

First National Bank of Botswana
Perspective on the NPS Project
Introduction of Code Line Clearing

Well-done Botswana

Looking back over the last year one could be forgiven for thinking that banking has not changed much since the focus in the press is still bank charges and service.

Very little, except for comments from the central bank, has been mentioned about the great strides all the banks have achieved in improving and radically changing the way entries are processed through automation, and the improvement on previous manual processes used in banking in Botswana.

Leading up to February 2002, the introduction of centralised electronic Code Line Clearing through a single clearing house at the central bank in Gaborone seemed a daunting task to achieve.

Previously, clearing involved the manually intensive processing of cheques were deposited at branches throughout the country. At branches outside of Gaborone cheques of other banks were tallied up on paper schedules and exchanged manually. One of the local banks would host the clearing process. The value of these cheques was then provided to each bank's head office in Gaborone, where the amounts due were included in the day's settlement figures.

These practices were inefficient. In

some instances values of local clearing might miss the deadline for settlement and only get included in the settlement for the next day.

Part of the inefficiencies was the time it took to clear cheques deposited in branches in remote towns, where the drawer of the cheque was in some instances up to 1000km away. The process of paying and, on occasion unpaying cheques in respect of cheques drawn and deposited at outlying branches added to the processing complexity at all banks.

In addition, salary payments, debit orders and stop orders for accounts being debited or credited at other banks required manual schedules and bank cheques to be provided to the receiving bank in order for these payments to be actioned. Due to the manual intensiveness, the processes were inefficient and prone to errors.

Having sketched the past and looking back over development in the last 18-24 months, the processing of payments has changed significantly.

Within a short space of time all banks developed the means to move all cheques and in some cases all transactions from every branch around the country to their Centralised Processing Centres in Gaborone, in order to meet

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the clearing for the next day. Code Line data is read off the cheques in order to allow each bank to create files for clearing and settlement.

Through this process, errors have all but been eradicated, efficiencies in terms of reducing the clearing period for cheques deposited and drawn on remote areas have been dramatically reduced to standard four day clearing period for the whole country.

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Real Time Gross Settlement (RTGS)

The Bank of Botswana maintains the responsibility of ensuring the stability of the financial system within Botswana by involvement in such areas as financial markets, Banking Supervision and the National Payments System (NPS) in order to maintain monetary stability and undertake monetary policy

and oversight.

It is essential that Botswana continues to further develop its National Payments System to ensure smooth operations surrounding the transfer of funds between counterparties involved in financial transactions. As the country continues to become further involved in the international aspects of financial dealings, the need to provide robust and efficient payment mechanisms becomes more important and challenging.

Significant progress has been made in the modernisation and reform of the Botswana NPS by the implementation of Code Line Clearing (CLC) and Electronic Funds Transfers (EFT's), which have combined to reduce the overall clearing cycle nationally to 4 days and provide an interbank medium for the automated transfer of credit payment instructions. The Bank of Botswana, in conjunction with the commercial banks and other stakeholders, have continued work together to achieve these improvements that benefit the country as a whole.

The next major project to be undertaken to continue the development of Botswana's NPS is the introduction of a Real Time Gross Settlement (RTGS) system, the main features of which are illustrated below.

The overriding purpose of an RTGS system in any economy, is to provide for the finality and irrevocability of interbank

settlement obligations, whilst ensuring that the transfer of funds between institutions is immediate and secure. This mitigates risk by reducing the exposure that both financial institutions and their clients face in the context of the then existing clearing cycle.

An RTGS system is an electronic inter-bank payment system that allows funds to be transferred between participating institutions using settlement accounts held at the Bank of Botswana (BoB). The system links all the member institutions in Botswana to the BoB utilising a very secure and robust communications medium and is designed to manage the undertaking of high value / time critical payment instructions. These are processed in real-time and on a gross basis (i.e. individually) without netting, as opposed to entering the current net settlement clearance and settlement cycle. These characteristics make the RTGS system quite different to the CLC and EFT systems. The RTGS system will be designed to allow other payment systems to undertake their settlement requirements directly through the real time channel, which will again contribute to a more secure and lower risk reduced NPS.

All payment instructions that are routed through the RTGS system will comply with "credit push" principles, which means that the payer initiates the transfer of funds to the payee as a credit payment instruction. On the understanding that the payer has sufficient funds in their settlement account with the Bank of Botswana, or adequate

collateral is pledged, the funds are automatically transferred in real time. In the event that there are inadequate funds or pledged collateral the RTGS system will reject the instruction.

Individuals or corporate customers that may wish to utilise the RTGS system for suitable payment instructions may do so provided that appropriate arrangements have been made with their bankers, who would send the payment instructions on their behalf. This would involve the debiting of a customer's account with the value of the payment prior to undertaking the payment instruction on behalf of the customer.

The RTGS system will be designed to utilise the SWIFT network as the message carrier in order to ensure the highest levels of confidentiality and security to all members that are utilising the system. The sending bank will present the full payment details to the RTGS system for the receiving banks' benefit and the RTGS system, upon receipt of this information, will undertake the funds transfer if sufficient funds are available or reject the request if there are inadequate funds.

The operations of the RTGS system are such that it will allow the transfer of funds from one bank or customer account to another bank or customer account in Botswana without the use of any paper driven instruction. All instructions are undertaken electronically with each instruction being handled individually, which results in the debiting of one participant bank's settlement account and the crediting of another's account across the books of the Bank of Botswana in real time.

A payment is considered to be final and irrevocable at the point when the send-





ing bank's account is debited and the receiving bank's account credited with the funds as specified on the sending bank's instruction.

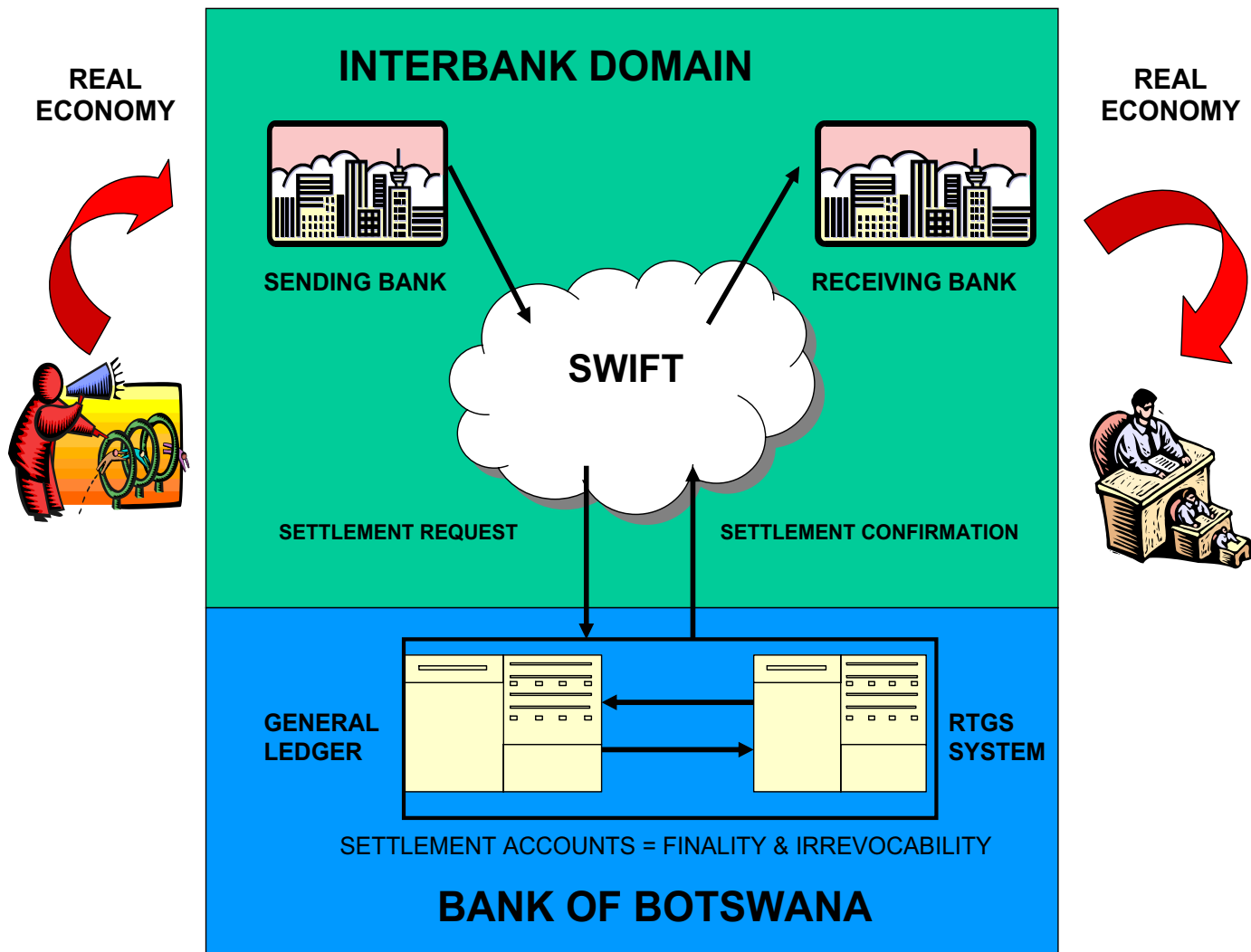
Among the benefits of an RTGS system the following may be considered to be the most valuable:

- (i) the management and mitigation of credit, liquidity and settlement risk which when combined, may lead to systemic risk in the payment system of Botswana; this is greatly reduced by undertaking payment instructions of high value or that are time-critical individually and in real time;
- (ii) the RTGS system allows both

- (iii) the interfacing of other payment system streams such as the Electronic Clearing House and additional future systems to undertake their settlement procedures through the RTGS system;
- (iv) a vehicle that will provide valuable statistical information to the BoB that will contribute to the decision making processes of monetary policy;
- (v) a platform that will allow a vibrant

- (vi) and expanding economy such as is being experienced in Botswana to enter into both regional and global financial markets with a high level of confidence in its payments system which is required on the global stage; compliance with the Bank For International Settlement's Core Principles for Systemically Important Payment Systems.

In conclusion the introduction and implementation of the RTGS system will be undertaken in conjunction with all stakeholders of the NPS and can only be considered as a most important and valuable asset for Botswana at both national and international levels.





Electronic Money

The global developments pertaining to electronic money schemes have evoked significant interest by the consumer, the financial sector generally and central banks. Electronic Money¹ (e-money), when considered as a substitute for cash when undertaking payment transactions, raises a number of policy issues for central banks regarding the implications surrounding central bank's revenues, their implementation of monetary policy and the oversight of payments system. In light of these potential policy concerns, in 1996 the G10 central bank Governors undertook to monitor the evolution of electronic money schemes and products whilst being cognisant of the competition and innovation that is associated with any emerging payment instrument or service via the services of the Bank for International Settlements (BIS) on a global basis.

DEVELOPMENTS IN BOTSWANA

Electronic money has emerged as an important mechanism for enabling small value payments. It is a payment mechanism that is a direct substitute for traditional cash by which value is transferred electronically to pay for goods and services at vending machines, retail establishments, over networks, or through direct person-to-person exchanges. In Botswana, this method of undertaking transactions is commonly used in public telephone booths, for the supply of domestic electricity, and to "recharged" cellular phone accounts with "value" to enable continuation of service. All of these are, however, restricted to dedicated "in-house" products and services offered by the issuer, and are not really e-money in the strict sense.

In recent years, the Botswana payments system has been characterized by the increased use of electronic payment technologies, such as automated teller machines (ATMs), credit cards, electronic funds transfers at point of sale (EFTPOS), debit cards and credit transfers, which now account for a significant volume of non-cash payments processed in Botswana.

E-money facilities in the sense of an electronic purse have not yet arrived in Botswana. However, it is certain

that e-money will arrive sooner or later. This could take the form of an e-money service operated by banks, but may also be of interest to non-bank private operators (e.g. cellphone companies might be interested in extending their single - product cards to more general e-money services). Government may wish to make use of e-money services for the payment of wages, pensions or other benefits, as a means of avoiding the problems associated with making large numbers of cash payments. Indeed, Government use of e-money could provide a major impetus for the development of such a product in Botswana.

The development of innovative electronic transactional networks raises numerous legal and regulatory issues that must be addressed if the potential of electronic money is to be realised. These include finding acceptable methods for authentication and protection of information, accommodating the special needs of law enforcement, and creating the requisite means of settling disputes. While the use of electronic payment methods has become increasingly prevalent, in particular the use of ATM cards, the legal and regulatory framework for these arrangements remains relatively underdeveloped.

Specific questions raised are: How will issuers be regulated? Who will set the standards? How can payments

transacted in an electronic environment be made secure? How will regulators police money laundering and counterfeiting?

THE ROLE OF THE BANK OF BOTSWANA

The emerging electronic money products necessitate the involvement of the Bank of Botswana due to risks inherent in their usage in the financial market. These may be in the form of credit, liquidity, operational, systemic and reputational risks. It is, therefore, necessary that a robust legal and regulatory framework should be put in place.

ACQUISITION SERVICES

Although there are no specific regulations directly governing the provision of acquisition services² in Botswana, the principal providers of these services are commercial banks, which are subject to prudential regulations. These prudential regulations serve as an insulation mechanism for contributing to stability in the financial market. Legislation such as the Bank of Botswana Act, 1996, the Banking Act 1995 and the National Clearance and Settlement System Act, 2003 set parameters for operational arrangements that would protect customers and build their confidence in such services.

DIRECT PROVISION OF PAYMENT SERVICES BY GOVERNMENT

As the largest employer in Botswana, Government could be involved in the establishment and provision of services covering some of the aspects of the National Payments System (NPS). It could do so directly or through third party, service providers such as the Post Office and the Botswana Savings Bank, using the telecommunications infrastructure of fixed line or mobile service

1 Electronic Money Developments Reference - BIS, CPSS Survey of Electronic Money Developments - November 2001

2 Providers of acquisition services act as financial intermediaries, linking cardholders, merchants, card issuers and banks.



Developments

providers. This could be a more efficient way of making pension payments or any other payments, particularly in the rural areas where commercial bank services are limited. Nonetheless, though technological innovation in computers and telecommunications have been adapted to banking operations, such infrastructure is not yet available in the rural areas, although a commitment from Government to make use of it would stimulate such developments.

CONCLUSION

The development of e-money as a form of effecting low value payments is gradually gaining momentum in the international economies. As part of the global village, Botswana cannot afford to be left behind and must, therefore, ensure that the environment and related infrastructure is conducive for such a facility. The development of e-money

would potentially benefit the consumer as it enhances the consumer's ability to effect low value payments. Although a lot of ground has been covered with regard to the regulation of e-money, a lot still remains to be done. Most of the inherent risks, however, will have to be addressed as and when they arise since the precise nature of the impact of e-money cannot be determined ex ante.

There are a number of factors that would support the use and acceptance of e-money products in Botswana. These include a willingness by the public to use such products; a wide (and growing) range of outlets for spending e-money (beyond telephones and electricity, as at present); a sound legal and regulatory framework surrounding their use; a reliable and extensive system of telecommunications and Information Technology (IT) infrastructure to facilitate their use; and an impetus provided by Government facilitating payments through

such a mechanism.

The risks associated with widespread use of e-money make it imperative that the regulatory framework be developed as well as a review of existing legislations to ensure legal recognition of electronic transactions.

It is quite evident that there is need to establish the rules and regulations for the governance of electronic money products, given their risk profile, so as to insulate the financial market against the identified risks mentioned earlier on. Thus, it would be necessary that the rights and obligations of the respective participants in an electronic money scheme must be clearly defined and disclosed.

The challenge for Botswana is to keep up with international developments and best practise. Key question that need to be addressed include whether the locus of authority, in particular the issuing of e-money should be restricted to bank, and the degree to which such products should be subject to Bank of Botswana oversight.

FROM PAGE 1 Well-done Botswana

This has also improved the handling and processing of unpaid cheques.

All other non-cheque payment instruments (stop orders, debit orders, salary payments etc.) have been automated by creating electronic files with all the data to be exchanged through the Electronic Clearing House in Gaborone. This allows for the settlement values to be agreed and calculated sooner and with fewer errors. The introduction of EFT payments has however brought its own set of challenges and frustrations, due to incorrect and insufficient banking details provided by employees to employers, and customers to their own banks, for payments to be made to beneficiaries at a bank other than to his own. Only when all parties ensure that correct details are provided to their bankers will we fully benefit in terms of time saving and efficiencies through the implementation of EFT payments.

Manual processes have all but been replaced by automation and electronic exchange. This has been a quantum leap in terms of how processes and procedures within each bank had to be re-engineered to facilitate this change.

There was no blueprint that Botswana could follow and implement the CLC and EFT. Each bank's procedures are different and methodology had evolved over a long time. The changes implemented within the time frame compares very favourably with other countries in the SADC region and we as Botswana banks can be proud for achieving this much.

But progress does not stop with the implementation and delivery of CLC, as continued attention needs to be given to round-off this success by:

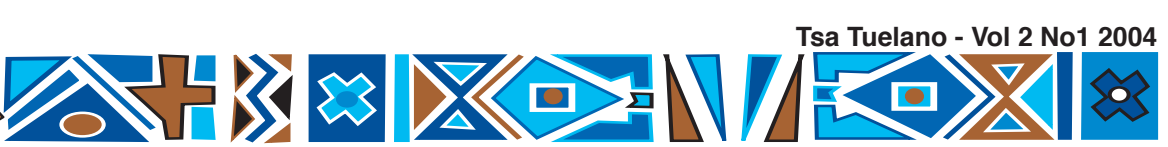
- (a) implementing paper-to-fol-low, where the electronic files exchanged between banks become the source for processing

to customers accounts and the physical cheques, which arrive the next day, are used to confirm the details already processed;

- (b) introduction of "truncation" for each bank, where all items processed will remain at their central sites, thereby assisting in quicker customer query resolution and better security of documents, reducing the potential for loss;
- (c) the introduction and exchange of the image of the voucher instead of the original voucher, in line with practice in several other countries. For instance, in the USA this has been agreed through the passing of the Check Clearing for the 21st Century Act;
- (d) implementation of Real Time Gross Settlement (RTGS) will deal with large value payments and remove them from the current cheque clearing processes.

Notwithstanding all of the future challenges and past achievements the Report Card shows "A". Well-done Botswana. You can be proud.





In recent years, much attention has been devoted to payments, clearance and settlement systems that are associated with the efficiencies affecting financial markets coupled with rapidly evolving technological developments. The continued increase in the volume and value of financial transactions together with the risks and complexities that provide the interconnections among financial institutions to perform varied transactions have necessitated the development of global policies that help to guard against instances of systemic risks together with building public confidence in money transmission systems.

Safeguarding the security of payments systems involves the development and implementation of measures designed to reduce system risks. Given the pivotal role of payments systems, it is not difficult to see how disruption in their operation could have a serious impact on the financial markets that they serve. Conversely, it is possible for an adverse development in a financial market or institution to have a disruptive impact on the overall payments system. For instance, if a problem arises that directly affects one or more of the banks operating in the payments system, then the other member banks in the system may experience subsequent difficulties in honoring their interbank settlement obligations, thereby potentially, causing systemic disturbance and risk.

There is no doubt that an efficient and smoothly operating payments system is a pre-requisite for business development, both domestically and internationally. Thus the safety, integrity and reliability of domestic and international payments, clearance and settlements are a fundamental requirement contributing to the safety and stability of financial institutions and financial markets.

Measures designed to reduce the likelihood of default, i.e., measures to curb the risks associated with credit and liquidity, on the part of individual parties are largely the responsibility of the commercial banks themselves. The central bank is in a position to support these efforts by increasing the general awareness of risk situations and especially high-risk situations, within the framework of its supervisory duties.

Reducing Risk And Promoting Efficiency

CENTRAL BANK INVOLVEMENT IN PAYMENTS SYSTEMS

Central banks' interest in payments systems stems from the impact that payment systems can potentially have on a range of central bank functions. These include, inter alia, undertaking monetary policy; serving as fiscal agents for respective national governments; promoting the safety and soundness of banks and acting as payments systems operators and regulators.

Central bank's objectives for payments systems, under both the monetary and financial stability headings, may be summarised as reducing risk and promoting efficiency in payments systems. Risk reduction is paramount together with soundness and efficiency as complementary goals. Efficiency has different dimensions, and may be grouped under cost, speed and robustness. Such efficiencies can be promoted through

Risk, Cost and Liquidity in Alternative Payments Systems from a Central Bank's Perspective

the operational involvement of a central bank or through the implementation of oversight. Oversight ensures the financial, operational and technical integrity of the payments system, its robustness against risks that may cause disturbances and shocks, thereby affecting its overall efficiency through the development and implementation of appropriate rules, regulations, procedures and standards.

The oversight function therefore seeks to ensure that there is fairness, efficiency, effectiveness, robustness and safety in the operation of any recognised payments system.

PAYMENT SYSTEMS IN THE SADC REGION AND INDUSTRIAL COUNTRIES

There are various types of payments systems currently operational in the Southern African Development Community (SADC) Region, and globally,





aimed at mitigating risk and promoting efficiency. Examples include, Real Time Gross Settlement (RTGS) systems, Electronic Systems, Continuous Linked Settlement (CLS), Target, and Deferred Net Settlement (DNS) systems.

In an RTGS system, settlement occurs in a continuous fashion on a transaction-by-transaction basis. There is no netting of debits against credits, thus the system users can be sure that in the event of a participating bank's failure, their transactions will be settled. However, in a DNS System, as final settlement occurs at designated times throughout the day or at the end of the day, the value of all the transfers each member bank has received to that point in time, less the sum of all the transfers it has been sent, represents its net settlement position. With respect to CLS, settlement of foreign exchange transactions is undertaken on a continuous basis. The advent of CLS is revolutionary in terms of the global financial infrastructure. Target on the other hand represents the evolution of payments systems from discrete operations to a linked transitional single currency system. The rationale is to link the domestic RTGS payments system of European Union (EU) "in" and "out" countries through a single network, Target. Target represents an important milestone in payments system design, and is the first substantial multinational payments system to successfully link central bank accounts across a geographic region.

In many countries cash dominates as a payment instrument for settlement of low value obligations. However, due to the risks associated with cash, the evolution of new technological innovations has resulted in a range of non-cash payment instruments being introduced. The key feature of each payment system is how payments are effected. For example, in the case of cash transactions, settlement finality is achieved immediately, unlike when non-cash payment instruments are used

when finality occurs at a future point in time. There is a lot of uncertainty in such circumstances, thus raising issues of risk, integrity and safety.

Given the degree of uncertainty arising from non-cash payment transactions and the magnitude of exposure to banks as a result, central banks in the SADC region have taken the initiative of reforming, modernising and harmonising their national payments systems to mitigate the risks inherent in such transactions. This has led to the continuing development and implementation of RTGS systems within the SADC region. To date there are six SADC countries that have adopted and implemented an RTGS system¹.

However the choice of a payment system is largely dependent on the value of transaction. For large value transfers, the main concern surrounds the interbank settlement obligations considerations e.g. credit or liquidity risk. In many cases large value transfer systems (LVTs) settle through accounts held at the central bank. Due to the critical role played by LVTs in a country's economic activities, central banks are involved, either directly or indirectly in their operation.

Given the level of uncertainty and risks associated with a diverse number of payment instruments, it is not unreasonable for financial institutions, and central banks, to make appropriate choices, leading to efficiencies, cost, and risk considerations.

RISK AND COST

As noted above, the safety, integrity and reliability of domestic and international payments, clearance and settlement, are critical for the safety and stability of financial institutions and markets. Thus it is fundamental that risk and cost considerations should be factored in when choosing or designing an appropriate national payments system. There are various types of risks that

need to be considered that are directly related to payments systems. These include, among others, operational, credit, liquidity, legal, systemic and reputational risks.

LIQUIDITY

Fry, Kilato et al (1999: 69)² note that "central banks are the ultimate source of liquidity and have a clear interest in promoting the sound development of the payment system. So in most circumstances, it makes sense that they should grant intraday credit, as this allows efficient settlement of payments with reasonable costs and low risks for participants. On the other hand, central banks have to ensure that they do not lose monetary control and that moral hazard is kept at low levels". To achieve these objectives, many central banks have adopted RTGS Systems and/or DNS Systems. In an RTGS Systems environment, settlement of transactions is done on a continuous basis, with minimum risk being borne by the central bank. However to hedge against such risk, the provision of collateral by participants is a pre-requisite. Because banks hold these highly liquid assets for prudential purposes under any alternative payment system arrangements, be it RTGS or DNS, the intraday balances acquired through intraday repos with a central bank incur no additional opportunity costs to satisfy the higher liquidity demands of the RTGS system.

CONCLUSION

Policy choices for central banks are focused on reducing risk and promoting efficiency. These twin objectives will therefore impact on choices that are made regarding the design, membership and oversight of a payments system. However, these factors will play out differently depending on circumstances and so affected payments systems will have different characteristics depending on their role and nature of payments dealt with.

¹ South Africa, Namibia, Malawi, Zimbabwe, Mauritius, Tanzania.

² Fry, Kilato et al (1999) "Payment Systems in Global Perspective", Routledge, London and New York.

