

## **Mr Mboweni discusses e-money and its impact on the central bank's operations**

Address by Mr Tito Mboweni, Governor of the South African Reserve Bank, at the Sun Microsystems Conference 1999, held in Vodaworld, Midrand on 11 October 1999.

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### **1. Introduction**

Electronic commerce, or e-commerce, is the catch-all phrase for many advances in technology centered 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 South Africa, as in the rest of the world, the Internet is being used more and more to advertise and sell goods and services. The Internet has brought about a need not only for micro payments, e.g. a small payment of perhaps only a few cents for viewing a specific piece of information, but also growing interest in developing more reliable and secure methods of payment for large commercial transactions.

E-commerce and, perhaps more important from the Reserve Bank's point of view, electronic money will probably have significant implications for most persons and institutions. This evening, I would like to concentrate only on two aspects, namely a comparison between electronic payment methods and the current conventional payment instruments, such as currency and credit cards, and the possible effect that e-money may have on the operations of the Reserve Bank.

### **2. The development of e-commerce**

The Internet, and its application to e-commerce is turning many industries inside out. Some firms have tried to only partially adopt the new e-commerce technologies, but are increasingly realising the importance of making e-commerce a seamless, integral part of their business plans. South Africa has begun to reach the stage where the previous wholesale financial markets structures are beginning to change as the Internet spreads through them. Retail investors, empowered by the web, are fast becoming much more proactive. Certain financial institutions face the prospect of traditional revenue streams contracting or disappearing altogether as the Internet brings transparency and efficiency to once closed areas. The financial world is taking e-commerce seriously, but no one knows exactly how or how quickly these new technologies will change the business landscape. However, one thing is certain – e-commerce will speed up the process of globalisation and will lay bare the weaknesses in any institution.

Central banks worldwide are considering their positions with regard to electronic commerce, Internet banking and electronic money applications. 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.

Most central banks are specifically considering the impact these products and e-commerce will have on their functions, and the regulatory and operational requirements which are necessitated. In South Africa, several major banks have already launched Internet banking services and all the major banking groups are investigating, or developing, multi-purpose smart cards using microchip technology which enable electronic "purse" facilities.

Although these new payment technologies are still in various stages of development, the South African Reserve Bank, as other central banks around the world, has a direct interest in anticipating their likely policy implications. Emerging electronic money products may require regulatory adjustment or intervention which will arise from: the need to limit the systemic and other risks which may threaten the stability of, and confidence in, the National Payment System; 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; and the need to assist law enforcement authorities in the prevention of criminal activity.

While these products are still being developed, the Bank is reluctant to impose regulation that could hamper the introduction of innovative and promising technologies. At this stage, the Bank is of the view that it should rather concentrate on understanding the emerging technologies and the issues they represent. Opportunities which these new technologies offer should also be investigated and exploited to the benefit of the country as a whole, i.e. how the emerging technologies can be used to make financial services more accessible to those in the low income, unbanked and rural communities in South Africa; and how the emerging technologies can be used for cash displacement and to solve problems such as the cost of cash handling and robberies.

### **3. The characteristics of electronic payments**

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. Depending on the type of technology that is used, these payments can in some cases be finalised immediately after they have been made, for example debit card transactions. Other account transfer payments, notably cheques, are conditional, and will only be finalised with a delay.

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. The transaction is final at the point when it occurs, and is not dependent on the operation of some underlying settlement system. Cash is the most widespread example of a token system, but in fact there are a number of other examples, such as multiple-trip train and bus tickets.

In determining whether electronically stored monetary value is "money", it is worth reflecting on the main attributes of currency, i.e. the notes and coins issued by the Reserve Bank. Currency is a standard product and is therefore easily recognised and identified. It is risk-free, in the sense that the Reserve Bank stands fully behind it. It is fully negotiable. Possession of currency is sufficient to establish a right of use, and it can be simply handed to someone else in order to make a payment. Usage is anonymous and not directly traceable. It is convenient and efficient for making small payments. It is valid for payment in all places and circumstances, and its status can only be questioned where forgery is suspected.

Payments made by means of currency are definite. They are final and irrevocable at the point when they are made, and are not dependent on the operation of any clearing or settlement arrangements. These attributes collectively imply that currency is generally accepted. However, it is not in all cases the preferred method of payment, particularly for higher value transactions, since use of currency involves handling, storage and security costs which may not arise to the same extent with other methods.

Payment by means of certain electronic methods score well on some aspects and poorly on others. However, the relative importance of these various attributes is very dependent on the type of payment being made. Cash can be very convenient in some situations, but a real nuisance in others – and the same is true for other technologies. Probably the key conclusion is that different payment technologies are not inherently inferior or superior to one another. Rather, each one of them has an appropriate place as, indeed, the current happy coexistence of a number of overlapping or competing alternatives clearly indicates.

Stored value cards and other new forms of payment will result in some substitution, but the nature and extent of this substitution will depend on a number of factors. 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.

From the Reserve Bank's point of view stored value cards or the account transfer system is only important as a means of payment, but has no direct bearing on monetary policy. In contrast to this, e-money may have important implications for monetary policy. That is why the Reserve Bank has decided to impose certain rules and regulations on e-money products in terms of its function as overseer of the National Payment System. Before considering the possible monetary policy implications of e-money, I want to briefly describe the criteria that will be used in deciding on the introduction of e-money in the National Payment System.

#### **4. E-money and the National Payment System**

In the National Payment System, e-money is defined as electronically stored monetary value on a technical device, either card-based or network-based, that functions as a prepaid bearer instrument, which can be widely used for making payments to undertakings other than the issuer, with or without involving bank accounts in the transaction.

In introducing e-money into the National Payment System, it must firstly fulfil certain legal requirements in which the rights and obligations of the respective participants must be clearly defined and disclosed. Any proposed e-money scheme will accordingly only be introduced in the National Payment System if it does not contravene the South African Reserve Bank Act, The Banks Act and The National Payment System Act.

Secondly, in order to protect the integrity of the National Payment System, the South African Reserve Bank, in its role as overseer of this system, will require insight into risk-related information. The South African Reserve Bank reserves the right to prescribe risk management and security measures prior to implementation of a scheme.

Thirdly, the Bank will require that mechanisms are available to measure and control the supply of rand-denominated money. This is necessary because e-money could potentially affect the Reserve Bank's ability to manage the money supply effectively.

Fourthly, only banks are permitted to issue e-money. Primary and intermediary issuers of electronic value will therefore be subject to regulation and supervision by the South African Reserve Bank. Although single purpose schemes will generally fall outside the definition of electronic money, the South African Reserve Bank will determine whether multi-purpose schemes fall within the definition or not.

Lastly, issuers will be obliged to redeem electronic money value in central bank money, at par, upon request. The management of the underlying float and redemption of electronic money value by the issuer to the holder must be clearly defined.

#### **5. E-money and monetary policy issues**

The Reserve Bank's main interest in e-money is in three areas, i.e. the effect that it may have on the formulation of monetary policy, the issue of banknotes and coins and on the soundness of the financial system.

##### ***(a) The formulation of monetary policy***

E-money can be considered as another innovation in a series of new financial arrangements. These new arrangements have all required some adjustments in the formulation of monetary policy, and e-money is not likely to be an exception to the rule. As already indicated, the collection of data on e-money is regarded as essential because the issue of e-money will affect the calculation of the money

supply, an important indicator in the formulation of monetary policy in any monetary policy framework. The development of e-money will therefore require a redefinition of the monetary aggregates to include this form of money.

It is at this stage difficult to determine what the effect of e-money will be on the value of the money supply. To the extent that e-money replaces the existing banknotes 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 a decline in the monetary aggregates. Similar deductions can also be made on the likely effect of e-money on deposits included in the monetary aggregates. The large scale introduction of e-money may also influence the velocity of circulation of money, which will have to be taken into consideration by the monetary authorities in the formulation of monetary policy. Nevertheless, the monetary aggregates should continue to be able to play much the same role as they currently play in monetary policy formulation, despite some difficulties that may be experienced in the transition period.

**(b) *Currency issue***

The Reserve Bank Act gives the Bank the sole right to issue banknotes and coins in South Africa. The provision of currency by the Reserve Bank under a statutory monopoly is seen as a useful public service which provides a basis on which other payment arrangements and contracts must rest. The Bank's role is to facilitate and encourage overall payment system efficiency by continuing to offer currency as just one payment technology amongst several. Alternative payment technologies and innovations are freely allowed within this framework, and users are allowed to choose freely amongst the competing technologies.

At this stage, there is no intention that the Reserve Bank should itself issue stored value cards, or provide other forms of electronic money to the public. However, the possibility that this might happen at some point in the future cannot be completely ruled out. If electronic developments proceed to the point where payment using currency becomes inefficient and costly, then it could prove to be necessary to convert our paper and metal currency issue into electronic form.

Electronic payment developments (and any erosion of the currency issue that may result) do not appear to pose any threat to the Reserve Bank's ability to implement monetary policy in the foreseeable future. Even if they did pose such a threat, the appropriate response would probably not be to seek to control or prevent such developments. It would generally be much better to adapt the monetary policy operational procedures to the realities of the market place.

**(c) *Prudential issues***

The issue of e-money could be a risky business, because the monetary amount stored on a card or on a network is only as good as the bank or other organisation which has the ultimate ability to pay on that obligation. This may not be a serious concern in the case of low-value balances. However, it becomes much more serious with higher-value balances. Such problems do, of course, not arise in the issuing of banknotes and coins. These currency liabilities form part of the Reserve Bank's overall liabilities and a guarantee is provided to the bearer that they will be replaced with currency of an equal value.

The issue of e-money will also increase the risk of counterfeiting. Depending on the technical characteristics of each system, counterfeiting could take place by physical reproduction of cards, by manufacture of a "re-loading mechanism" which could be fraudulently used to add new balances to authentic cards, or by "hacking" into the payments systems themselves. With some technologies, it might be difficult or impossible for the recipient of an electronic payment, or even for an issuer, to detect an electronic counterfeit. Telephone card fraud alone for example cost Telkom more than R13 million in the three financial years ending August 1999. By contrast, counterfeit currency can usually be detected by a recipient and the Reserve Bank as issuer scrutinises banknotes and coins carefully to prevent counterfeiting. Sophisticated security features will reduce the risk of successful electronic counterfeiting, but with the lucrative possible returns it will be difficult to rule them out.

Issuers will therefore have to take great care to ensure that the dangers of counterfeiting is minimised, and they should be vigilant in monitoring their systems and operations so that counterfeiting is quickly detected. Even more important is that when South African residents get involved in payment arrangements which are effectively domiciled outside South Africa, they need to understand who it is that they are dealing with, where the counterparties are legally located, whether they have an appropriate standing, and what potential risks they may face – either by holding balances within a system, or by using those balances in a transaction. This information may not always be readily available or may be difficult to evaluate.

Both the holders of new forms of electronic money, and the issuers, face potential risks in certain circumstances. Some of these are reasonably easy to understand and evaluate, and may not be any more serious than the risks which exist at present, such as losing your wallet. However, the risk characteristics of schemes involving elements such as multiple issuers, many members, many business organisations, multiple jurisdictions, delay or complexity in any settlement arrangements, or lack of any audit trails are most certainly not all straightforward.

## **6. Conclusion**

The introduction of e-money and for that matter all forms of e-commerce will accordingly create new problems for the business community, but will also create new opportunities for a more efficient payment system. The Reserve Bank is not too concerned about these new developments at this stage. Customer needs are likely to be best met through effective competition, and this will require that genuine choices amongst alternative products are available. Fast and efficient means of pricing trades, handling client relationships and redesigning distribution structures are being enabled by the Internet. More widespread uses of these new methods will create opportunities for financial innovations. However, the Bank will be watching these new developments carefully, in order to ensure that the integrity of South Africa's financial system is always maintained.