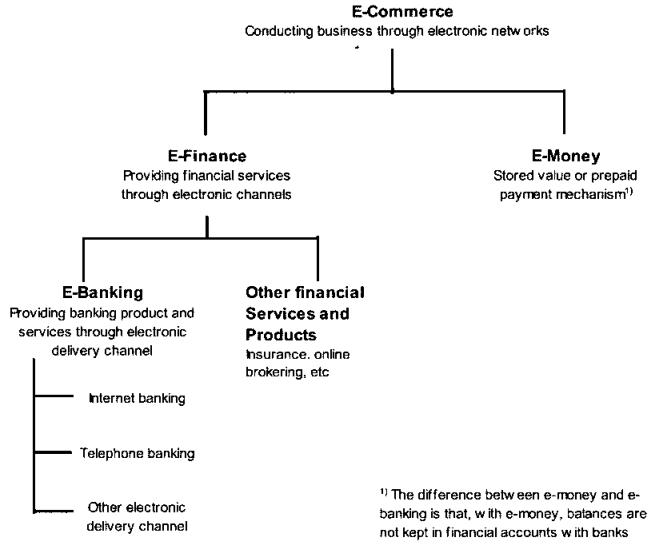
6. See Nsouli and Schaeter 2002.

Figure 2.1



The major attraction for the consumer is its convenience. Using e-money to pay small value purchases such as newspapers, vending machine items, parking fees, transportation fares could reduce the need to carry small bank notes and coins. It could also speed transactions because consumers do not need to wait for an exchange of cash or waste time writing a cheque. This product would be also more convenient than a debit card since it is easier to get an authorisation. Sending a small value digital coin for a small purchase of information in the Internet could prove to be more convenient and less costly than using a credit card. The electronic money could even promote budgeting because a user can spend only the amount on the card. Moreover, in one study, consumers have expressed enthusiasm for the electronic purse concept and are willing to pay either per transaction fee or annual user fees[7].

Electronic money should also prove attractive to merchants. It would save time and money in the handling of cash. Prepaid cards would likely have lower transaction fees than on-line debit cards and, unlike cheques, offer assured payment. Acceptance of electronic money would allow merchants to move markets from the physical world to the Internet, which offers access to global markets. Another benefit electronic money offers to merchants is increased safety and security by eliminating some opportunities for theft. Electronic money could help curtail

7. See Wenninger and Laster 1995.

vandalism of vending machines, public phones, and the like, because there would be no coin or currency to steal. Similarly, owners and employees of retail establishments and other service providers who handle cash, such as taxicab drivers, could be much less vulnerable to robbery. There is also an argument that people will spend 15%-20% more with card-based e-money because of the higher propensity to make impulse purchases and never running out of change[8].

E-money would also give benefits to issuers. Issuers of electronic money can reduce cash handling costs and combat fraud, save on-line network charges, and gain new sources of fee income from merchants and consumers. Of potentially greater significance, issuers can collect 'float', the right to invest and earn interest on the balances their customer holds on electronic money. As the uses for electronic money and the number of cards issued multiply, so too will the aggregate balances that consumers carry on the card. The income from float could therefore be substantial.

More broadly, the development of e-money may contribute to improving the efficiency of the payment system and to reducing the cost of retail transactions. In turn, it could potentially impact on improving productivity and economic welfare. Yang estimated that if paying transactions using a bank teller will cost about $1.07 per transaction, using an ATM about $0.27, the sweeping credit card around $0.08 to $0.15, the cost of using a card-based e-money, which does not require an open network, will only cost less than $0.01[9]. He believes that software-based transactions will cost even less.

3. GENERAL CHARACTERISTICS OF E-MONEY

Since in general, e-money should be characterised as a substitute of currency, it may not be incorrect to say that e-money also needs to have all the features of traditional money. It does not matter if it is represented by a software solution or a chip card, in the ideal case, electronic money should have the same properties as "normal" money. These criteria are:

(i) **Generally accepted as a medium of exchange.** Money as a medium of exchange greatly simplifies transactions which take place in an economy. The time spent trying to exchange goods or services is lowered and consequently transaction costs are reduced as well. The resulting ease and speed with which

8. See Crotch-Harvey, 2002.
9. See Yang 2000.

money is converted into other things – goods or services – is called "liquidity of money". As Keynes stated, money is the most liquid asset.

(ii) **Unit of account.** It serves as a measure for the value of good or services and thus provides a standard for making comparisons between different goods and services. With money, all prices, i.e., the values of goods and services, can be expressed in the same way, in terms of units of money.

(iii) **Store of value.** It can be saved and used in the future meaning that purchasing power is transferred from the present to the future. A person might decide to keep a fraction of the money that he or she received by exchanging his or her labour in order to spend it later. This saved money serves as a store of value.

In order to realise these functions, the attributes that are assigned to money are[10]:

(1). Transferability. This trait makes it possible to transfer different amounts of money to other parties. This is most often used if one buys goods with money. In the realm of electronic money, this requirement postulates the possibility to transfer electronic money in a secure manner in different media like chip cards, networks and others.

(2). Usability. This property is not often mentioned for money but of great importance as it is necessary to be able to evaluate the value of a monetary token like a coin or a bill especially for interactions with machines (ware dispensers, counting machines, etc.).
For electronic money, the importance of the ability to automatically handle it is obvious.

(3). Divisibility. Though every currency has a smallest indivisible value, it nonetheless provides a convenient way to split sums, usually using different coins and notes with different face values. For electronic money, this property is of importance because it allows you to pay without having to use normal money as well as to realise paying schemes for micropayment where the purchased goods (a page of information, etc.) may cost less than the smallest value available with normal money.

(4). Not centralised. Normal money is usually used in a nearly totally decentralised surrounding and passed from person to person, making money a very flexible tool for any kind of value transfer. For this feature to be crossed over to e-money, the system carrier must have an easy and convenient way to oversee all monetary transfers and which would prevent the fraudulent behaviour of users.

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10. See Schwaiger 1997.

(5). **System monitoring.** With normal money system, monitoring is usually done in the banks as well as with the users of the systems who are usually obliged to report any occurrence of counterfeit money. For any implementor of electronic money, this property is of importance because it would be relatively easy to locate illegal manipulations as well as security flaws in the system.

(6). **Security.** The security of normal money lies in the different means that a mint has in the process of producing money that would prevent easy fabrication of counterfeit money. For electronic money, this trait is of the utmost importance because the possibility to duplicate electronic money would lead to the eventual breakdown of the system through fraud.

(7). **Anonymity.** With normal money, nobody is (easily) able to correlate payments to people, which is an important factor for its users. For electronic money, the degree of anonymity depends on the actual implementation of the system. The anonymity issue is always antagonistic between the user and the system provider as well as between the user and the authorities. In both cases, the user wants his anonymity while the other side wants the information for reasons as different as making profiles of users for direct marking purposes, using user profiles to solve a crime and other reasons.

CHAPTER 3: DEVELOPMENT OF E-MONEY

1. GENERAL

To date, the success of e-money in the world has been limited. The reaction to these products around the world has been lukewarm so far. Although e-money has theoretically, immense potential benefits coupled with the global general trend of payment methods moving to a cashless society, it nonetheless has not become an important retail payment method. Cash still dominates as the means of retail payment while cheques and credit/debit cards are also still important cashless payment instruments in terms of volume. Evidence from some countries shows that e-money is only good for those transactions where physical cash is awkward to use and when people are in hurry. Examples include the use of e-money for parking meters, highway toll, and in vending machines that need exact change. Further success may come from multi-application smart cards which combine an e-money with other applications, such as a debit or credit card, local transportation ticketing, or identity card. This will offer a synergy effect, which in turn does not require additional investments from either the consumer side nor from the retailer side.

However, the use of electronic money systems appears to be growing in a few countries. By looking at the number of smart cards being sold in the world, it is safe to conclude that electronic money has gained much more foothold in Europe and to a lesser extent in Asia, than in the United States. From a total of 1.3 billion smart cards in circulation in 1997, 67% of them were being sold in Europe, 17% in Asia/Pacific, 13% in United States, and 3% in the rest of world[11] (Table 3.1). This is also confirmed by information gathered from the BIS survey of November 2001[12] where countries that have reported successful operations of e-money are from European and Asian countries. At least 16 countries have reported that card-based schemes are being launched and operating quite successfully. These are Austria, Belgium, Denmark, Finland, Germany, Hong Kong, India, Italy, Lithuania, the Netherlands, Nigeria, Portugal, Singapore, Spain, Sweden and Switzerland. Another 16 countries have reported that e-money schemes are being piloted, and a further 6 countries have reported that e-money schemes are under consideration. Compared to card-based schemes, the progress of the network-based schemes has been much less rapid. Only a few countries have reported that network-based schemes are operational or are under trial. These 6 countries are Australia, Austria, Colombo, Italy, the United Kingdom and the United States. In some countries, card-based e-money schemes are adopting features that would enable the card to be used over the Internet.

11. See FinCEN (Financial Crimes Enforcement Network) 2000.

12. See BIS (Committee on Payment and Settlement Systems) 2001.

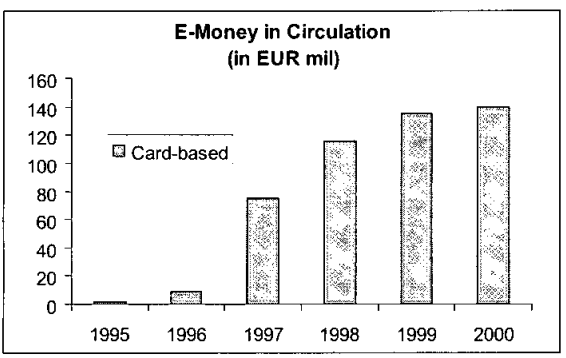
Table 3.1
Number of Smart Card in Circulation
(in 1997)

Region	Card-sold (unit)	Market share (%)
Europe	**870,000,000**	**67**
Asia/pasific	**225,000,000**	**17**
America	**165,000,000**	**13**
Rest of World	**40,000,000**	**3**
Total	**1,300,000,000**	**100**

From : Financial Crimes Enforcement Network, 2000

While leading in e-money products, the use of e-money is not yet widespread in the European Countries[13]. In most countries, the actual usage of e-money is still very low compared with cash or traditional non-cash payment instruments. Up to now, only card-based e-money has any significance, whereas the use of software-based e-money is very marginal. Starting from a negligible level in 1994, the total outstanding amount of card-based e-money in circulation has increased to reach a level of •140 million in June 2000 (Figure3.1), while software-based e-money has no statistical relevance. E-money in this region represented 0.04% of notes and coin in circulation, or 0.3% of cashless payment. Germany, the Netherlands and Belgium are countries in which outstanding e-money are the largest in the region.

Figure 3.1



13. Ibid.

According to the same report, the ratio of cards with e-money function per thousand inhabitants is quite impressive in this region. There are 454 cards with an e-money function per 1,000 inhabitants in the Euro area in 1999. Netherlands is the leading country with 1,313 cards per 1,000 inhabitants, followed by Belgium and Germany with 819 cards per 1,000 inhabitant and 739 cards per 1,000 inhabitants respectively in 2000[14]. The total transactions of card-based e-money during a year are as much as 77 trillion transactions. However, this represented only 0.30% of all cashless payment transactions. The still marginal use is also exemplified by the low volume of transactions per inhabitant (0.36), corresponding to 3.7 payments a year per card with an e-money function. The average value per transaction was EUR 3.1.

Meanwhile, while leading in technology, the United States is not at the forefront in the adoption of e-money systems[15] as the use of cheque and cash still prevails as means of payment. The United States is the only developed country in the world where cheque use is still increasing, with the number of cheques written growing at a rate nearly as fast as the overall economy. Use of cash is extensive as well. There were a number of limited-purpose e-money schemes in the country but most of them are being closed now. In Atlanta, more than 1.7 million e-money cards were produced for the 1996 Olympic Games, and these cards paid for about 200,000 transactions totaling $1.1 million. When the Olympics were over, the system was discontinued. Two separate pilot programmes, involving 100,000 customers and 1,200 merchants were started in New York City but were discontinued as of December 1998. Various other projects are being implemented in certain areas such as sports facilities, university campuses, military bases, and other facilities. An example of this is the university smartcard. The chip-based card provides official university identification, security access to buildings, stored value for on-campus dining, and a prepaid debit account for on- and off-campus purchases, including parking, photocopying, and university clubs, in addition to nearly 30 off-campus merchants.

Even though still expanding, the growth rate of e-money has been slowing. Using CPSS figures, the ratio of persons using e-money per thousand inhabitants has decreased. In 2000, the ratio was 455 but has since declined to 366 in 2001[16]. This is consistent with the conclusion of several reports that many e-money projects have been disappointing and have not progressed beyond the trial stage[17]. E-money

14. See BIS (Committee on Payment and Settlement Systems) 2003.
15. See BIS (Committee on Payment and Settlement Systems) 2001.
16. See BIS (Committee on Payment and Settlement Systems) 2003.
17. For instance, see USA case.

is typically used only for small-value transactions. If it only displaces coins and low-value notes, this would not have much effect on the total value of notes and coin outstanding, as this is dominated by large denomination notes. There are good reasons why notes and coins may continue to be preferred. They are familiar and simple to use, and clearly anonymous. They are legal tender, ensuring widespread acceptability, and are government-guaranteed. They can be readily re-spent by the recipient. The resource costs of their use are generally not borne by the user. Furthermore, the attractiveness of e-money schemes is limited by their lack of interoperability.

2. IN THE SEACEN MEMBER COUNTRIES.

A closer look at e-money development in the SEACEN Countries reveals that e-money is still in its infancy stage. Many countries under research reported that there are no e-money schemes in their countries yet. From the 10 participating countries, only 5 countries reported that they already have e-money schemes, while 2 countries have started products similar to e-money except it still needs provider authorisation[18]. In other countries, e-money is still in the very embryonic phase. The use of cash and cheques are still dominant in settling payment in the retail payment systems in the region. Up to now, the type of e-money schemes operating in these countries are mostly in the form of card-based e-money, confirming the findings by the BIS survey that the penetration of network-based e-money has been less rapid compared to card-based schemes [19] and survey by the Central Banking Publications[20] that the majority of e-money schemes under study are card-based. In a few countries, card-based e-money may have developed first as a single-purpose payment instrument for which the card issuers and the goods or service provider have been the same. Card-based e-money using smart-card technology has been introduced in several countries as well. Even though very marginal, network-based e-money products are available in a few countries.

In Korea, although the growth of e-money is very impressive, e-money is still not an important means of payment in the retail payment system. Most Koreans prefer to use credit cards for large value payments and cash for small payments. E-money is generally used to pay bus and subway fares and for purchasing goods and services in the cyber market. Even though the total amount of e-money is still

18. SEACEN member countries under research are Brunei, Indonesia, Korea, Malaysia, Mongolia, Nepal, Philippines, Sri Lanka, Taiwan, and Thailand. Due to unforeseen reasons, two other member countries, namely Myanmar and Singapore, cannot participate in the research project.

19. See BIS (Committee on Payment and Settlement Systems) 2001.

20. See Robinson and Pringles 2002.

negligible, the growth rate of this product has been very impressive in recent years. The total number of cards more than doubled during the period of March 2002 to June 2003. The float outstanding shows a remarkable progress by growing more than five times during the same period. Like most other countries, the data for network-based e-money is not available.

In Malaysia, even though cash and cheques are still dominant means of retail payment, the usage of e-money has been quite considerable and on an increasing trend. As the end of 2002, the share of e-money as a payment mode for cashless payment was relatively high at 31.2%. In fact, it is the second largest payment instrument in non-cash payment after cheques. The high usage of e-money as a payment system is attributed to the usage of this instrument at toll highways in Malaysia. However, compared to cheques and credit cards, the average daily value of this instrument remains low. Currently, Malaysia is facing the transition from magnetic stripe cards to chip cards.

In the Philippines, there are six card-based e-money products in the market issued by several banking institutions. Generally, e-money products in Philippines have multi-functional features. E-money may gain vast opportunities in this country as there the number of Internet users increases (grew more than half in 2000).

In Taiwan, until recently, e-money was not an important means of payment. The share of e-money to total payment, either by volume or by value, is still negligible at nearly zero. However, there is a trend where payments are moving towards non-paper based instruments. The use of paper-based instruments such as cheques is on the decline while the card-based and electronic-based ones are increasing. In terms of value, the share of cheques decreased to 12% in 2002 from 22% in 1998, while the card-based and electronic based instruments increased to 1.3% from 0.5%, and 87% from 78% respectively during the same period of observation. Currently there are three e-money schemes in Taiwan.

In Thailand, e-money circulation in the economy is very low. To date, the proportion of e-money to notes and coins in circulation is very small (0.001%). There were a few small scale-schemes launched in the past few years. The private sector, including bank and non-bank institutions, is showing interest in issuing e-money. While the Thais are getting more familiar with modern payment methods, cash and cheques remain the dominant means of payment in the economy.

Brunei and Indonesia have started payment products which are similar to e-money except they need central authorisation. They are card-based products and are similar in terms of usage with debit cards. They can be used domestically as

well as internationally. Users of these products are not required to be account holders.

TABLE 3.2
E-MONEY PRODUCTS IN SEACEN COUNTRIES

Country	Name	Type	Launch date of product	# of issuers	# of cards issued (or PC)	#of merchant terminals (or PC)	Float (USD mil)	Val. of daily trans (USD)	Value limit (in USD)
Korea	K-Cash	C/N	Jul-00	18	554,260	744	0.49	7,600	429
	MYBI	C/N	Sep-00	6	2,057,500	7,006	3.72	308,700	429
	A-cash	C	Jun-01	2	400,000	15,318	0.34	47,100	429
	Mondex	C/N	Jun-00	7	700,000	4,000	0.08	2,600	429
	Visa Cash	C/N	Oct-01	5	860,000	644	0.02	na	429
	Moneta Cash	N	Nov-01	1	3,000,000	70	na	na	429
Malaysia	MEPS CASH	C	1996	12	9,200,000	8,176	0.45	12	526
	Touch 'n Go	C	1997	1	2,400,000	395	12.29	68,647	132
Phillipines	Master Electronic	C	2000	2	530,000	20,000	0.64	54,298	160
	Visa Electronic	C	Mar-03	1	19,886	20,000	0.012	36	65
	Ace Arizona	C	Dec-02	2	50,000	1,800	0.298	17,510	900
Taiwan	FIS-IC Card	C	Feb-98	22	2,030,000	14,528	na	513.5	15-295
	Mondex Taiwan	C	Sep-99	9	250,000	3,500	0.41	1,486	upper limit 295
	E-SUN eCoin	N	Jan-02	1	88,000	110	0.12	1,470	upper limit 295
Thailand	SCB Smart Card	C	1999	1	50,000	20	0.0059	348.8	465

Note: C: Card based, N: Network based, na: data are not available

Source : Country papers and CPSS survey of electronic money,internet and mobile payments,March 2004

The central banks in the SEACEN region have generally welcomed the development of e-money products, albeit with caution. It seems clear that the central banks do not intend to put a brake on the e-money development. Maintaining this stance, the central banks would continue to study electronic money while observing closely the developments in the respective countries.

3. FACTORS INFLUENCING THE DEVELOPMENT OF E-MONEY

E-money has the potential for far reaching effects if they are able to overcome some obstacles. Gramlich argues that a major hurdle for the electronic money products is the network problem[21] which is somewhat like the chicken and egg question. Consumers will only be persuaded to use e-money products if there are a sufficiently wide variety of retail outlets that will accept them. On the other hand,

21. See Gramlich 1999.

retailers will only be prepared to install expensive e-money handling equipment if there are sufficient customers who want to pay by e-money. If most merchants do not accept stored-value products, most customers will not bother with stored value cards. Payment systems involve a network, and money is not truly money unless it becomes nearly universally acceptable.

Moreover, time is needed for a product to be accepted by customers. Meyer argues that it took years for ATMs and debit card networks to be widely used and accepted in the world[22]. Ultimately, these innovations in the payment system have proved efficient and cost-effective for users. E-money may have a similar experience, with natural setbacks at first, further evolutionary development, and eventually a growing acceptance from the general public.

The slow adoption of e-money products may also be explained by the abundance and convenience of other payment options. Many people now have many payment options such as cash, credit cards, cheques, debit cards, or others. Moreover, the new advancements in technology have introduced Internet and mobile phone payments. They may choose the appropriate one that best meets their needs.

The main obstacles for e-money to replace central bank money were regarded quite differently in the United States and the EU. The European survey stated that technical infrastructure, interoperability, and costs and profitability for issuers are the main problems, whereas security and privacy are regarded as the leading problems for a successful e-money take-off in the United States[23]. Apparently, the development of electronic technology is not enough to attain the high level security and desired privacy protection in the Internet world. For example, although advanced technology may make counterfeit difficult, the public is still afraid that the e-money issuers who can accumulate customers' information on what and when they bought, may use such information without the customer's permission.

Due to different conditions, the main obstacles for e-money to replace central bank money were regarded quite differently in the United States and the EU. The European survey stated that technical infrastructure, interoperability, and costs and profitability for issuers are the main problems, whereas security and privacy are regarded as the leading problems for successful e-money take-off in the United

22. See Meyer 2001.
23. See Gormez and Forrest 2003.

States[24]. Apparently, the development of electronic technology is not enough to attain the high level of security and desired privacy protection in the internet world. For example, although advanced technology may make counterfeit difficult, the public is still wary that the e-money issuers can misuse accumulated customers' information.

The reasons generally cited for the relatively sluggish development of e-money in the SEACEN region are the network problems, certain inertia of customers to change their payment habits, interoperability of the system, and security concern. The term 'network effects' is used to describe the experience that the more beneficial an innovation will be to a potential user, the more widespread this innovation is and therefore, the more it is used by third parties. In this context, the apparent still insufficient loading terminals play a key role. In Korea, lack of information about the advantages of the products, high costs in installing terminals, and privacy issues are obstacles to the widespread of this new instrument. Meanwhile, interoperability is the main concern in the Philippines. In Taiwan, the main reason this instrument is still at its infancy is related to consumer's habit, merchant's acceptance, issuers' reputation and security problems. The market penetration and high cost of investment are the main problems for the success of e-money schemes in Thailand.

Due to its great potential, however, we cannot rule out the possibility in the future that potential use of e-money will get stronger. If the acceptance of e-money tracks with the history of other payment systems such as ATMs and credit cards, the growth of e-money may be slow in the first five years, but increase dramatically thereafter[25]. The potential for rapid growth was also supported by ECB in that as was the case with many innovations, the development of e-money could follow an S-curve, in which a period of slow growth could lead up to future rather expansive growth[26]. Thus, e-money may potentially present new challenges to monetary policy in the future. Many countries will be watching developments, with a view to ensuring that the integrity of the financial system is maintained.

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24. Ibid.
25. See Hayes, et al 1996.
26. See BIS (Committee on Payment and Settlement Systems) 2001.

CHAPTER 4: IMPLICATIONS ON CENTRAL BANKING FUNCTIONS

1. ON THE EFFECTIVENESS OF MONETARY POLICY

The emergence of electronic money has led to various studies on the implications of its impact on central banking functions even though e-money is at the advent stage. Initially these studies only focused on prepaid card-based products but with the increased use of network money, the coverage of studies have also included the latter[27]. There were real worries that electronic money could affect the effectiveness of monetary policy, cause shrinkage in central banks' balance sheets, and the ability of central banks to raise seigniorage revenue[28]. There were also real worries that uncontrollable growth of e-money could in turn endanger the maintenance of price stability[29]. Some economists even believe that if electronic money could completely replace currency, it will lead to a future without central banks, while others feel that its impact will be less drastic.

One of the important issues raised by e-money for the central bank is its implications for the efficacy of monetary policy. The introduction of e-money could potentially have an effect on the demand for monetary aggregates and on the formulation of monetary policy[30]. If e-money can contribute to a more efficient payment system, it could lead to shifts in the velocity of money which may temporarily reduce the usefulness of the monetary aggregates, especially narrower ones, for countries that rely on them as targets or indicators. It is conceivable that a very extensive substitution could complicate the operating procedures used by central banks to set money market interest rates. The basic explanation for this extreme argument is the more payments using electronic money substitute for banknotes and coins, the less currency is required in circulation; this reduces the balance sheet of the central bank and consequently reduces its ability to influence interest rates in the money market since cash is a large or the largest component of central bank liabilities in many countries.

The consequence of shrinking of the central bank's balance sheet would be the reduction of seigniorage income[31]. The seigniorage is a central bank's income

27. In 1994, the EMI study about E-money, and since network-based has emerged in 1998, ECB has included the network-based products.

28. See BIS (Bank for International Settlements) 2001.

29. See European Central Bank 1998.

30. See BIS (Bank for International Settlements) 1996.

31. See BIS (Bank for International Settlements) 1996. BIS proposes a way to count seigniorage which is roughly estimated by multiplying notes and coins outstanding by the long-term rate of interest on government securities.

derived from their monopoly on production of money. Banknotes in circulation are non-interest-bearing liabilities but central banks' corresponding asset holdings earn interest that constitutes seigniorage revenue. If e-money were to substantially substitute for cash, then a decrease in the amount of notes in circulation could result in accompanying decrease in seigniorage revenue. In the extreme case, this may force central banks to rely on government grants to fund their operations, with implications for (perceived) central bank independence.

Based on a research study which analysed the impact of electronic money on seigniorage revenue in G10 countries[32], it was found that it is difficult to predict the threat of e-money on seigniorage in the medium- and long-run since the acceptance and spread of e-money is still unpredictable. However, if e-money eliminates all bank notes denominations up to $25, the central bank seigniorage income will be reduced to around 0.05-0.15 as percentage of GDP. For comparison, without e-money in circulation, the central bank seigniorage income as percentage of GDP is around 0.28 – 0.65. Other research have found that if e-money can substitute for 40% or more of all currency outstanding, only the French and Belgian central banks would stand to lose a lot as they have to start looking for alternative ways of raising revenues to preserve their independent position from government[33]. In fact, the improvements and efficiency gains realised in the payment system have clearly affected central banks' income which have been confirmed by Alan Greenspan. He has said that a diversion of seigniorage may be an inevitable by-product of creating a more efficient retail payment system in the long run[34]. Stored-value cards and network money are not currently major market factors in the United States. However, if non-bank electronic money were to displace today's currency holdings, the Federal Reserve Banks would lose close to $30 billion in annual revenue.[35]

E-money may complicate the task of central banks by affecting the data analysed by central banks. E-money could reduce the reliability of monetary aggregates and other monetary indicators. For example, if e-money has replaced a significant amount of banknotes, then monetary base and M1 will be misleadingly low if e-money is not included in the calculation. This would be a problem for countries that rely heavily on them as targets or indicators in their monetary policy. Therefore, they may need to start collecting e-money data and incorporate it into their measures.

32. See Boeshoten and Hebbink 1996.
33. See Groeneveld and Visser 1998.
34. See Greenspan, 1996.
35. See Gates 2002.

The question of whether excessive issue of e-money could give rise to inflationary pressures could be a concern as well. If e-money is issued through the conversion of banknotes or sight deposits, it would not change the money supply and price stability is not endangered especially if the central bank monitors these figures. However, if electronic money is issued as a consequence of credit, private issuers have incentives to supply additional amounts of electronic money. This over issue could in turn endanger the maintenance of price stability.

2. ON BASIC TASK IN PAYMENT SYSTEM

A central bank's interest is not only confined to monetary policy concerns but also relates to the central bank's basic task in the payment system in the promotion of a smooth functioning of payment systems and the stability of the financial system. Therefore, a number of additional regulatory concerns, such as the need to preserve the unit-of-account function of money, the efficient functioning of payment systems and confidence in payment instruments, the protection of customers and merchants, the stability of financial markets and protection against criminal abuse, also have to be taken into account[36]. A number of risks should also be identified and managed.

E-money may erode the benefits of a currency as a single unit of account if they are traded at different values. If some types of e-money products were thought more creditworthy or acceptable than others, they may then trade at different values. A good e-money may be priced higher than the lesser one. This could endanger the unit account role as incorporated in central bank money. This could be avoided by requiring all e-money to be redeemable in conventional money.

It is important that the development of e-money should not endanger the smooth functioning of the payment system and the stability of the financial system. E-money offers efficiency in retail payment but this efficiency will only be realised if the general public has confidence that it is a reliable product accepted by all users. Therefore, it is important to put in place sufficient safeguards on e-money products so it is seen to be a reliable way of making payments.

Issues on protection of customer and merchants are becoming important as well. The reason for this is because most customers and merchants cannot assess the quality of the issuers due to the symmetric availability of information and a lack of understanding of the technical security features of the payment systems they offer.

36. See European Central Bank 1998.

The avoidance of systemic risks and consequently, the protection of the stability of financial markets have been a main regulatory concern. Since customers are unable to assess adequately the creditworthiness of the issuers, there is a risk that customers will have excessive confidence in them until a crisis of confidence occurs, to which they may overreact, triggering bank runs. The history of banking has shown that bank runs are not just a problem for individual depositors and individual deposit-taking institutions, but that they may cause systemic disruptions and may even, ultimately, affect the real economy.

The possibility of criminal abuse using e-money cannot be neglected. The risks of e-money counterfeit and fraud can hardly be excluded. The inadequate management of operational risk and a lack of technical security make an electronic money scheme vulnerable to counterfeit and fraud. Another area of criminal abuse associated with electronic money schemes relates to money laundering and tax evasion.

As with other payment products, the various risks that can arise should be properly managed. A key issue for central banks is the degree of risk that might be acceptable. This would partly depend on the risk that it would be appropriate for an individual institution to bear. Another consideration would be whether the failure of one participant was likely to threaten the viability of the whole scheme or whether the failure of one scheme could threaten the viability of other schemes or the reputation of electronic payment systems more generally. These systemic concerns are likely to be limited for e-money schemes because, given their retail nature, the amounts involved are likely to be small.

It is noted above that the introduction of e-money raises issues relating to money laundering across borders and to the legal treatment of cross-border e-money payments. Other cross-border concerns could arise from the fact that schemes may offer e-money in more than one currency, which may, for example, make it more difficult for central banks to measure accurately the stock of e-money denominated in the home currency. Many e-money schemes are being developed on the basis of technology or procedures developed in foreign countries by, for example, large international payment card companies. A concern may be how the public authorities can obtain detailed and precise information about the products or schemes being promoted in their country by foreign vendors, and how they may be able to influence individual schemes in the light of their particular domestic concerns.

CHAPTER 5: POLICY RESPONSES AND REGULATORY FRAMEWORK

1. POSSIBLE POLICY RESPONSES

Possible policy responses to the regulatory and monetary policy issues raised by e-money could have many forms. These include (i) considering whether e-money fits within traditional product categories and hence is covered by existing regulations, (2) limiting the issuers to only banks as this would avoid change in the existing institutional setting, (3) putting restrictions on maximum value of e-money, (4) incorporating e-money into monetary aggregates, (5) issuing of e-money by central banks themselves, or (6) expanding the coverage of reserve requirement to cover e-money[37]. Other policy responses such as redeemability requirement and putting some other requirements are proposed by the ECB[38], intensifying customer education, or requiring 'the float' to be invested in high assets.

The policy responses and regulatory framework aspects of electronic money are discussed in various international fora. The European Monetary Institute (EMI) issued a report on electronic money in 1994[39]. Since network money has not emerged at that time, the report only covered prepaid cards. The most important recommendation of the report is that only credit institutions should be allowed to issue prepaid cards. The principal consideration is that reliable supervision of this new product must be possible. In 1997, the G-10 countries[40] also published a report on electronic money[41]. This report differed from the EMI report in two respects. Firstly, it concerned not only prepaid cards, but also network money. Secondly, it applied a broader analysis and also covered such issues as consumer protection and counterfeiting. In August 1998, the European Central Bank (ECB) published inter alia a report on the monetary-policy aspects of electronic money[42].In addition, the Bank for International Settlement (BIS) has published reports on security, supervision and the central bank's role with regard to electronic money[43].

37. See BIS (Bank for International Settlements) 1996.
38. See European Central Bank 1998.
39. See EMI (the Working Group on EU Payment Systems).
40. G-10 countries comprise the central banks of the largest countries.
41. See BIS (Group of Ten) 1997.
42. See European Central Bank 1998.
43. Security of E-Money, 1996, Implications for Central Banks of the Development of E-money, 1996, Risk Management for E-Banking and E-Money Activities, 1998.

2. POLICY RESPONSES TAKEN BY COUNTRIES

The actual policies of regulators with respect to electronic money vary from country to country. Regulators in nations that currently do not have a legal basis on which they can supervise payment instruments may be in a position such that existing banking laws allow electronic cash to be subject to supervision. The alternative would be to enact separate laws governing the supervision of electronic cash. For regulators who have a legally firm basis for supervision of payment instruments (such as most of the United States, Canada, Italy, and Portugal), the basic question will be how to read, adapt, interpret, change, or reformulate the existing rules. These countries may need only to reword or eliminate the rules that are based on technical solutions rather than on functional processes.

With regard to the impact of e-money on monetary policy, the European Central Bank argues that until recently e-money has not given any material impact on monetary policy[44]. This is mainly because outstanding e-money in the circulation is still very low. However, given the potential for rapid growth in e-money use and the fact that e-money may become a very close substitute for banknote and coins, they believe that in the long-run, e-money may have an impact on consumer prices.

Since the primary objective of the ECB is to maintain price stability, it is the important to take into consideration various policy responses. First, to safeguard the role of unit of account, there is a need to impose obligatory redeemability requirements on issuers. Imposing redeemability requirement would create a closer link between e-money and central bank money. Thus, privately issued e-money would always be redeemed at par value with central bank money. Second, to maintain the size of central banks' balance sheets and central banks' ability to steer short-term interest rates, central banks can impose minimum reserve requirements on e-money issuers or by issuing e-money themselves. Third, to maintain the reliability of monetary aggregates and other indicators of monetary conditions, that would be very important for countries that rely on them as targets or indicators, central banks should collect information on e-money issues and include them in monetary aggregates.

Since the interest of a central bank is not only on monetary policy concerns but also to promote the smooth functioning of payment system and the stability of the financial system, the ECB argues that clear rules and the condition under which e-money can be issued must be established. This policy is explained in the Report on e-money published by the ECB in 1998. In the report, the European Central Banks has defined several minimum requirements for e-money schemes.

44. See BIS (Committee on Payment and Settlement Systems) 2001.

According to this report, issuers of e-money or e-money schemes must, (i) be subject to prudential supervision, (ii) be covered by solid and transparent legal arrangements, (iii) maintain adequate technical, organisational and procedural safeguards, against threats such as counterfeiting, (iv) offer protection against criminal abuse such as money laundering, (v) supply the central bank with relevant statistics for the purpose of monetary policy, (vi) be legally obliged to redeem e-money against central bank money at par and (vii) have the possibility to impose minimum reserve requirements on all issues of e-money. A further objective is that there should be sufficient interoperability between different systems and that appropriate guarantees, insurance or loss-sharing schemes should be in place. In addition, enhancing international coordination is also desirable since cross border issue may arise, particularly as regards software-based network money. The proposals would help to promote confidence amongst business and consumers as well as ensure confidence in the currency.

At present, e-money is not expected to have any effect on monetary policy implementation in the United States as well. However, authorities there have pointed out that the situation will need to be monitored if and as e-money balances expand. At present, they only monitor e-money liabilities issued by depository institution. This product is subject to reserve requirements and included in the M1. However, up to now there is no legal authority requiring statistical reporting of any e-money balances issued by non-depository institution. They argue that voluntary reporting, as has been the case with traveller's cheques issued by non-banks, may be encouraged.

In the United States, significant questions are being raised about regulations applicable to stored-value cards e-money. Current regulations that may apply to stored-value cards or electronic value include Regulation E (Electronic Transfer liability limits) and Regulation Z (consumer protection concerns)[45]. Regulation E was established by the Federal Reserve Board to implement the Electronic Funds Transfer Act of 1978. The regulation was designed to protect consumers and defined the rights and obligations of both consumers and "financial institutions" when electronic transactions affect consumer accounts. Regulation E is important to the issuers of smart cards. It provides rules for the manner in which certain "access devices" such as debit cards, may be solicited and issued, establishes the conditions and terms of disclosure for providing these devices, requires documentation in the form of transaction receipts and periodic account statements, sets forth limitations on consumer liability (at present $50), and specifically details how consumer disputes will be resolved.

45. See Good 1997.

However, even as early in September 1996, the U.S. Congress directed the Federal Reserve to study whether Regulation E could be applied to e-money without adversely affecting the cost, development and operation of such products and to date, the Board has not taken further action[46]. The Board, however, continues to monitor development and issues concerning electronic stored value products, and may take further action on the proposal in the future. In a legal opinion issued in July 1996, the Federal Deposit Insurance Corporation (FDIC) said that most stored-value cards are not covered by deposit insurance. There are also a myriad of issues regarding escheat laws[47], consumer protection laws, and privacy issues that must be addressed[48].

Up to now, no central bank under research in the SEACEN region has indicated that e-money would give an adverse impact on monetary policy. The e-money in the SEACEN region is still in the initial stage of development and may need a long time before it is widely accepted. Several researches being done by some central banks could not find any impact of e-money on central banking functions such as on seigniorage, the effectiveness of monetary policy, and the integrity of payment system as the amount of e-money in the region is still negligible. However, some countries are fully aware that e-money could have an impact on the effectiveness of monetary policy and seigniorage, and that it may be difficult to maintain a stable foreign exchange rate once e-money become widely accepted in the future. Therefore, central banks in the region are always watching the development of e-money closely. Based on the country reports it is found that some central banks, namely Korea, Malaysia, and Taiwan are already collecting data on the e-money. The same conclusion that e-money has no real impact yet on monetary policy is obtained from the BIS survey. Given the low average value of e-money transactions and relatively small cap on the amounts that can be stored on stored value-cards, the value of e-money float is still very low. It is also found that losses on account of decline in seigniorage revenues are also perceived to be negligible by the central banks and have so far evoked no specific policy responses from them.

With regard to regulatory framework, some SEACEN countries have reported that the existing legal framework is adequate enough while others feel that it is not sufficient. The countries that find it insufficient are planning to implement a new legal framework in the near future. To regulate all e-money issuers, the Korean government has prepared the new draft Legislation (Electronic Financial Transaction

46. See BIS (Committee on Payment and Settlement Systems) 2001.

47. See Good 1997. Escheat laws deal with the right of the state to take title to property after the death of a person who has not disposed of the property by will and has left no heirs to inherit it. The laws vary from state to state.

48. Ibid.

Act, EFTA) and is expected to introduce it to the National Assembly when it starts its new term of service in June 2004. The current regulatory provisions governing prepaid cards were passed into law in 1998 but are only imposed on banks and credit cards companies. Meanwhile, the legal framework of e-money in Malaysia is contained in the Payment Systems Act 2003 that will come into force on November 2003. The legal framework of e-money in Taiwan is contained in the Banking Law, although this law only applies to multipurpose stored-value card. There is no specific legal framework for the e-money business in Philippines. Knowing that it is important to ensure the integrity, credibility and stability of the payment and financial systems, Thailand is now working to lay down a legal framework to regulate e-money business.

None of the central banks in the SEACEN countries under survey intends to issue e-money themselves in the near future. Even though the central banks have the ability to issue e-money, they do not feel the need to do so as outstanding e-money is still low.

The contents of the regulatory frameworks of most of the SEACEN member countries seem to be going in the same direction. Given the risk associated with the e-money issuance, e-money issuers need to be subject to prudential supervision. For the purpose of monetary policy, e-money issuers should submit any information that may be required by authorities. To maintain the unit of account function of money, e-money is obliged to be redeemed against central bank money at par. In addition to this, the regulatory framework must also address the issue of the ceiling amount of e-money and information disclosure. Several addition regulations are being applied by Taiwan in setting additional requirements for banks that could issue e-money.

3. BROAD REGULATORY FRAMEWORK

To a great extent, discussion among the authorities has focused on whether it is most appropriate to regulate in advance, or to wait and see. These different attitudes are based on such factors as varying opinions on how fast the systems will grow. Premature, strict regulations may delay the development of increasingly more effective financial systems, since such regulation will make it a less attractive business proposition to develop these systems. A more liberal approach entails the risk of a system going into enforced liquidation, resulting in a tarnished image for the issuer and widespread distrust among consumers. This would probably also delay the development of electronic money until such time as consumer confidence is restored. In this regard, the United States and Europe take a different stance. In Europe, the issuance of e-money is regulated, while the United States is taking

a more 'wait and see' approach before they issue e-money regulations.

The proponents to regulate early have their own arguments[49]. Firstly, since e-money products are still developing, regulations could impose harmful costs and possibly discourage new innovation and new entry. Secondly, since the outstanding amounts owed to customers are still low at this time, systemic risk are not substantial at this stage. Thirdly, any regulation could quickly be overcome if needed. Fourthly, electronic money is not a real threat to the role of central banks. However, the proponents of early regulation argues that appropriate regulation at an early stage has a positive impact on innovation by reducing the likelihood of the failure of a scheme, which would damage the confidence of customers and merchants in the payment instrument. Besides, if such a regulatory framework were only to be designed after a variety of products had already been developed, it might entail substantial changes to the products or restrictions on the parties involved and the related costs might endanger the business case for such products.

However, the proponent of the "wait and see" or 'hands-off' approach also have other arguments. While it is believed that government also has a role in monitoring the growing use of e-money by consumers, they argue that new government regulation of e-money and its issuers is not needed at this time. Establishing a comprehensive regulatory framework at an early stage would risk stifling innovation. The government regulation could adversely affect competition, experimentation, and innovation in an industry that is still in the early stages of development, and could increase the cost of e-money products unnecessarily. In the current period of change and market uncertainty, there may be a natural temptation for the regulators and a natural desire on the part of some market participants, to have the government step in and resolve the uncertainty, through standards, regulation, or other government policies, but as financial systems become more complex, detailed rules and standards have become both burdensome and ineffective, if not counterproductive[50]. It has been argued that to foster financial innovation, we must be careful not to impose rules that inhibit it. To develop new forms of payment, the private sector will need the flexibility to experiment, without broad interference by the government. Hence, in the earlier period, industry participants may find that self-policing is in their best interest. Moreover, initial experience indicates that electronic money will not be used as frequently in the foreseeable future as was originally expected. Lastly, the attempt to regulate electronic money by only single nation states will most likely fail due to the borderlessness of the Internet.

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49. See European Central Bank 1998.

50. See Greenspan 1997.

To the question of regulating earlier or later, judgments would come largely into play as there are always trade-offs. Careful judgment should also be made in determining the best time to regulate so as to remove uncertainties and also at the same time not stifle innovation.

CHAPTER 6: E-MONEY RISKS AND RISK MANAGEMENT

1. E-MONEY RISKS

The prospects for e-money are favourable. However, there are also some risks to be managed. The development of e-money which begun in the early 1990s has increased the concern within central banks about the risks posed by these new products to the payment systems. This concern has led to significant policy actions and studies at various central banks and other institutions. The risks to which e-money is subject, in turn, pose new challenges by financial authority to control payment system risks.

It is not wrong to say that the types of e-money risks are not new since some of the common risks and problems traditional banks may face apply also for the electronic money business. It is safe to say that in general, the basic types of risks generated by electronic money are not new. However, the specific ways in which some of the risks may arise as well as magnitude of their impact on payment systems and financial stability may be new[51]. Among the many risks, the operational risk, reputational risk, and legal risk may more likely arise. Similar arguments are also presented by Mc Andrews, 1999. He argues that e-money systems present new uncertainties to banks and payment system through their potential for increased fraud, operational and legal risk[52]. A detailed classification of other risks is fairly standard. They are typically categorised as credit or solvency risk, liquidity risk, market risk, and systemic risk[53]. Even though electronic money activities may represent a relatively small portion of the overall activities of financial institutions, we cannot, however, say that the potential risks of e-money are negligible. McAndrews and Wasilyew stressed that even retail payment systems, if composed of large number of firms, can lead to significant systemic risk[54].

Operational risk arises from the potential for loss due to significant deficiencies in system reliability or integrity[55]. This risk is normally associated with inadequate procedures and controls, information system failures and human error. Inadequate operational procedures and internal controls expose the institutional to potential fraud, counterfeiting and costly disruptions in operations. Given the particular nature of the electronic money product, the risk of fraud being perpetrated by employees,

51. See BIS (Basle Committee on Banking Supervision) 1998.

52. See Mc Andrew 1999.

53. This issue is described in more detail in the report on Risk Management for Electronic Banking and Electronic Money Activities BIS (Basle Committee on Banking Supervision) 1998.

54. See Mc Andrew 1999.

55. See BIS (Basle Committee on Banking Supervision) 1998.

customers and merchants is particularly high. The reliability of the information system is also crucial. Failures in this system affect the integrity of data, which is necessary to prevent malfunctions and errors and, in the worst scenario, may lead to business interruption with huge possible losses for the issuer. Furthermore, low performance by staff may increase the risk of human error. Operational risk can also arise from customer misuse. Operational risk could be a major concern for e-money issuers especially for those which are newly established businesses with a new product. Since the technology is still new for them they may be unfamiliar with the control environment that is very important.

Reputation risk is the risk that the reputation of an institution might deteriorate following specific events[56]. In the context of electronic money schemes, the emergence of malfunctioning or security breaches in the system, the inability to solve problems with customer and adverse media coverage are all elements, which might negatively affect the reputation of institution. The issuing institution mainly incurs this kind of risk. Increased reputational risk can be a direct corollary of heightened risk exposure or problems in other risk categories, particularly operational risks.

Legal risk arises from violations of, or non-conformance with laws, rules, regulations, or prescribed practices, or when the legal rights and obligations of parties to a transaction are not well established[57]. Legal risk may arise from violation of laws or regulations, such as money laundering, customer disclosures, privacy protection, etc. Legal risk may also arise when the legal rights and obligations of all parties involved are not well established. The contractual and legal relationships between consumers, retailers, issuers and operators might be complex. A major concern is whether the rights and obligations of all the parties involved are certain and transparent. For example, issues could arise regarding liability in the event of fraud, counterfeiting, accident or the default of one or more of the participants.

Besides, e-money schemes could be also exposed to interest rate risks and foreign exchange risks[58]. E-money issuers could be exposed to interest rate risks related to investments in interest bearing assets. Interest rate risk could also arise from a negative mismatch between interest received on assets backing outstanding e-money liabilities and interest paid on those liabilities. e-money issuers is exposed to foreign exchange risks if a currency mismatch between assets and liabilities

56. Ibid.

57. Ibid.

58. More detail on other risks can be found in Risk Management for Electronic Banking and Electronic Money Activities, BIS (Basle Committee on Banking Supervision) 1998.

results in a net open position. A currency mismatch may occur if funds corresponding to outstanding e-money liabilities denominated in one currency are invested in assets denominated in other currency.

The nature of e-money activities that is allowed to across national boundaries may also raise a certain risk, which is cross-border risk[59]. Two main types of cross-border use of electronic money can be foreseen. First, customers could use electronic money to make payments to merchants located abroad, either by using prepaid cards while traveling or by purchasing goods or services in foreign countries via a computer network. In this case, the customer and the issuer may be located in one country, while the merchant is located in another. Second, issuers established in one country may implement electronic money schemes by which they offer electronic money in another country, presumably in the customer's home currency. So far, the cross-border supply of electronic money represents a limited phenomenon. However, it is already apparent that the development of the cross-border supply of electronic money, which might increase after the introduction of the euro, is crucial from many perspectives. From central bank perspective, it is important to define the applicable law (conflicts of laws) and the issue of cooperation between supervisory bodies in different countries.

2. RISK MANAGEMENT

All of these risk issues raise concerns on how to control risks in e-money systems. The main argument is the issuers must be able to manage and control risks and absorb any related losses if necessary. For example, to protect e-money products, there are specific security features available such as to make the microchip embedded in the card tamper resistant, encryption technology used to authenticate e-money transaction and to protect data from alteration, or setting maximum limit of amount that can be held on e-money products[60]. Even though electronic money activities may represent a relatively small portion of the overall activities of financial institutions currently, it is important to assure that critical systems are not threatened by the risk exposures.

A proper risk management process will help issuers and supervisors attain these goals. Issuers may employ such a process when committing to new electronic money activities, and as they evaluate existing commitments to these activities. To

59. See BIS (Basle Committee on Banking Supervision) 1998.

60. More detailed on this matter can be found in Security of Electronic Money, BIS (Committee on Payment and Settlement System and the Group of Computer Experts of the Group of Ten Countries) 1996.

manage these risks, three basic elements should be taken in place. These are (i) assessing risks, (ii) controlling risk exposure, and (iii) monitoring risks[61].

Assessing risks in an ongoing process and typically involves three steps[62]. First, identify risks and, where possible, to quantify them. If it cannot be quantified, the authority may still identify how potential risks can arise and the steps it can take to deal with and limit those risks. The authority should form a reasonable and defensible judgment of the magnitude of any risk with respect to both the impact it could have on and the probability that such an event will occur. Second, determine risks tolerance. The determination of this tolerance is based on an assessment of the losses the issuer can hold. Third, compare whether the risk exposure fits within the tolerance limits.

After assessing risks, the management should take steps to control these risks[63]. Controlling risks includes implementing security policies and measures, strengthening internal coordination, evaluating and upgrading products and services, implementing measures to ensure that outsourcing risks are controlled and managed, providing disclosures and customer education, and developing contingency plan. It should be ensured that staff responsible for enforcing risk limits should be given authoritative independence. The ability to control and manage these risks increases when policies and procedures are set out in written documentation and made available to all relevant staff.

For e-money, monitoring risks is particularly important[64]. The two important elements of monitoring systems are system testing and auditing. Testing of systems operations can help detect unusual activity pattern and avert major system problems, disruptions, and attacks. Auditing provides an important independent control mechanism for detecting deficiencies and minimising risks in the provision of e-money services.

Examples of possible risk management measures in electronic money are many. The common measures to handle operational risk includes: (i) the existence of effective control procedures, internal audit and other preventive measures; (ii) staff whose capabilities commensurate with their responsibility; (iii) the development of information systems which provide timely, accurate and secure data; and (iv) the

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61. See BIS (Basle Committee on Banking Supervision) 1998.
62. Ibid.
63. Ibid.
64. Ibid.

definition of contingency plans to ensure the continuity of vital operations[65]. Given the potential for counterfeiting and fraud, any possible measures to address this risk are considered important. Some are: (i) the establishment of purse-to-purse limits, which would reduce the business case for fraud; (ii) the storage of the last x transactions, which would enable the customer to verify and proof them; (iii) "know your customer" procedures and the analysis of customer and retailer usage patterns, which would allow the issuer to detect "abnormal" amounts being presented for reimbursement, and (iv) update the technical security features of a scheme continuously, since technology evolves fairly rapidly, the potential to undermine the security features of an electronic money scheme increases over time. To address reputational risks, several possible risk management measures can be offered. Those are (1) test system before implementing, and (ii) develop back-up facilities and contingency plans, including plans to address customer problems during system disruptions. Meanwhile, measures to address legal risks off-course setting solid and transparent legal arrangements. Other detail examples of possible risk management measures in electronic money can be found in the BIS paper[66].

3. COUNTRY EXPERIENCE

Participating SEACEN countries have reported that up to now, e-money schemes give negligible risks to the payment system. Again, this is due to the limited volume of e-money existing in the circulation. However, it is not to say that issuers of e-money should not implement adequate measures to manage the probable risks involved. Many countries in the SEACEN region stressed the importance to have adequate measures. For instance, Malaysia stressed the importance that e-money issuer should have adequate safeguard against fraud, forgery and money laundering. E-money issuers are also required to address issues concerning consumer protection, education and privacy.

Concerning money laundering, many central banks under survey argue that putting the ceiling amount on e-money products will be effective to curb the criminal activities. This will give them less incentive to use it as a medium for money laundering. Prohibition to use card-to-card transaction will also limit the probability. In addition, most of countries under research have already enacted a Money Laundering Act. Keeping the record of every e-money transaction and reinforcing cooperation and coordination among authorities are also important to prevent money laundering in the use of e-money.

65. See Financial Services Authority 2001.

66. See BIS (Basle Committee on Banking Supervision) 1998.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

1. CONCLUSIONS

Throughout the mid 1990s, technology-driven payment products namely electronic money has emerged. The use of this new payment instrument poses a series of questions to monetary policy and to the financial systems. There were serious discussions on how electronic money could distort the effectiveness of monetary policy, reduce the ability of central banks to raise seigniorage revenue, impact on the efficiency and smooth operation of payment systems as well as the stability of the financial system. Since e-money business may carry risks, it could lead to systemic risks as well. Realising the great potential of e-money to become a major instrument in retail payment systems, the central banks has studied the implications for monetary policy at an early stage.

Electronic money itself presents a great advantageous potential for both society and the economy. Its convenience, decreased transfer and handling costs, flexibility and increased application possibilities are some of the main advantages of e-money. Barriers to the spread of this new product include start-up costs, security issues, fraud, and reluctantly to new innovations.

However, it poses risks and problems at the same time. It is not wrong to say that the types of e-money risks are not new. Some of the common risks and problems traditional banks may face apply also for e-money business. Among the risks, operational risks, reputational risks, and legal risks are more likely to arise. McAndrews and Wasilyew stressed the dangers of mishandling the risks in retail payment systems. They argued that even retail payment systems, if composed of large number of firms, can lead to significant systemic risk. Besides, payment systems has always be considered as very sensitive in which customers confidence plays a very important role.

The steps recommended by the BIS are very valuable to handling these risks[67]. Three basic elements are suggested to manage the risks. These include: (i) assessing risks, (ii) controlling risk exposure, and (iii) monitoring risks. Assessing risks typically involves three steps: (i) identify risks and quantifying them, (ii) determine risks tolerance, (iii) compare those. Meanwhile, controlling risks include implementing security policies and measures, strengthening internal coordination, evaluating and upgrading and developing contingency plan. For electronic money, monitoring risks

67. See BIS (Basle Committee on Banking Supervision) 1998.

is particularly important. Two important elements of monitoring are system testing and auditing.

It has been more than a decade since e-money first emerged. However, the success of e-money in the world has not very evident. The reaction to this product around the world has been somewhat lukewarm. E-money has been much more successful in Europe and the Asia/Pacific, and to a lesser extent in the United States. Of the total smart-cards sold in the world in 1997, 67% of them were being sold in Europe, 17% were in Asia/Pacific, and 13% in the United States. Based on the BIS survey on November 2001, at least 16 countries have reported that e-money schemes are being launched and operating successfully while another 16 countries have reported are schemes are being piloted, and a further 6 countries have schemes under consideration. Compared to card-based schemes, the progress of the network-based schemes has been much less rapid.

A closer look at e-money development in the SEACEN countries has revealed that e-money is still at its infancy in the region. Many countries reported that there were no e-money schemes in their countries yet. From 10 countries participating in the research, only 5 countries have reported that e-money schemes are already operating or being implemented, and 2 countries have started product similar to e-money except it needs an authorisation[68]. Practical use of e-money is very limited and the volume and value of e-money transactions are negligible compared with those of other retail payment instruments. The use of cash and cheques are still dominant in settling retail payments in the region. The type of e-money schemes operating in this region are mostly in the form of card-based e-money, confirming the findings by the BIS survey[69] and by the Central Banking Publications survey[70]. In a few countries, card-based schemes may have developed first as a single-purpose payment instrument for which the card issuers and the goods or service provider have been the same. The successful applications are from multi-application smart cards e-money schemes which combine e-money with other application such as a debit or credit card, local transportation ticketing, or identity card. This multifunctional card offers a synergy effect, which does not require additional investments from either the consumer side or the retailer side.

68. SEACEN member countries under survey are Brunei, Indonesia, Korea, Malaysia, Mongolia, Nepal, Philippines, Sri Lanka, Taiwan, and Thailand. Due to unforeseen reason, two other member countries, namely Myanmar and Singapore, can not participate in the research project.

69. See BIS (Committee on Payment and Settlement Systems) 2001.

70. See Robinson and Pringle 2002.

Although operating quite successfully in some countries, the progress of e-money in general, has so far been somewhat disappointing. This product has not yet gained wide acceptance as predicted before. Some evidence in many countries indicates that electronic money will most likely only take the role of payment medium of very small amounts and through Internet in some countries. The lack of e-money as a payment instrument for e-commerce is world-wide, even in countries with liberal regulations regarding e-money and a huge volume of e-commerce like the United States. The main obstacles for a widespread adoption of e-money are quite different in every region. European countries feel that technical infrastructure, interoperability, and costs and profitability for issuers are the main problems, whereas security and privacy are regarded as the leading problems for a successful e-money take-off in the United States. For the SEACEN region, network problems, certain inertia of customers to change their payments habits, interoperability, and security concern are considered to be the main obstacles to the success of e-money.

Various studies have come to the same conclusion that e-money has the potential to affect central banking functions. The emergence of e-money raises several policy issues of potential concern to central bank functions and other public authorities such as (i) the effectiveness of monetary policy, (ii) the ability of central banks to raise seigniorage revenue, (iii) the oversight function of payment system, and (iv) to the extent that central banks have supervisory responsibilities, the possible financial risks borne by the issuers of e-money. In addition, related to central bank's basic task in payment system that is to promote the smooth functioning of payment systems and the stability of the financial systems, there are a number of regulatory concerns. These are: (i) fundamental monetary policy concerns, (ii) efficient functioning of payment systems, (iii) protection of customers and merchants, (iv) stability of financial markets, (v) protection against criminal abuse, and (vi) market failure.

Although e-money can theoretically impact on central banking function, at this time, it is safe to say that the impact is only a potential one. At present, the development of e-money does not seem to pose any threat to the central banks' ability to operate monetary policy. So far, no central bank has reported that the development of e-money have given a substantial impact on its function. As the outstanding amounts of e-money in circulation are still very low, the effect of e-money on monetary policy and on payment system risks is likely to be negligible. For those reasons, many central banks have not taken any serious actions other than monitor closely the development of e-money.

Like the product itself, the regulation of e-money is still in the early stage and is still evolving. Regulatory authorities face a choice concerning the timing of the

introduction of any possible regulatory measures. There could be a risk of introducing a regulatory régime too soon before it is clear what would be best. On the other hand, consumer confidence in e-money is important and that could be dented if lack of regulation leads to fraud or business failures. To this regard, the United States and Europe take a different stance. In Europe, the issuance of e-money is regulated. Most European countries perceive a need for such regulation in order to ensure sound market practices, to protect those who use e-money, and to take adequate account of both systematic and monetary policy concerns. The United States is taking more of a 'wait and see' approach before they issue regulations on e-money. They argue that establishing a comprehensive regulatory framework at an early stage would risk stifling innovation.

With regard to regulatory framework, many countries have been preparing to implement a new legal framework. On September 2000, two directives on e-money were finally adopted in European countries. Several SEACEN member countries reported that the existing legal framework is adequate enough to deal with issues related to e-money. However, some other countries reported that the existing legal framework is not adequate enough and therefore they are preparing to implement a new legal framework. To regulate the e-money issuers, the Korean government has prepared the new draft legislation (Electronic Financial Transaction Act, EFTA), and is expected to introduce it to the National Assembly when it starts its new term of service in June 2004. The current regulatory provisions governing prepaid cards were passed into law in 1998. However, it is only applied to banks and credit card companies. Meanwhile, the legal framework of e-money in Malaysia is contained in the Payment Systems Act 2003 which came into force on November 2003. The legal framework of e-money in Taiwan is contained in the Banking Law, although this law only applies to multipurpose stored-value card. There is no specific legal framework for the e-money business in Philippines. Knowing that it is important to ensure the integrity, credibility and stability of the payment and financial systems, Thailand now is working to lay down a legal framework to regulate e-money business.

Designing an appropriate regulatory framework for e-money schemes involves many aspects. These include the system and security, financial integrity of the issuers, protection of consumers, and promote of competition and innovation. In this connection, the European countries advocate the introduction of the several minimum requirements for the framework for the issuance of e-money. These are: (i) e-money issuers are subject to prudential supervision, (ii) solid and transparent legal arrangements, (iii) adequate technical, organisational and procedural safeguards, (iv) protection against criminal abuse, (v) monetary statistics reporting, (vi) redeemability of e-money into central bank money at par and (vii) possibility of reserve requirements.

2. RECOMMENDATIONS

It is true that the regulation of e-money is still at an early stage, like the product itself, and is still evolving. However, authorities should not adopt a wait and see approach towards legislating for it. A wait-and-see approach was heavily criticised because of the heavy investment in e-money and with heavy investment, it would be very difficult in the future to modify developments later found to be inappropriate. By creating legal certainty for e-money, it will safeguard the interests of consumers and businesses, and so help to build confidence in its usage. Since European countries in some sense are leading in this matter, we should make the effort to keep up with their studies and researches.

REFERENCES

Boeschoten, W.C. and G.E. Hebbink. 1996. *Electronic Money, Currency Demand and Seigniorage Loss in the G10 Countries.* DNB Staff Reports No 1. De Nederlandsche Bank.

Bernkopf, Mark. 1996. *Electronic Cash and Monetary Policy.* First Monday, Volume 1, No1.

BIS (Bank for International Settlements). 1996. *Implications for Central Banks of the Development of Electronic Money.* Bank for International Settlements, Basel, Switzerland.

BIS (Committee on Payment and Settlement Systems and the Group of Computer Experts of the Central Banks of the Group of Ten Countries). 1996. *Security of Electronic Money.* Bank for International Settlements, Basel, Switzerland.

BIS (Group of Ten). 1997. *Electronic Money - Consumer Protection, Law Enforcement, Supervisory and Cross Border Issue.* Bank for International Settlements, Basel, Switzerland.

BIS (Basle Committee on Banking Supervision). 1998. *Risk Management for Electronic Banking and Electronic Money Activities.* Bank for International Settlements, Basel, Switzerland.

BIS (Committee on Payment and Settlement Systems). 2001. *Survey of Electronic Money Developments.* Bank for International Settlements, Basel, Switzerland.

BIS (Committee on Payment and Settlement Systems). 2003. *Statistics on Payment and Settlement Systems in Selected Countries.* Bank for International Settlements, Basel, Switzerland.

BIS (Committee on Payment and Settlement Systems). 2004. *Survey of Electronic Money, Internet, and Mobile Payment.* Bank for International Settlements, Basel, Switzerland.

Crotch-Harvey, Trevor. 2002. *Electronic Money and the Law: The Implications.* Smart Card News Limited.

Deutsche Bundesbank. 1999. *Recent Developments in Electronic Money.* Monthly Report, June 1999. Deutsche Bundesbank.

European Central Bank. 1998. *Report on Electronic Money.* European Central Bank.

EMI (The Working Group on EU Payment Systems). 1994. *Report to the Council of the European Monetary Institute on Prepaid Cards.* European Monetary Institute.

Financial Services Authority. 2001. *The Regulation of Electronic Money Issuers.* Consultation Paper 117. The Financial Services Authority. Canary Warf, London.

FinCEN (Financial Crimes Enforcement Network). 2000. *A Survey of Electronic Cash, Electronic Banking and Internet Gaming.* U.S. Department of Treasury.

Freedman, Charles. 2000. *Monetary Policy Implementation: Past, Present and Future – Will the Advent of Electronic Money Lead to the Demise of Central Banking?* Bank of Canada.

Gates, June A. 2002. *Will E-Money Make Central Banks Obsolete?* The Federal Reserve Bank of Cleveland.

Godschalk, Hugo and Malte Krueger. 2000. *Why E-money Still Fails - chances of e-money within a competitive payment instrument market -,* Paper prepared for the Third Berlin Internet Economics Workshop Berlin, May 26-27, 2000.

Good, Barbara A. 1997. *Electronic Money.* Federal Reserve Bank of Cleveland Financial Services Working Paper Series 9716. Federal Reserve Bank of Cleveland, Cleveland, Ohio.

Good, Barbara A. 1998. *Will Electronic Money be Adapted in the United States?* Federal Reserve Bank of Cleveland, Working Paper, 1998/22.

Gormez, Yuksel and Cappie Forrest. 2003. *Prospects for Electronic Money: A US – European Comparative Survey.* The Central Bank of the Republic of Turkey, Research Department Discussion Paper.

Gormez, Yuksel. and Capie Forrest. 2000. *Surveys on Electronic Money.* Bank of Finland Discussion Papers, 7/2000. Bank of Finland.

Gramlich, Edward.M. 1999. *Electronic Payments Now and in the Future.* Remarks before the Electronic Payment Symposium, University of Michigan, Michigan, September 17, 1999.

Greenspan, Alan. 1997. *Regulating Electronic Money.* The Cato Online Policy Report, Volume XIX, Number 2.

Groeneveld, J.M. and Ad Visser. 1998. *Seignorage, Electronic Money and Financial Independence of Central Banks.* De Nederlandsche Bank.

Hayes, David G. et al. 1996. *An Introduction to Electronic Money Issues.* United States Department of the Treasury.

Howcroft, Paul. 1996. *Future Law and Regulation of Pre-paid Cards.* European Financial Service Law.

Laster, David and John Wenninger. 1995. *Policy Issues Raised by Electronic Money.* Federal Reserve Bank of New York. This paper was presented at the Conference on Digital Cash and Electronic Money, Columbia Institute for Tele-Information, Columbia Business School, Columbia University, New York, 21 April 1995.

Ledingham, Peter. 1996. *The Policy Implications of Electronic Payments.* The paper was presented to the 'consumer payment systems' conference, Auckland. Reserve Bank of New Zealand.

Mc Andrews, James J. 1997. *Banking And Payment System Stability In An Electronic Money World.* Working Paper No. 97-9, Federal Reserve Bank of Philadelphia.

Mc Andrew, James J. 1999. *E-money and Payment System Risks.* Contemporary Economy Policy, Vol 17 No 3, July 1999.

Meyer, Laurence H. 2001. *The Future of Money and of Monetary Policy.* BIS Review 100/2001. Bank for International Settlements, Basel, Switzerland.

Nsouli, Saleh, M. and Andrea Schaeter. 2002. *Challenges of the E-Banking Revolution.* Finance and Development, IMF Publication. Vol 39, Number 3.

Piffaretti, Nadia. 1998. *A Theoretical Approach to Electronic Money*, Working Papers N.302. Faculty of Economic and Social Sciences, University of Fribourg, Switzerland.

Robinson, Matthew and Robert Pringle. 2002. *A Survey of Central Bank Payment Systems Experts.* E-money and Payment System Review. Central Banking Publications, London.

Sifers, Randall W. *Regulating Electronic Money in Small-Value Payment Systems: Telecommunications Law as a Regulatory Model. Federal Communications Law Journal Vol 49 Nr 3.*

Schwaiger, Christian. 1997. *Smart Card Wallets.*

US Department of the Treasury. 1996. *An Introduction to Electronic Money Issues.* Prepared for the US Dept of Treasury Conference:Toward Electronic Money and Banking: The Role of Government,

Van der Wielen, Henny. 1997. *Electronic Money: A European Perspective.* Delivered to the Seminar on Electronic Money hosted by the Bank of England, London, 4th February

Wenninger, John and David Laster. 1995. *The Electronic Purse.* Current Issues in Economics and Finance, April 1995, Vol 1 no 1. Federal Reserve Bank of New York, New York.

Yamori, Nobuyoshi and Narunto Nishigaki. 2000. *Electronic Money Projects in Japan.* Columbia Business School, Center on Japanese Economy and Business, Working paper No 175. Columbia Business School, Columbia University.

Yang, Chambers C.B. 2000. *Electronic Money and Relevant Legal and Regulatory Issue.* Haworth & Lexon Law Office.

PART II :
COUNTRY CHAPTERS

CHAPTER 8: CENTRAL BANK RESPONSES AND REGULATORY FRAMEWORK OF E-MONEY IN BRUNEI DARUSSALAM

By
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1. INTRODUCTION

In an economy that produces and distributes a wide variety of goods and services, money flows like blood through the economic body. When the flow becomes inadequate, the body efficiency is impaired.

What is money? The most accurate definition of money is this: money is anything that serves as money. Therefore, anything that is generally accepted by the public as performing the functions of money is money. The most common function of money is to serve as a medium of exchange. The medium of exchange has evolved. It began as commodities with considerable values such as precious metals, cattle, animal hides during the barter trade era where valuable objects are served as money. As economies become more complex and sophisticated, the media of exchange are replaced by money with little or no intrinsic value. For example, a piece of currency such as a five-dollar bill is just a piece of carefully made paper with carefully engraved special designs and wording that costs about two cents to produce. The currency has almost no intrinsic value but it does satisfy few of our needs or wants. Perhaps the reason for the pattern of change from valuable substance to paper of little or no intrinsic value is that more sophisticated economies require money to perform other functions in addition to serving as a medium of exchange.

Everyone knows that money need not be spent immediately upon receipt. Rather it can be used to acquire goods or services from others at some time in the future. When money is held for future spending or investing, it functions as a store of value. A ten dollar note you hold represents, in effect, a claim cheque on the economy which you can redeem at your option for goods or services value at $10. However, money is not the only type of store of value, any physical thing that has a price may also function as a store of value, such as a piece of real estate. In countries of high inflation, money may not be the most preferred store of value. Therefore, it is important that the economic conditions must be favourable to allow money to function effectively as a store of value with good stability so that individuals and businesses can plan for future expenditures in a more orderly, more precise and more assured way.

1. Finance Officer, Brunei Currency Board

In an economy characterised by trade, money also serves as a measure of value or unit of account. We express the value of all goods and services in terms of money, and that common measure provides us with a standard by which we can relate the value of any good or service to the value of any other good and service. The function of money as a measure of value or unit of account is the basis for the debt structure, which puts a time dimension into the financial transactions. Trades are no longer restricted to those made in the present but can be made in the future such as loans or debt transactions and commodity trading for future delivery and payment. Money, in other words, permits a system of deferred payment.

Money is both a flow and a supply, and the rate at which money flows (turnover) through the economy may affect the pace of economic activity in any given period. The rapidity with which money flows determines the amount of income and production that each dollar of our money supply will generate annually.

Given the important functions of money and its effects on the economy, one of the major roles of the authority or the central bank, other than being the sole authority to issue notes and coins in circulation, is to regulate the money creating ability of banks. Regulating the ability of banks to create money means setting and implementing monetary policy involves controlling the reserve positions of banks. The three main tools which a central bank uses as instruments of monetary policy are discount policy, reserve requirements and open market operations.

Brunei Darussalam has no central bank, but the Ministry of Finance (MOF) through the Treasury, the Brunei Currency Board (BCB), Financial Institutions Division (FID) and the Brunei Investment Agency (BIA) exercises most the functions of a central bank. However, not being a bank, MOF cannot maintain accounts of the banks or service them directly. Any money transfers by MOF or any of its constituents are routed through commercial banks. In effect, there is no banker to the banks in the present structure.

BCB was set up in 1967 mainly to preserve the external value of the currency and is the sole authority responsible for the issue and management of currency in the circulation. FID is an integrated supervisory authority with supervisory powers over all financial institutions, including insurance companies and securities companies.

Due to the currency peg system, where Brunei dollar is at one to one parity with the Singapore dollar, there is no active monetary policy. Brunei Darussalam's financial sector is very liberal and there are no official credit or interest rate restrictions. The interest rates are determined by the Brunei Association of Banks

and the rates generally move along with the Singapore rates. There are no foreign exchange and capital controls, so that the currency is freely convertible for both current and capital account transactions.

2. EXISTING PAYMENT AND SETTLEMENT SYSTEM

The payment and settlement system in Brunei Darussalam is not highly developed and is mainly the retail payment system. Most payments are made by cash (banknotes and coins). Due to the interchangeability agreement between Brunei Currency Board (BCB) and the Monetary Authority of Singapore (MAS), Singapore notes and coins are customary tender in Brunei Darussalam and are used for payment of goods and services alongside with Brunei currency, which is the legal tender. Cash payments remain the most convenient method for making small-value payments, when payment is made at the point of sale. It is estimated that more than 80% of all retail transactions are paid for by cash.

There are 9 commercial banks - 6 foreign and 3 local which provide full banking services to the economy. The clearing system is currently being provided by a commercial bank at its own liquidity and market risks, with the settlements being done outside the country. The internationally reputable commercial bank branches which account for more than 75% of the market keep a close watch of the relatively small banks and voluntarily undertake risks in day-to-day operations of the market.

Cheque clearings are organised by the Brunei Bankers' Association (BBA) through the centralised Clearing House in Bandar Seri Begawan where all 9 banks participate. Under the rules of BBA, a member of the clearing house is designated from time to time as the manager of the clearing house and, as well as managing the clearings, takes on the role of 'central clearing bank'. At present, the other banks pay a nominal service fee to HSBC for facilitating clearing. The money market and forex transactions within the banking sector are relatively small and banks have their settlements done in Singapore.

All banks in the clearing house maintain a clearing account with HSBC, being the 'central clearing bank' and the rules specify that these accounts must be kept in credit but the rules provide for interest to be paid on credit balances and on overdrawn balances. If a bank is short, HSBC provides that bank with an overnight facility at an agreed interest rate. Alternatively, HSBC together with other larger banks provides temporary accommodation to the troubled bank to ensure that the market is not disrupted by a temporary liquidity shortage of one bank. The bank which experiences problems will borrow at a penalty rate and make available

necessary funding for end of day settlements in Singapore. The BBA has taken initiative to centralise the clearing houses and upgrade the clearing system with a view to speeding up the cheque clearing process which had been done manually all these years until early September this year when automated clearing was implemented. The automation and centralisation initiative is spearheaded by HSBC on behalf of BBA.

The main clearing house in BSB and other two sub clearing houses in Seria and Kuala Belait were centralised in September last year. This is an interim step to the full automation of Brunei Darussalam's clearing system that supports the development of a fully electronic interbank payments system and also resulted in improved efficiency levels through the transfer of operations to a centralised location. The major challenge to the successful implementation of the automated clearing is to convert all non-MICR cheques held by customers of banks to MICR format. A nationwide exercise involving all banks was conducted and is expected to last till 2004.

Oversight of the payment system in Brunei Darussalam is the responsibility of FID of the MOF.

3. DEVELOPMENT OF E-MONEY

Like all technological development, money which has existed for thousands of years and used by man for payment of goods and services, has been evolving not only from objects to hard currencies in terms of notes and coins, but also takes in the form of deposit accounts, plastic money and electronic payments. In this era, money has also takes the form of smart cards and digital cash or e-money. Since this has potential to substitute for cash for making small value payments, it raises policy issues for central banks as regards to the possible implications for their revenue (seigniorage gain), implementation of monetary policy and their payment oversight role. E-money has grown in importance as it does serve the functions of money as a medium of exchange, store of value and measure of value.

3.1 Salient Features of E-Money

For the purpose of this country paper, e-money shall be defined as "storedvalue" products that are generally prepaid payment instruments in which a record of funds owned by or available to the consumer is stored on an electronic device in the consumer's possession, and the amount of stored "value" is increased or decreased, as appropriate, whenever the consumer uses the device to make a purchase or other transaction.

Despite its wide range of possible uses, e-money is not anonymous unlike cash and it is not a legal tender. These are the characteristics of cash that cannot be substituted by e-money despite the fact that the latter can serve most functions of money.

3.2 Recent Development of E-Money Schemes

Of all the commercial banks surveyed, only one local bank offers e-money product in Brunei Darussalam. It is the MasterCard Electronic (MEI, prepaid cash card which was launched in September 2002. It is a card-based product and is similar in terms of usage to a signature based credit and debit card. Since it is a 'MasterCard', it can be used locally and overseas at MasterCard merchants and ATMS. Currently in Brunei Darussalam, there is no network or software-based schemes which operate via specialised software installed on personal computer for storing value and are designed to make payments over computer networks, primarily the internet.

Benefits of the Prepaid ME card offered:-

1) No minimum income requirement and one does not require to be an account holder;

2) Easy to own, can be purchased by cash for denominations of B$15, B$25, B$50 and B$100. The card will be valid for a minimum of 12 months and up to 24 months from the date of card activation. Anyone above age 12 can purchase;

3) Easy to use. Card can be activated and topped up at the bank itself, ATMs or via internet and mobile-phone banking;

4) ME card has worldwide recognition and is accepted by over 12 million merchants worldwide making it convenient to pay for goods and services both locally and overseas;

5) Amount is transferable to another ME cardholder as an allowance, gift, souvenir or pocket money;

6) Bill payments can be made through ME card such as telephone bills; and

7) Savings on purchases where one can enjoy 10%-40% discount at participating merchants.

The local bank also launched the MTV ME card to target a new market segment, 'urban youth' age 12 and above. Other than access to their funds, it also has exclusive MTV privileges such as MTV e-updates, road shows, movie premieres and cardholder stands a chance to win ail-expenses-paid trips to MTV Award Shows in Asia. Cardholders are charged an annual fee of B$15.

The ME product run on a proven card system which is certified by MasterCard International for connection to their networks and hence the bank has to meet their standards for reliability, response time, accessibility, security and others.

3.3 Factors Influencing the Development of E-money

Due to the small market and small population (Brunei Darussalam has population of around 341,000 as at end of year 2002), most of the commercial banks in Brunei Darussalam do not launch e-money schemes as it can be costly to set up the initial infrastructure and immediate ROI is not good from business point of view. However the local bank which is the first to launch the e-money products, is constantly on the look out for innovative products and has the mission to be the leading local bank with the long term view.

Since the trend of usage is increasing and as the public understand more about the features of the e-money products and their wide usage, other commercial banks may follow suit. Though still at its infancy, we may see more and more e-money schemes being introduced in the market and the authority will certainly be keeping a watchful eye as a regulator, but careful not to stifle the efforts of innovation and efficiency of the banking sector in introducing new products.

3.4 Impact of E-money on Central Banking Functions

At this moment, the development of e-money in Brunei Darussalam does not have much impact on the central banking functions due to its small volume. Like most central banks, there is no adverse impact on the size of Brunei Currency Board's balance sheet due to a possible decline in the value of currency in circulation as a consequence of widespread adoption of e-money yet. The currency in circulation has remained stable and unaffected with the new development of e-money products.

FID will continue to undertake the oversight and supervisory role of the banking sector by collection of data.

3.5 Identification and Analysis of E-money Risks

There are security risks associated with e-money. It is important that these risks are recognised and security measures taken to minimise them to prevent financial loss to issuer or other participants in the e-money systems. The main areas of vulnerability comprise the devices used in the system including those held by consumers and merchants, and the messages transmitted between such devices. As with other payment systems, significant areas of risks are to be found in the manufacturing and distribution processes, issuer and acquirer systems and central system operation.

The potential risks identified are the following:

a) Operational -unauthorised access, employee fraud, counterfeiting of e-money, customer repudiation of a transaction etc;

b) Reputational - customers cannot access their funds, virus/hacker gain entry to internal system etc;

c) Legal - rights and liabilities of the parties not legally valid or not sufficiently explicit, misuse by customer for money laundering, inadequate disclosure of information to customer, failure to protect customer privacy etc; and

d) Credit and liquidity risks.

Due to the involvement of the major international payment card such as Visa and MasterCard in the existing e-money schemes offered in Brunei Darussalam, most of the risk issues listed above were considered before the launch. Credit and liquidity risks may not be as critical since e-money is issued on 'cash-basis' and not on 'credit'. Currently, the e-money is cardbased with a magnetic stripe to store the value and information and therefore is subject to the same risks as other cards such as debit and credit cards where magnetic stripes are used. 'Skimming' is the potential risk for all magnetic stripe cards where genuine cards could be duplicated and fraudulently contained balances without corresponding load transaction and payment to the issuer.

Electronic money products could suffer from instances of accidental corruption or loss of data stored on a device, the malfunction of an application, such as accounting or security functions, or failures in the transmission of messages. In card-based product, malfunction can cause changes to the stored-value balances and if exploited before being detected, issuer can suffer financial loss.

There are three main types of security measures designed to safeguard the integrity, authenticity and confidentiality of critical data and processes, as well as to protect against losses due to fraudulent duplication or repudiation of transactions. They are the prevention, detection and containment measures.

One example of prevention measures for card-based system is to have security-related processing performed inside a physically secured module, such as a smart card containing a microprocessor chip. Duplication of a smart card is more complex and requires high level of expertise and resources which help as a deterrent. Cryptography is another feature for fraud prevention. Making devices tamper-resistant is the first line of defense against outside attacks. At the moment, ME card is not utilising the smart chip technology and is subject to the same risk as any magnetic stripe cards.

Individual e-money transactions, once executed, are subject to a variety of different security-related monitoring and verification procedures. In the ME card-based system, each transaction can be identified by a unique number based on the card's serial number and its transaction counter. The procedure is very similar to the verification and on-line authentication of a credit card. This traceability and monitoring serve as one of the detection type of measures. Limits on transferability between consumers may reduce the opportunities for fraudulent balances to be used without detection. Though the ME card system permits consumer-to-consumer transfers, user is required to do so via ATMS, bank counters or internet banking. This interaction with the central operator enables records stored on the cards to be checked and hence allow traceability and monitoring.

Some containment measures undertaken by the issuer of e-money products include the setting of time and value limits. With the limits on the size of balances stored, the attacker would need to duplicate or alter a large number of devices to make the effort financially worthwhile. Expiration dates on cards force the user to interact with the central system, where fraud could be more easily detected. The ME card offered by in Brunei Darussalam has a limit of B$2000 a day in terms of top up and transfer value. It also has validity of either one or two years.

All applicants for the ME cards are required to register their identity and address with the issuer bank which could facilitate investigation of any attempted fraudulent activity. No anonymous purchase of the ME cards is allowed at the moment. The age limit of 12 is imposed as it is the age where the national identity card will be issued to the individual and is used for the registration. As for the merchant devices, ME cards can be used worldwide as long as the merchants have the EDC terminals which in turn were registered with their respective suppliers.

The local bank itself also has internal controls which oversee the distribution or delivery of ME prepaid cards to the cardholders in a safe, secured and efficient manner. There is also a hot list maintained by the issuer where suspected cards are checked at point of interaction with the central system and can cause the cards to be retained by a terminal. This is the same security measure as a typical credit card.

4. POLICY RESPONSES WITH REGARDS TO E-MONEY

4.1 On Monetary Policy Concern

As e-money becomes more widely used, it may indeed substitute for cash in a wider range of possible uses. However, in Brunei Darussalam, the volume and value of e-money transactions are negligible compared to those of other retail payment instruments. Consequently, it will not result in a sharp decline in BCB's balance sheets in the short term. Given the current development of e-money, it seems that at most, e-money will replace only currency held for small-value transactions, which involve a very small loss of revenue from seigniorage. There may not be any need to call for specific policy response since the average value of e-money transactions is low and there are relatively small cap on the amounts that can be stored on the stored-value cards. Possible responses by the authority if the size of its balance sheet is affected due to widespread adoption of e-money, are to impose minimum reserves on e-money issuers or even by issuing e-money itself.

4.2 On Regulatory Framework

FID which currently performs the oversight and supervisory functions of the payment system will continue to monitor with regard to development of e-money. All commercial banks need to inform FID with regard to any new product launched, including e-money schemes. There is no specific legislation with regard to e-money but there are laws combating money laundering and terrorism which are applicable to e-money schemes, as they are to credit institutions, which in many countries are the sole issuers of e-money.

The Government of Brunei Darussalam has enacted a number of legislations including the Drug Trafficking (Recovery of Proceeds) Act Cap 178, the Money Laundering Order 2000, the Criminal Conduct and Recovery of Proceeds Order 2000 and Anti Terrorism (Financial and Other Measures) Order 2002.

The Money Laundering Order 2000 was enacted for the prevention of the use of the financial system for money laundering by establishing identification, record

keeping and internal reporting procedures and systems. Guidelines and notices for the financial institutions will be issued on anti-money laundering measures, taking into account the FATF 8 Special Recommendations and there is consideration of establishing a Financial Intelligence Unit (FIU).

A National Anti-Money Laundering Committee (NAMLC) is yet to be formalised and proposed members include many government agencies and institutions. Representatives of the private sector/financial institutions or professions covered by Money Laundering Order 2000 may be invited to the NAMLC meetings as and when necessary.

A Reporting and Supervisory Authority will be formed under Section 20 of the Criminal Conduct (Recovery of Proceeds) Order 2000 and Section 15 of the Money Laundering Order 2000 respectively. Both FID and Brunei International Financial Centre (BIFC) of MOF will be the focal points for money laundering issues and carry the functions of supervising and reporting evidence of money laundering and any other financial crimes.

In 2000, Electronic Transactions Order (ETO) was introduced. Amongst other purposes, some objectives stated in the ETO are:-

a) to facilitate electronic communications by means of reliable electronic records;

b) to facilitate electronic commerce, eliminate barriers to electronic commerce resulting from uncertainties over writing and signatures requirements, and to promote the development of the legal and business infrastructure necessary to implement secure electronic commerce;

c) to help establish uniformity of rules, regulations and standards regarding the authentication and integrity of electronic records; and

d) to promote public confidence in the integrity and reliability of electronic records and electronic commerce.

Many of the security features of e-money schemes, including the limits on value that can be stored on the cards, make them less attractive for the purposes of money laundering and other criminal abuses. But the oversight function of the authority requires a careful study of the features of e-money schemes to ensure that they do not broaden the scope for possible criminal abuse.

5. CONCLUSIONS AND RECOMMENDATION

Development of e-money schemes will continue and we shall see significant changes to the security architecture of these e-money products as they are introduced to a wider market. Technology will evolve and e-money systems will face challenges and the issuers need to ensure that the systems can be regularly upgraded and modified to meet new security threats.

Like our currency, e-money is no different as it will be subject to risks of attacks like counterfeiting and disruption of the system causing financial loss. It is up to the authorities and the issuers to work hand in hand to take security measures to ensure that e-money products will remain a convenient, safe and efficient method of payment for small-value retail transactions though it is not foreseeable at this moment how it will replace the larger-value types of payments. Despite its infancy stage, the impact of e-money on central bank functions cannot be ignored as the development may grow so rapidly that it reaches a stage where central bank's balance sheet will be affected.

It is recommended that all central banks and money-issuing authorities to be prepared for this imminent development of e-money, a potential substitute for the cold hard cash.

CHAPTER 9: CENTRAL BANK RESPONSES AND REGULATORY FRAMEWORK OF E-MONEY IN INDONESIA

By
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1. PAYMENT AND SETTLEMENT SYSTEMS

In general, the interbank payment system in Indonesia can be processed through two major systems i.e. Real Time Gross Settlement System (RTGS) and Clearing System.

1.1 Bank Indonesia Real Time Gross Settlement (BI-RTGS)

The development of the RTGS system in Indonesia was encouraged by the growing awareness of the need for managing systemic risks in large value funds transfer system. BI-RTGS provides speed, reliability and certainty in sending and receiving funds, which is an important feature to help facilitate the Indonesian financial industry recovery. For Bank Indonesia, the system is very important in reducing payment system risks. In addition, the RTGS system can also be a source of accurate information for both bank supervision activities and the implementation of monetary policy.

Before the introduction of the RTGS system, all interbank fund transfers were processed through clearing systems and settled on net basis. Unlike clearing system, BI-RTGS that was implemented on 17 November 2000, processes and settles all interbank large value transactions electronically on a gross basis. BI-RTGS provides a mechanism for reducing systemic risks, and settles various types of banking transactions such as interbank money market, foreign exchange, government tax payments, as well as third party payments.

The BI-RTGS computer system is fully operated and governed by Bank Indonesia. All commercial banks in Indonesia are required to be the member of BI-RTGS. BI-RTGS allows banks to send credit transfer and requires all of them to have sufficient funds in their settlement accounts at Bank Indonesia. If there is not enough funds in the account of the sending bank, the transaction will be queued and after a specified period of time, queue management and gridlock resolution will take place.

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Currently, if compared to the total transactions processed through clearing and RTGS systems, the transaction value processed through BI-RTGS is about 95 %. By September 2003, total transactions processed through RTGS are about 86.4 trillion rupiah per day (equivalent to approximately 10 billion USD) while the average of daily transactions is about 18,000 a day.

1.2 Clearing system

Currently there are 104 local clearing houses operated by 38 Bank Indonesia offices and state bank branches as agencies. Currently, there are 4 different systems used in all clearing houses. In Jakarta region, that makes up almost 50 % of all clearing transactions, an Electronic System is used for clearing operation. With the Electronic System, the calculation is based on the electronic data sent by banks electronically while papers are sorted by reader-sorter machines.

There are some types of paper-based instruments that can be processed and settled through the clearing system and they are:

- "Nota Kredit" or Credit Note, is a document used to transfer funds from the submitting bank for the benefit of a receiving bank or the receiving bank's customer. Since the implementation of BI-RTGS, the value of credit note was capped up to less than 100 million rupiah;

- Cheque is a debit instrument that follows international standard of cheque use and practice;

- Bilyet Giro is a non-negotiable debit instrument, which is very similar in nature to cheque. The main differences are that bilyet giro cannot be cashed by its holder and that it can be post dated; and

- Nota Debit or Debit Note is a document submitted by a bank for the purpose of collection from another bank. Since 1998, the value of interbank debit note has been limited to IDR 10 million (equivalent to approximately 1,100 USD).

Clearing item has to be in Rupiah currency with 100% face value. Debit items (Cheque, Bilyet Giro and Debit Note) accounted for the biggest share of clearing volume (54.6%), while credit items accounted for 45.5% of clearing volume.

Bank Indonesia's clearing system is settled on a multilateral net basis. An "early warning" of net settlement position is produced after all inputs have been initially processed and distributed to every clearing member approximately 30 minutes before

settlement time. Settlement is done at the end-of-day (deferred net settlement). Since the implementation of RTGS system, the clearing figures are interfaced directly to RTGS Central Computer.

Currently, a total of approximately 300,000 clearing items are processed daily through all clearing houses and amounted to approximately 5 trillion rupiah.

In order to reduce the risk exposure in clearing system, along with the implementation of BI-RTGS, Bank Indonesia applied a capping regulation on the value of interbank fund transfers processed through clearing system. After the implementation of BI-RTGS and the capping regulation, a significant portion of clearing value is shifted to BI-RTGS. As stated before, the total value currently processed in all clearing houses only comes up to around 5 %.

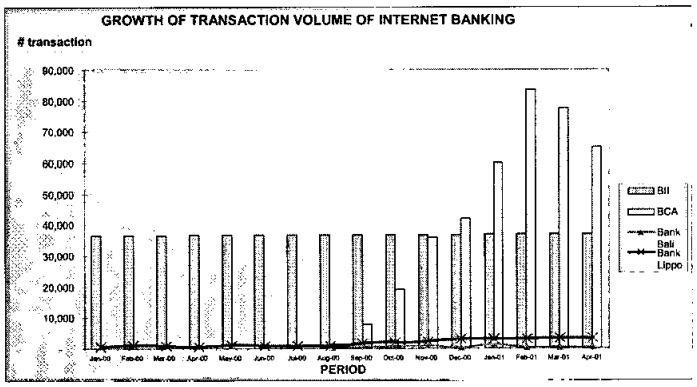
2. DEVELOPMENT OF INTERNET BANKING AND ITS REGULATORY FRAMEWORK

Rapid development of information technology has altered the business world strategy, which put in place such a technology as major element in production process or service delivery. Adding to that, information technology advancement has also promoted the innovation of banking services industry in Indonesia. As can be seen, Automatic Teller Machine (ATM), credit card, phone banking and other technology-based services tends to become customary ones offered by Indonesian banks as a strategy to seize the market. Nowadays, electronic banking transaction taking the form of internet banking turns out to be a new option of banking delivery channels. It is apparent that a growing number of bank has embarked on the provision of internet banking along with the more intense demand from the business world and bank's customers for conveniences. On balance, electronic banking is deemed able to offer services promptly for those in need of quality services.

At present, internet banking draws wide attention as customers may do non-cash banking transactions with ease through the internet access. From bank' side, internet banking services may cut the operational cost and make it more efficient in delivering services. In Indonesia, internet banking practice was initiated by a domestic bank in mid-1999. Shortly after that, there were 7 banks rendering internet banking services, ranging from informational to the advanced mode, that is transactional services. In 2001, 154,375 customers made use of internet banking services provided by 4 among those 7 banks. The growth of transaction volume by those 4 banks is depicted in the graph below. Meanwhile, there are around 43 banks developing their website limited to informational and communication purposes. In the future, the more the number of internet users and the tighter the

competition among banks, the more likely increase in the number of banks entering into the internet banking world.

Figure 9.1



From the operational point of view, internet banking services in Indonesia are performed by a special division or a newly established *virtual branch*. In the meantime, product or services generally offered consist of information provision like interest rate, exchange rate, and account balance, and other services such as opening of new account, payment of bills, transfer of funds, overbooking, purchase of cheque, etc. Needless to say that the development of internet banking in Indonesia is still in the infant stage compared to other regions in Asia. Nonetheless, future progress should be anticipated so as to avoid potential problems.

Despite the fact that information technology is very sophisticated, it could still be accessed by unauthorised users, and ultimately risks do exist in this technology-based service, including financial, operational legal and reputational risk. Being the national regulator of banking system, Bank Indonesia holds the moral responsibility of protecting public interest. In this regard, Bank Indonesia is obliged to assess whether banks are in compliance with the prudential and risk management principles. Since March 1995, Bank Indonesia has passed a regulation on the application of Information System Technology (ITS) that oversees the application procedure as well as risk mitigation and security measures. However, the regulation does not specifically mention the ITS of internet banking. Therefore, Bank Indonesia is now working on issuing a specific regulation on internet banking services provision, which is expected to come into force next year. Essentially, the regulation will supplement the existing regulation and covers the following main aspects:

Proposed Regulatory	Description
Type of Internet Banking	■ Bank may provide informational, communicative and/or transactional internet banking services ■ Establishment of Internet Only Bank (IOB) is prohibited.
Pre-requirements	■ Bank should give written notice to Bank Indonesia not less that 10 days prior to the realisation, accompanying with supporting information and documents. ■ Bank should put into service the prudential principles in order to protect public interest ■ Being certified by International reputable Certification Authority <u>Additional requirements for Transactional Internet Banking</u> ■ Bank shall obtain approval from Bank Indonesia ■ Bank should meet the following requirements: - Being in the business of Informational and/or Communicative Internet Banking at least 3 months - Policy, system, procedure and human resources required are in place
Type of Services	Types of Transactional Internet Banking allowed, among others, are application of opening account, transfer of funds, overbooking, information of account balance, clearing, and other transaction being authorised.
Prudential Principles	■ Bank should incorporate the intention of rendering internet banking services in its annual plan and should abide by all regulations concerning the principles of know your customer and other prudential principles ■ Bank should have policy and procedures overseeing at least bank's domain, technology provision and system coverage, transaction procedure, security aspects, risk management, and internal control.
Technology Provision	■ Bank may build and apply in house technology in providing the internet banking services, or may outsource to other party. ■ In case the technology processing is outsourced to other party, bank should determine the objective of engaging a vendor, select the candidates, and ensure that the agreement covers necessary terms and agree with the prevailing law.
Security Aspects	Bank is obliged to operate a security system, encompassing security system and infrastructure, customer data secrecy, data recovery center, and contingency plan

Proposed Regulatory	Description
Risk Management and Internal Control	■ Bank should adopt and implement risk management to minimise potential risk within the tolerable limit. ■ Bank should develop and execute internal control in all aspects relating to service delivery
Consumer Education	Bank should educate the customers on the "know how" of Internet Banking, namely through the production of manual on the system application, the conduct of "test and trial" to the customers, as well as familiarisation of other aspects of Internet Banking services, such as customers right and obligation, data secrecy, and any events like system alteration.
Supervision	■ If deemed necessary, Bank Indonesia may conduct on site examination toward the overall handling of Internet Banking by individual bank. ■ Specifically for foreign bank, whose audit performed by head office, bank should submit the findings report to Bank Indonesia.

3. OVERALL TRENDS IN RETAIL PAYMENT SYSTEMS IN INDONESIA

According to the media used, payment system in Indonesia can be categorised broadly into two systems : cash and non-cash payment system. Cash still plays a dominant role in Indonesia especially for retail payments, and for the majority of citizens may be the only payment instrument effectively available.

The Indonesian currency is Rupiah consisting of coins and bank notes. The note denominations range from Rp.1,000 to the largest Rp.100,000 (equating to approximately USD12), while the coins denominations range from Rp.25 up to Rp.1,000. Notes and coins in circulation reached Rp. 94.27 trillion by August 2003.

Although cash it still a predominant instrument for retail payment, the use of non-cash instrument, especially card-based payment had also increased. The following is an overview of the trend of non-cash payment instrument commonly used in Indonesia.

3.1 Paper-based Instruments

3.1.1 Cheque and Bilyet Giro

Cheque and Bilyet Giro are paper-based instruments that are commonly used in Indonesia. Cheque is a debit instrument that follows international standard of cheque use and practice. Bilyet Giro is a non-negotiable debit instrument, which is very similar in nature to cheque. The main differences are that bilyet giro cannot be cashed by its holder and it can be post dated.

Cheque and Bilyet Giro are commonly used by corporate entities, businessmen or higher-income individuals. Personal cheques are not common in Indonesia.

Currently, the transaction volume of cheques and Bilyet Giro processed through the clearing system is approximately *150,000 transactions* per day on average.

3.1.2 Credit Transfer

Fund transfers within bank are provided by banks through their internal network system while inter bank fund transfers can be processed through several mechanism, i.e.:

a) Clearing systems (coverage local transfers)

Interbank credit transfers with value less than 100 million rupiahs can be processed through paper-based clearing system (using 'credit note' as the paper based instrument). Currently, the average of daily transaction of credit transfer processed through clearing systems comprise about 100,000 transactions per day.

To increase the efficiency in processing paper-based items, the new 'paperless clearing system' for interbank fund transfer is being developed to replace the 'paper based system'.

b) RTGS system (coverage local and cross-regional transfers)

To decrease the risk exposure in the clearing systems, the value of 'credit note' for interbank fund transfer processed through the clearing system is capped up to less than 100 million rupiah. Interbank credit transfers with face value at least 100 million must be processed through Bank Indonesia's Real Time Gross Settlement System (BI-RTGS).

c) Correspondent bank networks

Banks can also use the correspondent bank network mechanism for cross-regional interbank fund transfer.

3.2 Card-based Instruments

A wide range of payment cards has emerged in the local market, including ATM and Point-of-Sale (POS) debit cards and international credit and debit cards.

3.2.1 ATM and Debit Cards

The significant development in retail payment system over the last decade is characterised by the introduction of ATMs and other card based payment at point of sales. ATM services were introduced in the early 1990s.

During the early 1990s the majority of large banks established ATM service. The number of ATMs grew rapidly until the crisis appeared. Currently there are about 10,343 ATMs (as at July 2003) owned by 31 banks. Four domestic shared-ATM networks (ALTO, ATM BERSAMA, CAKRA, and BCA) and two international shared-ATM networks (Cirrus and Plus) exist now.

ATM cards are used not only for withdrawals and account balance enquiries, but also for fund transfer between accounts within a bank, paying utilities such as telephone bills, credit card bills, etc.

Recently, one of the network switching provider is developing a new feature for interbank fund transfer through the ATM. The new feature is expected to be implemented at the end of 2004.

Debit card at Point of Sale (EFT-POS) is also becoming more popular as a choice of payment method. Some banks issues debit cards under the Maestro or Visa Electron scheme. Other banks issues proprietary cards and provides their own terminals at the merchant site. There are now 12 banks offering debit card facility to their customers.

Ideally, from a macro perspective, a national switching for all shared-ATM networks and EFT-POS terminals is necessary for efficiency. On the other hand, the lack of business agreements between various parties seems a major obstacle to achieving a "one terminal per counter" vision, while shortcomings in common transaction switching infrastructure undoubtedly also contribute.

By the end of July 2003, there are about 12 million card holders in Indonesia. During the month, the transaction volume reached 2.4 million transactions with total amount reaching about 930 billion rupiah.

By the number of card holders, debit cards far outnumber credit cards. In July 2003 there are about 12 million debit card holders, while holders of credit cards are only about 5.8 million. It is most likely due to the easier conditions required by banks for their customers in having debit card facility. Furthermore, unlike credit card, banks do not bear any risk in the usage of debit card. Anyone can automatically have a debit card by maintaining a savings account in those banks which provide such facility. Most of the banks, are issuing single card for ATM as well as debit transactions at point of sales.

3.2.2 Credit Cards

Major credit card brands such as VISA, MasterCard, AMEX, and Diners are common and widely accepted especially in big cities. Credit card operations are mostly provided by commercial banks in cooperation with Visa and MasterCard. Certain banks also issue proprietary credit cards. Credit card are also provided by non-bank institutions where the operation is under license of Ministry of Finance.

By July 2003, there are 15 issuer banks and about 4.4 million credit card holders in Indonesia. During the month, the transaction volume reached 5.9 million transactions with total amount reaching about 2.6 trillion rupiah.

3.3 Recent Development on Prepaid Product and Most Probably Pioneer Type of E-money

There is no e-money scheme product at the moment in Indonesia. Before the economic crisis started in 1997, several banks had conducted an in-depth study on several e-money schemes like visa cash, proton, mondex, etc, but none of the banks at this stage have decided to launch the product.

The following products are probably the pioneer type of e-money :

3.3.1 E-wallet

In October 2001, a local bank in Indonesia in cooperation with Visa International, introduced a new card-based prepaid product called e-wallet. Actually, e-wallet is a derivative product of Visa Electron. At glance, the product's name

sounds like an e-money scheme product. But, if we refer to BIS's definition of e-money, there are some characteristics in e-wallet that make it different from e-money:

- E-wallet still uses a magnetic technology rather than a microchip (according to BIS's definition, an e-money is characterised by the using of a microchip technology).

- According to BIS, the value of e-money is stored on the device in the consumer's possession. However, the value of money in e-wallet is not stored on the card in electronic format, but is still maintained in a special account (pool account) by the issuer bank. This is why the usage of e-wallet still needs a PIN and signature mechanism for authorisation.

There are also, however, some characteristics in e-wallet that makes it similar to e-money :

- To have an e-wallet, one is not required to have an account at the issuer bank. It is available at outlets, kiosk, etc. (Each e-wallet has a registered number maintained by the issuer bank which can be assumed as account number).

- The value of money will be reduced each time it is used for payment and can be reloaded through some mechanism (by transfers, ATM terminals or by telephone).

3.3.2 Prepaid Telephone Card

At this time, cellular phones are becoming more common and popular in Indonesia. There are four cellular phone providers currently in Indonesia. All the companies provide two schemes of charging mechanism, i.e.:

- Post-paid scheme (customer will be charged at the end of month). Beside the airtime tariff used, the customer will also be charged for the fixed-abdomen fee.

- Pre-paid scheme (using a stored value card, without abdomen fee). The use of this scheme needs a pre-fund loading on the card. The value of the fund or the credit balance will be reduced by the airtime used up. Customers can reload the credit balance to their card by using some mechanism. Previously,

customer can only reload the credit balance by buying a voucher that contains a serial number to be input in reloading process. But currently, most providers in cooperation with some banks, also provide reloading facility through ATMs or by using Credit Card.

The usage of the second scheme is more popular than the first one. This phenomenon has driven the providers to make innovations on their prepaid-based products. One of the most significant innovations that will be soon developed is the facility to transfer the credit balance from one customer to another customer. The fund transfer instruction will be executed by using 'short message services' facility ('sms-based').

At the initial stage, this new facility is probably used just for balance transfer between customers. However, since there's no restriction of the underlying transaction, a customer can probably use it to exchange with something, as long as both parties agree with the transaction. For example, one could transfer a certain value to another and he get something for the exchange.

Considering the possible extension of its usage in the future, it is not certain at this time whether it could be considered as an e-money scheme or it may be merely considered as a barter mechanism.

4. VIEWS ON DEVELOPMENT OF E-MONEY

Bank Indonesia is monitoring the development of electronic means of payment. According to its Act, Bank Indonesia has the authority in determining the usage of payment instrument. The issuance of a new type of payment instrument has to be approved by Bank Indonesia.

At this time, there is no specific policy or regulation that has been developed by Bank Indonesia regarding the implementation of e-money. This is mostly due to the lack of full knowledge on Bank Indonesia's part on e-money as well as its priority. It is, however, fully agreed that issues on e-money are very important especially those raised by BIS in its publication, such as seigniorage, monetary policy, supervision, money laundering, consumer protection, etc.

Since e-money scheme is not existent yet in Indonesia, issues on e-money are still only at the stage of being aware. For this reason, Bank Indonesia is always monitoring the current issues of e-money and its implementation in other countries.

Issues on e-money will also be addressed in the new version of the Indonesian National Payment System Blue Print, which is now being revised. It is expected that the revised Blue Print will give some policy directions on e-money schemes.

Regarding the legal aspect, Bank Indonesia will soon frame the regulation on card-based payment services such as credit card, debit card and prepaid card. In general, the main aspects to be regulated will include license, issuer, clearing and settlement, etc. Some aspects of card-based e-money scheme will most probably be covered in this regulation.

CHAPTER 10: CENTRAL BANK RESPONSES AND REGULATORY FRAMEWORK OF E-MONEY IN SOUTH KOREA

By
Byung-jae Jung[1]

1. INTRODUCTION

Prepaid cards including e-money do not play an important role in the payment system. Koreans like to use credit cards when they pay. Besides this, the government for several years has been actively promoting credit card usage and gave credit card holders the incentive of tax reductions according to the amount paid by credit card.

Koreans usually pay for large value items by credit card, for small values by cash and for very low value items by prepaid card including e-money. E-money is still not popular because consumers are worried about its safety. It is not convenient for the consumers to use e-money because there are only around 20,618 merchant terminals as compared to eight million merchant terminals of credit cards.

The average daily value of settlements through financial institutions' retail payment systems stood at 34,146 billion won in the first half of 2003, while that of e-money (including prepaid cards) stood at 475 million won in June 2003.

The regulatory provisions governing prepaid card including e-money are set out in " The Act on Financial Companies Specialising in Loan Business"(a revision of the former "Credit Card Business Act", it was passed into law in January 1998). This Act covers banks and credit card companies. However, there is no law to regulate issuers other than banks and credit card companies which issue prepaid cards including e-money.

The Bank of Korea (BOK), therefore, took part in drawing up the bill of Electronic Financial Transaction to regulate all domestic issuers of e-money. The bill is expected to be presented to the National Assembly when it starts new term of service June, 2004.

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2. DEVELOPMENT OF E-MONEY

2.1. Recent Development of E-Money Schemes

2.1.1 Historical Background

The banks began to develop e-money on the basis of a joint venture in January 1996. They introduced new e-money embedded in an IC chip, called K-Cash, in July 2000. Another four types of e-money, also with an embedded IC chip, started before or after K-cash. They were issued by banks and card companies. These five card-based e-money can be used on the internet too. The Bank of Korea (BOK) began to survey the development of card-based e-money every three months from March 2002. The five card-based types of e-money are K-Cash, MYbi, A-Cash, Mondex and VisaCash.

Holders of e-money generally use it when they pay fare for the bus or subway. They also pay by e-money for goods and services in the cyber market. The issuers of card-based e-money are trying to persuade the consumer to use it. The amount is still insignificant but the growth rate is very high these days. The volume of daily transactions increased 73% to 513,515 in June 2003, from 296,439 in June 2002. The value of daily transactions increased 192% to 475 million Korean won in June 2003 from 163 million Korean won in June 2002.

Slightly different types of e-money (network-based e-money) have also been introduced for transactions mainly in the cyber market. They are issued by cyber shopping malls. Data on network-based e-money are not available. The holders pay in e-money over the internet when they pay for goods and services (music, CDs) where prices are not high.

At the initial stage, there is no regulation on e-money because their development would not have been meaningful. Recently though, the Government and the BOK are keen to have systematic knowledge of market and impact of e-money. The bill of Electronic Financial Transaction has, therefore, been prepared and is expected to be introduced to the National Assembly when it starts new term of service June, 2004.

E-money in Korea does not meet the definition set by the BIS. It is similar to prepaid cards because it is of limited use rather than of universal use.

2.1.2 Relative Importance of E-money Instruments Compared with Other Retail Payment Instruments

Cash and credit cards are usually used as retail payment instruments. The types of e-money are used in some local areas and are restricted to payment for transportation.

2.1.3 Market Usage of E-money

Card-based e-money is issued by banks and card companies. Most types of network-based e-money are issued by cyber shopping mall. Card-based e-money has greater credibility than network-based e-money. Nevertheless teen-agers and young men below the age of 30 often use network-based e-money.

2.1.4 Some Issues or Problems Faced in the Development of E-money

There is a problem of consumer protection. Holders can suffer financial loss if the issuers of e-money become insolvent and the issuers can divulge personal information on the holders.

E-money holders are inconvenienced because merchant terminals numbered only 20,618 at the end of June 2003.

2.1.5 Issuers of these Instruments

Card-based e-money is issued by banks and card companies. Network-based e-money is usually issued by the mobile carriers or cyber shopping malls

2.2 Features and Statistical Data of E-Money

2.2.1 Card-based Schemes

K-CASH, a pan-bank scheme run by banks, the Korea Financial Telecommunications and Clearings Institute (KFTC) and credit card companies, was launched in July 2000. Up to 500,000 Korean won can be loaded in K-CASH per card. The loading and refund of K-CASH can be done at the issuer's website, CDs, and ATMs through the cardholder's bank account. K-CASH is protected with SEED, a Korean unique algorithm, and uses a PIN.

By the end of June 2003, 16 banks and 2 credit card companies had issued about 526,000 cards. They are used for universities, hospitals, retail

stores and online shopping malls, etc. They may also be used to pay for public transport in several medium-sized provincial cities - Chuncheon, Suwon, Gimhae, Andong, Seogwipo, etc.

MYBI, developed by Mybi Corp., which was established jointly by Pusan Bank and several companies, is currently issued by 3 banks and 3 credit card companies. It has contact and contactless feature and is based on the cardholder's account. It is now mainly used for public transport within Busan and provincial cities, but is being expanded to offline and online retail stores. About 1,806,000 cards had been issued by the end of June 2003.

A-cash is being developed as an add-on function by 2 credit card companies. It is used to pay public transport services in some provincial cities. About 468,000 cards had been issued by the end of June 2003.

MONDEX, issued by 3 banks and 3 credit card companies, is provided by Mondex Korea, which was established in January 1998 as a subsidiary of MasterCard Corp. Transferability is possible within families. About 567,000 cards had been issued by the end of June 2003.

VisaCash which is issued by 2 banks and 4 credit companies is provided by VisaCash Korea. About 998,000 cards had been issued at the end of June 2003.

2.2.2 Network-based Products

There is a lot of network-based e-money in Korea. Among them MONETA Cash is one of the best known products. It was developed solely by SK Telecom, which is one of the major mobile telecommunication companies. Users can use MONETA Cash for purchasing goods and services over the internet at merchants subscribing to the scheme and can transfer the loaded value to another user. Also MONETA Cash can be used at offline retail stores with mobile devices - cell phones and PDA's.

(i) Loading procedures

Monetary value on card-based e-money is loaded through a bank terminal or computer, and network-based e-money is usually loaded via a computer.

(ii) Value Limit on E-money Instruments

The value limit of card-based e-money is 500,000 Korean won. It was 200,000 Korean won in the infancy of e-money.

(iii) Are they transferable among end-users?
Mondex is transferable among members of a family only after permission from the issuer. The other four types of e-money are not transferable among end-users.

(iv) Are they adapted for network payment?
In fact, all card-based products in Korea except A-Cash are designed to allow use over the internet.

(v) Are they multicurrency?
Not yet

(vi) Are there multifunctional payment features?
The IC chip card has the function of public authentication besides the function of e-money. The banks and the BOK have been planning to Launch IC chip card schemes since May 2003 and have decided to add on several function, such as ATM card, credit card and e-money, to the chip.

(vii) Number of cards/network-based issued
Card-based e-money : 2.0 million(at the end of March 2002),
4.4 million(at the end of June 2003)
Networked-based e-money : non-available

(viii)Number of merchant terminals
Card-based e-money : 10,976 (at the end of March 2002), 20,618 (at the end of June 2003)

(ix) Float outstanding
Card-based e-money : 1.2 billion Korean won
(at the end of March 2002),
6.4 billion Korean won
(at the end of June 2003)

(x) Volume of daily transactions
Card-based e-money : 202,109 (March 2002), 513,515 (June 2003)

(xi) Value of daily transactions
Card-based e-money : 120 million Korean won (March 2002),
475 million Korean won (June 2003)

(xii) Average value of transactions
Card-based e-money : 592 Korean won (March 2002),
925 Korean won (June 2003)

2.3 Factors Influencing the Development of E-Money

The growth of cyber transactions is rapid nowadays which is likely to encourage consumers to pay in e-money on the cyber market.

Most people do not like to pay small amounts of money when they use public transportation and so they pay fares by e-money.

However, there are few noticeable advantages of e-money use compared with other alternatives such as credit cards and prepaid transportation cards. Besides, the investment costs are enormous in the formative stage of an e-money scheme while the profit outlook is uncertain. Users of e-money do not want their transactions to be revealed.

Taking into consideration, factors favouring the growth of e-money and the barriers to its general acceptances, the prospect for its widespread adoption is not bright.

2.4 Impact of E-Money on Central Banking Functions

Economists in the BOK have researched the impact of electronic banking on monetary policy. Electronic banking includes internet banking, ATMs, and credit cards. But there is only a minute database for e-money because its history is short. They could not find any significant linkage between e-money and central banking functions, such as an impact on seigniorage, the effectiveness of monetary policy or the integrity of the payment system.

The BOK thinks e-money has hardly influenced central banking functions so far because its transaction amount is negligible.

2.5 Identification and Analysis of E-Money Risks

If the issuers of e-money go insolvent, holders can suffer a financial loss equivalent to the size of their e-money balance. To date, the volume and value of E -money is extremely small. E-money poses little additional risk to the payment system in Korea.

3. POLICY RESPONSES WITH REGARD TO E-MONEY

3.1 On Monetary Policy Concerns

(i) The Bank of Korea's view on the development of e-money

Since e-money schemes were first introduced, their balances have not been included in monetary statistics because the transaction amount is negligible.

However, when e-money comes into use nationwide or the amount issued is significant, it will, the Bank of Korea (BOK) thinks, be necessary to include it in monetary statistics.

The BOK feels that e-money will not have any considerable impact on seigniorage for the time being, because its use is not expected to increase significantly in the near future. However, the BOK realises that it is essential to take some measures before e-money comes into use all over the country. Since 2002, the bank has participated in drawing up the bill of Electronic Financial Transaction and the government is expected to present the bill to the National Assembly when it starts its new term of service in June 2004. When this bill passes through the National Assembly, it will govern generalities of electronic financial transactions. The Bank of Korea does not intend to issue its own e-money in the near future.

3.2 On the Regulatory Framework

(i) What regulations have been put in place to preserve the integrity of e-money schemes and to protect consumers' rights?

There have been no officially announced initiatives related to the development of e-money. However, the BOK intends to develop ways to examine the financial situation of credit card companies that issue and operate e-money, to be specific, prepaid cards.

The regulatory provisions governing prepaid cards including e-money are set out in the "Act on Financial Companies Specialising in Loan Business" (which represents a revision of former "Credit Card Business Act", and was passed into law in January 1998).

The provisions include the obligation to set aside up to 10% (in fact 3%) of the amount of e-money issuance for collateral and repayment procedures, and the capping of prepaid cards at 500,000 Korean won. Because its provisions were originally established in January 1994 to regulate disposable magnetic stripe (M/S) type prepaid cards, they are not adequate to regulate e-money. The government is expected to present the bill of Electronic Financial Transaction to the National Assembly when it starts new term of service June, 2004. The bill is framed to govern generalities of e-money.

(ii) Who is allowed to issue e-money in your country?

The banks and card companies can issue e-money under the name of prepaid cards without any permission under the "Act on Financial Companies Specialising in Loan Business". Credit card companies are able to clear their e-money only through bank accounts.

Companies other than the banks and card companies are not subject to any obligations concerning their issue of e-money because there is no law governing non-financial companies' issue of e-money. According to the bill, issuers of e-money, whose capital is above 5 billion Korean won, have to get permission from Financial Supervisory Commission.

(iii) If non –banks are allowed to issue e-money, then how do you regulate them?

So far, we do not regulate non-bank issuers other than card companies. So the government is preparing a new Act (EFTA) to regulate them.

(iv) Other policy issues such as the need to have a specialist supervisor to supervise e-money schemes.

The Financial Supervisory Service has kept an eye on the development of e-money and understands the issues involved such as consumer protection, repayment, security of transactions, etc. But it realises that it needs specialist supervisors to supervise e-money scheme more effectively.

3.3 On Other Issues

The BOK thinks that an active and creative e-money activity is needed, because it helps improve the e-money technology. The Government intends to deregulate small e-money issuers whose capital is below 5 billion Korean won after the new ACT (EFTA) has been promulgated.

It is not expected that customers will be inclined to use domestic based e-money overseas or to use foreign currency based e-money in Korea because infrastructures are different and incompatible at the moment.

Korean e-money products seem to have little attraction for money launders because of various features such as the prohibition of card-to-card transactions and the ceiling on the value loaded. No official action has so far been taken by

the Government on this matter. The BOK, however, is trying to minimise possible risk through the formulation of detailed procedures for system operation and issuance.

The BOK's e-money framework incorporates some features for security enhancement such as ruling out card-to-card transactions, authenticating transactions at each stage, setting a ceiling on the value loaded, and managing keys.The Government intends to develop and provide encryption systems for e-money schemes.

Because e-money standards have been set out and these apply to all banks and credit card companies, a system using these standards will operate nationwide.

There have been no specific measures taken by the Government on issues and questions related to taxation, consumer protection, the implementation of operational and technical standards, access and competition, etc.

However, the government has been preparing the bill of Electronic Financial Transaction and is expected to be presented to the National Assembly when it starts new term of service in June, 2004. The main features of the bill are as follows:

- E-money issuers have to obtain permission from the Financial Supervisory Commission
- E-money issuers should deposit funds in an account with the BOK according to the minimum reserve rate set by the Monetary Policy Commission.
- The BOK can demand information about the e-money issuers and require the Financial Supervisory Committee to examine them.
- Electronic purse limits, redeemability of e-money, etc

4. SUMMARY AND CONCLUSIONS

There are five types of card-based e-money and several network-based types of e-money in Korea. The five card-based types of e-money do not comply exactly with the definition of e-money. These are prepaid cards. The BOK cannot gather information on network-based e-money.

The regulatory provisions governing prepaid cards including e-money are set out in the "Act on Financial Companies Specialising in Loan Business". Because its provisions were originally established in January 1994 to regulate

the disposable magnetic stripe (M/S) type prepaid cards, they are not adequate to regulate e-money.

The amount of e-money usage is very small compared with other retail payment instruments. E-money schemes have little impact on settlement risks and monetary policy. However, the BOK, the supervisory authority and the Government are holding a watching brief on the developments of e-money.

The BOK and Government have been preparing new draft legislation (EFTA) before e-money comes into universal use in Korea. This Act will set out broad scope of supervisory measures, minimum reserve rate, permission for e-money business, etc. I would also like to propose that a joint project for countries in the SEACEN area to cooperate in developing new e-money schemes that can be used all over the SEACEN area.

CHAPTER 11: CENTRAL BANK RESPONSES AND REGULATORY FRAMEWORK OF E-MONEY IN MALAYSIA

By
Nik Lily Hariati Shamsuddin[1]

1. INTRODUCTION

The smooth, efficient and safe operation of the payments system is essential to support economic activity and maintain financial stability. In addition, a safe and efficient functioning payments system enables the Central Bank to implement its monetary policy effectively. In modernising the payments system in line with new technology and current needs of the users, efforts have been directed at facilitating more efficient means of making payments electronically.

In order to develop card-based payments, initiatives that are being taken include adopting to new technology to deter card payment fraud; enhancing EFTPOS facilities to promote the usage of debit cards and promoting a nationwide electronic purse infrastructure. The banking institutions in collaboration with Malaysian Electronic Payment System (1997) Sdn. Bhd. (MEPS) initiated the development of a chip-based Payment Multipurpose Card, now known as Bankcard to replace existing magnetic stripe ATM cards. The chip-based ATM card offers a high standard of security to deter counterfeiting. The initial applications incorporated into the Bankcard are the ATM, debit and MEPS Cash electronic purse. The ATM and MEPS Cash applications are also made available in the MyKad.[2] To prevent the unauthorised usage of credit cards, the banking institutions under the leadership of the Association of Banks in Malaysia are carrying out an industry migration to the EMV chip-based platform. EFTPOS terminals have also been installed extensively for supporting the growing point-of-sale transactions.

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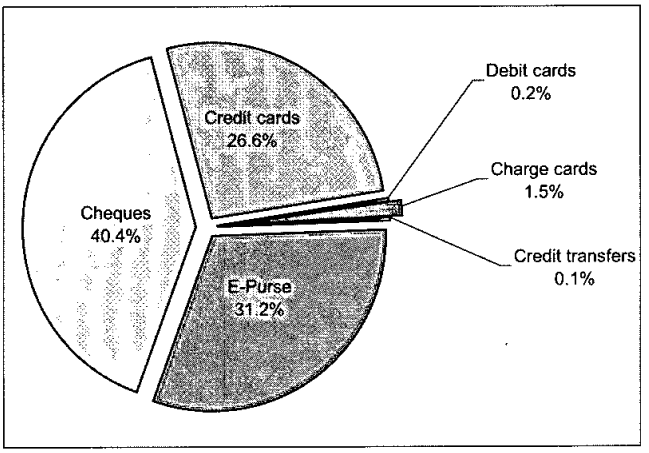
1. Senior Executive, Payment Systems Department, Bank Negara Malaysia.
2. Government Multipurpose Card (GMPC) or officially known as MyKad, is a smart card based multi-application ID card for the Malaysian citizen. Currently, it serves as an ID card, a driving license and as an immigration card to facilitate speedy entry/exit from the immigration points. GMPC is one of the Multimedia Super Corridor's flagship applications.

Figure 11.1: Composition of Number of Non-Cash Payments in 2002



1.1 E-Money in Financial Payments

Cash and cheques are still the most common retail payment instruments used in Malaysia. However, the usage of credit cards, charge cards, debit cards and electronic money has been on an increasing trend. To some extent, this reflects the growing sophistication of Malaysian consumers as well as aggressive promotions by the card issuers. The high volume of the e-purse as a payment mode, as shown in the chart above is contributed to the high usage of payments at toll highways in Malaysia. Despite this, the average daily value remains low compared to cheques and credit cards.

In Malaysia, e-money schemes are issued by both the banking institutions and non-banking institutions. Besides being issued as standalone prepaid cards, they are also being issued with multifunctional features[3]. Currently, the e-money schemes are in the early stage of development.

The establishment of clear rules on the conditions under which e-money can be issued, would have a positive impact on the confidence of customers and merchants in the payment instrument. In this regard, a set of e-money regulations would be issued, amongst others, specifying the various regulatory requirements on e-money issuers under the different e-money categories depending on how widespread the e-money instrument would be used.

3. E-money function is combined with other payment functions such as the ATM, debit and credit card facilities and even with non-payment functions.

2. DEVELOPMENT OF E-MONEY

2.1 Recent Development of E-Money schemes

The development of stored value cards started in the 1980s with the introduction of the single purpose telephone card. The development in information technology has promoted the emergence of several types of single purpose and multi-purpose electronic money schemes. The MEPS Cash electronic purse is operated by MEPS with the current participation of twelve banking institutions. In addition to MEPS Cash, a private operator, Rangkaian Segar Sdn. Bhd. had, in 1997 introduced a limited purpose stored value card, the Touch 'n Go card to facilitate the convenience of making payments at highway toll plazas, carparks and fare payments for public transportation. E-money schemes are also being introduced in closed communities such as schools, private colleges and universities which have been incorporated in the student I.D. card.

2.2 Salient Features and Statistical Data on E-money

2.2.1 Card-based Products

MEPS Cash

The MEPS Cash scheme, which was initially issued on a standalone basis was piloted in September 1999 at selected areas in Kuala Lumpur. It is based on the Proton e-money system developed by Proton World International. The maximum amount that may be loaded into MEPS Cash is MYR2,000. MEPS Cash can be used for retail purchases and is reloadable at most of the participating bank's ATMs. By having a uniform e-purse platform, it facilitates competition amongst the banking institutions and at the same time ensures interoperability of payment transactions. MEPS Cash is intended to complement the use of other payment cards in the country's effort to migrate to electronic payments. As at the end of 2nd Quarter 2003, more than 9,000 MEPS Cash terminals deployed. As the MEPS Cash scheme has only recently been deployed on a more widespread basis, the volume of transactions has yet to reach any significant level. MEPS Cash is currently being issued in the local currency and the monetary value is not transferable among the cardholders.

Touch 'n Go card

The Touch 'n Go card, a contactless card is issued to facilitate payments in the transport sector. The Touch 'n Go card is also an optional application incorporated

into MyKad and can be loaded at 400 point-of-sale terminals and at selected ATMs. There are a total of 2.4 million Touch 'n Go cards issued and the daily volume and value of transactions are 80,600 and MYR260,000 respectively. The Touch 'n Go card is currently being issued in the local currency and the monetary value is not transferable among the cardholders.

Closed communities prepaid cards

The issuance of prepaid cards in closed communities such as universities, private colleges and schools have been on an increasing trend. Nevertheless, such e-money schemes are mainly confined within the compound of the institution and are used by the members of institution.

2.2.2 Network/software Based E-money Schemes

In Malaysia, network based e-money schemes are still in the early stage of development. Nevertheless, a private operator has introduced an electronic points system to facilitate on-line purchases using the points issued by the operator.

2.3 Factors Influencing the Development of E-money

The extent of widespread adoption of e-money very much depends on the incentives for issuers, consumers as well as the merchants to use it. Merchants may not be willing to invest in the terminals if there are not many users and the users may not want to use it if there are not many merchants who accept the e-money scheme. In Malaysia, the MEPS Cash scheme is launched as a standard banking application in the Bankcard and in MyKad to ensure a large base of users. As the banking industry upgraded its existing magnetic stripe based terminals in the EMV migration exercise, new applications such as the MEPS Cash scheme would be added on. With a concerted industry effort, in the mass deployment of chip based cards and conversion of terminals to accept the chip based cards, the 'chicken and egg' dilemma to some extent would be addressed.

2.4 Impact of E-money on Central Banking Functions

The development of e-money in Malaysia is in its infancy and therefore, has yet to give significantly impact on central banking functions, i.e. monetary policy implementation, revenues, seigniorage and integrity of the payment systems.

2.5 E-Money Risks

Bank Negara Malaysia requires issuers of e-money to have adequate safeguards against fraud, forgery, money laundering, adequate control to manage the risks involved and efficient contingency plans in the event of a system breakdown or compromise of the scheme. Security measures have been undertaken by e-money issuers to combat fraud and counterfeiting risks. These measures include the use of tamper-resistant smart cards, cryptographic protocols and value limits.

3. POLICY RESPONSES WITH REGARD TO E-MONEY

3.1 Monetary Policy Concern

The development of e-money schemes at this stage is not expected to have significant implications on monetary policy implementation. Currently, statistical information on e-money schemes are collected and aggregated on a monthly basis and Bank Negara Malaysia is closely monitoring developments in the marketplace. Bank Negara Malaysia has no plans to issue electronic money at present.

Banking institutions are the main players for e-money issuance. The clearing and settlement arrangements are done via the local automated clearing house, operated by MEPS for e-money. As the e-money is in its early stage, its use is not widespread and has not significantly reduced the amount of notes and coins in circulation.

3.2 Regulatory Framework

The legal framework for e-money instruments is contained in the Payment Systems Act 2003 (PSA)[4]. Under the PSA, Bank Negara Malaysia is the authority responsible for promoting the reliable, efficient and smooth operation of the national payment and settlement systems and for ensuring that the national payment and settlement systems is directed to the advantage of Malaysia. The PSA will provide a more explicit and transparent oversight framework and has been designed to contribute to the development of sound payments in the country. It puts forward three policy objectives, that is to ensure the safety and efficiency of the payment systems, as well as to safeguard public interest and contains the provisions that allow Bank Negara Malaysia the necessary powers to effectively carry out its oversight activities in meeting these objectives. The PSA will empower the Central

4. The Payment Systems Bill 2003 was tabled and passed in Parliament on 23 June 2003. The Bill will come into force on the 1 November 2003.

Bank to designate payment systems and payment instruments for closer oversight. Operators of designated payment systems and designated payment instruments will be required to ensure good corporate governance and adequate operational arrangements are in place.

In addition to the legal framework, Bank Negara Malaysia is currently formulating a regulation on e-money instrument, pursuant to section 69 of the PSA. The proposed regulation is designed to:

- promote orderly development of e-money schemes in Malaysia by stimulating healthy competition and e-money product innovation while maintaining financial and payment system stability;

- ensure the soundness of multi-purpose e-money schemes and the stability, reliability and integrity of the issuers; and

- protect the interests of the public and maintain public confidence in the payment instrument and payment systems.

E-money instrument is proposed to be one of the payment instruments to be designated under section 24 of the PSA and therefore is subject to Bank Negara Malaysia's approval before issuing a designated payment instrument.

Under the proposed regulation on e-money, the stored value instruments are classified into three e-money instruments; single purpose[5], limited purpose/closed community[6] and multi-purpose[7]. There is no prohibition of issuing single purpose stored value instruments and network/software based e-money by non-financial institutions but Bank Negara Malaysia may require the issuers to submit information under the PSA. Financial institutions as well as non-financial institutions can issue limited purpose stored value instruments and multipurpose network-based e-money. Only banking institutions, however are allowed to issue the multipurpose stored value instruments. In addition to the above requirement, the proposed regulation also addresses issues amongst others, redeemability, permissible activities of issuer

5. Single purpose stored value card refers to a card that can be used for payment of goods and services from the card issuer only e.g. prepaid phone cards. Single purpose e-money instrument will not be included in the definition of e-money instrument.

6. Limited purpose stored value card refers to an electronic device that can be used to make purchases from the issuer and few other merchant conducting other kind of businesses.

7. Multi-purpose electronic money is defined as a payment instrument that stores funds in an electronic form which enables the user to purchase goods and services from third parties other than the issuer.

of e-money instrument, limit to amount that can be issued, information disclosure, requirement to submit statistical information and submission of an audit report on system security. The issuers of e-money are required to submit audited report on the security of their e-money system as and when required by Bank Negara Malaysia.

The issuers of e-money would be regulated under the PSA and therefore, would be subject to oversight and supervisory activities by Bank Negara Malaysia. E-money systems will be required to undergo annual examinations regarding their internal controls and any other matters considered necessary by Bank Negara Malaysia to carry out its oversight responsibilities.

E-money issuers are required to address the issues concerning consumer protection, education and privacy issues. The information on these particular issues must be made clear to all potential consumers to ensure a sound environment for the consumers to participate in the particular e-money scheme. In addition, e-money issuers must provide sufficient customer education and information available to consumers including the consumer's rights and responsibilities.

3.3 Other Issues

3.3.1 Money Laundering

In respect of concerns regarding money laundering, the amount which can be loaded onto the prepaid cards is limited and are used mainly for small value transactions. As such, there is little incentive for them to be used as a medium for money laundering. Nevertheless, to curb money laundering in Malaysia, an Anti-Money Laundering Act 2001 was enacted. The provisions of the Act include customer identification, record keeping and reporting of suspicious transactions by reporting institutions and allowing for the seizing, freezing and forfeiture of properties that are proceeds of money laundering activities.

3.3.2. Cross-border Concerns

At present, e-money schemes in the country facilitates only local currency transactions.

4. SUMMARY AND CONCLUSION

Although cash and cheques are currently the most important mode of payment in Malaysia, the use of electronic money schemes is on an increasing trend. Bank Negara Malaysia is closely monitoring the industry efforts on promoting MEPS Cash as the national e-purse scheme, in particular the deployment of the supporting infrastructure, such as ATMs and terminals. MEPS Cash which complements and reduces demand and printing of currency could reduce the use of cash for private consumption spending if it is widely accepted.

The e-money development however, has yet to give a significant impact on the Central Bank's functions, reduction of notes and coins in circulation as well as monetary policies and revenues. Nevertheless, Bank Negara Malaysia has taken the initiative to formulate the regulation on e-money to lay down the legal framework on e-money and procedures in approving the issuance of multi-purpose e-money schemes. The regulation has also been formulated to protect the interests of the public and maintain public confidence in the payment instrument and payment systems. The regulation is expected to come into force in the 1st Quarter of 2004.

REFERENCES

EMEAP Working Group on Payment and Settlement System, *Payment Systems in EMEAP Economies*, July 2002

Bank Negara Malaysia, Annual Report 2002.

Bank for International Settlements, *Survey of Electronic Money Developments*, November 2001.

Bank Negara Malaysia, *The Central Bank and the Financial System in Malaysia - A Decade of Change*, 1999.

Group of Ten, *Electronic Money – Consumer Protection, Law Enforcement, Supervisory and Cross Border Issues*, Report of the Working Paper on Electronic Money, BIS, April 1997.

Bank for International Settlements, *Implications for Central Banks of the Development of Electronic Money*, October 1996

CHAPTER 12: CENTRAL BANK RESPONSES AND REGULATORY FRAMEWORK OF E-MONEY IN MONGOLIA

By:
Yadamsuren Tungalag[1]

1. INTRODUCTION

The financial system of Mongolia consists of:

- Central bank (The Bank of Mongolia)
- Other depository corporations (16 commercial banks)
- Other financial corporations (84 non-bank financial institutions)

1.1 The Bank of Mongolia

Legal status of the BOM:

The Central Bank of Mongolia shall be the competent organisation authorised to implement State monetary policy within the territory of Mongolia.

The Bank of Mongolia is responsible:

- For the formulation and implementation of monetary policy
- For the issuance of banknotes
- As the banker's bank
- As the bank for government
- For the supervision of banking activities to ensure the soundness of the financial system

Main objectives of The Bank of Mongolia are to:

- Reduce inflation
- Enhance economic growth
- Ensure stability of the Togrog
- Develop effective financial intermediation
- Holding and management of the state's reserves of foreign currencies

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Facilities of interbank settlement:

1. The Bank of Mongolia arranges clearing and settlement of interbank payments and makes payment through each commercial bank's current account with the BOM.
2. The BOM may open branches for settlement of interbank payments.
3. The BOM shall issue regulations oil settlement of interbank payments.

2. Development of E-commerce

Electronic commerce, or e-commerce, is the catch-all phrase for many advances in technology centred on the Internet and heralds fundamental changes for the world economy. The expansion of the Internet on a global basis, has made it an ideal means to conduct commerce. In Mongolia, as in the rest of the world, the Internet is increasingly being used to advertise and sell goods and services. There are a number of electronic money products which are either in the process of being developed or are already available for electronic payments and banking and which are, or could be, activated through ATMs, telephonic devices, personal computers, intelligent cards and card-reading devices.

Although these new payment technologies are still in various stages of development, policy making authorities have direct interests in anticipating the likely policy implications. Emerging electronic money products may require regulatory adjustments or intervention to limit the systemic and other risks which may arise and threaten the stability of, and confidence in, the national payment system. There is also the need to provide consumers with adequate protection from unfair practices, fraud and financial loss; the need to ensure the central bank's ability to conduct monetary policy is not hampered; and the need to assist law enforcement authorities in the prevention of criminal activities.

Opportunities which these new technologies offer should also be investigated and exploited, i.e. how the emerging technologies can be used to make financial services more accessible to those in the low income and rural provinces of Mongolia and how the emerging technologies can be used for cash displacement and to solve problems such as the cost of cash handling and criminal acitivities.

Basically two methods of making payments can be distinguished. The first is the account transfer system. In this system, customers issue instructions to banks to debit the account of the person making a payment and to credit the account of the person receiving the payment. Payment methods which fall into the account transfer category include cheques, debit cards, credit cards and telephone banking.

The second method of payments is the direct transfer or token system. In this system, money or a form of money is established, which can be directly handed from one person to another, with or without the direct involvement of any bank in the transaction. These forms of money are purchased from an issuer, who ultimately carries the obligation to redeem them.

2.1 Requirements to Introduce E-money into National Payment System

In order to limit systemic and other risks, which may threaten the stability and confidence on national payment system, it is required that:

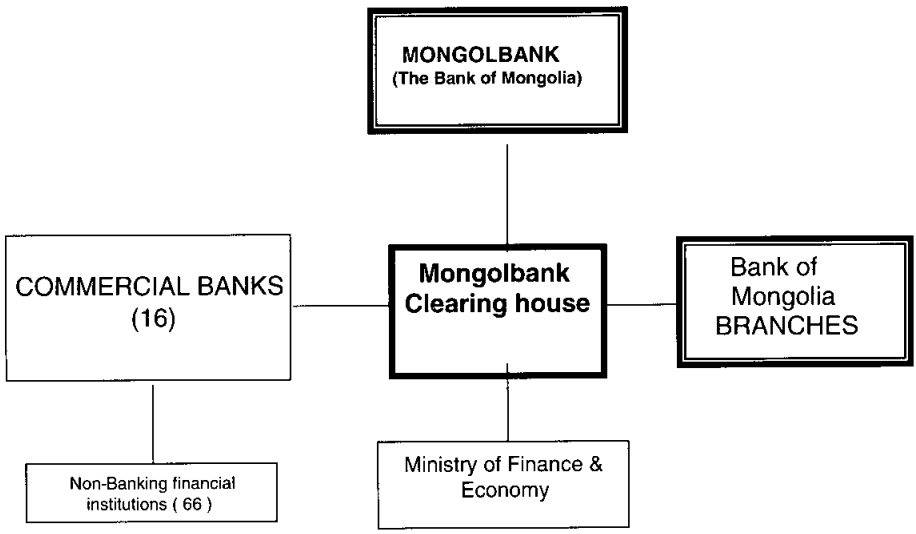
- Certain legal requirements are fulfilled in which rights and obligations of respective participant must be clearly defined and disclosed;
- Mechanisms be available to measure and control money supply;
- Only banks are permitted to issue e-money; and
- Issuer obliged to redeem e-money value in central bank money.

2.2 Security of E-money Schemes

- Security breaches may occur at level of consumer, merchant or issuer and could involve attempts to alter data transmitted between devices.
- Security attacks are most likely be for financial gain, but also aim to disrupt the system
- A key safeguard for card-based schemes is to make the microchip embedded in the card tamper-resistant.

The National Center of Standardisation and Metrology of Mongolia has approved IT banking standards in order to provide security requirements related with the banking transaction cards, authenticate the origin and text of a message sent between sender and receiver, prevent possible data alteration, data lost, counterfeit and any other adverse illegitimacy.

Figure 12.1 Payment Systems Framework in Mongolia



2.3 Credit Transfers

Credit transfers are the most widely used non-cash payment media in Mongolia. Normally, customers place their order with a bank in the bank's pre-formatted form. That is immediately verified against the balance on the accounts of customers or the cover funds directly paid by them. If the remitting bank (branch) finds the cover sufficient, it puts into its own system manually for further transfer. In case the recipient holds no account anywhere the message should have a beneficiary ID number or other details of equivalent importance.

The 1999 amendment to Clearing Rules stipulate that each commercial bank has only one end access to the CH, that stopping any inter-bank settlement in the countryside. It means the message of payment between two different banks in the same aimag (province) has to clear through two different bank headquarters in Ulaanbaatar and the Clearing House.

Under normal conditions inter-bank transfers are completed on the same day in Ulaanbaatar, 1 business day between aimag (provincial) branches.

2.4 Other Non-cash Payments

Some commercial banks started issuing other cashless instruments including cheques and different types of payment cards, although the volume of their transactions is insignificant.

- Cash
- No-Cash
  - Payment order, invoice
  - Swift
  - Western union, Money Gram
  - Checks
  - Cards (Visa, Master, Phone cards, Internet cards)
  - E-Payment (Netcard, eShop, Rose)

Figure 12.2 Payment System Flow Diagram

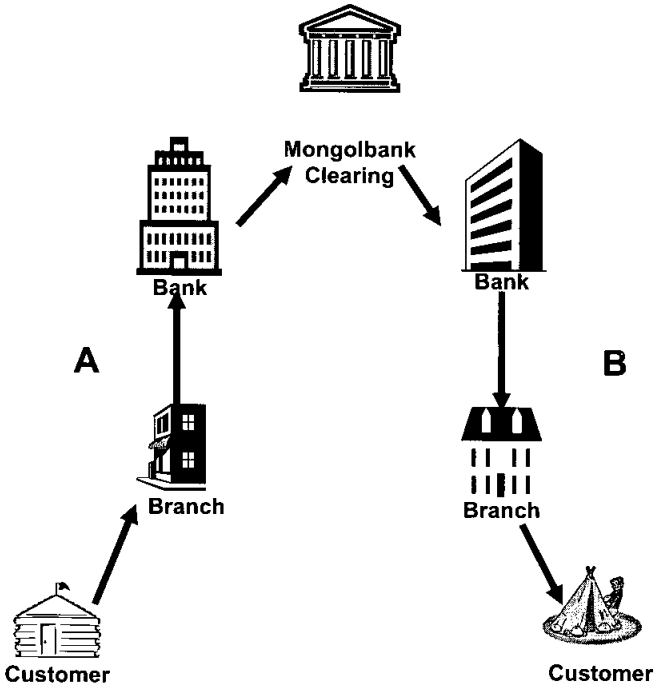


Table 12.1 Patment Media Summary

Name	Cards			Tel	Internet	International transfer	Swift	Online	Mobile
	Visa	Master	Other						
Capital bank							Y		
TDBM bank	Y					Y	Y	VSAT	Y
Agricultural bank						Y		VSAT	
Mongol Post				Y		Y	Y		
Golomt bank	Y	Y				Y	Y		Y
Savings bank						Y	Y		
T_and_D bank		Y							
Ulaanbaatar city bank									
Erel bank							Y	VSAT	
Zoos bank		Y				Y	Y		
Anod bank			Y			Y	Y		
Inter bank							Y		
Capitron bank		Y			Y	Y	Y		
Credit Bank									
Menatep bank									
Xas bank						Y			

2.5 Future Trends

The Bank of Mongolia received a credit from the World Bank for the Mongolian Payment and Settlement System Modernization Project. With the project, The Bank will be able to separate high-value messages from low-value and set interbank card settlements. For this purpose, the Bank will establish the legal environment of the e-payment and e-commerce of Mongolia.

2.6 Clearing and Settlement Arrangement

Participants

In addition to The Bank of Mongolia, only 16 local banks and the Ministry of Finance and Economy have direct access to the system. Up to now, The Bank of Mongolia has not set any admission criteria for the banks nor any fixed number on the clearing members. The current situation thus enables any bank established in Mongolia and awarded a licence from The Bank of Mongolia to apply for membership in the clearing. As of 2002 there were 16 direct members in the CH.

E-money in Mongolia

- Introduced in 2003
- Only one bank providing this service (Golomt)
- Number of customers (53)
- Total transaction 600
- Software supplier - domestic company
- Network environment – SQL server
- Security fulfillment – DES

3. CONCLUSION

The introduction of e-money and for that matter all forms of e-commerce, may create new problems for the business community, but will also create new opportunities for a more efficient payment system. People will tend to prefer to use payment technologies which are cheaper, more convenient, and less risky than available alternatives. Many will probably prefer methods which can be used for multiple purposes, rather than having to utilise a variety of methods to meet different needs. The level of acceptance of particular payments by retailers, merchants and other suppliers will obviously have an important influence on the implementation of new approaches. Exactly how these influences will develop remains to be seen.

Electronic money products will require regulatory adjustments or interventions due to risks which may occur with its introduction. Due to the possible threat it poses to the stability of whole financial system which may affect the confidence in banking system, it is necessary for the central bank to implement measures to regulate e-money schemes and create the necessary legislations.

CHAPTER 13: CENTRAL BANK RESPONSES AND REGULATORY FRAMEWORK OF E-MONEY IN NEPAL

By
Narayan Prasad Paudel[1]

1. INTRODUCTION

1.1 Country Profile

Nepal, a land-locked country in South Asia, is situated in between India and China. The kingdom of Nepal extends between latitude of $26^0 22'$ to $30^0 27'$ North and longitudes of $80^0 4'$ to $88^0 12'$ East. The total area of the Kingdom of Nepal is 147181 square kilometers. About 26.5 percent of the total area is under cultivation. Forest, snow and pasture occupy another 56 percent of the total area. For administrative purpose, the country is divided into 5 development regions, 14 zones, 75 districts, 1 metropolitan area, 4 sub-metropolitan areas, 53 municipalities and 3913 village development committees. According to the Population Census 2001, the total population of the Kingdom of Nepal is 23.1 million with an annual growth rate of 2.24 percent.

Nepal has predominantly a subsistence agricultural economy, which contributes about 38 percent to the country's total GDP. About 77 percent of the total population is primarily engaged in agricultural. The share of manufacturing sector to the country's total GDP is still less than 10 percent and the pace of industrialisation in the country is yet to develop. By the end of the Ninth-Five Year Plan (1997-2002), the proportion of people living below poverty line has been estimated at 38 percent of the total population. Nepal has initiated planned economic development approach since 1956, but poverty has still remained a challenge to the country. It still remains as one of the least developed countries with per capita GNP of about US$ 250.

Since the mid 1990s, the country has initiated liberal economic policies to encourage private sector participation in the economic activities of the country. Nepal has an open economy and the volume of trade with India accounts for about 48 percent of total international trade. Traditionally, Nepal's foreign trade has always remained in deficit. Due to high deficit in trade account, current account balance has been adversely affected. Current account has been made fully convertible with some sort of restrictions on service and transfer accounts. The capital account is

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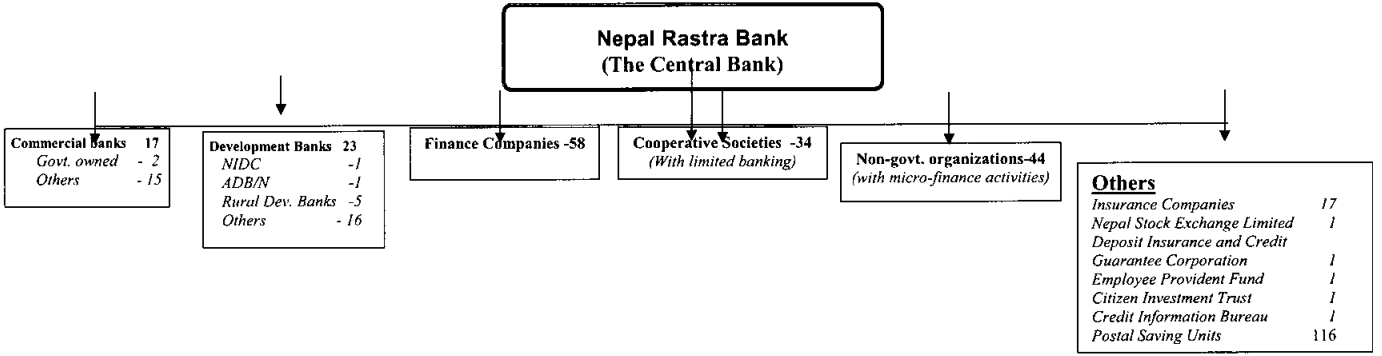
under full control of the government. Though, the capital account remains unconvertible, the government has made a provision of allowing 100 percent foreign investment in some of the specified sectors.

1.2 The Nepalese Financial System: An Overview

The history of banking in Nepal is not very old as the first ever bank in the country, Nepal Bank Limited (NBL), was established in 1937. The central bank, Nepal Rastra Bank was established much later in the year 1956. In the mid 60s, the Nepal Industrial Development Corporation was established as the first development bank, and Rastriya Banijya Bank (RBB), the second commercial bank fully owned by the government, was established in 1966. During the mid 80s, motion was set for the revolution of banking industry in the country. In 1984, NABIL Bank Limited, the first joint-venture bank was established with foreign equity participation. A number of banks and financial institutions entered into the market, making the entire financial system much more competitive as well as diversified. Presently, Nepal Rastra Bank, the regulatory and supervisory body, regulates, supervises and monitors commercial banks, development banks, finance companies, cooperative and non-government organisations (NGOs) carrying limited banking businesses. The structure of the Nepalese financial system is depicted below.

All these institutions are directly or indirectly involved in channeling funds from one sector to another sector in the economy. Commercial banks, finance companies, development banks, cooperative and NGOs are involved in the country's payment and settlement system. Only commercial banks are allowed to operate foreign exchange transactions.

Figure 13.1 The Nepalese Financial System
(As of mid-November 2003)



2. PAYMENT AND SETTLEMENT SYSTEM

2.1 General Overview

Banks and financial institutions provide payment and settlement services in Nepal. Basically, commercial banks are the institutions widely rendering payment and settlement services. The Commercial Bank Act 1974, Foreign Exchange Regulation Act, 1962 and Negotiable Instrument Act govern the activities related to payment and settlement services.

About 86 percent of the total population lives in the rural areas which lack infrastructure facilities such as electricity, communication and transport. In the rural areas, cash is widely used in payment and settlement services. Cash and paper-based instruments such as cheques and commercial bills are the commonly used instruments in the urban areas. Few commercial banks offer ATM, tele banking and internet banking services.

In the urban areas, cheque draft, telex, transfers are used in making large-value payments. Nepal Rastra Bank conducts clearinghouse for inter-bank payment system. The Negotiable Instrument Act of Nepal has set some rules relating to payment and transfer of money through different instruments instead of using currency notes.

In the banking sector, promissory note, bill of exchange and cheques are widely recognised as negotiable instruments and these instruments are used in making payments involving large amounts of money especially in trading, enterprises, contracts and big houses.

Cash, cheques, draft, telex, telegraphic transfer and mail transfer are the payment methods used in domestic payment. Recently, Kumari Bank Limited has provided internet banking services. However, the services provided are very limited. ATM and credit cards are also used in making payments. Credit cardholders can make small value payment at some specified merchandise units. ATM also provides facilities to withdraw money up to a given limit. These cards are denominated in Nepalese Rupees. No electronic card can be used to withdraw cash in other convertible currencies.

For the settlement of inter-bank transactions, the clearinghouse in Nepal Rastra Bank was established in 1968. The clearinghouse provides services related to the settlement of cheques, drafts and other similar payment orders among the member banks. Nine different offices of Nepal Rastra Bank located in different parts of the

country provide clearing services. All clearing member banks maintain transaction accounts with Nepal Rastra Bank. The net clearing of each member bank is debited or credited to its account and any overdrawn balance must be replenished within 24 hours. Each member bank has to pay NRs.2000.00 as the membership fee each year for the settlement on domestic cheques, drafts and other similar instruments.

2.2 Global Trends in Payment and Settlement System

Nepal has been following a fixed exchange rate with the Indian currency and floating exchange rate with other convertible currencies. The trade payment between Nepal and India is generally settled in Indian currency. Some specified items can be imported from India by paying US dollars. For trade purpose, telex transfers, bill of transport and letter of credit are the commonly used means of payments. Trading between India and Nepal can take place without using letter of credit. However, a letter of credit is used if payment is to be made in US dollars. Payments in India are generally settled in Indian Currency, except the imports of some specified Indian machinery and industrial raw materials, for which US dollars can be used for payment. Nepal Rastra Bank maintains Indian currency account with the Reserve Bank of India and all other commercial banks maintain Indian currency agency accounts with their corresponding banks in India to settle the payments.

In Nepal, capital account has not been made convertible. However, Nepalese citizens, having a source of income in foreign currency, can open a convertible currency account with designated commercial banks and are eligible to hold international credit card. Authorised moneychangers, hotels, travel agencies and commercial banks can accept foreign currencies in cash, travelers' cheques and credit cards. Payment from abroad can be received through telex transfer, bank cheque, draft, and mail transfer. Most of the commercial banks have started to use SWIFT, which enables money for foreign payments. Similarly remittance of foreign currencies can take place upon the clients' request and the following are the modes of transfer

- Drafts
- Mail Transfer
- Telex Transfer
- Credit Cards
- ACU dollars

Cross-boarder payment system is still at the initial stage. Nepal is a member of the Asian Clearing Union (ACU) and all the trade payments among the member countries except India are settled through the clearing system of the Union in ACU

dollars. The Nepal Rastra Bank clearinghouse facilitates clearing of cheques, drafts and other similar instruments in eleven foreign currencies - USD, EUR, GBP, DEM, CHF, AUD, CAD, NLG, SGD, FFR and JPY.

Generally, the central bank and the commercial banks are involved in cross-border payment and settlement system of the country. Current account is fully convertible and capital account is not convertible. Therefore, prior approval of the central bank is required for making transactions in the capital account. Due to the existing foreign exchange regime, the country has to segregate the global payment and settlement system into two groups - for Indian currency and for other convertible currencies.

3. DEVELOPMENT OF E-MONEY

3.1 Salient Feature of E-money

Electronic-money products are defined as "stored value" or prepaid products in which a record of the funds or "value" available to a customer is stored on an electronic device in the consumer's possession[1]. Electronic-money refers to "stored value" or prepaid payment mechanisms for executing payments via point of sale terminals, direct transfers between two devices or over open computer networks such as internet[2]. Electronic-money products are also called Electronic purses or digital cash which can be single purpose or multipurpose. Single purpose cards are used to purchase one type of specified goods/services from one vendor such as telephone cards whereas multipurpose cards can be used for a variety of purchases from several vendors. Generally, banks issue multipurpose cards. Based on these definitions of Electronic-money products, some salient feature of e-money can be pointed out as follows:

- E-money products are stored value or prepaid payment mechanisms.
- E-money products are characterised by the use of a magnetic stripe or a computer chip embedded in the card. Typically, a microprocessor chip is embedded in the plastic card.
- Issuer, network operators, vendors and the clearer are the four types of service providers of e-money schemes.

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1. Implications for Central Banks of the Development of Electronic Money, Bank for International Settlements, Basle, October 1996.
2. Risk Management for Electronic Banking and Electronic Money Activities, Basle Committee on Banking Supervision, Basle, March 1998, BS/97/122.

- Electronic money products differ in the way in which value is transferred. Some e-money schemes are direct and some others require the involvement of a third party to transfer the value.
- E-money products can be used to make small and retail value payments.
- E-money products such as debit and credit cards require a personal identification number (PIN) to authorise a transaction.

3.2 Recent Development of E-money Schemes

At present, there are 17 commercial banks currently in operation in Nepal and few banks provide e-money products. Among the e-money products, Automatic Teller Machine (ATM) is most popular.

Nabil Bank Limited was established in 1984 and it is the first bank in Nepal to introduce e-money products. The Bank issues Rupee and International Master Card Cards in the country. An International Master Card from the bank is accepted at millions of establishments across the world and a local Nabil Master Card is accepted at over 125000 retail and service outlets in Nepal and India including hotels, restaurants, department stores and establishments offering diverse services. The bank is also expanding facilities by issuing Visa credit cards very soon. Besides issuance, the bank is also the first acquiring Bank of Nepal and is presently accepting Master Card, Visa and Diners Club Cards. The bank has launched Tele-banking facilities under which the customer can avail the balances of his account through telephone. Nabil has started worldwide transfer of funds by using SWIFT funds transfer and messaging system.

Nepal Investment Bank Limited (established in 1986) provides tele-banking facilities to its customers, which enable the customer to access his account balance and to order a statement of account by using personal password. Automatic Teller Machine (ATM) facilities provided by Nepal Investment Bank Limited enables its customers by using a PIN code to have access to the ATM machines from where the following facilities are made available:

- Cash withdrawal up to NRs.20,000 per day
- Balance inquiry
- Statement of account up to five transaction
- Change of PIN code
- Cash deposit
- Cheque pad request.

In the near future, the Bank is also planning to launch the following E-banking products:

- Visa Electron Debit Card
- Visa Credit Card
- E-Banking

Standard Chartered Bank Nepal Limited (established in 1987), in its endeavour for the better and consistent services to its customers has provided different services including:

- Tele Banking, and
- Electronic Banking (ATM and POS).

Approximately one hundred customers have been enjoying tele-banking services from the bank. Once the operators validate the PIN with the customer database, the required information is provided to the customers like account balance, number of transaction made in a day, etc.

The bank has established its own network and provided required hardware to support e-money transaction. It has set up nine (seven inside Kathmandu valley and two in Pokhara city) ATM machines and almost three hundred fifty points of sale (POS) machines are available in various customer locations. These POS machines are located mostly in Kathmandu valley and some are located in cities like Pokhara and Biratnagar. The bank has well-established communication set up to its regional headquarter in Dubai through two VSAT link to support E-banking transactions.

The bank also issues Visa Silver and MasterCard Gold. Both of these cards are local cards valid in Nepal and India only. The bank has issued nearly 5000 Visa Silver card and 200 MasterCard Gold to its customers. The financial charge is 2.5 percent per month calculated on a daily basis on the outstanding balance carried forward. There is the facility to pay a minimum of 5 percent or 100 percent of the total outstanding balance.

The bank has also issued more than 19000 Debit Cards to its customers. To avail this facility, the customer should open either a savings or current account with the bank. These plastic cards can be used to purchase goods/ services and to obtain cash, for which the card issuers debit the cardholders asset account. Every cardholder is issued a PIN code unique with other cardholders. The customer can withdraw NRs 50000.00 per day from the ATM machine. In some ATM machines, customers can also deposit money.

The bank has launched a new product - Right Fax System which is the first of its kind launched by the commercial banks in Nepal. High-end customers having high-volume transactions can enjoy the facility and the daily transaction detail will be transmitted to the customers' fax machines on a daily basis. Presently, fifteen customers are using this facility from the bank. The bank has been providing web-banking facility to almost fifty-five customers and the customers can view the details of the daily transactions made in their accounts.

Nepal Bangladesh Bank Limited (established in 1993) has been providing Tele-banking services from its one branch since June 1994. The Bank has also launched ATM facility having the following characteristics

- Withdrawal limit worth NRs. 25,000 per day
- Balance Inquiry
- Statement Order
- Cheque Order

Himalayan Bank Limited, the first private sector bank established in the year 1993, has been providing the following E—banking services.

- Telebanking
- Credit Card
- Visa Credit Card
- Internet banking (under process)

Telebanking service is a password-connected service offered to the bank's customers through which the customers can make enquiry on balances in their accounts, order chequebook and even order account statement from the fax-machine. The bank also issues its own credit cards to nearly 5000 customers and these cards can be used to make payments in about 400 establishments located in Kathmandu. About 10000 customers use ATM machines and the bank also issues visa credit cards. These cards are of two types. The first one is a local card valid only in Nepal and in India. The second type of visa credit card is an international card. The bank has not yet offered internet banking service. However, the bank is planning to initiate internet banking service from January 2004.

Kumari Bank Limited (established in 2001) has introduced internet banking services to its customers. The facilities offered by the bank on internet banking are listed below.

General : Activity log, change password, change profile, enquiries, download applications or statements, close account and change of address.

Accounts : Balance enquiry, downloading account statement, loan, deposit and transaction enquiry.

Payments : Account transfer (within group accounts).

Request : Standing orders, future dated payments, stopped cheques, order stationery, copy statement, limit change and bank drafts.

In the absence of Cyber Law, the bank is providing the above facilities on one-to-one contract basis. Account transfer facility is very limited and it can take place from one firm to another belonging to the same group. Therefore, the services offered by the bank appear to be E-banking in nature.

Nepal Telecommunication Corporation, a government owned entity has already introduced public payphone in the major cities like Kathmandu and Pokhara. The introduction of payphone has become a convenient service because the customers do not need to carry coins. Customers can have access to telephone services anywhere anytime by using a smart card. The Corporation has also introduced pre-paid mobile services from 23 August 2003. Payphone and prepaid mobile services are quite similar to e-money products recently introduced in Nepal, but these services are for single-purposes. These services do not fall in the category of banking services or products.

3.3 Factors Influencing the Development of E-money

A number of factors influence the development of e-money. In a country like Nepal, the major factor that influences the development of e-money is its geographical situation and the under-developed urbanisation process. Only 14 percent of the total population lives in the urban areas. About 86 percent of the total population, who lives in the rural areas does not have access to basic infrastructure requirement for using e-money products such as electricity, communication network, network operators and vendors of specialised hardware and software. Therefore, the extent of the spread of e-money is largely affected by the country's geographical condition. Commercial banks have a large branch network in the rural areas of the kingdom of Nepal and because of several reasons rural branches have been unable to offer e-money products or services.

Financial deepening of the country is not so strong and the majority of the people especially in the rural and semi-urban areas use cash as mode of payments instead of using banking instruments. Lack of banking habits has been hindering the development of e-money. In Nepal, two types of monetary aggregates are being

used for the conduct of monetary policy. Narrow money (M_1) consists of currency in circulation and demand deposits of the banking sector. Broad money (M_2) consists of M_1 and time deposits.

For analysis purpose, M_1 is considered as medium of exchange and the store value feature of money is partly accommodated in M_2. The development of e-money largely depends on public's behaviour, banking habits and use of banking instruments in making payments.

E-money products such as plastic card, credit card and debit card replace cash and customers do not need to carry cash with them. However, these products/ services are entirely new in the Nepalese context and issuers charge fees and other services charges to their customers making the use of e-money products relatively costly. Therefore, a possible disincentive for the users of e-money could be the cost of using e-money products. Consumers compare the available e-money schemes with other payment methods in terms of fees, charges, security, privacy and the availability of merchants accepting the underlying e-money scheme.

All e-money schemes may not be equally useful everywhere. Only specified merchants having special arrangement with the issuing agency can accept e-money services. In other words, merchants' willingness to accept e-money will depend on a number of factors including the size of fees imposed by the issuer or operators, the cost of terminals, the reduction in the cost to them of handling cash, and their willingness to adopt new technology.

Basically, e-money schemes are designed to make small value payments. Many schemes set a low limit on the maximum value that can be held by the consumer. By holding large e-money balances, consumers may lose the interest on such balances. Generally e-money schemes are not suitable to make large-value payments and consumers may prefer other instruments such as bank cheques.

3.4 Impact of E-money on Central Banking Functions

Nepal Rastra Bank is the central bank of the kingdom of Nepal and the legal base for its functioning is the Nepal Rastra Bank Act, 2002. Maintaining monetary and financial stability in the country is the prime objective of the central bank as stipulated in the Act. Though the use and introduction of e-money products have not been widely exercised in Nepal, the development of e-money brings a number of interrelated policy issues to the central bank. Being the regulatory and supervisory body of the financial system, Nepal Rastra Bank is responsible for minimising possible financial risks in the operations of e-money products.

Security of e-money scheme is the other concern to the central bank. Security breaches can take place at the level of consumer, the merchant or the issuer. Remedial measures must be taken to control the potential risk. Protection of data from unauthorised alteration, maximum limit on the amount that can be held on e-money devices and on the transaction value are some of the features associated with e-money schemes to maintain security. However, security breach may be difficult to detect and central monitoring system must be initiated.

3.5 Identification and Analysis of E-money Risks

The most important risk categories for e-money activities are operational risk, reputational risk and legal risk. However, the degree to which a particular risk is applicable accross different e-money schemes may differ. Different types of risks may arise from a single problem and appropriate risk management mechanism should be in place in order to address and monitor each of these different risks.

3.5.1 Operational Risk

Operational risk may arise in different ways. Deficiencies in system reliability or integrity due to internal and external attacks on the systems, misuses from customers and inadequately designed e-money schemes are the main causes responsible for emerging operational risk.

3.5.1.1 Security Risk

Inadequate control measures, attack by hackers, unauthorised access to bank's computer system, injecting a virus and employee fraud are some of the factors that could create security problems in e-money schemes. The system must incorporate adequate measures to detect and deter such security problems. Due to expanded computer capabilities, geographical dispersal of access points and the uses of various communication paths, controlling access have become increasingly complex. The issuers or the bankers must have an effective control mechanism to address all such issues.

3.5.1.2 Other Operational Risk

The other types of operational risk are as follows:

- Outsourcing of implementation, operations and support portions may not be reliable and it may result in system breakdowns and financial difficulties. Rapid technological changes may require updating of computer software periodically.

- Customer misuse of products and services, both intentionally and unintentionally may result in financial losses on the bank.

3.5.2 Reputational Risk

Reputational Risk, the risk of significant public image of overall bank operations, may arise due to banks' actions causing major loss of public confidence. The System may not work as expected and it will cause widespread negative public reaction. Mistakes, frauds, breach of security, problems with the service, inadequate information about the product use and problem resolution procedures may expose a bank to reputational risk. A hacker-penetrating bank's website may alter it to internationally spread inaccurate information about the bank or its products. Reputational risk sometimes appears to be significant affecting the system as a whole

3.5.3 Legal Risk

Rights and obligation of all the parties involved must be clearly defined. Lack of clarify on rights, duties and obligations may bring uncertainty about the validity of some agreements formed via electronic media. Money laundering may be attractive in e-money scheme, as no physical presence of the customer is required. In the Nepalese context, there is a lack of legal framework governing the e-money schemes. In the absence of Cyber Law and Anti-Money Laundering Act, banks dealing in e-money schemes are exposed to legal risk.

3.5.4 Other Risks

The other traditional types of risk associated in e-money products are as follows:

Credit risk	:	Risk of non-settlement of an obligation.
Credit risk	:	Risk of banks' inability to meet its obligation.
Interest rate risk	:	Risk of bank's condition to adverse movements in Interest rates.
Market risk	:	Risk of losses arising from movements in market prices, including foreign exchange rates.

Different types of risks discussed above are general in nature and the degree of the applicability is largely determined by the extent to which e-money products are used in practice. In the Nepalese context, very few e-money schemes have been offered by the issuers and few people have access to e-money products. Therefore, the degree of risk inherent to e-money products in the Nepalese context is at a low level.

4. POLICY RESPONSES WITH REGARDS TO E-MONEY

4.1 On Monetary Policy Concern

In the Nepalese context, very few banks have offered e-money products. Few people use e-money products and the volume of transaction is very low. In other words, e-money products are still very new. Only commercial banks are allowed to issue e-money products such as debit and credit cards. Nepal Telecommunication Corporation, a non-financial institution under the Ministry of Information and Communication, has recently launched e-money products such as payphone and prepaid mobile phone services. There are two types of issuers of e-money products: the commercial banks and non-financial institution Nepal Telecommunication Corporation. The commercial banks issue multi-purpose-prepaid cards and Nepal Telecommunication issues single-purpose-prepaid cards.

Though the Nepalese financial system comprises banks and financial institutions, only commercial banks can operate card-related business and foreign exchange transaction. The proposed Bank and Financial Institutions Act is in the final stage and the proposed Act is supposed to replace all the existing legal frameworks governing the depository institutions under the perview of the central Bank. Different types of banks and financial institutions will be categorised into different grades and almost all types of banking activities are allowed to all the banks and financial institutions with some restrictions and prudent norm. The proposed Bank and Financial Institutions Act, often known as the umbrella Act, is supposed to widen the areas of operations within the universal banking concept and all the depository institutions will be allowed to operate banking businesses depending on their categorisation. However, under the existing legal and regulatory framework, commercial banks are the only institutions authorised to deal in card-related businesses.

Policy response with regard to e-money on monetary policy is largely determined by the extent to which e-money replaces cash. The table below depicts the composition of narrowly defined money (M_1) over the last ten-year period.

Table 13.1 Money Supply (M_1)
(Mid July)

Rs. in Million

Year	Currency	Demand Deposits	Money Supply (M_1)	Currency Ratio
1992	13639.7	5818.0	19457.7	70.1
1993	16313.0	7520.0	23833.0	68.4
1994	19659.7	8850.7	28510.4	69.0
1995	22493.9	10491.5	32985.4	68.2
1996	25046.4	11451.6	36498.0	68.6
1997	27333.7	11126.6	38460.3	71.1
1998	30893.2	14270.6	45163.8	68.4
1999	34984.3	16078.1	51062.5	68.5
2000	42143.0	18836.8	60979.8	69.1
2001	48295.1	22281.8	70576.9	68.4
2002	55658.3	21497.9	77156.2	72.1

From the above, it can be seen that a large proportion of narrowly defined money remains in the form of currency held by public and demand deposit held by public accounts in the range of 27.9 to 31.8 percent over the last ten years of period. The public prefers holding cash balances rather than depositing money into the bank and a number of factors are responsible for this situation. Demand deposit to money supply ratio is not so significant and a nominal part of the total demand deposit held by public represents e-money balances. Therefore, the spread of e-money is very nominal in the Nepalese context and the concept of seigniorage effects has almost no meaning to the central bank. Only the deposits of the banking sector have been accounted in monetary aggregates and deposits accepted by other non-bank depository institutions have not been covered in the existing monetary policy framework. Therefore, e-money balances do have much effect in the conduct of monetary policy and the velocity, targets and indicators of monetary policy remain almost unchanged with the use of e-money products.

The central bank is generally positive in its stance in the development of new and innovative banking products and the establishment of new banks and financial institutions has been eased by establishing prudential licensing criteria. However, the central bank does not have any plan to issue e-money products and for the

conduct of monetary policy, cash reserve ratio (non-interest bearing), bank rate and open-market operation are the policy instruments at its disposal.

4.2 On Regulatory Framework

In the Nepalese context, e-money fits within traditional banking service categories and hence is covered by the existing regulatory framework. E-money balance is a form of deposit and existing regulation governing deposits are likely to apply. The issuance of multi-purpose credit cards is limited to commercial banks and the regulatory framework already in place can be extended to cover the new services. The use of e-money services is very limited due to limited number of issuers, users and services variety. Issuing a number of regulatory norms may not be appropriate because e-money schemes have yet to develop in Nepal. However, the central bank in its capacity as supervisory body, must face a choice concerning the timing of the introduction of appropriate regulatory measures to minimise risk inherent to e-money products. The central bank of Nepal has issued very few directives concerning credit cards. Some major regulatory provisions on credit card operations are as follows.

- Individuals having their convertible currency account with the commercial banks in Nepal can make payments by using credit cards from their accounts.
- Convertible currencies earned from export and tourism sectors can be used for making payment in convertible currencies with some ceiling imposed thereon.
- Nepalese citizens not having convertible currency accounts can make payments from their credit cards within the limit officially endorsed in their passport (The maximum limit is set at US$ 2000.00 for a person traveling abroad and such facility will be provided for once in a year).
- For those who have permission from Nepal Rastra Bank, payments can be made from their credit cards within the permitted limit.
- Making payments in a heading under the capital account is not allowed.

Capital account is fully controlled in Nepal and the Nepalese citizen can enjoy foreign exchange facilities upon producing valid travel or other related documents. However, Nepal Rastra Bank has issued certain directives on the use of foreign exchange facilities for different purposes.

4.3 On Other Issues

The use of electronic money influences the level of costs, benefits and risks facing consumers in their day-to-day electronic transaction. E-money products are inexpensive, rapid, convenient, accessible and reliable. Consumers can benefit from

the ability to use payment methods. However, there are certain consumer risks posed by e-money. In case of e-money, financial risks could arise from fraudulet acts such as theft of the consumers' cards or manipulation or interception of electronic message sent over computer networks. The other risk is that consumers may be unable to complete payments in the amount or at the time and location they desire because of expired or deactivated credit cards, merchants inability to make change for currency, or the refusal to accept personal cheques.

Electronic money products raise new challenges to the supervisors. Different types of financial and operational risks are involved in e-money products and the role of a supervisory body should be to minimise such risks. Effective financial risk management practices must be in place. Issuers of e-money products should manage liquidity position properly. Effective internal control and management system will minimise risks related security in e-money products. These are the measures that the issuers of e-money products must initiate in their respective areas. The role of supervisory authority should be to ensure that adequate measures have been taken by the issuers in minimising all such risks inherent in e-money products.

Effective and adequate legal framework governing e-money products is the other factor to be taken into account. Legal framework must be adequate in preventing, investigation and prosecuting criminal activity. In the context of Nepal, there is the lack of Cyber Law and the agreement or contract between the issuers and consumers governs all the service related features of e-money. Though the Commercial Banking Act governs commercial banking activities in general, no specific legal framework has been enacted to govern the e-money products. It has been realised that the enactment of Cyber Law is very much needed for the conduct of e-money/e-banking businesses.

The introduction of e-money could have effect on money laundering and cross border issues. The central bank has started its workouts for the enactment of anti-money laundering act. The foreign exchange policy of Nepal does not allow all the consumers to use their prepaid cards issued by domestic commercial banks in making payment to foreign-based merchants.

5. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

In the Nepalese context, the use of e-money has not been practiced yet. Few banks have been offering electronic banking services. As per the BIS-definition, e-money product must fulfill two conditions. The first one is that it must have multi-

purpose uses and the second is that it should not require online authorisation to access the customers' bank account. Therefore, the services provided by the Nepalese banks are of e-banking in nature. E-money products have not been introduced till date. Presently, the following commercial banks have been offering e-banking services.

Nabil Bank Limited

Nepal Investment Bank Limited

Standard Chartered Bank Nepal Limited

Himalayan Bank Limited

Nepal Bangladesh Bank Limited

Kumari Bank Limited

These commercial banks are offering e-banking services only. Nepal Telecommunication Corporation, a non-bank government entity providing communication services in the country, has recently introduced public payphone and prepaid mobile services. Payphone and prepaid services are the services for which the subscribers have to pay for calls in advance. The subscribers have to deposit some amount in advance via purchase of cards (public payphone cards and prepaid mobile sim cards). These cards posses the characteristics of e-money products, but they are single-purposes cards and have not been recognised as e-money products under the international definition of e-money.

Recommendation

The regulatory framework and risk management of e-money would have no meaning unless e-money products are widely used in practices. In the Nepalese context, e-money products have not been introduced yet. However, in the time to come, the use of e-money products may take place and the concerned parties should be aware of different risks from their respective point of views. The following issues may be the major concerns when e-money products are used:

- Safety measures to be initiated by the issuers.
- Enactment of Cyber Law and other specific acts or laws governing e-money products and consumers' protections.
- Strong regulatory and risk-management framework to be established by the central bank.

CHAPTER 14: CENTRAL BANK RESPONSES AND REGULATORY FRAMEWORK OF E-MONEY IN PHILIPPINES

By
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1. INTRODUCTION

The retail payment mechanism forms an integral part of the monetary system in a country's economy. As such, the safe and efficient operation of the system is a concern not only to the market participants but especially so to the central bankers as guardians for the technical efficiency of the payment system.

The introduction of electronic money (e-money) as a retail payment mechanism raises the issue as to how this technology meshes with the existing payment system. Presently, the use of electronic money is challenging the role of cash considering that it also meets the payment needs of individuals and corporations for ordinary business transactions. Some issues on the introduction of e-money are of principal concern to those who uses them, such as the consumers, the issuers and merchants while some are of principal concern to the central banks and the policymakers.

In the Philippines, the shift from fiat money to an "IT-induced" transfer payment mechanism is not as yet significantly felt though we can foresee its progress through the gradual increase of customer usage. It is for this reason that I believe a revisit with our existing rules and policies be conducted to institute regulatory initiatives that are congenial to technological changes.

This paper identifies and briefly discusses some of the key issues on e-money vis-à-vis the current stance of the Bangko Sentral ng Pilipinas in so far as the bank regulatory, consumer protection, financial privacy and risk allocation issues as well as matters of monetary policies are concerned.

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2. DEVELOPMENT OF E-MONEY

2.1 The Philippine Retail Payment System

Presently, we are witnessing dramatic changes in the banking industry. Technology continues to revolutionise banking and transforms the ways in which banks and customers do business. The information technology age has virtually shaped the global financial environment in this new millennium.

In the Philippines, it was in the early 80's, with the onset of the Automated Teller Machines (ATMs) that signaled the advent of electronic technology. Today, ATMs are part of the Filipinos' daily banking routines and as these challenge the existence of the conventional, physically manned brick-and-mortar structures, they are considered integral to the banks' fine-tuning of its delivery channels. The Philippine banking institutions are now offering electronic banking services using different delivery platforms that include Internet, mobile, non-mobile and proprietary applications.

Before we proceed any further let me give you an overview of the retail payment system existing in the Philippines.

There are a number of conventional mediums of payment in the traditional retail system in the Philippines. These are classified into cash and cashless payment instruments.

2.2 Cash Payments

Cash, notes and coins remain the most convenient method for making small-value payments. The Bangko Sentral ng Pilipinas (BSP) is the country's sole issuer of notes and coins in circulation. Coins are produced by the BSP minting facility and are denominated in 5, 10, and 25 centavos and 1, 5 and 10^2 pesos. On the other hand, notes are printed in 10^2, 20, 50, 100, 200, 500, 1,000, and 2,000 peso denominations.

2.3 Cashless Payments

Cashless payments are made using instruments by which current and/or savings account balances held with banks are transferred and utilised. Previously, banks in the Philippines are not allowed to pay interest on current accounts. However, as an effect of policy liberalisation, banks are now permitted to pay interest on current

2. The BSP is currently minting 10-peso coins to replace the 10-peso bills

accounts subject to certain conditions such as higher minimum maintaining balance, among others. Among the most common cashless payments are as follows:

Checks. These are debit instruments in the form of written orders to pay a specified sum on demand when the instrument is presented to the issuing institution or the payer's bank.

Money Orders. These are financial instruments issued by a bank or other institutions allowing the individual named on the order to receive a specified amount of cash on demand. These are often used by people who do not have checking accounts.

Bankers' acceptance. It is an unconditional order in writing requiring the bank to which it is addressed to pay on demand or at some future date a certain sum of money.

Letter of credit. It is a document issued by a bank that essentially acts as guarantee of payment to a beneficiary.

Plastic Financial Transaction Cards. These are convenient payment devices with the conventional magnetic strips. It is a handy payment facility offering access to a pre-arranged payment line and offers a faster payment process. The most common plastic cards in the Philippines are as follows:

Credit cards. These have become very popular for making payments. As a payment card, a credit cardholder is granted a credit line that gives him the authority to make purchases and/or withdraw cash up to a maximum limit. Interest is charged on the amount of the unpaid credit balance and holders are usually charged an annual membership fee for using the card.

Some local banks issue their own cards such as the Unicard of Metropolitan Bank and the Bankard of Rizal Commercial Banking Corporation. Several banking institutions issue internationally accepted credit cards such as Visa and Mastercard. As a marketing strategy, some credit card issuers have relaxed some of their credit requirements, such as no required application, reduced annual dues, free medical check-up, easy repayment scheme, cash advance, etc.

Debit cards. In here, transactions are connected to the cardholder's funds deposited either in the form of savings or current account. These cards are used for purchases and since it is tied up with the deposit account of the holder, it

automatically provides immediate payment to the merchant through a point-of-sale (POS) system by debiting the customer's deposit account.

There are different types of debit cards but the most common in the Philippines are the ATM cards issued by banking institutions. These cards can be used in Automated Teller Machines (ATMs) which are automated devices used to accept deposits, disburse cash drawn against a customer's deposit account, transfer funds between accounts, pay bills, obtain account balance information, etc. In the Philippines there are three (3) ATM networks, the Megalink, Bancnet and Expressnet which are owned by a consortium of Philippine banks.

Presently, some of our banking institutions are requesting authority to offer Internet and mobile banking services using their existing connection with the ATM switch owned by the said networks.

POS System. This is a system that provides computerised method of verifying checks and credit availabilities and debiting or crediting customer accounts.

Stored Value Cards or Electronic Money (E-money). E-money is the latest electronic banking product that hit the Philippines as a new method of payment and is now making some headway as an alternative means for cash in the consumer market. As defined by the Bank for International Settlement (BIS), e-money is a stored-value or prepaid product in which a record of the funds or value available to a consumer is stored in an electronic device in the consumer's possession. The electronic value is purchased by the consumer and is reduced whenever the consumer uses the device to make purchases.

A comparison of the different card payment schemes are shown below:

CREDIT CARD	DEBIT CARD	SMARTCARDS
■ Buy now, pay later	■ Buy now, pay now	■ Pay now, buy later, get more value
■ Small volume, high value	■ Require access to bank accounts	■ High volume, small value
■ Pre-qualification to reduce credit risk	■ No credit risk	■ Prepayment, no credit risk

2.4 Recent Development of E-Money Schemes

In the Philippines, e-money started in the form of prepaid cards. These are single-purpose payment instruments that are non-reloadable such as the prepaid phonecards of landline and cellular telephone companies, the Metro Rail Transit Authority and the Light Rail Transit Authority. Now, phonecards for mobile phones are reloadable. Another reloadable, single-purpose prepaid card is the e-pass used for paying tolls at the South Super Highway, one of the Expressways in the Philippines. Motorists can reload their e-pass at dedicated ATMs installed at Shell gasoline stations along the said highway.

Some Philippine banks have also started to introduce multi-purpose card-based electronic money products to clients as a means of facilitating retail payments. There are now six stored-value cash cards in the Philippine market, the Express Cash of the Bank of the Philippine Islands, the E-ON Electron of Unionbank, FASTcard of Equitable-PCI Bank, Cash Card and Smart Money of Banco de Oro, and the Mondex Card. Funds can be loaded as many times as the customer wants by either maintaining an account with the participating bank or depositing money for the purpose or reloading the stored-value card using cash from dedicated loading stations and payment centers.

FASTcard, launched in the first quarter of this year, has access to the ATM, over-the-counter tellering system and the POS channels only. The Bank is now requesting to enhance the card to enable the Bank to cater to more diverse customer usage requirements. Just like other stored-value cards, the proposed enhancement will give the holder wider access via different electronic channels such as the Internet, mobile and phonebanking.

Mondex Philippines, a non-bank institution is presently issuing the Mondex card while the Philippine Long Distance Telephone Co., a non-financial institution also launched the PLDT VISA Cash Card.

The use of a prepaid software product known as "***Digital Cash***" that utilises computer networks such as the Internet is yet to be introduced in our country.

2.5 Features and Statistical Data on E-Money

Hereunder is a matrix of the data and information gathered from several issuers of stored-value cards:

Particulars	BDO Cash Card	Smart Money Card	FastCard	BPI Express Cash
Issuer	Banco De Oro	Banco De Oro	Equitqble-PCI Bank	Bank of the Philippine Islands
Launch Date	December 2002		March 2003	November 2000
Delivery Channel	ATM POS OTC	ATM POS Smart	ATM POS	ATM POS
Functionalities	Mobile	Wireless Centers Mobile	OTC	OTC
	Cash withdrawal			
	Balance inquiry	✓	✓	✓
	Statement request	✓	✓	✓
	Payment for purchases	-	✓	✓
	Bills payment	✓	✓	✓
	Card reload	✓	✓	✓
	Prepaid airtime reload	✓	✓	✓
	Value transfer	✓	-	✓
	Acts as discount card	✓	✓	✓
		-	-	✓
Value Limit per Card	P25,000 P100,000	P10,000 P50,000	P10,000 P50,000	P10,000 P50,000
Currency Stored	Philippine Peso	✓	✓	✓
Transferability	Non-transferable	✓	✓	✓
Multifunctional features-				
ATM card	✓	✓	✓	✓
Purchase card	✓	✓	✓	✓
Prepaid call card	✓	✓	-	✓
Discount card	-	-	-	✓

Loading procedures and loading stations	▪ Over the counter cash acceptance (PHP) using the card sale/reload slip ▪ Debit from an existing CASA at the maintaining branch (processed via withdrawal) for credit to the cash card with the use of card sale/reload slip ▪ Card to card value transfer over-the-counter ▪ Card to card value transfer via mobile	▪ Mobile Banking Service – cardholder transfers PHP amount from his bank acct. into his card via defined functions on his Smart Mobile Phone ▪ Loading Centers – cardholders personally hands over cash (PHP) to accredited Smart loading centers (wireless centers and smart merchants) ▪ Card to card transfer-cardholder transfers amount from his card to another card account via mobile.	▪ The card can be purchased over-the-counter from all Equitable PCI Bank branches via cash payment or fund transfer from an account ▪ To purchase a FASTCard, the purchaser: ➢ has to present/ submit a valid ID. ➢ client must fill our the VISA Election Application Form ➢ must be at least 18 years of age ➢ must pay P100 application fee ➢ must load a minimum of P100 upon purchase 1. ATM Debit Bills loading → Can be performed at EPCIB FASTeller and ESB ATMs only → Cash loading/ reloading shall be processed as a regular bills payment transaction. Upon insertion of his	• BPI/BPI Family savings Bank • BPI ATMs • BPI Express Deposit Machine • BPI Express Bills Payment Machines • BPI Express Phone • BPI Express Online

			FASTeller/ FASTeller VE Card, the client will then select the bills payment option to perform reload transactions. → A FASTCard Institution shall be defined with INSTITUTION CODE 100. → The institution name shall appear on the ATM screen as "EPCI FASTCard". 2. Over-the-counter loading → Can be performed at ECPCIB branches only using the existing Bills Payment form → The cardholder may load the card via cash payment or debit to peso CA/SA. Check payments are not allowed → Loading shall be done by the branch tellers.	
Are they multi-currency	No.	No.	No.	No.

Total amount of cash loaded	P902MM (Jan.-Dec.)	P698MM (Jan.-Dec.)	P12 M (Jan. to Dec.)	P240M (June '03)
Participating Merchants/Number of Merchants	1,800 (Shoemart establishments and affiliates)	20,000 (Mastercard Electronic and Smart merchants)	VISA Merchant Terminals: 1. Around 20,000 ECN terminals locally 2. Around 2,000,000 VISA Merchants worldwide	20,000 accredited establishments with MasterCard E-Logo
Average Outstanding Float	P18.68MM	P43.9MM	P665 MM (April to August)	P40M (as of June '03)
Ave. No. of Daily Transactions	19,010	53,898	Reloading – 33 POS – 3	3,000 (as of June '03)
Value of Daily Transactions	P53.075MM	P11.7MM	Reloading – P2,018 POS – P1,400	P1.3M
Ave. value of daily purchase	P.085	P6.226	No data given	P.155M at POS Terminal

To summarise, we now have in the market prepaid, reloadable electronic stored value cash cards issued by several Philippine banking institutions. Generally, the stored-value cards issued are multi-functional, reloadable, can be accessed via ATMs, POS, OTC, mobile phone and soon via the Internet. The values stored in the cards are in Philippine currency ranging from P10,000 to P50,000 and recently we have approved a bank's request to increase the amount to P100,000. Also, there is a pending request for a P200,000 stored-value which is presently being processed.

2.6 Factors Influencing the Development of E-Money

Compared to other retail payment instruments discussed earlier, some of the reasons advanced for the move to smart cards are as follows:

- Inter-operability. Smart card technology can be used in both "attended" and "unattended" retail environment;
- It answers the demand for bigger data storage capacity and intelligence;

- Smart cards are preferred medium of payment for "micropayments" to replace coin and small bills but high volume transaction in complementary to other bank cards.

Moreover, the relative benefits derived from the use of Smart Cards on different perspectives such as the consumer/cardholder, the business establishment or merchant and the banking institutions can be summarised as follows:

From the cardholder –

- Convenience in cash-handling;
- Speed in transaction;
- Multi-functional card; and
- Good for budget (prepaid).

From the merchant –

- Efficiency in cash-handling, e.g. coins or small change;
- Reduced pilferage;
- Inter-operability;
- Cheaper/faster in case of off-line; and
- As a marketing tool for loyalty.

From the bank

- Integrated payment card;
- Reduced fraud;
- Prepaid float; and
- No credit risks.

On the other hand, the following are the perceived issues on smart cards rollout:

- Higher set-up costs since it involves an expensive technology;
- Critical mass of users;
- Change of habits since it is a prepaid concept;
- Reload infrastructures; and
- Competition.

In the Philippines, the emergence of smart cards opened a vast market opportunities. Compared to other card payment schemes, smart cards appear to have a higher penetration potential as shown in the statistics below:

The Market Opportunities

Philippine Market 76.5M Population
As of May 2000

Adult		+	Children / Teenagers
19 M Banked Population	14M Unbanked Population		43M
Existing Credit Spend			Cash Market (Urban Areas)
P78B			P1.4 Trillion

The Opportunity

Likewise, the following indicators point to the favourable development of the electronic banking product:

- Increasing number of ATM machines, both onsite and offsite as follows:

	1999	2000	2001
Onsite	2,867	2,972	3,172
Offsite	618	708	823
Total	3,485	3,680	3,995

- Philippine Internet users number some 1.54 million as of end-2000 compared to 1.09 million in 1999.
- In terms of the number of Internet hosts defined as the number of computers with active Internet Protocol Addresses (IPAs) connected to the Internet, there are 3 computers with Internet access per 10,000 populations as of end-2000.
- In terms of access to basic telephone service, there are more than 6.9 million telephone lines that have been installed. As of end-2000, there are 9 telephones per 100 people compared to just 2 telephones per 100 people in 1995.
- As of end-2000, there are approximately 6.45 million subscribers in cellular mobile telephone service compared to just 2.85 million subscribers in 1999.

2.7 Impact of E-money on Central Banking Functions

The acceptance of E-money is not yet widely accepted in the Philippines. As shown in the statistics mentioned earlier, the used of e-money is still negligible and has no adverse impact yet on the central banking functions of the Bangko Sentral ng Pilipinas.

3. POLICY RESPONSES WITH REGARD TO E-MONEY

Hereunder are some concerns, which we feel are paramount in our discussion of e-money issues:

3.1 On Monetary Policy Concern

- Are the electronic signals on stored value cards legal tender?
- What issues do card-to-card transfers and anonymous electronic cash transactions raises with respect to law enforcement and related matters?
- What are the possible effects of stored value cards on the monetary and payment systems?
- What other concerns do the new technologies create for central bankers and government interests?

The volume of e-money at present is still negligible. We are at present contemplating of referring the issue to our Department of Economic Research for further study.

3.2 On Regulatory Framework

Banking Regulatory Issues

- Can a non-financial institution be allowed to issue stored-value cards? If so, will it be subject to the guidelines in chartering banks; capitalisation; reserve requirements; deposit insurance, financial reporting, examination, etc.?

  No regulation yet disallowing non-financial institutions from issuing e-money and there is no intention yet of subjecting these institutions from banking requirements.

- Are the values stored in prepaid cards to be booked as deposit liabilities subject to reserve requirement and deposit insurance?

Since the mechanics of smart cards are similar to that of manager's checks (MCs), the rule on MCs will be applied.

- Are the unclaimed balances stored in the cash cards be subject to escheat?

  Consistent with the position that the rules on MCs be adopted for stored value cards, the unclaimed values stored in the cards shall be subject to escheat. However, we are also contemplating of referring the matter to our General Counsel since it involves a legal issue.

Consumer Protection Issues

- Are the consumer protection laws applicable to banks also apply to the bank's electronic cash transactions?

  We feel that the consumer protection laws applicable to banks should also apply to electronic banking transactions as much as practicable.

Financial Privacy Issues

- Does the Bank Secrecy Law apply to the issuers of cash cards?

- Does the reporting requirement for money laundering apply also to the issuers of cash cards?

  On the assumption that cash card issuers are banks and being consistent with the position of applying our rules on MCs to that of cash cards, we believe that whatever requirements we have on MCs with regard to record keeping and customer privacy should also apply to cash cards.

Public Issues

- Who bears the risk of loss or unauthorised use of stored value cards?

  As a general rule, the client bears the risk of loss since the safekeeping of the card is his responsibility.

- How is the risk of counterfeited stored value cash allocated and who bears other financial risks of electronic money?

  It depends upon the terms and conditions signed by the parties involved.

4. CONCLUSION AND RECOMMENDATION

In the Philippines, electronic money is still in its infancy stage, is not yet widely accepted and its issuance is not regulated by the Bangko Sentral ng Pilipinas. Stored-value cards are similar to treasurer's/cashier's/ manager's/ gift checks in the sense that in both cases it involves advance funding. With this as the guiding principle, it is believed that the issuance of electronic money should also not be subject to regulation such as those concerning reserve requirement and insurance coverage. However, unlike manager's checks which are issued solely by banks, issuers of electronic money may not be limited to banking institutions. At this stage and if we are to encourage its development there should be a level playing field where the opportunity is open to all that have the financial strength to back up the investment in the infrastructure.

Looking into the scheme and mechanics of plastic cards there appears to be no new radical change in the payment system that would require for an overhaul of our banking policies. Neither does it seem to have any significant implication on the overall operational framework in the financial system.

The soundness of the e-money system which depends largely on the security features of the cards is now being addressed by the BSP-Technical Working Group on E-Banking as it looks deeper on the security aspects of banks intending to offer electronic banking services and products, including the issuance of plastic cards. This is in addition to the information system on-site validation being undertaken by the operating departments of the SES on banks with electronic banking facilities.

On some issues concerning the effect of electronic money on the volume of money in circulation, the monetary and payment systems and as legal tender, we believe that these are remote possibilities. Electronic money will not as yet replace our existing payment system, not even in the near future. However, we will continue to monitor its development with the end in view of ensuring that the integrity of the banking system is maintained.

As regards the non-financial cash card issuers, we believe that their respective supervisory authority is effectively regulating their operations.

REFERENCES

Ladaban, Jonel, "Smart Cards in the Philippines", 6th Philippine Electronic Banking Conference, 19 April 2001.

Lamberti, Mario B., "The Philippine Payment System: Efficiency and Implications for the Conduct of Monetary Policy", *Discussion Paper Series,* No. 2001-20.

Summers, Bruce J., "The Payment System Design, Management and Supervision", International Monetary Fund, Washington, D.C. 1994.

Svigals, Jerome, "Smart Cards, The Revolution in the Cards Market" 1998.

"The Internet and Business: A Lawyer's Guide to the Emerging Legal Issues" published by the Computer Law Association.

CHAPTER 15: THE REGULATORY FRAMEWORK AND RISK MANAGEMENT OF E-MONEY IN SRI LANKA[1]

By
Mr. WRA Dharmaratne[2]

1. INTRODUCTION

1.1 Background

Money, as a medium of exchange, has existed for thousands of years. The form of money has continued to evolve with the rapid growth in international trade and commerce and the faster growth in information technology. The payments system also has been changing and evolving over centuries, together with the form of money. The latest revolution in the form of money is the introduction of e-money[3], which enhances the efficiency of payments, if the necessary infrastructure is available for the use of such money.

E-money can be considered as another innovation in a series of new financial arrangements. The development of e-money will create more opportunities for a more efficient payment system. At the same time it also may have effects on the formulation of monetary policy, the issue of bank notes and coins and on the soundness of the financial system. Growth of e-money in a country, would require the collection of data, since if would affect the circulation of the money supply, an important indicator in the formulation of monetary policy framework. It may even require a redefinition of the current monetary aggregates. To the extent that e-money replaces the existing bank notes and coins on a one for one relationship, the redefinition of the monetary aggregates would leave the demand for money unchanged. However, to the extent that e-money allows people to economise in their overall holdings of currency it could lead to the decline in the monetary aggregates. Similar decline can also be made on deposits, which are also included

1. In this paper the development of the payments and settlements system in Sri Lanka has been discussed since e-money scheme is not developed yet in Sri Lanka.

2. Senior Economist attached to the Economic Research Department, Central Bank of Sri Lanka.

3. It is hard to provide a clear cut definition for e-money as a number of official bodies have described and categorised this product in different ways. Generally, this product can be viewed as a card based instrument, where the consumer uses specialised hardware such as a plastic card with a magnetic stripe or computer chip or software, in which the product functions takes place through a computer which is connected to a network or it can be defined as electronically stored monetary value on a technical device, either card-based or network-based, that functions as a prepaid bearer instruments, which can be widely used for making payments to undertaking other than the issuer, with or without involving bank accounts in the transaction.

in the monetary aggregates. On the other hand, the large-scale introduction of e-money may also influence the velocity of circulation of money. Further, impact on consumer protection, frauds and money laundering are the important factors yet to be considered in the development of e-money.

In the case of Sri Lanka, although there are new innovations in the area of information technology and the payments system, the use of e-money is still at a very early stage. Up to date, only one commercial bank has introduced a smart card based e-money product, namely "People's Smart Cash" in 1998. At present, even that product is not used actively, although it can be used for multiple purposes such as an electronic purse, savings account, credit card, loyalty card and also an ATM card. Although the number of smart cash cardholders is 1,500, the outstanding balance on these cards amounted to only Rs.0.8 million at end 2002. Similarly in many other countries, e-money products are at a relatively early stage of development, while their benefits and impact as well as risks, are yet to be determined. Some banks in Sri Lanka are considering the use of e-money in the future. According to their views, the high initial cost and the non-availability of necessary infrastructure facilities in the country, particularly in rural areas, are the major constraints for the development of this product.

In Sri Lanka, cash is the most popular mode of payment in comparison to other payment methods such as cheques, debit and credit cards, SLIPS etc. Sri Lanka is moving from paper based instruments to paperless instruments in the settlement of payments. The Central Bank of Sri Lanka (CBSL) is currently involved in upgrading and modernising the payments and settlements system in view of its key function in improving the efficiency and reducing the risk of financial intermediation, and increasing financial stability. One such major initiative in this respect was the introduction of the real time gross settlements (RTGS) system on 8 September 2003. In addition, a Scripless Securities Settlement System (SSSS) for the trading of government securities will be introduced in the near future. An Image Cheque Clearing System is also to be introduced in the future, in collaboration with LankaClear, the company operating the automated cheque clearing facility.

1.2 Method of Payments

The methods of payment in the payment and settlement of transactions in Sri Lanka include cash, cheques, direct debit and credit transfers, credit and debit cards, prepaid cards (telephone cards) and postal and money orders.

1.3 Payment and Settlement Services Providers

The Central Bank of Sri Lanka (CBSL) and licensed commercial banks (LCBs) are the main service providers in the Sri Lanka payment and settlement system. Other institutions participate in the payment and settlement system through these main institutions.

1.4 Legal Framework

There is no specific legislation with respect to the payment and settlement system in Sri Lanka. The Monetary Law Act No.58 of 1949 (MLA), by which the Central Bank was established, requires the CBSL to provide facilities for clearance of inter-bank transactions and for settlement of balances through the deposit reserves maintained by LCBs in the CBSL. The MLA also requires the CBSL to provide facilities for the transaction of government debt securities and Primary Dealers (PDs). The conduct of business by LCBs and requirements with regard to the maintenance of confidentiality are governed by the Banking Act No.30 of 1988. Further, necessary amendments have been made to the MLA, from time to time to facilitate and improve the payment system in Sri Lanka. For example, the MLA was amended in order to facilitate the operations of the RTGS system in Sri Lanka, while the Registered Stock and Securities Ordinance and the Local Treasury Bills Ordinance were amended to facilitate the SSS system.

2. EXISTING PAYMENTS AND SETTLEMENTS SYSTEM

2.1 Payment Instruments (Domestic)

Payment instruments can be divided into two:
(a) Cash payments
(b) Non cash payments

With the advance of computer and communication technology, paperless payment instruments other than cash are growing in the country. A significant milestones in the development of non cash payment methods was the introduction of a Real Time Gross Settlement System (RTGS) together with the Automated General Ledger System (AGLS) of the Central Bank. The Central Bank of Sri Lanka also expects to start operating a Scripless Securities Settlement System (SSSS) in 2003. RTGS and SSSS together are known as "LankaSettle".

2.1.1 Cash Payments

Cash is the most widely used mode of payment despite the increasing popularity of cashless payment instruments. Currency held by the public amounted to Rs.75 billion at end 2002, which was 54 per cent of narrow money (M1), indicating the dominance of cash payments among the public. Meanwhile, currency in circulation at end December 2002 was Rs.88 billion, which was around 6 per cent of GDP. At present, currency notes are issued in denominations of Rs.1000, Rs.500, Rs.200, Rs.100, Rs.50, Rs.20 and Rs.10 and coins in denominations of Rs.10, Rs.5, Rs.2, Rs.1, cts. 50, cts. 10, cts. 5, cts. 2 and ct.1. In Sri Lanka, the Central Bank has the sole authority to issue currency notes and coins and manage the currency in circulation in the country.

2.1.2 Non Cash Payment Instruments

Non cash payment instruments can be divided into two ie., paper based instruments and paperless electronic bulk payment instruments. There are six major non cash instruments currently used in Sri Lanka for making payments.

a) Cheques and bank drafts drawn on commercial banks, which are widely used by firms and individuals.
b) Cheques drawn on the Central Bank. These are used by LCBs, primary dealers, the government and certain government agencies/departments.

Figure 15.1

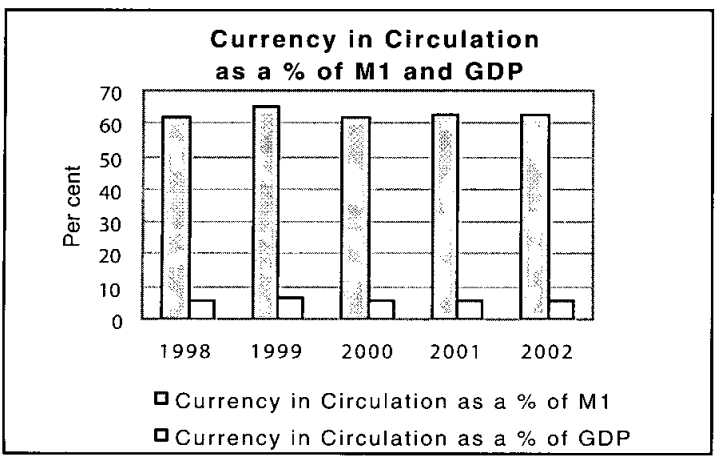
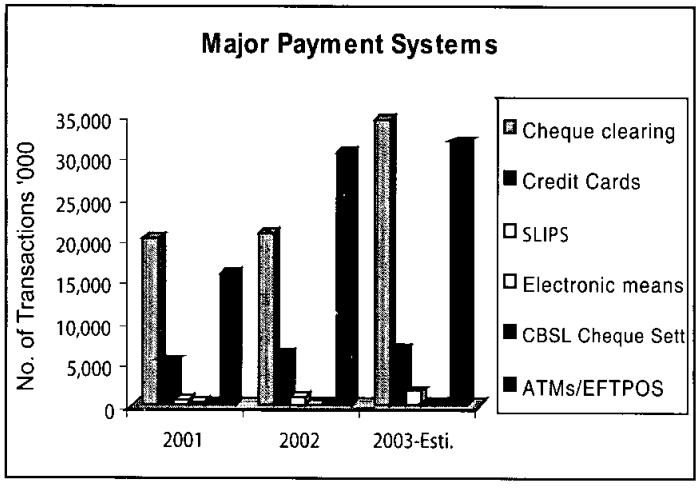


Figure 15.2



c) Sri Lanka Inter-bank Payment System (SLIPS)
d) Credit and debit cards, used by individuals.
e) Other payment media such as postal orders, money orders and standing orders, etc.
f) Real Time Gross Settlement System (RTGS)

2.1.2.1 Cheques Drawn on LCBs

Cheques drawn on LCBs are extensively used by banks, industrial and commercial sector institutions and corporate customers and individuals for retail payments, although there are some risks associated with them. LCBs are permitted to operate current accounts and pay or collect cheques drawn by or paid in by their customers. Until the establishment of the Sri Lanka Automated Clearing House (SLACH) in 1985, the clearing of cheques was done manually in the Central Bank. In the manual system, three days to three weeks were usually required to clear a cheque. The number of days required to clear a cheque was reduced to around one to three days with the introduction of the SLACH. Given the wider payment reforms undertaken by the CBSL, this function has been outsourced to LankaClear (Pvt) Ltd. since April 2002. In 2002, the number of cheques cleared were around 21 million, while the total value of cheque clearing was around Rs.1,410 billion. Currently, LankaClear clears all low value cheques/bank drafts by using reader/ sorter machines and sending the clearing balances to the CBSL for the settlement of cross-bank accounts.

Figure 15.3

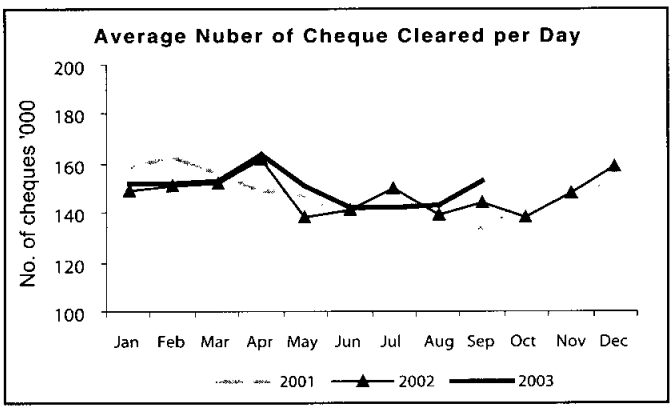
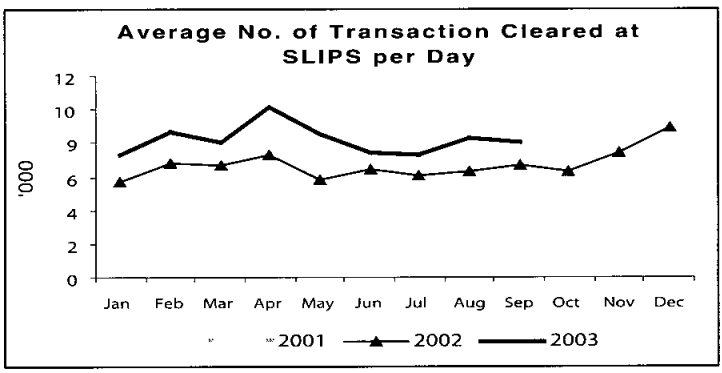


Figure 15.4

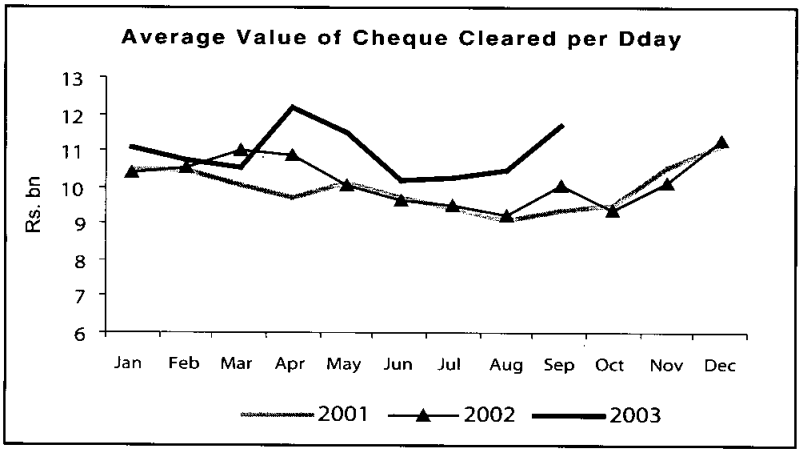


2.1.2.2 Cheques Drawn on CBSL

Licensed commercial banks, primary dealers, the government and certain government agencies and government departments maintain current accounts with the CBSL. They are permitted to use CBSL cheques for making their payments. One of the special features of these cheques is they enable same day clearing and settlement. They have been used mainly for the settlement of large value transactions in the call market, forex market and the government securities market.

The daily settlement of each bank's net position in each of the clearings and its direct transactions with the Central Bank takes place across its current account with the Central Bank's Domestic Operations Department (DOD). Every bank is required to hold in its current account, at the end of each day, at least 10 per cent of its defined liabilities, as a Statutory Reserve Requirement (SRR). In addition,

Figure 15.5



every bank is required to maintain at the end of each day, a liquidity ratio equivalent to 20 per cent of its deposits.

Banks, primary dealers and others were not allowed to overdraw their current accounts with the CBSL at any time during the day and overnight.
However, some of the features of this payment system were replaced with the introduction of the RTGS System on 8 September 2003. This system will facilitate large value fund transfers and settlements on an electronic basis in real time rather than settling at the end of the day.

2.1.2.3 Sri Lanka Inter-bank Payment System (SLIPS)

As a further enhancement of the automation of the clearing system, the CBSL and the Sri Lanka Bankers Association jointly developed an off line system in 1993, for inter bank payments, named the Sri Lanka Inter bank Payment System (SLIPS). The main objective of SLIPS was to eliminate paper transactions between banks and introduce a GIRO system (Singapore Clearing House implemented an off line inter bank payment system in 1984, which they named as inter bank "GIRO") for customer debits and credits. SLIPS was designed for carrying out low value and medium value, but high volume, transactions. Many institutions use this system for salary payments without writing cheques, pay orders and vouchers. This system is now being used for credit transactions and debit transactions and payment of electricity, water bills, EPF contributions and payment relating to insurance premia etc. LankaClear is the operator for SLIPS in Sri Lanka. All LCBs and the CBSL are direct participants of SLIPS while other financial institutions, corporate bodies

and individuals participate through their correspondent banks. This system involves an exchange of magnetic tapes or diskettes through LankaClear (Pvt.) Ltd. on a daily basis. During 2002, the total value of direct credit transactions processed by LankaClear (Pvt) Ltd. amounted to Rs.1,336 billion, while the total value of direct debits amounted to around Rs.65 million. However, with the introduction of the RTGS on 8 September 2003, the credit facilities given to the respective accounts on the same day were restricted in order to encourage the RTGS System.

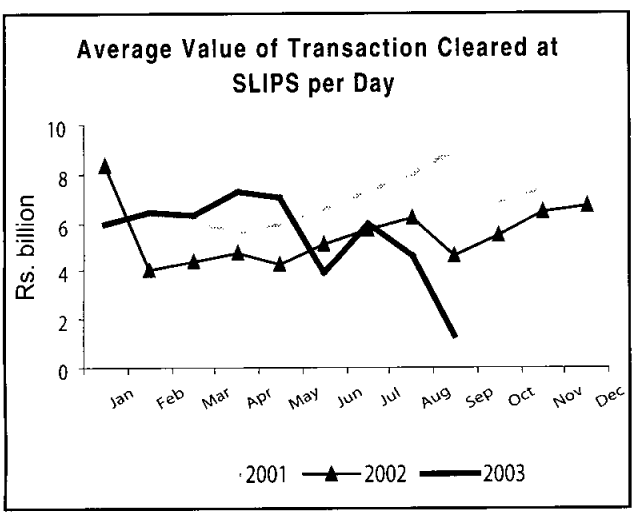
2.1.2.4 Credit and Debit Cards (ATMs and EFTPOS)

Credit and debit cards are another mode of payments in the payment system in Sri Lanka. The use of credit cards for retail payments has been improved considerably in the past.

Credit Cards/ATMs

Credit cards, which give the cardholder the ability to purchase goods and services on credit and also obtain cash advances, was introduced in the early 1980s. The use of credit cards as a mode of payment has become increasingly popular. The promotional efforts of licensed commercial banks improved the usage of credit cards by customers. In Sri Lanka, credit cards are issued by LCBs and a private credit card company, in collaboration with major international card operators viz., Visa & MasterCard. Credit card holders can use the card for payment up to the

Figure 15.6



pre-determined limit and credit period. There are four types of credit cards currently being used in Sri Lanka, i.e., Visa, MasterCard, American Express and Golden Key. The number of credit cards issued, the number of credit card users, the number of transactions and the value of the credit card transactions have shown a steady growth. Credit cards can also be used as cash cards. Currently, the maximum credit limit granted on a credit card is around Rs.2.5 million while out of the total cards issued by banks around 80 per cent can be used globally.

By end 2002, the total number of credit cards issued by the nine LCBs and a non-bank financial institution was around 326,000, recording a significant growth (around 26 per cent) from 2001. The number of credit card transactions also increased from 5.4 million at end 2001 to 6.3 million at end 2002, an increase of 15 per cent. The total value of transactions increased to Rs.18.2 billion, a 22 per cent increase over 2001. Credit cards, which can be used both internationally and domestically, accounted for 76 per cent of the total number of cards in circulation.

Debit Cards/EFTPOS

Debit cards replace cheques for the payment of goods and services at the point of sale. The transaction is passed on to the card holder's account through an electronic process and the merchant is credited on the same day. The use of debit cards as a mode of payment is gradually increasing in Sri Lanka. However, it is not as popular as credit cards. The lack of infrastructure facilities in rural areas is the main constraint for the development of the use of debit cards. There were 4.3 million transactions worth Rs.25 billion through 4,256 EFTPOS terminals available in islandwide in 2002.

2.1.2.5 Automatic Teller Machines (ATMs)

ATMs were first introduced in Sri Lanka by the Hong Kong and Shanghai Bank in 1986. Cash cards have been introduced by nine banks in Sri Lanka to date. At the end of June 1997, 180 ATMs had been installed. This increased to 636 by end December 2002. At present, ATMs are operated by 13 commercial banks and the National Savings Bank. Some banks provide a shared network facility, under which a customer of a participating bank can have access to common ATMs. A variety of services are provided by ATMs, e.g., cash withdrawals, inter account fund transfers, balance inquiries, cash/cheque deposits, cheque books requisition, message transmission and settlement of utility and other bills.

2.1.2.6 Society for Worldwide Inter-bank Financial Telecommunication (SWIFT)

This system came into operation in Sri Lanka on 3 June 1994. At the end of 2002, there were 22 domestic SWIFT users. The number of members, sub members and participants amounted to 9, 10 and 3, respectively. The total number of messages sent and received through SWIFT amounted to 2.5 million in 2002. RTGS transactions will use the SWIFT service to submit their payment instructions, using their own computer terminals.

2.1.2.7 Other Payment Media

Telebanking & Internet Banking.

These services allow users to send messages to banks using a telephone at any time of the day, to transfer funds, settle utility bills and credit card balances, make inquiries regarding their balances, stop a cheque payment, make requests for statements and new cheque books, and obtain financial information. At present, eight commercial banks provide phone/mobile, tele-banking and internet banking facilities to customers. Internet banking permits customers to obtain conventional banking services using the Internet as a mode of payment. In Sri Lanka, Internet banking was started in 1998. As at end October 2001, there were 6 banks providing Internet services for about 3,214 users. As at end October 2003, the number of banks providing Internet services has increased to 8 while the number of users also has increased to around 17,200.

The facilities provided by some commercial banks include e-wallet, e-catalog, web card and xpress money. E-wallet is a virtual pouch, which stores all customers' personal data and credit card numbers with total confidentiality being assured. It can also used to directly debit their accounts with the bank to pay their purchases. Further, customers can use their e-wallet on the WAP phone too.

Merchants can display their products and get paid for the items they sell automatically by using e-catalog. When customers want to send or receive money instantly they can do it through xpress money. Xpress money uses a multi-tier web technology to send money immediately.

A commercial bank recently introduced a new website i.e., "payeasy" to facilitate payment of utility bills. Customers who have a Visa card or MasterCard can make a payment by logging on to the this particular website. Customers can log into this system from any part of the world and any time of the day to pay their bills.

Although there is no special supervision policy on e-money or e-banking in Sri Lanka, an examination and evaluation of the adequacy and effectiveness of the internal control system in the banks will come under onsite inspection by the Central Bank of Sri Lanka. However, a prudential supervision system is required in the future as these facilities are increasing.

Prepaid Telephone Cards

In Sri Lanka, cellular phones have become very popular. There are four cellular phone providers at present in Sri Lanka, namely, Dialog GSM, Mobitel, Tritel and Celtel. These institutions provide two schemes of charges i.e., pre-paid and post-paid. In the pre-paid system the value is stored in the particular card and no annual fee is charged for this type of cards. The value stored in the card will be deducted by the air time used up. A reload facility is available in some cards (eg., Universal card issued by Tritel) issued by these companies. Reloading can be done through ATMs and credit card or giving the particular pin number to the issuing company.

Postal & Money Orders

This mode of payment is not a part of the interbank payment system. The Department of Posts provides retail cash payment services. Postal and money orders are mainly used by the public to settle their individual small value payments and obtain pension and social security payments. The total value of payments made through local and foreign money and postal orders amounted to around Rs.9 billion in 2002.

2.2 Cross Border Payments

Two types of methods are used for cross border payments. Cross border settlements by LCBs directly through their correspondent banks abroad on gross settlement basis Settlement of intra-regional transaction among member countries of the Asian Clearing Union (ACU) through the ACU intra-regional multilateral net deferred payment system.

Cross border payments should be made through internationally accepted currencies such as US dollar, sterling pound, Japanese yen and the euro. In cross border payments, more than 50 per cent of the settlements are made in US dollars. Only authorised dealers are allowed to engage in foreign exchange transactions. Accordingly, LCBs and authorised money changers who are appointed by the CBSL are permitted to engage in these transactions. However, money changers are not allowed to sell foreign currency against rupees or accept /issue traveller's cheques

or other financial instruments.

2.2.1 Payment Instruments in Cross Border Payments

Payment instruments which are used in Sri Lanka for international payments are foreign currencies, foreign draft, credit and debit cards issued under license of international card companies, telex transfers and electronic media such as SWIFT and Euroclear systems and traveller's cheques. Telex transfers and electronic media are the most commonly used methods for the payment and settlement of current international transactions and capital account transactions.

3. NEW TRENDS IN THE PAYMENTS AND SETTLEMENTS SYSTEM

3.1 Real Time Gross Settlement System (RTGS)

This system is a gross settlement system where both processing and final settlement of funds transfer instructions will take place continuously in real time. It will facilitate large value fund transfers and settlements on an electronic basis in real time rather than settling at the end of the day. It will expedite fund transfers among banks, primary dealers, financial institutions, investors, customers, the government and the public. The transmission and processing of payment messages are typically automated or electronic, while settlement takes place in the Central Bank's books, i.e., final (irrevocable and unconditional) and transfer of value is recorded in the book of the CBSL. This system will bring about financial discipline in the banking sector, since banks will have to maintain adequate cash and reserves in their accounts to meet their payment obligations, as the system will instantaneously update their bank accounts for each transaction. Treasurers and fund managers of banks and financial institutions will have to be very cautious in providing more accurate estimates of their payment obligations since settlements are final and irrevocable. This will improve the liquidity management of the banks.

The RTGS system settles transactions on a gross basis rather than a net basis, which took place in the earlier system at the end of the day. The earlier system for settlement of payment was very lengthy and required a number of officials working long hours in the day. There was no legal assurance that the transaction would be finally settled at the end of the day. Further, it was subject to several risks such as credit risk, liquidity risk and systemic risk, in respect of the settlement of payments. However, the liquidity requirement in the RTGS system is higher. Therefore, the CBSL provides a liquidity facility to the participants during the day called an "Intra-day liquidity facility". To obtain this facility the requesting institution

needs eligible collateral, but CBSL does not charge any interest for these provisions. However, these facilities should be settled at the end of the business day. All payments and settlement instructions will be sent through the SWIFT system, which is considered to be the world's safest and secure communication system, thereby ensuring the security of the transactions routed through this system. For other messages, banks and primary dealers can use a wide area network that is operated by the CBSL.

There are a number of benefits to the users of this system. Liquidity can be available all the time for participants through the provision of a collateralised intra-day credit facility. It will reduce the settlement risk since it can give participants the possibility of settling payments in central bank cash with immediate finality. Cost savings under the RTGS system will arise due to the following reasons:

(a) incoming funds will be available for immediate reuse,
(b) the need to split liquidity among several payment systems during the day can be avoided,
(c) the cost of printing cheque books on security paper can be reduced,
(d) immediate reaction will be possible if any problems arise with regard to the transfer of a payment and,
(e) reconciliation of accounts can be done on an intra day basis.

At present, payments settled through the RTGS system accounts for around 78 per cent (on average per day basis) of the total value of transactions. In order to facilitate the operations of the system, necessary amendments were made to the MLA to achieve the following:

- Establish the system and provide for selected rights and responsibilities;
- Enable the provision of intra-day liquidity by CBSL to ensure smooth functioning of system;
- Establish finality and irrevocability to electronic records and transactions;
- Provide for the outstanding of functions related to payments and settlements.

3.2 The Scripless Securities Settlement System (LankaSecure)

The SSS system will be introduced in Sri Lanka in the near future. The new system will facilitate the operations of the real time settlement of large payments combined with semi-automated settlement of government Treasury bills and Treasury

bonds, which are issued as certificates as they are proof of individual investments. Currently, when one wants to trade or transfer the bills and bonds to another person, the physical certificate needs to be endorsed by the holder and delivered. This system is not actually a secure one and requires official intervention. Primary dealers and individual investors need to physically transport these papers for endorsement and verification. This system will soon be replaced by a Central Depository System (CDS) in order to minimise the long process involved in transacting government securities in the current system. The CDS is a key component within the SSS system. The CDS will record all title transfers electronically and issue written confirmations to individual investors, which contain the number of the Treasury bill and Treasury bonds and the value of those bills and bonds in rupee terms. The CDS will be linked to the primary dealers.

The long process of the transaction of Treasury bills and Treasury bonds at present will be replaced with instantaneous electronic transactions increasing the liquidity of government paper. At the same time, primary dealers will be able to bid at lower rates with the improved trading facilities, which would also reduce the borrowing cost of the government. Further, this will help to develop the debt market in Sri Lanka.

3.3 Image Cheque Clearing System

In Sri Lanka, of the total value of low/retail value transactions, on average per day basis, cheques account for 63 per cent. It usually takes around 7-10 days to realise cheques from outstations. To expedite the cheque clearing process, the Central Bank and LankaClear Ltd. are expected to launch an image cheque clearing system in the near future. With the introduction of image cheque clearing, LankaClear expects to speed up clearing of cheques to one or two days. The Image Clearing System (ICS) is a cost effective way to combat the ever increasing number of written cheques for payments. This system will replace physical movement of cheques with electronic images. In this system images are captured (both side of the cheque) using scanners at the payee branch and transmitted electronically to the payer branch. When implementing this system, standardisation of cheques will be required. In the case of Sri Lanka it is proposed to establish ten regional image cheque-clearing centres. The possible benefits of this system are as follows:

- Enhance the speed and efficiency of cheque processing. With the introduction of image cheque clearing system it will improve the efficiency of low value and retail cheque clearing to facilitate transaction throughout the country while reducing cheque realisation times which varied from t+1 to t+10 days to t+1 to t+2 days.

- Banks can streamline and cut operating costs by reducing the total number of staff required to process the outward clearing cheques. Replacement of the current reader/sorter machine at LankaClear Ltd. with the new technology would help to reduce the high cost of cheque clearing.

- This system will minimise risks and provide a secure cheque clearing system, eliminate various adhoc cheque clearing procedures adopted by banks and standardise the cheque clearing process.

- Increase the operational flexibility and productivity.

- Imaging is safe, secure and less prone to fraud.

- Risk will be reduces as the physical instrument is truncated at central/regional clearing centers.

- Banks are able to generate revenue from new services offered via ICS.

4. BANKS' VIEWS ON THE DEVELOPMENT OF E-MONEY

The payment system in Sri Lanka consists of the infrastructure which facilitates the several million payments made each day. The development in the payment system can be seen during the last two decades. Although the payment system has developed gradually, e-money is still not popular in Sri Lanka as a method of payment. So far, only one commercial bank has introduced such a product but is not actively in operation at present. However, there is potential for the development of such a product in the financial market in Sri Lanka.

Some commercial banks are examining the potential to develop this product in Sri Lanka. Discussions are on going in some banks and they are collecting views on the possibilities and available market for such a product.

The introduction of e-money will benefit both banks as well as card holders. Unlike traditional currency, the bank pays no interest for digital currency balances. Therefore, banks receive an interest-free loan from customers. Although hard currency has been a successful payment instrument over centuries, the production cost of paper money is becoming higher due to security requirements, resulting in a large cost in the use of paper currency. Therefore, the use of e-money will become more efficient and more effective in settlement and payments if it is able

to eliminate the transaction/holding cost and can offer high security standards. Hence, the introduction of e-money in Sri Lanka needs to be considered seriously. It will help to reduce the paper work in making payments, as well as reduce the use of manpower for operational work, while increasing security in the payment system. However, the lack of infrastructure facilities and the initial cost of the installation of necessary technology are major constraints. Nevertheless, while the initial cost is high, the long-term benefits of this will outweigh the initial cost.

5. CONCLUSION

The payment system in Sri Lanka has evolved steadily in the past. The CBSL plays a major role in the development of the payment system in Sri Lanka. An important step in this regard was the introduction of the RTGS system in September 2003. The SSS system and an image cheque clearing system will be introduced in the near future. Although there are new innovations in the payment system, one of the shortcoming identified in the current payment system is the non-existence of a proper legal framework. The most important task of the Central Bank in the field of payment and settlement system is to secure the safety and efficiency of the payment and settlement system, since they are essential mechanism supporting the stability of financial markets. Therefore special attention should be given to the issues relating to the electronic media payment and settlement system with the establishment of such a legal framework. Further, customers need to be encouraged to use innovative products to maximise the use of the existing payments and settlements system like the RTGS system.

E-money can be regarded as another useful innovation in a series of new financial arrangements that benefits customers as well as banks. Digital cash/e-money is still at an early stage in most countries, while cash is the dominant mode of payment. Considering its advantages, banks all over the world are considering the development e-money positively.

In Sri Lanka, the development of e-money is still at an early stage, with only one commercial bank providing such a facility. Cash plays a predominant role in making payments while new innovations are being introduced to the payment system. The introduction of e-money as a mode of payment will benefit banks and customers, as well as merchants. Although the initial cost of introducing e-money is high, its future returns may be even higher. Considering the positive effects of innovative technologies in the financial system, the Central Bank of Sri Lanka continues to support the development of electronic financial infrastructure.

Table 15.1
Selected Monetary Aggregates

Rs. mn.

Item	2000	2001	2002
Currency held by public	62,646	65,536	75,291
Demand Deposit held by public	55,831	56,675	64,070
Narrow Money (M_1)	118,477	122,211	139,361
Currency in Circulation	73,316	76,561	88,308
GDP at Current Market Price	1,258,000	1,407,000	1,585,000
Currency in Circulation as a % of GDP	5.8	5.5	5.6
Currency held by public as a % of M_1	52.9	53.6	54.0

Table 15.2
Major Payment Systems

	2001		2002		2003 June (a)	
	No. of Transactions ('000)	Value (Rs. bn.)	No. of Transactions ('000)	Value (Rs. bn.)	No. of Transactions ('000)	Value (Rs. bn.)
Cheque clearing	35,308	2,372	35,488	2,445	17,692	1,278
Credit Cards	5,444	15	6,256	18	3,603	10
SLIPS	1,255	1,667	1,609	1,336	959	708
Electronic means	321	169	157	90	131	42
CBSL Cheque Settlement	128	169	146	19,475	74	9,168
ATMs*	12,400	39	25,100	72	16,565	59
EFTPOS*	3,521	12	5,490	25	3,729	14
Money/Postal Orders	n.a.	9	n.a.	9	n.a.	5

Source: Central Bank of Sri Lanka

(a) Provisional
* During the period

Table 15.3
Cheque Clearing at LankaClear (Pvt) Ltd.[a]

Instruments	2001	2002	1st Half	
			2002	2003[b]
1. Total items ('000)	35,308	35,488	17,397	17,692
2. No of working days	239	241	117	116
3. Average items/per day	147,735	147,250	146,612(c)	151,724(c)
4. Average/amount cleared per day (Rs.mn.)	9,924	10,145	10,185(c)	11,240(c)
5. Item processing charges (Rs.'000)	70,616	70,974	34,757	35,386

Source: LankaClear (Pvt) Ltd

(a) Functions of the Sri Lanka Automated Clearing House were divested to LankaClear (Pvt) Ltd. on 01.04.2002
(b) Provisional
(c) Based on 2nd quarter

Table 15.4
Payment Cards in Circulation

Item	2001	2002	1st Half	
			2002	2003[a]
1 No of Credit Cards	194,339	247,950	217,422	277,966
1.2 Domestic & International (end period)	64,082	78,725	69,660	81,928
1.3 Domestic Only (end period)	258,421	326,675	287,082	359,894
Total Number of Cards				
2 Total Number of Transactions **(in '000)**	5,443.6	6,255.8	2,845.7	3,621.8
3 Total Value of Transactions **(in Rs. mn)**	14,888.1	18,155.3	8,174.3	10,335.0

Source: Commercial Banks

(a) Provisional

Table 15.5
Sri Lanka Inter-bank Payment System (SLIPS) Transactions

	2001	2002	1st Half	
			2002	2003(a)
1. Total number of items	1,255,067	1,608,704	751,216	959,099
2. No. of working days	239	241	117	116
3. Average items/per day	5,251	6,675	6,487(b)	8,612(b)
4. Average/Amount cleared per day (in Rs. mn.)	6,975	5,542	4,711(b)	6,003(b)

Source : LankaClear (Pvt) Ltd

(a) Provisional
(b) Based on 2nd quarter

Table 15.6
SLIPS Transactions by Size

Description	No of Item				Total Value (Rs.mn)			
	2001	2002	1st Half		2001	2002	1st Half	
			2002	2003(a)			2002	2003(a)
Above Rs.100 Mn	2,552	2,383	1,103	1,123	1,060,236.1	831,577.5	387,238.2	434,808.0
Rs. 51 Mn -100 Rs. Mn.	1,836	2,430	970	1,349	147,865.6	189,419.3	76,305.8	107,560.3
Rs. 26 Mn.-50 Rs. Mn.	4,725	4,019	1,738	2,071	222,238.9	174,160.5	74,874.4	91,535.6
Rs. 21 Mn.-25 Rs. Mn.	1,866	1,563	856	867	43,149.8	37,780.3	20,613.1	21,196.9
Rs. 16 Mn-20 Rs. Mn.	777	806	417	387	15,006.9	15,087.9	7,105.3	7,357.7
Rs. 11 Mn -15 Rs. Mn.	1,264	1,129	574	517	16,525.3	15,461.8	7,850.4	7,137.3
Rs. 6 Mn -10 Rs. Mn.	1,944	2,406	1,193	1,127	15,271.5	20,105.3	10,033.7	9,356.8
Rs. 1 Mn -5 Rs. Mn.	6,938	10,074	5,005	5,366	19,200.6	24,665.2	12,010.4	12,807.4
Less than Rs. 1 Mn.	1,233,255	1,579,220	734,706	946,285	127,632.4	27,485.7	12,349.9	18,593.0
Total	**1,255,157**	**1,604,030**	**746,562**	**959,099**	**1,667,127.1**	**1,335,743.5**	**609,023.2**	**746,358.9**

Source : LankaClear (Pvt) Ltd.

(a) Provisional

Table 15.7
SLIPS Transactions by Type

Description	No. of Items				Total Value (Rs. mn)			
	2001	2002	1st Half		2001	2002	1st Half	
	2002	2003(a)					2002	2003(a)
1. Call money lending	3,119	5,120	2,212	2,711	588,494.2	732,339.2	322,534.5	389,568.6
2. Foreign exchange settlement	2,030	2,353	1,161	1,126	123,187.1	128,524.7	61,516.9	73,034.0
3. Call money settlement	4,134	2,405	1,200	1,113	629,771.0	182,392.3	101,883.6	61,126.6
4. Credit transactions	1,252,837	1,606,598	750,202	958,099	1,667,056.6	1,335,661.4	609,087.4	708,301.4
5. Debit transactions	2,230	2,086	1,014	760	70.6	64.9	31.7	37.7
6. Total transactions	1,255,067	1,608,684	751,216	959,099	1,667,127.1	1,335,726.3	609,119.1	708,339.3

Source : LankaClear (Pvt) Ltd.

(a) Provisional

Table 15.8
CBSL Current Account Settlement System

Item	2001	2002	1st Half	
			2002	2003(a)
1. Reserve balances held at the CBSL (Rs. million)	34,316.5	39,681.8	36,660.2	42,323.2
2. Total No. of transactions	128,283	146,171	71,301	74,190
3. Total value of transactions (Rs. million)	16,703,178	19,475,379	9,321,695	9,168,921
4. Reverse Repo transactions with CBSL (Rs.million)	7,542,436	216,461.3	153,823	7,407

Source : Central Bank of Sri Lanka

(a) Provisional

Table 15.9
Cash ATMs and EFTPOS Terminals

Item	2001	2002	2nd Quarter	
			2002	2003[a]
1. ATM				
1.1 No.of machines(End of period)	495	636	563	677
1.2 Volume of financial transactions (During the period in '000)	12,416.3[b]	25,118.0	11,504.3	15,462.1
1.3 Value of transactions (During the period in Rs. mn.)	38,538.6[b]	71,873.0	26,646.2	58,899.8
2. EFTPOS				
2.1 No. of machines (End of period)	5,307	4,256	5,603	4,639
2.2 Volume of financial transactions (During the period '000)	3,521.2	5,939.5	2,745.9	3,729.5
2.3 Value of transactions (During the period in Rs. mn.)	12,512.1	24,915.4	11,970.4	14,465.9

(a) Provisional
Source: Commercial Banks, National Savings Bank
(b) Value and volume of transactions of one bank are not included

Table 15.10
SWIFT Message Flow to/from Domestic Users

Item	2001	2002	2nd Quarter	
			2002	2003[a]
		No Of Messages		
Total messages sent of which :	1,215,630	1,286,484	624,522	643,154
Category I	222,127	257,522	121,877	142,656
Category II	277,249	261,496	127,327	134,428
Total messages received of which :	1,197,711	1,227,864	595,904	635,117
Category I 522,993	570,880	276,343	305,231	
Category II 34,071	37,955	17,019	21,591	
Domestic Traffic	102,983	106,095	47,945	59,476
Memorandum Item:				
Global SWIFT Traffic	1,533,906,047	1,817,443,994	873,415,853	986,186,997

Source: Society for Worldwide Interbank Financial Telecommunication (SWIFT)
Category I - Customer (Funds) Transfers
Category II - Bank (Funds) Transfers
(a) Provisional

REFERENCES

BIS Papers, "Implication for Central Bank of the Development of E-money", October, 1999.

BIS Review, E-money and its Impact on the Central Bank's Operations", Address by Tito Mboweni, October 1999.

PSPN BI, "Electronic Money", Paper, September, 2000.

SEACEN, "The Payment and Settlement Systems in the SEACEN Countries", Vol. II, August, 2001.

The Central Bank of Sri Lanka, Annual Reports, Various Bulletins and Other Economic Indicators.

CHAPTER 16: CENTRAL BANK RESPONSES AND REGULATORY FRAMEWORK OF E-MONEY IN TAIWAN

By
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1. INTRODUCTION

In the field of micro payment, several e-money schemes in Taiwan are now developing, or are in the pilot process. A variety of stored-value cards (SVC) are emerging one after another, especially the single purpose SVC. Moreover, an Internet (or mobile) payment is forging ahead a new frontier of anytime, anywhere or anyway. Coping with the payment innovations mentioned above, a comprehensive regulatory framework should be set up to handle these different scenarios.

E-money in general falls into three categories: the card-based system, the Internet/network based system, and the hybrid system, which is interoperable between the former two systems. However, there is not yet a definite statement of the terms of e-money in Taiwan, except for SVC, which, according to Article 42-1 of the Banking Law, is narrowly defined as an instrument with multipurpose functions for micro payment. The said multipurpose SVC shall mean that the money value stored thereon may be used among different operating systems, or used in different business types. As a corollary, a single purpose SVC, such like telephone cards and metro cards issued by non-banking business units, is not subject to the Banking Law.

Pursuant to the same Article 42-1, the bank shall obtain the competent authority's approval prior to issuing SVC; and the competent authority shall prescribe rules for approval and management of such issuance after consulting with the Central Bank. Thereafter, the Ministry of Finance promulgated "Regulations Governing Approval of the Issuance of Stored Value Cards by Banks (in brief, the **Regulations**)," on October 8, 2001. According to these regulations, a non-bank may not issue e-money as said "stored value card."

A bank issues a SVC and thereby accepts an advance. That shall be treated as a deposits-taking behaviour, and the advance shall be the insured subject in accordance with Article 4 of the "Deposit Insurance Act." Such bank shall deposit reserves at the Central Bank in accordance with the required reserve ratio of demand deposits.

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The payment methods in Taiwan, except cash, have signaled a new trend that paper-based instruments like checks are in decline, while card-based and electronic-based ones are increasing. The market share of cheques is going down from 43.89% to 23.22% by volume, and also from 21.80% to 11.95% by value during the periods of 1998-2002, compared to the card-based 41.95%-66.62%, 0.51%-1.32% and the electronic-based 14.16%-10.17%, 77.69%-86.73% accordingly (see Appendix 16.1). However, until recently, e-money has not yet become an important means of retail payments in Taiwan. The market share of e-money (such as stored value cards, Internet/mobile payments) to total payments, either by volume or by value, is near zero. The main reason is that e-money is still at an early stage in payment markets; its spread is subject to the consumers' habit, merchants' acceptance, originators' reputation, and facilities' security.

2. DEVELOPMENT OF E-MONEY IN TAIWAN

2.1 Recent Development of E-Money Schemes

E-money in this context will be confined to micro payment with multipurpose SVC, which basically may be divided into card-based and/or network/software-based instruments. Currently, there are three e-money schemes in Taiwan:

(a) **The FISC IC Card System:** This card system is designed and operated by the Financial Information Services Co. Ltd. (FISC). Operations began in August 1993 to enable cardholders to withdraw cash, purchase in contracted stores, make phone calls, pay gas bills, and manage transfer and credit functions of the IC card. Since February 1998, an additional prepaid function has been introduced to this card for micro payments. Now, there are 22 domestic banks participating in this system for IC card issuance and merchant acquisition.

(b) **The Mondex Card System**: This card system is provided by the Mondex Taiwan, a subsidiary of MasterCard Corp, and a joint venture company with Taiwan's ACER Group. The pilot began in September 1999 at Oriental Scientific Industrial Zone in Taipei County. Operations began in June 2002 to enable cardholders to pay taxi fares, buy lotto tickets, and make purchases at convenience stores. There are now 9 domestic banks participating in this system for funds management, cards issuance and merchants' acquisition. Its multiple functions allow this card to store caspph value for consumption in real world or over virtual space.

(c) **The E.SUN e-Coin System**: This e-Coin system is a pure network-based SVC, which is designed and operated by domestic E-Sun Bank. It was launched

in February 2003 to provide customers with an online payment alternative by enabling customers to make small online payments through a virtual bank account opened online with E-SUN Bank. The money value is stored at the E-SUN Bank's server instead of the microchip. Customers may use e-Coin to purchase digital content products, play games, shop at e-markets, or participate in e-auctions.

2.2 Features and Statistical Data of E-Money

Table 16.1 summarises the features and statistical data (for details, see Appendix 16.2) of e-money mentioned above. A brief explanation is stated below:

(a) **The FISC IC Card System:** The main feature is to combine ATM, credit, debit and prepaid functions into one card for all-purposes. The money value is loaded from the ATM machines. There is a minimum and maximum limit of the stored value, that is, NT$ 500-10,000 (amounting to US$ 15-295). As of September 2003, the number of IC cards issued registered around 2,030,000, the number of merchants available reached 14,528. Average daily transactions were 152 by volume and US$ 513 by value; thereby average value per transaction was US$ 3.38.

(b) **The Mondex Card System**: The Mondex card adopts EMV standard format with a microchip embedded thereon. It can be designed to offer payment services with multi-currencies and multi-functions. The money value is loaded from an array of Mondex devices or via Internet channel. A maximum amount of the stored value is NT$ 10,000 (amounting to US$ 295). As of September 2003, the number of IC cards issued registered around 250,000; the number of merchants available reached around 3,500. Average daily transactions were 215 by volume and US$ 1,486 by value; thereby average value per transaction was US $7.

(c) **The E.SUN e-Coin System**: The e-Coin is a digital cash system. The money value can be added via ATMs, Internet banks, Mobile banks, or convenience stores. A maximum amount of stored-value is NT$ 10,000 (amounting to US$ 295). As of September 2003, the number of consumers registered around 88,000; the number of merchants available reached 110. Average daily transactions were 350 by volume and US$ 1,470 by value; thereby average value per transaction was US$ 4.2.

Table 16.1 : E-Money Schemes in Taiwan Area

Country	Name of Systems	Type of Systems	Loading procedures	Value limit on card or consumer software (in USD)	Transferability among end-users	Adapted for network payment	Multi-currency features	Multi-functional payment features	Number of issuers	Number of cards issued (or home PC users)	Number of merchant terminals (or merchant PCs)	Float outstanding (in USD million)	Volumes of daily (purchase) transactions	Value of daily (purchase) Transactions (in USD)	Average value of (purchase) Transactions (in USD)	Reporting period	Launch date of period
Taiwan	FISC IC Card	Card-based	ATM	Limits between US$ 15 - 295	No	No	No	Yes (ATM0 Credit0 Debit0 Phone Card)	22	2,030,000	14,528	n.a.	152	513.5	3.38	Sep. 2003	Feb. 1998
	Mondex Tawan	Card-based	* An array of Mondex devices * Internet	Upper limit US$ 295	No	Yes	No	Yes (Credit card and Debit card)	9	250,000	3,500	0.41	215	1,486	7	Sept. 2003	Sept. 1999 (pilot) June, 2002 (roll-out)
	E.SUN eCoin	Network-based	Internet ATM/Credit/ Debit cards convience stores	Upper limit US$ 295	No	Yes	No	No	1	88,000	110	0.12	350	1,470	4.2	Sept. 2003	Jan. 2002

Note : 1 USD=34NTD

2.3 Factors Influencing the Development of E-Money

The bottleneck of e-money development might be attributed to the following problems:

(a) Payment habits concerns: Consumers who are familiar with traditional payment media like paper cash or cheque might not easily change their habits into the e-money payment; likewise, merchants who prefer cash revenue might not be willing to accept e-money for service charges.

(b) System interoperability concerns: E-money is invisible or exists only in cyber space; its application is subject to the availability of terminal facilities and the interoperability among different systems. For the moment, there is a lack of such an integrated system and platform for various e-moneys to share.

(c) IT security concerns: E-money is transferred through Internet or cyber space,which may face a variety of challenges coming from internal and external threats, such as counterfeiting, tampering, hacker attacking, virus invading, personal data leaking or stealing, and so on. Most consumers thereby lack of faith in holding e-money.

2.4 Impact of E-Money on Central Banking Functions

In Taiwan, the ratio of e-money (SVC) to currency in circulation is 0.0025%. E-money is obviously at an initial stage of development, it might take a long period of time for e-money to be widely accepted. Moreover, the credibility, established by central banks in the long run, is not easily replaced by those of banks or institutions, which issue e-money for only a short period of time. Even so, the rapid changes in IT technology someday may push e-money to be more competitive, and widely accepted by the public. Once e-money becomes the mainstream of tomorrow's money, e-money may generate a far-reaching challenge to the role and function of central banks. For instance, the function of central banks may weaken on account of following impacts of e-money:

(a) Reducing seignorage revenues;

(b) Curtailing the effectiveness of monetary policy implementation;

(c) Aggravating the administrative burden of payment and settlement systems;

(d) Increasing the difficulty to maintain a stable foreign exchange rate.

2.5 Identification and Analysis of E-Money Risks

E-money-holding carries benefits as well as risks. E-money itself in general possesses features of finality, transferability and/or anonymity. It may act as a final payment instrument; its stored-value transferal shall be treated like a cash transaction instead of only a message transferal, such like credit card consumption. The finality of e-money is guaranteed by its issuer's reputation and credibility and its system's security arrangements. In essence, the float of e-money to its issuer is like the deposits in a bank, either e-money or deposits is a liability to its originator. A failure of the e-money system, due to bankruptcy, counterfeit, or inadequate regulation, might bring reputation risk, operation risk and/or legal risk to payment systems. Even more, it might also cause a domino effect to the whole e-money system.

Banks in Taiwan with goodwill are engaging in e-money issuance and operation as mentioned above. The float outstanding is required to deposit reserves at the Central Bank and shall be under the umbrella of deposits insurance protection as well. Every e-money scheme has its own security arrangements, which include timely internal audits, revision and updating of its business operation guidelines, and regularly submitting such guidelines to the authorities for recording.

3. POLICY RESPONSES WITH REGARDS TO E-MONEY

3.1 On Monetary Policy Concern

Should the use of e-money be widely spread, it may cause an array of structural changes to current monetary aggregates, monetary multipliers, velocities, and in turn, alter the effectiveness of monetary policy. It may also affect the conduct of central bank's monetary policy due to its impact on money demand behaviour, or impact on seignorage revenue of central banks. Whatever it may be, the public demand for currency may decrease and monetary base may shrink to the extent that it could no more be a proper variable in implementing monetary targeting policy. For these reasons, the Central Bank is continuing to watch closely the development of e-money in Taiwan.

In Taiwan, only banks are allowed to issue e-money (the said SVC). Since January 2002, banks have been required by the Central Bank to report their statistical data on e-money issuance and transactions monthly. The float outstanding of e-money is included in demand deposits and is one of the components of monetary aggregates. As at the end of August 2003, the total amount of e-money in float accounts were a mere NT$ 14 million, which is not of much significance to the Central Bank's monetary policy operations.

3.2 On Regulatory Framework

a. Minimum Prudential Requirements

For monetary and financial stabilisation purposes, the Central Bank has been entrusted to oversee payment systems as a whole, including the emerging e-money schemes. The financial authority sets two minimum requirements for those banks who shall not apply for approval to issue e-money, if:

(1) The ratio of the bank's equity capital to its risk assets does not comply with the minimum capital requirement 8% as stipulated in Article 44 of the Banking Law; or
(2) Reserves for bad debts do not meet minimum requirements and the overdue loan ratio for the quarter prior to the application is higher than the average overdue loan ratio of all financial institutions.

In addition, the stored-value cards issued by a bank shall comply with the following regulations:

(a) The maximum value stored thereon shall not exceed NT$ 10,000, and total float outstanding shall not exceeded 10% of the bank's net worth as of the end of the previous year.

(b) The residual value on the SVC shall be redeemable in equivalent NT dollar after confirmation.

(c) Funds transfer from one card to another is in principal not allowable.

(d) All transactions, either on-line or off-line, shall be documented and kept for at least five years for audit, review, and examination purposes.

b. Consumer Protection

The protection of e-money consumers shall be reinforced by "Guidelines on Consumer Protection in Electronic Commerce," and the pending amendment to the existing "Consumer Protection Law." Accordingly, the obligation and rights of e-money-holding shall be documented in terms of a standard contract and notify holders in an obvious manner.

Before issuing and selling e-money, a bank shall notify its clients to understand the following items:

(a) The rights and obligations of holding e-money;

(b) The rights and obligations when e-money is misused, counterfeited, or altered;

(c) The notice method of e-money lost or stolen, and the resulting rights and obligations between counter parties;

(d) The ways to use, terminate, and redeem e-money;

(e) The validity period and recycling procedures for non-reloadable SVC;

(f) The way of service charges and its explanation;

(g) The procedure for handling disputed transactions.

In addition, an issuing bank and its merchants shall keep all clients' and consumers' information confidential, unless otherwise prescribed by law.

c. Supervision Protection

Currently, most domestic banks have obtained the competent authority's approvals to issue e-money. However, only a few banks engage in such a business practice. For management of e-money issuance, the competent authority, the Ministry of Finance, promulgated the "Regulation Governing Approval of the Issuance of Stored Value Cards by Banks," on October 18, 2001. Thereafter, the Central Bank conducts on-site examination of those banks issuing e-money, and focuses on the robustness and soundness of system's framework, including executive organisation, IT system technology, security controls, counterfeit-resistance, business operation guidelines, internal audit, inner controls, risk management and accounting procedures, contracted merchants management, and so forth.

d. Enforcement

When a licensed bank does not comply with the **Regulations**, or it is likely to engage in unsafe or unsound practices, the Central Bank will be entrusted to take (and/or require a bank to take) prompt remedial action and impose a range of sanctions if necessary.

3.3 Other Issues

a. Money Laundering

The application of e-money in Taiwan is still at an initial promotion stage. However, due to the intangibility and anonymity of e-money, traditional anti-money laundering methods may not work to detect e-money laundering. Therefore, it is necessary to reinforce related regulations; otherwise, e-money may become a new channel for money laundering.

With a view to prevent money laundering via e-money channel, related government authorities have cooperated and coordinated with each other to address this problem as described below:

(a) Re-examine existing regulatory framework and make ensure that adequate prudential supervisions are added to fight against e-money laundering;

(b) Record the detail of every e-money transaction and keep the record for at least 5 years;

(c) Impose a maximum value limit on SVC or digital cash when loading or adding e-money value;

(d) Keep integrated data on every e-money holder confidential; and,

(e) Reinforce cooperation and coordination among authorities.

b. To Address Cross-border Concerns

A bank, engaging in e-money businesses for cross-border transactions, should operate in accordance with the **Regulations**, and "Regulation Governing the Declaration of Foreign Exchange Receipts and Disbursements or Transactions". For example, a bank, approved by the competent authorities to issue SVC, may issue an international SVC, or cooperate with a foreign institution to issue such a card, but the issuing institution shall in all cases be a bank. However, issuing a SVC with multi-currency function has not yet been permitted due to the consideration of foreign exchanges management.

Accordingly, an international SVC, issued and used in Taiwan, shall be calculated in NT Dollars and all settlement and clearing shall be processed in Taiwan. An international SVC, issued for overseas consumption purpose, shall be settled in

foreign currency. Outward or inward foreign exchange conversions shall be conducted through a licensed foreign exchange bank authorised by the Central Bank.

For the purpose of administration and statistics compilation by the Central Bank, a bank, which is engaging in the international SVC (denominated in foreign currency) business, should send monthly reports to the Central Bank before the 10th day of the next month. These monthly reports should include the following items: the number of cards issued, the total value of cards issued, the amount paid, the number of cards in circulation, the total value of cards in circulation, and the number of terminal facilities. All foreign currencies should be converted into US dollars.

c. Small E-Money Issuers

So far, the Central Bank has not yet shown any intention of issuing its own e-money while all small e-money issuers shall comply with the related regulations as mentioned above.

4. SUMMARY AND CONCLUSION

Unless e-money possesses all the same properties as those of cash, such as reliable and stable money value; transferability; anonymity; convenience and unconditional irrevocability and inconvertibility (meaning finality), it may not be used to replace the role of fiat money issued by central banks.

E-money has not been widely used by the public as anticipated. The main reason is that it is still at the promotion stage in the payment market; its spread is subject to the consumers' habit, merchants' acceptance, originators' reputation and facilities' security. In general, there exists a chicken-egg dilemma in the marketing promotion of e-money. The consumer may hold on to using e-money until more merchants are accessible, the merchant may hold applications to participate in the e-money's business circle until more consumers participate.

E-money in Taiwan is still at an early stage of development, and it may take a long period of time to take off, much less to become a credible instrument which is wide-accepted by the public. Although current e-money has little impact on the central banking functions, it may have the potential to become tomorrow's money in the forthcoming E-commerce era. With advances in information and telecommunication technologies, e-money may develope to replace a part of currency in circulation and/or banking deposits. Such a currency substitution of e-money for

either inside money and/or outside money may shift the structural components of monetary aggregates and cause an array of structural changes to current monetary aggregates, monetary multipliers, velocities, and in turn, alter the effectiveness of monetary policy. Meanwhile, it may also affect the conduct of central banks' monetary policy due to its impact on money demand behaviour, or impact on seignorage revenue of central banks.

E-money holdings have benefits as well as risks. A capable and comprehensive regulatory framework should be in place to handle a variety of scenarios, such as minimum prudential requirement, supervision protection, enforcement, consumer protection, anti-money laundering and cross-border concerns. For management of e-money issuance, the Ministry of Finance promulgated "Regulations Governing Approval of the Issuance of Stored Value Cards by Banks" on October 18, 2001. Thereafter, the Central Bank conducts on-site examination of those banks issuing e-money, and focuses on the robustness and soundness of system's framework, including executive organisation, IT system technology, security controls, counterfeit-resistance, business operation guidelines, internal audit, inner controls, risk management, accounting procedures and contracted merchants management, and so on.

In Taiwan, there is not yet a clear definition of the terms of e-money, except for SVC. In this paper, e-money is confined to the multipurpose SVC, which may be used among different operating systems or used in different business types, and can be issued by banks only according to Article 42-1 of the Banking Law. As a corollary, the issuance of single purpose SVC is not subject to the regulation of the Banking Law. Such discrimination between the single purpose SVC and the multipurpose SVC is not so compact without further consideration.

For example, in contrast with the less attractive and slow growing multipurpose SVC, a single purpose of SVC is flourishing and prosperous in Taiwan. For business promotion, the single purpose SVC, especially the virtual network card issued by Internet service providers, is usually sold at a discount rate, while the multipurpose SVC is sold at an exchange rate of one to one. As a result, the single purpose SVC dominates the multipurpose SVC in marketing competition. Moreover, several network cards may be used among different operating systems or used in different business types over the Internet space even though they are classified into the category of the single purpose SVC. These two SVCs are therefore not so clear-cut in practical application, especially in the Internet transactions.

For reasons mentioned above, this paper suggest that the government authority should reexamine the existing regulatory framework and clearly define the terms of e-money to cover the e-payments through Internet and mobile phone. Also, it would be better to enact a new "Regulations Governing Issuance and Management of E-money" by extending current "Regulations Governing Approval of the Issuance of Stored Value Cards by Banks". In this new Regulation, financial authorities should be empowered to take actions when necessary to regulate e-moneys issued by non-bank business units.

Finally, to avoid too early an interference with the development of e-money innovation, the central bank should adopt a prudential stance to watch closely the development of this new technology, assess the impact of e-money on central banking functions when necessary, and make a due response to potential challenges early on.

Appendix 16.1 : The Market Share of Non-cash Transactions in Taiwan

Unit : G%

	Volume					Value				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Paper-based										
Cheques	**43.89**	**36.84**	**31.29**	**26.77**	**23.22**	**21.80**	**18.52**	**16.06**	**14.94**	**11.95**
Card-based	**41.95**	**50.02**	**56.26**	**62.20**	**66.62**	**0.51**	**0.80**	**1.03**	**1.09**	**1.32**
ATM transferal	3.33	5.25	7.48	9.13	11.48	0.31	0.53	0.75	0.78	1.00
Credit card	38.58	44.68	48.68	53.03	55.11	.200	0.267	.283	.304	.326
Debit card	.008	.016	.024	.008	.004	.000	.000	.000	.000	.000
IC(prepaid)	.031	.077	.087	.030	.016	.000	.000	.000	.000	.000
Electronic-based	**14.16**	**13.14**	**12.45**	**11.03**	**10.17**	**77.69**	**80.68**	**82.91**	**83.97**	**86.73**
CBC-CIFS	.097	.084	.078	.073	.063	52.79	52.76	52.84	55.52	57.33
FISC-NIRS	13.32	12.32	11.46	9.89	9.14	24.85	27.82	29.91	28.19	29.04
On Batch	0.728	.711	.840	.979	.827	.044	.058	.058	.070	.060
FEDI	.007	.020	.040	.076	.119	.013	.045	.096	.191	.297
Internet Banking	–	.000	.026	.009	.011	–	.000	.000	.001	.002
Mobile Banking	–	–	–	–	.011	–	–	–	–	.001
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Note: CBC-CIFS: is Central bank's Interbank Funds-transfer and Settlement system
FISC-NIRS: is Nationwide Interbank Remittance System operated by FISC
On Batch: is actually an ACH system operated by FISC
FEDI: is Financial Electronic Data Interchange

Appendix 16.2 The Transaction Statistics of Stored Value Cards in Taiwan

NT dollar

Y/M	FISC-IC Card		Mondx Taiwan		E.SUN e-Coin	
	Volume	Value	Volume	Value	Volume	Value
2002/01	12,898	4,270,712	-	-	30	5,593
02	7,253	2,057,171	-	-	59	11,498
03	12,878	3,480,370	-	-	49	7,581
04	11,891	4,378,365	-	-	69	12,271
05	13,893	4,190,104	-	-	219	8,600
06	11,702	2,530,221	-	-	308	21,531
07	7,557	3,135,215	601	47,191	569	94,934
08	4,264	3,064,430	1,767	492,738	759	112,179
09	6,128	4,321,380	2,546	1,137,131	952	149,714
10	9,637	4,138,415	3,234	1,862,206	1,870	212,923
11	8,407	3,064,676	3,213	2,183,407	2,201	469,388
12	9,678	3,527,832	3,461	2,008,756	2,386	348,132
2003/01	5,907	3,914,870	3,305	2,019,778	3,500	417,884
02	4,661	1,875,813	2,440	1,356,635	3,987	531,856
03	9,813	2,831,009	2,930	1,543,788	4,605	510,286
04	8,195	2,192,904	3,167	1,340,472	4,934	521,351
05	10,221	2,237,930	2,571	1,345,313	5,811	631,034
06	7,985	2,699,260	2,872	1,240,263	6,900	701,877
07	4,554	2,653,727	3,586	1,509,245	8,700	1,249,371
08	3,879	2,483,304	4,118	1,675,512	9,700	1,461,295

CHAPTER 17: CENTRAL BANK RESPONSES AND REGULATORY FRAMEWORK OF E-MONEY IN THAILAND

By
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I. INTRODUCTION

E-money in Thailand is still at an early stage of development. There were a few small-scale schemes launched in the past few years. The e-money circulation in the economy is very low and has no significant effect on the monetary policy or any other central banking functions. However, both private sector banks and non-bank institutions are still showing interest in issuing e-money, as the customers are becoming more familiar with modern payment methods. Thus, with this market trend, authorities are discussing the issues related to e-money and establishing a legal framework to regulate and supervise the business to ensure the integrity, credibility and stability of payment and financial institution systems.

2. DEVELOPMENT OF E-MONEY

2.1 Recent Development of E-Money Schemes

Cash and cheques have been the predominant means of payment in the Thai economy. However, in the past decade, electronic payment methods have become more important in the payment system. Plastic cards, namely, ATM cards, credit cards, and debit cards have become increasingly popular payment means as cash substitutes. ATMs have started to play an important role in cash withdrawal and deposits since 1983, and with commercial banks promoting payment services through it such as inter-bank fund transfers and utilities payment, ATMs have become widely used. On the other hand, BAHTNET, an inter-institution large value fund transfer system, which was introduced by the Bank of Thailand in 1995 plays a significant role in reducing cheque-based inter-bank transactions.

Although plastic cards and other electronic payment methods have been widely accepted, e-money, however, has not been successful.

In the late1990s, there were few pilot projects launched in the market, such as Micro Cash Card and SCB Smart Card.

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- **Micro Cash Card** was first launched in 1996 by Bangkok Payment Technology Company (BPT), a non-bank institution. The company was a joint venture of four members – a public bus provider, a computer/software distributor, an ATM processing centre company, and the DBS Thai Danu Bank Plc. Later in 1999, the company was wholly acquired by the DBS Thai Danu Bank Plc.

  The Micro Cash Card was a reloadable anonymous electronic wallet, which only allowed cash reloading through available terminals. The cardholders used the card to pay for bus fares on Micro Buses, cinema tickets, and goods and services at designated merchants. However, due to a low amount of transactions, limited number of point of sales, the scheme was terminated later in 2001.

- **SCB Smart Card** was launched in 1999 with the cooperation of Siam Commercial Bank Plc., Advanced Vision Systems Co.Ltd., and Chulalongkorn University in order to service students of the university. The functions available on SCB Smart Card were identity card, ATM, and electronic purse. The scheme has also been extended to other universities in Thailand as well. However, the e-purse function has not been widely accepted, thus leaving the smart card with only ID and ATM functions.

Nevertheless, the Siam Commercial Bank still continues the operation of electronic purse in a limited scope, where by SCB staff can use the smart card as an ID card and e-purse in its canteen. The purse limit is 465 USD. As of now, the average number of transactions from the staffs' e-purses is 700 transactions per day, with the value of 15,000 Baht (375 USD). At present, the float outstanding is at approximately 255,000 Baht (6,375 USD).

2.2 Features of E-Money

Currently, Thai Smart Card Co. Ltd., a joint venture of private companies and commercial banks (C.P. Seven Eleven Plc., Telecom Asia Corporation Plc., SVOA Plc., Loxley Plc., Government Savings Bank, Bank of Ayudhya Plc., Krung Thai Bank Plc., Krung Thai Card Service Plc., and Siam City Bank Plc.), is preparing to launch a **Digital Purse**. The scheme aims for small value payments at retail shops, schools, and universities. There will be 2 types of cards as follows;

1. Account-linked Card: The card will be linked with a customer's bank account, where the cardholders can transfer money from their accounts directly to the digital purse. The issuer bank will manage the float received from these cards.

2. Anonymous Card (Unlinked card): The empty cards will be issued and sold at retail shops. Customers will be able to top up their cards by cash or use them in conjunction with the ATMs. The float of these unlinked cards will be shared among the issuer banks.

With the objective of small value payments, and the findings from their market research that revealed the average amount for each top up is 400 Baht (10 USD), the company plans to limit the card value at the maximum of 5,000 Baht (125 USD).

Thai Smart Card acts as an operator and a clearinghouse for the scheme. The scheme is expected to be launched in the second quarter of 2004. All of the aforementioned schemes are denominated in Thai Baht.

2.3 Factors Influencing the Development of E-Money

The main problems for the success of e-money schemes in Thailand can be categorised into 2 main factors, which are:

1. Market Penetration/Recognition: The aforementioned schemes seem to be directed to a very limited target group and with a few retailers accepting the cards, which were not enough to gain the interests of the customers. Moreover, the chip-based cards were not widely known among the customers.
2. Technology shifts and high investment cost: Technology for chip-based cards has been changing rapidly which result in the need for continuous research and development to keep up with the changes. However, the R&D would be costly for the card issuers, and with the low market penetration, there was no economy of scale for the investments.

However, at present, there are opportunities for e-money in Thailand to become widely adopted due to the following reasons:

1. The government has played an important role in promoting the recognition of smart cards via various projects such as Smart ID card, and Common Ticketing System.
2. Thai population is more acquainted with modern payment methods as shown in the growing number of credit cards and debit cardholders.
3. A legal framework is being established to ensure the credibility and integrity of the payment system, and financial institutions stability, as well as consumer protection. This would result in the confidence of the customers in the new payment instruments as well as a firm direction from authorities to the industry.

4. Commercial banks are being more active in introducing new payment instruments to attract customers due to a more competitive environment in the banking industry.
5. There is more cooperation and integration of private sectors of both banks and non-banks in introducing e-money which would require lower investments from each party, and allow more acceptance of the e-money from numbers of retailers and operators.

2.4 Impact of E-Money on Central Banking Functions

To date, the proportion of e-money to notes and coins in circulation is very small (0.001%) and the amount of e-money issued is not included in monetary statistics. However, the Bank of Thailand is aware that, e-money could have a potential impact on the effectiveness of monetary policy and on seigniorage, particularly in the case of a significant amount of usage.

Primary research on the effects of e-money on money supply and seigniorage was conducted in 2001, and it was found that the effects of e-money on both money supply and seigniorage would depend on the amount of e-money circulated in the economy. The effect on money supply would also depend on the reserve requirement imposed on the e-money issued. The more e-money in circulation and the less reserve requirement, the more effect of e-money on money supply. Examples of the effects on supply of broad money (M3) owing to different combinations of e-money issued and reserve requirement on e-money can be shown in the table below.

		r = 0.06 r_{em} = 0	r = 0.06 r_{em} = 0.06	r = 0.06 r_{em} = 0.5	r = 0.06 r_{em} = 1
Multiplier		16.67	15.67	8.33	0
		Increase in Broad Money (M3) (million Baht)			
Rate of e-money replacement to notes and coins 1/	50%	3,910,000	3,765,000	1,954,000	0
	25%	1,955,000	1,838,000	977,000	0
	10%	782,000	735,000	391,000	0
	1%	78,200	73,500	39,100	0

Notes: r = reserve requirement on deposit
r_{em} = reserve requirement on e-money
1/ Value of notes and coins in circulation in Nov. 01 = 469,081 million Baht

Numbers in the table indicated that e-money could have significant impact on M3. Since a significant increase in M3 could put pressure on the price levels in the economy, it is the Bank of Thailand's responsibility to closely monitor the widespread of use of e-money in order to respond to the increase of e-money once the usage has reached a significant level.

However, the Bank of Thailand is encouraging the reduction of usage of cash, and promoting non-cash transactions, but it has no intention of issuing e-money.

2.5 Identification and Analysis of E-Money Risks

Bank of Thailand is also aware that e-money could pose risks on the payment system and financial institutions in the form of liquidity risk in case of the default of operators or main players of the system, operational risk, legal risk, and reputational risk.

Moreover, the involvement of non-regulated institutions could pose higher risk levels on the systems. Conduct of e-money with insufficient security measures could also deteriorate market confidence towards overall system. Thus, security measures and prudential regulations are needed to ensure the credibility and integrity of the system.

3. POLICY RESPONSES WITH REGARD TO E-MONEY

3.1 On Monetary Policy Concern

As mentioned, the value of e-money transaction is very small, thus so far there is no concern on the monetary policy. However, we are closely monitoring the development of e-money in Thailand. Periodic reporting would be requested in the future for the purpose of monetary policy.

3.2 On Regulatory Framework

Currently, there is no specific regulatory framework for the e-money business. Under the present laws, commercial banks, finance companies, and credit foncier companies are subject to supervision and regulation of the Bank of Thailand, while private companies are not subject to direct supervision by any authorities. However, the Ministry of Finance has authority under the Announcement No. 58 of the National Executive Council date 26 January 1972 to regulate the businesses which may have significant effects on the economy.

Therefore, to ensure the integrity, credibility and stability of the payment system and the financial institutions system, and to protect customer rights, the Bank of Thailand and the Ministry of Finance are working together to lay down a legal framework for regulating the e-money business.

The framework will focus on risk management, float management, security controls, and consumer protection, such as exposure limits, audit trail, technology, etc. The framework also has to be congruent to the evolution of the market and international practices.

Moreover, a Subcommittee on National Payment Co-operation, which is comprised of representatives from commercial banks, Communications Authority of Thailand, and the Bank of Thailand, has set up a working group to develop a set of recommendations for regulations and risk management practices for the e-money business, as well as technical and security standards for smart cards in Thailand.

3.3 On Other Issues

Money laundering: There are no specific measures to prevent money laundering through e-money. However, the Money Laundering Act has come to force since August 1999, thus the framework for the prevention of money laundering through e-money will have to be concurrent with the law.

Consumer protection: The Consumer Protection Act has come to force since 1979. Customers can file complaints through the Consumer Protection Board which was also established under the Act.

4. SUMMARY AND CONCLUSIONS

E-money is still in a developing phase in the Thai economy. However, it is expected to be widely used in the future and be one of the important means of payment to reduce cash transactions in the economy. Currently, private sectors and authorities in Thailand are working together to promote the safe and sound e-money business.