

**Payment, clearing and  
settlement systems in  
South Africa**



## Contents

List of abbreviations .....	377
Introduction.....	379
1. Institutional aspects .....	379
1.1 The general institutional framework .....	379
1.2 The role of the central bank .....	379
1.2.1 Oversight.....	380
1.2.2 Provision of payment and settlement services .....	380
1.2.3 Cooperation with other institutions.....	380
1.3 The role of other private and public sector bodies.....	381
1.3.1 Banks .....	381
1.3.2 Payments Association of South Africa .....	381
1.3.3 Payment Clearing House (PCH) system operators .....	381
2. Payment media used by non-banks .....	382
2.1 Cash payments.....	382
2.2 Non-cash payments.....	382
2.2.1 Non-cash payment instruments .....	382
2.2.2 Non-cash payment terminals .....	385
2.2.3 Interchange fee regulation .....	386
3. Payment systems .....	386
3.1 General overview.....	386
3.2 Participation.....	386
3.3 Types of transactions.....	387
3.4 Operation of the system and settlement procedures .....	387
3.5 Risk management.....	387
3.6 Pricing .....	388
3.7 Major ongoing and future projects.....	388
4. Systems for post-trade processing, clearing and securities settlement .....	389
4.1 General overview.....	389
4.2 Securities settlement systems .....	390
4.2.1 Institutional framework.....	390
4.2.2 Participation.....	390
4.2.3 Types of transactions .....	390
4.2.4 Operation of the system.....	390
4.2.5 Risk management.....	391
4.2.6 Links to other systems.....	392

4.2.7 Pricing .....	392
4.2.8 Major ongoing and future projects.....	393
4.3 Use of securities infrastructure by the central bank.....	393

## List of abbreviations

ATM	automated teller machine
BIS	Bank for International Settlements
BSD	Banking Supervision Department
CLS	Continuous Linked Settlement
CPSS	Committee on Payment and Settlement Systems
CSD	central securities depository
DVP	delivery versus payment
EFT	electronic funds transfer
EFTPOS	electronic funds transfer at the point of sale
FSB	Financial Services Board
IOSCO	International Organization of Securities Commissions
JSE	Johannesburg Stock Exchange (JSE Ltd)
NPS	national payment system
NPS Act	National Payment System Act, 1998 (Act No 78 of 1998)
PASA	Payments Association of South Africa
PCH	Payment Clearing House
RTC	Real Time Clearing
RTGS	real-time gross settlement
SAFIRES	South African Financial Instruments Real-Time Electronic Settlement
SAFE	SAFIRES Front End
SAMOS	South African Multiple Option Settlement
SARB	South African Reserve Bank
SARB Act	South African Reserve Bank Act, 1989 (Act No 90 of 1989)
SFIDVP	simultaneous, final and irrevocable delivery versus payment
SSD	self-service device
SST	self-service terminal
SWIFT	Society for Worldwide Interbank Financial Telecommunication
ZAR	South African rand



## Introduction

South Africa, like many African countries, has varying requirements for payment systems and payment instruments. In urban areas, sophisticated first-world electronic facilities and instruments are demanded, while in remote rural areas, the predominant requirement is cash-based. This is reflected in the physical payment system infrastructure implemented throughout the country.

Over the past few decades, the South African national payment system (NPS) has developed steadily. In 1998, the South African Reserve Bank (SARB) introduced a more sophisticated settlement system called South African Multiple Option Settlement (SAMOS).

SAMOS, designed for large-value interbank transactions, was developed to bring domestic interbank settlement practices in line with international best practice and signalled the start of a new era for payment practices in South Africa.

## 1. Institutional aspects

### 1.1 The general institutional framework

The role and responsibilities of the SARB in the domestic payment system are governed by the South African Reserve Bank Act, 1989 (Act No 90 of 1989 – the SARB Act). The SARB is empowered to “perform such functions, implement such rules and procedures and, in general, take such steps as may be necessary to establish, conduct, monitor, regulate and supervise payment, clearing and settlement systems”.

The SARB ensures the overall effectiveness and integrity of the NPS and has thus been given the power to govern the entire payment process, from the moment that the payer initiates a payment until the beneficiary receives the money.

The SARB, together with the banking industry, drafted legislation for the participants in the NPS, and in October 1998 the National Payment System Act, 1998 (Act No 78 of 1998 – the NPS Act) was promulgated. The purpose of the NPS Act is to “provide for the management, administration, operation, regulation and supervision of the payment, clearing and settlement systems in the Republic of South Africa, and to provide for connected matters”.

The SARB oversees the safety and efficiency of the payment system pursuant to the NPS Act. In terms of regulation, the SARB may issue directives and position papers. Directives contain binding rules to address payment system risks, while position papers contain guidelines to address payment system risks and foster sound practices within the payment system.

### 1.2 The role of the central bank

One of the roles of the SARB is to provide banking services to the central government, although this function has been scaled down since the government began holding cash balances with other banks. The SARB does not provide banking services to provincial governments, local authorities or state enterprises.

The SARB is, however, responsible for the movement of government balances to, from and between other banks. Such movements have an effect on banks’ cash holdings and therefore serve as a convenient additional instrument for managing banks’ liquidity.

As part of its role as “banker to banks”, the SARB acts as custodian of the cash reserves that banks are legally required to hold or prefer to hold voluntarily with the SARB. The SARB has the authority to change banks’ minimum cash reserve requirements and can use such adjustments to influence bank liquidity and the amount of money in circulation.

The SARB provides liquidity to banks during periods of temporary shortages of cash, ie it acts as “lender of last resort”.

The SARB also provides banks with liquidity by lending against reserved collateral to facilitate the funding of settlement instructions in SAMOS.

### **1.2.1 Oversight**

The intensity of oversight is proportionate to the systemic or system-wide risks posed by a payment system. The South African oversight model has been aligned, developed and refined to cater for the domestic payment system, and at the same time adheres to international best practice.

The scope of the South African oversight function includes banks and non-bank participants. Developments in the area of payment products, notably innovations such as mobile banking and electronic money, are also carefully monitored. Oversight thus keeps track of both traditional providers of payment products in the South African market and newcomers.

Through continuous monitoring, performance statistics, risk management reports and specific compliance requirements, participants are monitored and analysed for exceptions or problems.

### **1.2.2 Provision of payment and settlement services**

The only assets used to settle interbank obligations by payment system participants are central bank money in the form of either cash or the passing of entries across the books of the SARB. The SAMOS system is a subset of the general ledger of the SARB and any entries passed are final and irrevocable under the NPS Act.

SAMOS has a high degree of security, operational reliability and contingency arrangements in place. Security policies include the security and network architecture. The security solutions are maintained and upgraded as the technology changes and international, national and industry standards are raised.

On the operational level, service levels and the accompanying service level agreements are matched to the changes required.

SAMOS is the only settlement system in South Africa and is owned and operated by the SARB.

### **1.2.3 Cooperation with other institutions**

The SARB is a member of various committees at the Bank for International Settlements (BIS), including the Committee on Payment and Settlement Systems (CPSS). The SARB is represented in numerous BIS working groups.

The SARB also has formal relationships with and participates in various projects and initiatives with other international institutions, such as the World Bank and the International Monetary Fund.

There has been ongoing cooperation and interaction with the Continuous Linked Settlement (CLS) Bank since the inclusion of the South African rand (ZAR) in the CLS system.

Close cooperation is maintained with the Banking Supervision Department (BSD) of the SARB as payments are primarily made from funds on deposit.

### **1.3 The role of other private and public sector bodies**

#### **1.3.1 Banks**

Banks issue various payment instruments to their customers to effect transactions including, among other things, financial market transactions as well as day-to-day purchases of goods and services.

Banks' business customers do not have direct access to the clearing and settlement networks and therefore have to utilise the payment networks of participating banks.

Systems and communication mechanisms are put in place by commercial banks to provide their customers with payment facilities and channels, including automated teller machines (ATMs), internet banking facilities, branch networks and payment instruments. The banking industry has been encouraged to develop payment instruments and systems that include electronic funds transfer (EFT) mechanisms, debit orders, debit cards and credit cards.

Commercial banks respond to their customers' requirements by providing robust, fit-for-purpose payment instruments that adhere to international best practice. Innovation, access, security and safety are important features taken into account in developing payment instruments.

#### **1.3.2 Payments Association of South Africa**

Under the NPS Act, the SARB may recognise a payment system management body established with the object of organising, managing and regulating the participation of its members in the payment system. The Payments Association of South Africa (PASA) is recognised by the SARB in this regard.

PASA manages the conduct of its members in all matters relating to payment instructions. One of the main responsibilities of PASA is to support the SARB in its role as overseer of the payment system by ensuring compliance by its members and, where necessary, imposing penalties and sanctions.

#### **1.3.3 Payment Clearing House (PCH) system operators**

The PCH system operators are BankservAfrica, Strate Limited, Visa and MasterCard.

##### **1.3.3.1 BankservAfrica**

BankservAfrica is the system operator responsible for clearing interbank obligations stemming from the retail payments environment.

BankservAfrica is owned by the South African clearing and settlement banks, and provides interbank electronic transaction switching services to the banking sector. Retail payment transactions include EFTs, cheques, and card, internet and ATM transactions.

Payment instructions arising from retail transactions are sent to BankservAfrica through the various payment streams and networks for clearing. At BankservAfrica the payment instructions are sorted and the interbank obligations of the participants calculated. At predetermined times, the interbank obligations are submitted to SAMOS for settlement. No multilateral netting takes place within the clearing system or within SAMOS.

##### **1.3.3.2 Strate Limited**

Strate Limited (Strate) is responsible for the settlement of securities in South Africa. Equities, bonds and money market instruments are bought and sold through the stock exchange or in direct transactions between buyers and sellers. Strate then determines the interbank payment obligations arising from these transactions, which are then settled in SAMOS.

### 1.3.3.3 Visa and MasterCard

Cards issued by South African banks are affiliated to international payment schemes such as Visa and MasterCard. Depending on card issuer preferences as well as the nature of the transactions, these transactions are cleared and settled by the relevant payment schemes.

## 2. Payment media used by non-banks

### 2.1 Cash payments

The SARB has the sole right to produce, issue and destroy banknotes and coins in South Africa. The SA Mint Company and the SA Bank Note Company, both subsidiaries of the SARB, are responsible for the minting of coins and printing of banknotes, respectively.

There are five denominations of notes (R10, R20, R50, R100 and R200) and seven denominations of coin (5c, 10c, 20c, 50c, R1, R2 and R5) currently in circulation.

Notes and coin in circulation in South Africa as at the end of December 2006 and December 2010 amounted to R63.6 billion and R82.5 billion, respectively.

The demand for banknotes and coin is determined by the general public. Banknotes are used and accepted as a means of payment because the public trust that they will in turn be able to purchase goods and services to the face value of the banknotes.

The potential supply of banknotes and coin to the public, however, is limited by banks to the extent that the public is only permitted to withdraw cash held as deposits or draw cash against prearranged credit facilities. The SARB is responsible for the wholesale distribution of banknotes and coin, whereas banks distribute banknotes and coin to their branch offices to ensure availability to the public.

Although it is difficult to estimate the value of cash payments, a recent study of consumer spending at major retail institutions in South Africa indicated that cash is still the most prevalent means of payment, accounting for 55% of all transactions by value (88% by volume).

### 2.2 Non-cash payments

#### 2.2.1 Non-cash payment instruments

Various non-cash payment instruments are issued by banks to enable transactions such as the purchase of goods and services, transfer of funds, etc.

All transactions emanating from the use of these instruments (retail transactions) are cleared at BankservAfrica and settled in SAMOS.

Outlined below are some of the payment instruments used within the South African payment industry.

##### 2.2.1.1 EFT credit

EFT credit transactions originate when a customer instructs their bank via various channels, eg electronic file generation, internet, mobile phone, etc, to make an electronic payment to a third party, accepting that such payment will be made that day or on a future date. Payment is only effected once the customer has been authenticated by the bank and sufficient funds are available.

Subsequent to routing of the payment instructions to the relevant banks, the gross interbank obligations resulting from the cleared transactions are calculated and communicated to the SARB for settlement by the participating banks.

EFT credit payments are widely used by employers to pay salaries and are increasingly being used by retail customers in place of cheques.

The risk emanating from EFT credit transactions is lower since the transactions are “credit-push” in nature, ie the payer initiates the payment.

EFT credits are the most commonly used payment instruments in South Africa and have increased substantially over the years. EFT credits comprise approximately 70% of all retail payments settled in SAMOS.

The value of EFT credit transactions settled in SAMOS increased from approximately R3 trillion in 2006 to R4.8 trillion in 2010, or by 58%.

#### *Real Time Clearing (RTC)*

When utilising internet banking, customers have the option to expedite payments by selecting the RTC payment stream instead of the standard EFT credit. This payment stream was developed to provide increased transaction speed and convenience to customers. Once the customer is verified, and funds permitting, the transfer is effected, the payment instruction is immediately processed and the payee credited within 60 seconds.

The RTC payment option was introduced in 2007. The value of RTC payments settled in SAMOS in 2010 amounted to R38.7 billion.

#### *2.2.1.2 EFT debit*

EFT debits are used to collect monthly premiums on insurance policies, mortgage and hire purchase payments, medical aid subscriptions, etc. They provide the payer with a cheap and very convenient means of making recurring payments.

EFT debits provide a facility whereby a beneficiary can collect money from a payer’s bank account provided that they have been given either a written or recorded voice mandate to do so.

The value of EFT debit transactions settled in SAMOS in 2006 amounted to R322 billion and increased by 78% to R574 billion in 2010.

#### *2.2.1.3 Cheques*

The current view in South Africa regarding cheques is that they are outdated, expensive to process and vulnerable to fraud. Electronic payments are viewed as safer, technologically more advanced and more cost-effective.

However, there would appear to be a number of companies that still prefer to pay by cheque, because the delay in clearing allows for cash float management, and the cleared and processed cheques present irrefutable proof of payment.

It is thus very difficult for a client-centric business like banking to summarily stop providing cheques as a payment instrument. The challenge will be for the industry to wean its remaining cheque-using customers off cheques by persuading them to use the alternatives.

The value of cheques settled in SAMOS in 2006 was close to R1.4 trillion and decreased by 39% to R838 billion in 2010.

#### *2.2.1.4 Cards*

Cards are the fastest-growing global non-cash payment instrument, and in recent years have been pivotal to the growth of retail financial services. As a means of payment, cards are the primary alternative to cash and cheques, offering convenience for consumers and merchants alike, making the payment system more efficient and secure.

South African banks offer Visa, MasterCard and/or American Express branded credit cards, which can be used in ATMs and are widely accepted in retail establishments. However, the rules governing participation in Visa and MasterCard schemes are established by their respective international bodies.

The value of card transactions (both debit and credit) settled in SAMOS in 2006 amounted to R150 billion and more than doubled to R303.6 billion in 2010.

#### *Debit cards*

Debit cards are issued against a demand deposit account, such as a current or savings account. Thus usage of the debit card is restricted to funds held in the particular bank account.

Similar to a debit card, a cheque card is issued against funds held by the customer in a banking account.

The uptake of debit cards in South Africa has been substantial. From December 2006 to December 2010, the settlement of debit card transactions in SAMOS increased by 173%.

#### *Credit cards*

A credit card is essentially a payment instrument through which purchases can be made utilising credit provided by the issuing bank. During the recent financial crisis, growth in the credit card industry has been slow in South Africa, due to high interest rates, shrinking credit limits and more stringent borrowing terms.

#### *Prepaid cards*

Prepaid cards are issued against a preloaded balance and distributed mostly by retailers as gift cards.

At the end of December 2010, South African banks had issued approximately 4 million prepaid cards. Many consumers prefer prepaid cards simply because they have more control over their spending. Many industries in South Africa, such as the mining industry, load salaries, loans and commissions onto a prepaid card. The prepaid card is safe, secure and cost-effective, and alleviates the need to carry cash around.

#### *Petrol cards*

Petrol cards are unique to South Africa and Namibia and were developed as a result of local fuel regulations. Until recently customers could only use cash or a petrol card to purchase petrol at filling stations. Customers can now also use debit or credit cards at selected filling stations.

#### *2.2.1.5 E-money*

The regulation of e-money products and schemes is constantly being developed and applied appropriately as innovation occurs.

In South Africa, only locally registered banks may issue e-money. The money is stored electronically and is a generally accepted means of payment.

Under the Banks Act, deposits of e-money must be held in a separately identifiable e-money account for each holder of e-money. The onus is on the issuer of the e-money to ensure that all relevant legislation is adhered to.

Any person wishing to issue e-money must ensure that the public using the e-money are made aware of the conditions of use and the recourse that the holder of the e-money would have in relation to the issuer.

### 2.2.1.6 Mobile banking

Various initiatives for mobile banking have been undertaken in South Africa recently. Users can access their banking account via their mobile phone, eg for balance enquiries, payments, funds transfers, airtime purchase, etc.

At the end of December 2010, banks reported that 5.4 million customers conduct their banking activities via their mobile phone (for R14 billion in terms of value).

In emerging and developing economies,<sup>1</sup> such as South Africa, millions of people have no access to bank accounts but are nevertheless mobile-phone literate. Banks have identified this lucrative market and the mobile phone has become a vital enabler to provide basic financial services, bridging the gap between the banked and the unbanked population of South Africa.

South Africa has countless breadwinners who live and work in urban economic hubs, but have extended families back home in poorer rural areas, where the building of banking infrastructure does not make business sense. Banks have introduced mobile banking products that allow such breadwinners to send money back home in a safe, simple and affordable manner. The mobile money transfer service means people no longer have to risk giving an envelope full of cash to a middleman, such as a friend or a taxi driver, to deliver to a recipient in a remote area.

Mobile money transfer systems allow a customer to initiate a payment instruction to a beneficiary who does not have a bank account but owns a mobile phone. The beneficiary, once alerted of the transfer, may collect the funds from selected collection points or ATMs using their mobile phone. Banks partner with local retailers to reach communities in some of the most remote parts of the country. One of the main advantages of the service is that the mobile banking technology works across all the networks on any handset or SIM card.

## 2.2.2 Non-cash payment terminals

### 2.2.2.1 Automated teller machines (ATMs)

ATMs of the various commercial banks are distributed throughout South Africa and are used extensively to effect numerous banking transactions, eg cash withdrawals, acceptance of deposits, bill payments, funds transfers, balance enquiries, etc.

The ATM infrastructure is provided by the respective banks, whose brands are displayed on the ATM. Customers may use ATMs of other banks than their own and are charged a service fee for such transactions.

*Mini-ATMs*, also known as self-service devices (SSDs) offer limited functionality compared to ATMs. Instead of dispensing cash, a mini-ATM issues a paper voucher that may be encashed or used for the purchase of goods at a specific merchant. Mini-ATMs are deployed in rural areas where there is limited or no access to ATMs and are situated in selected merchant stores.

*Self-service terminals* (SSTs) are devices with the same electronic features and functions as those of an ATM, except that they do not dispense cash.

At the end of 2010 there were 23,259 ATMs, 3,385 mini-ATMs and 1,562 SSTs in South Africa.

---

<sup>1</sup> <http://www.imf.org/external/pubs/ft/weo/2011/01/weodata/groups.htm>.

### 2.2.2.2 Terminals for electronic funds transfer at the point of sale (EFTPOS)

EFTPOS terminals are located at participating retail institutions to enable consumers to purchase goods and services using either their debit or credit cards. Consumers are also able to withdraw cash at the merchant's EFTPOS terminal.

The infrastructure for the terminals is in most instances provided by the merchant's bank. However, some retail institutions contract with external companies to provide the necessary infrastructure. As at the end of 2010 there were 273,798 bank-owned EFTPOS terminals in South Africa.

### 2.2.3 Interchange fee regulation

The regulation of interchange fees has become a contentious issue in many countries, South Africa being no exception.

Recently, an enquiry was launched into the fee structure of the South African banking sector by the local Competition Commission. The enquiry focused on the high bank charges and the lack of transparency thereof, emanating from the market concentration of the four big banks in South Africa. Interchange fees and the regulation thereof formed part of the enquiry.

Although the SARB does not regulate interchange fees, it is proposed that the SARB play the role of facilitator (and not price regulator) in the interchange fee determination process. It is imperative that the parameters considered for price determination be transparent and reasonable, and that the relevant stakeholders, ie both banks and non-banks, be part of the process.

## 3. Payment systems

### 3.1 General overview

As highlighted previously, South Africa has only one national payment settlement system, SAMOS. The SAMOS system is an automated interbank settlement system provided by the SARB for banks to settle their interbank obligations on a real-time gross basis, or under a delayed gross settlement arrangement.

SAMOS is used for the settlement of all large-value, retail and securities transactions.

The SAMOS system is linked to the various participant banks, clearing systems and operators.

### 3.2 Participation

Different tiers of banks or participants function within the payment system. There are currently 23 participants in the SAMOS system.

According to the NPS Act, the following institutions are permitted to be participants in SAMOS and to use the system for settlement purposes:

- the SARB;
- commercial banks or branches of foreign institutions registered under the Banks Act, 1990;
- mutual banks registered under the Mutual Banks Act, 1993;
- cooperative banks registered under the Co-operative Banks Act, 2007; and

- designated settlement system operators such as CLS Bank International, which operates the CLS system.

Banks which are not participants in SAMOS may, however, use sponsorship arrangements through other qualifying banks to clear and settle on their behalf.

### **3.3 Types of transactions**

Large-value interbank transactions are settled one by one on a real-time gross settlement (RTGS) basis. Settlement is final and irrevocable.

Low-value retail payments such as EFT, card, ATM and cheque transactions are settled in batches on a deferred basis.

Settlement of equity, bond and money market obligations also takes place on a batch settlement basis, at predetermined times throughout the business day.

In terms of the settlement value in the overall settlement system, on average, large-value payments represent 92% of the value of the transactions settled and retail transactions 8%. However, the volume of transactions in the retail network far exceeds that of transactions in the large-value settlement system.

The total value settled through the SAMOS system in 2006 and 2010 amounted to R59.3 trillion and R75.6 trillion, respectively, representing an increase of 27%. The total number of transactions processed in the same periods was 1.9 million and 3.3 million, respectively, which means an increase of 76%.

### **3.4 Operation of the system and settlement procedures**

SAMOS operates round the clock, seven days a week. The settlement day starts at one second after midnight and closes at midnight. The settlement cycle is divided into different windows which dictate the types of instructions allowed and accommodates specific processing at predetermined times within the settlement day.

Each SAMOS participant has a settlement account, from which interbank settlement obligations are settled, and a loan account in SAMOS.

Participants must lodge the prescribed collateral (comprising the liquid asset requirements prescribed by the Banks Act, 1990) at the SARB. This collateral is registered in SAMOS and is used to secure intraday loans and to provide sufficient liquidity to ensure the smooth functioning of the settlement system.

SAMOS messages are based on the Society for Worldwide Interbank Financial Telecommunication (SWIFT) standards and message types. All SAMOS participants must be registered at SWIFT and use a SWIFT BIC-8 code. Each participant has a unique number which identifies it to other users of the system.

In order to guard against a possible failure of SAMOS, all instructions are mirrored to the SARB's backup site. This site is a fully functional office with full-time business support personnel. Each settlement member has its own contingency arrangements to address the possibility of an internal systems failure during the day. These may take a variety of forms, to suit the individual participant, and remain the responsibility of the individual member.

### **3.5 Risk management**

Upon the implementation of SAMOS, it was determined that certain retail payment systems were being used incorrectly for large-value payments, thus creating excessive exposures in

those systems. These exposures posed a risk to the entire payment system. To address this, item limits were introduced for specific payment instruments in the retail payment system.

In addition to reducing settlement risk, the implementation of item limits increased the value of payments settled on an immediate finality basis in SAMOS, to more than 90%. The retail payment systems were therefore, reduced to less than 10% of the total settlement value.

A further risk reduction measure taken by the SARB was to move to settlement on the value day and to discontinue the practice whereby batches were settled as per the previous business day. All transactions submitted for the day are settled by that night. Same-day settlement reduces risk as overnight exposures are eliminated.

SAMOS provides facilities for interbank payments to be settled on a real-time basis, that is, finally and irrevocably across the books of the SARB. Settlement risk is thus significantly reduced and principal risk is non-existent.

The SAMOS system settles on a pre-funded (credit-push) basis. When the necessary funds are available, settlement takes place immediately. If a bank has insufficient funds available in its settlement account, the SAMOS system will automatically grant a loan to the bank against acceptable collateral and settlement will then take place immediately. However, when there are neither sufficient funds nor sufficient collateral for a loan, settlement will not take place.

SAMOS is also used to settle the repurchase agreement (repo) transactions that are conducted for monetary policy purposes. Banks can obtain central bank funds via repos. The movement of funds resulting from repo transactions is effected through the SAMOS system in real time. The real-time capability of the settlement system ensures the effective and rapid transmission of monetary policy signals through the financial system, and paves the way for more dynamic interbank and money markets. To limit operational risk, participants are required to have sufficient business continuity planning and disaster recovery facilities in place and to test them regularly.

### **3.6 Pricing**

Charges levied for the use of the SAMOS system are based on cost recovery and include processing and network usage. An account management fee is also charged annually.

Penalties are levied for uncertified and invalid messages, as well as for attempting to effect settlement without sufficient funds.

All charges are transparent to the participants.

### **3.7 Major ongoing and future projects**

The SAMOS system was developed and implemented over 10 years ago. Originally developed as an RTGS system, it has since evolved into a hybrid system to accommodate liquidity optimisation mechanisms to facilitate bond and equity settlements. However, the hybrid evolution of the system and its functionality has been in line with worldwide trends, best practice and standards.

A review of the SAMOS application and settlement network infrastructure in 2009 determined that the system still met the needs of the settlement stakeholders and was viable for the long term.

With the evolution of technology, minor enhancements to the system are ongoing.

## 4. Systems for post-trade processing, clearing and securities settlement

### 4.1 General overview

The only exchange for trading securities in South Africa is the Johannesburg Stock Exchange (JSE Ltd). The JSE is licensed as an exchange under the Securities Services Act, 2004 (Act No 36 of 2004) and is Africa’s premier exchange. The JSE has evolved from a traditional floor-based equities trading market to a modern securities exchange providing fully electronic trading, clearing and settlement in equities, financial and agricultural derivatives and other associated instruments and has extensive surveillance capabilities.

Strate, the South African central securities depository (CSD), is responsible for the settlement of a number of securities including equities and bonds for the JSE, as well as a range of derivative products such as warrants, exchange-traded funds, retail notes and tracker funds. The settlement of money market securities has also recently been added to its portfolio of services.

In September 1997, a team of banks and JSE representatives evaluated systems that would suit South African requirements. It was concluded that the Swiss system was the right system for South Africa, as Switzerland was one of the few countries at that stage to comply with the G30 recommendations and in particular to achieve true simultaneous, final and irrevocable delivery versus payment (SFIDVP). The successful implementation of the South African Financial Instruments Real-Time Electronic Settlement (SAFIRES) system by Strate in 1999 marked the beginning of a new era in South African settlement.

SAFIRES and its corresponding front-end system, SAFIRES Front End (SAFE), have made the transition from a paper-based to an electronic-based environment possible.

There is currently no central counterparty in place for equities or money market instruments although, through its specific functioning, the JSE does provide for an underlying guarantee in respect of on-market transactions.

The following diagram depicts the structures post-trade.

Market	Asset class	Trading platform	Clearing	Settlement	
				Securities	Cash
Equities	Equities	JSE	JSE and CSD	CSD (simultaneous, final & irrevocable delivery vs payment)	SARB (central bank funds via RTGS system)
Bonds	Government and corporate debt instruments	JSE	CSD	CSD (simultaneous, final & irrevocable delivery vs payment)	SARB (central bank funds via RTGS system)
Money market	Government and corporate debt instruments (short-term)	Not exchange-traded	CSD	CSD (simultaneous, final & irrevocable delivery vs payment)	SARB (central bank funds via RTGS system)

## **4.2 Securities settlement systems**

### **4.2.1 Institutional framework**

Strate is a limited liability company jointly owned by the JSE, four domestic banks and one international bank. It operates as a depository and settlement system under the Securities Services Act.

Strate's Board of Directors has the power to change depository services and strategy, amend fee structures, and approve, restrict or even withdraw the use of services for participants. The directors' responsibilities are clearly set out in the Securities Services Act and include the self-regulation of Strate, its participants and anyone using the services of the depository, either directly or indirectly.

CSD Rules, Directives and Notices are issued by Strate as part of its legal statute, wherein the rights and obligations of participants are designated. These are binding on the CSD, CSD participants and any other person using the services of a CSD participant.

Section 39 of the Securities Services Act and Rule 3.10 of the CSD Rules provide specifically for the suspension of a participant.

The Financial Services Board (FSB), the regulatory authority for South Africa's non-banking financial services industry, retains the overall responsibility for the licensing of the CSD (Strate). Various other co-regulatory relationships also exist. A formal licence review is undertaken annually by the FSB.

### **4.2.2 Participation**

Strate has established and maintains risk-based qualifying criteria that govern the admission and ongoing suitability of participants. Participants are obliged to apply independently for permission to fulfil this role in each of the equity, bond and money market environments.

Strate is the appointed regulator of the activities of each participant. Strate Supervision, an independent division within Strate, is responsible for ongoing monitoring to ensure adherence to the established criteria. In fulfilling this function Strate Supervision is accountable to the FSB and is required to work with the external auditors of the CSD participants to obtain assurances that they operate in compliance with the CSD Rules and Directives.

As Strate does not hold a banking licence, all clearing and settlement services for cash must take place through a clearing bank that holds a SAMOS account at the SARB and is a registered member of the appropriate PCH.

### **4.2.3 Types of transactions**

Strate has established appropriate systems, in conjunction with the various market participants, to give effect to clearing, settlement and electronic safekeeping of listed and unlisted company equities, warrants and fixed income securities (government, utility and corporate bonds) as well as money market instruments in South Africa.

Detailed procedures for, and operational timelines applicable to, each instrument type have been agreed and are governed by directives published by Strate from time to time. Strate Supervision, as indicated earlier, monitors adherence to these and retains the power to impose operational fines and/or penalties for non-adherence.

### **4.2.4 Operation of the system**

The securities settlement systems operated in South Africa by Strate are all benchmarked against the 19 CPSS-IOSCO recommendations for securities settlement systems published in November 2001. These are continually revisited in line with international best practice. All

markets operate on the principle of SFIDVP, with settlement taking place in central bank funds via a direct interface to the SARB's RTGS system, SAMOS.

Settlement timelines do, however, differ according to instrument type and can vary from T+0 (in respect of money market instruments and certain allowable same day transaction types) to T+5 (in respect of ordinary on-market equities settlements).

BIS settlement models 1, 2 and 3 are employed, again according to instrument type.

Finality, by law, of both cash and securities is achieved upon settlement in the respective systems of Strate and the SARB. Transactions cannot be unwound once settled and bankruptcy cannot be declared on a participant retrospectively (the so-called "zero hour rule" therefore does not apply).

The funds processing cycle makes use of multilateral netting to enhance efficiency in the CSD systems (apart from the money market system, which employs gross trade-by-trade methodologies). The net interbank obligation of the participating banks is calculated by the SAFIRES systems, and the transactions are submitted for settlement in SAMOS at specific times of the day. Once confirmation of settlement is received from the SARB, Strate then initiates the movement of securities (transfer of ownership).

#### **4.2.5 Risk management**

Effective risk management and operational efficiency are cornerstones of the CSD model employed by the South African financial markets.

##### *4.2.5.1 Liquidity risk*

Liquidity risk is reduced through net cash and securities positions within intraday settlement "windows" for equities and bonds. Any risk exposure is also mediated by small but maturing equities and bond lending/repo markets, and the availability of commercial credit lines. Fails management for equities and warrants is provided by the JSE standing behind all transactions concluded on the Exchange. The JSE does not act as a central counterparty, but its Settlement Authority will step in and settle a failing guaranteed transaction in which a broker was involved. Firstly, however, the JSE member as the introducing party would be called upon by the JSE to settle this transaction by reversing it onto its own book.

Fails management for bond transactions comes through the buy-in procedures which enable participants to access the very liquid repo markets to resolve trade issues. Only when all avenues to alleviate a failing trade have been exhausted (in essence a participant would then be in liquidation default) will the default mechanisms of the JSE be activated. To date no instances of liquidation default have been recorded and no claims have been made against the Bonds Guarantee Fund. The current exchange control regulations restrict the granting of overdraft facilities to any non-resident of South Africa (person or entity). Specific (and timely) requests for such a facility must be submitted to the aforementioned authorities via a commercial bank.

##### *4.2.5.2 Counterparty risk*

For equities and warrants, the JSE Settlement Authority guarantees settlement of on-market trades against the default of a member. Risk control methods used include DVP settlement, which guards against the loss of principal, voluntary and compulsory give-ups by the JSE, and ultimately the use of the JSE Guarantee Fund to compensate direct losses as a result of a member default (but without guaranteeing settlement to counterparties of the defaulted broker). Counterparty risk for off-market trades is controlled only by the use of the DVP principle, with no settlement guarantees employed. These transactions constitute only a small minority of the settlement volume passing through Strate.

Participants of the depository's bond settlement service are limited to the major South African banks, hence risk of a participant default is low. Should such a default occur, however, the SARB has undertaken to manage the situation to protect against contagion and has, as part of its overall management approach, developed a comprehensive strategy for dealing with such an event.

#### *4.2.5.3 Asset servicing risk*

Strate's primary role is that of information consolidator, collating information received from its participants before passing this on to the issuer (or its agent). The market works according to strict deadlines (as published in Strate Directives) and, following the implementation of the Equities Corporate Actions Enhancement Project in April 2010, processes are largely automated. Very little, if any, manual intervention is required.

#### *4.2.5.4 Financial risk*

Possible claims against the depository are limited, by law, to instances of gross negligence only. Strate assumes no credit risk for transactions processed by its participants and only undertakes to distribute the proceeds of corporate/capital events once these have been received from the relevant issuer company.

#### *4.2.5.5 Operational risk*

Operational controls and procedures are defined and have been audited by major audit companies in recent years. These reports have not highlighted any material weaknesses, and the controls evaluated across the organisation have been considered adequate, appropriate and effective to provide reasonable assurance that risks are being managed and that objectives should be met. There have been no material breakdowns in controls or losses incurred due to operational breakdowns since Strate's inception.

#### *4.2.5.6 CSD-on-CSD credit risk*

Strate successfully connected to the Link Up Capital Markets infrastructure in November 2010. The implementation of actual linkages to another CSD is, however, still dependent upon changes to legislation. Although the new Companies Act has been promulgated, enabling changes are still required. These should be accommodated in the Financial Services Bill that is expected to replace the Securities Services Act during 2012.

### **4.2.6 Links to other systems**

As mentioned above, Strate does not currently have links in place to any other settlement system, although it has recently become a member of the Link Up Capital Markets group.

The intention is to forge appropriate links to (one or more) prominent European CSDs in support of existing and future investment requirements.

### **4.2.7 Pricing**

Strate pricing is published on its website and is considered transparent to users.

Prior to the presentation of proposed pricing to the Strate Board of Directors for approval, the relevant market stakeholders are consulted. Thus, all stakeholders have an opportunity to comment on proposed fees prior to their implementation. Although the stakeholders may not always agree with the pricing, the process remains transparent.

The bulk of the Strate charges levied in the various markets are transaction-based and dependent upon successful completion of individual transactions for a fee to be generated. Specific charging structures differ for each market (equities, bonds and/or money market securities).

#### **4.2.8 Major ongoing and future projects**

As mentioned above, one of the key focuses at this time is the implementation of the first CSD-to-CSD linkages.

Strate also continues to invest in the improvement of the technology and functionality used to support its various markets. The Money Market development programme is ongoing and the introduction of the necessary functionality to support category 3 instruments was achieved successfully in August 2011.

Strate, in consultation with the JSE and the various role players, is also actively involved in an assessment regarding the redevelopment of the bonds settlement application.

#### **4.3 Use of securities infrastructure by the central bank**

Monetary policy decisions are implemented by the SARB's Financial Markets Department through a range of refinancing operations conducted with the commercial banks as counterparties and which are executed at or with a spread to the repo (policy) rate. In addition to the refinancing operations, the department also conducts a range of open market operations to influence liquidity in the money market. Market operations are undertaken in both the domestic and foreign exchange markets.