Currency Futures trade on the JSE's Currency Derivatives Trading Platform

JSE

Currency Derivatives

Currency Futures

Currency Futures & Options trade on an electronic trading platform, offering an efficient, electronic, automatic and transparent platform for the trading of all currency derivative products

What are Currency Futures?

A currency futures contract is a contract that allows market participants to trade the underlying exchange rate for a period of time in the future. Currency futures are agreements between two counterparties where one counterparty buys (longs) the underlying exchange rate and the other sells (shorts) the underlying exchange rate on a specified future date. The underlying instrument of a currency future contract is the rate of exchange between one unit of foreign currency and the South African Rand.

Currency futures are contracts that allow participants to take a view on the movement of the exchange rate as well as hedge against currency risk. Currency futures will be used as a trading, speculating and hedging tool by all interested participants.

Currency Futures Contracts offered

Currency derivatives offer the following currency futures contracts:
- Dollar/Rand ($1,000)
- Euro/Rand
- Sterling/Rand
- Australian Dollar/Rand
- Japanese Yen/Rand
- Canadian Dollar/Rand
- New Zealand Dollar/Rand
- Chinese Renminbi/Rand
- Rand/Japanese Yen
- Dollar/Rand Maxi ($100,000)
- Swiss Franc/Rand
- Any-Day Expiry (Flexible expiry date)
- Can-Do (Exotic Structures)
- Botswana Pula/Rand
- Quanto Futures

Currency risk

Currency risk or foreign exchange exposure is the exposure to an unfavourable movement in a currency or exchange rate. Investors importing goods from abroad or exporting goods abroad and transacting in foreign currency or the investor's home currency are susceptible to changes in the exchange rate and, as a result, this changes the expected income. Individuals traveling overseas are also subject to exchange rate fluctuations and the weakening of their home currency to the foreign currency in the country that they are visiting. Theoretically, currency risk is the combination of transaction, translation, economic and political exposure.

Transaction exposure refers to cash flow exposure. This is the currency risk a firm has to face when expecting to receive or pay a fixed amount of foreign currency in the future as these cash flows will be revalued in the case of a change in exchange rates.

Translation exposure, also known as accounting exposure, is the degree to which exchange rate fluctuations affect a multinational parent company's book value when financial statements of the company's global operations are consolidated and stated in the parent company's home currency.

Economic exposure, also called operating exposure, measures the change in a company's expected operating cash flows as well as the market value of the company due to a change in exchange rates. Economic exposure can affect either the company's profitability or market share by hampering its competitive position in a particular market.

Political exposure refers to changes in an exchange rate value caused by political actions undertaken by a country's government. Examples of political risk include government imposing changes in tax laws and exchange control regulations, both of which will have an effect on the exchange rate of that country's currency compared to other currencies.

Factors that influence exchange rates

An exchange rate between two countries is determined by demand and supply of the relevant two currencies, which is influenced by economic factors including, among many others, the flow of imports and exports, the flow of capital and relative inflation rates.

One factor affecting an exchange rate is the merchandise trade balance. By definition, the merchandise trade balance is the net difference between the value of merchandise being exported and imported into a particular country.

For example, consider the exchange rate for USD/ZAR. South Africa (SA) imports products from the U.S. To pay for them, South Africans need US Dollars; therefore, the SA companies trade SA Rand for US Dollars. On the other hand, because Americans desire SA goods, they purchase SA Rands. The net effect is an increase in the supply of US Dollars and SA Rands. The SA demand for American goods and services contributes to the demand for US Dollars while American purchases of SA goods and services contribute to the demand of SA Rands.

In this case, the net difference between SA purchases of American goods, and American purchases of SA goods, is the merchandise trade balance between the two countries. If the SA demand for American goods is higher than the American demand for SA goods, the demand for US Dollars is higher than the demand of SA Rands. As a result the US Dollar would appreciate against the SA Rand.

The flow of funds between countries to pay for stocks and bonds purchases also contributes to the exchange rate movements. In the near term, these capital flows are greatly influenced by yield or interest differentials. This is known as interest rate parity, which holds that the interest rate differential between two countries is equal to the differential between the forward exchange rate and the spot exchange rate.

Over the long run, the spot exchange adjusts to reflect the difference in interest rates between the two countries. All else being equal, the higher the yield on SA securities compared to American securities, the more attractive SA securities are relative to American securities. An increase in SA yields would tend to raise the flow of U.S. Dollars into SA securities as well as decrease the outflow of Rands to American securities. Combined, this increased flow of funds into SA would lower the value of the U.S. Dollar and increase the value of the Rand, therefore, the SA Rand to U.S. Dollar ("ZARUSD") ratio, as it is represented in the forex market, would increase, hence you would need more Dollars to buy one SA Rand.

The rate of inflation is another factor influencing currency exchange rates. Inflation occurs when the rate of money growth in an economy is higher than the rate of growth in real GDP, hence more money is chasing fewer goods, and this in turn drives up the prices of these goods. Since exchange rates are an expression of one unit of a currency in terms of another, inflation essentially changes the relative value of this relation. For example, if SA is experiencing higher inflation than US then the USD/ZAR ratio increases to represent the increased value of Dollars relative to SA Rand. Or seen in another way, one Rand will now buy less Dollars. This fact is rooted in the concept of a purchasing power parity, which holds that, over the long run, the exchange rate adjusts to reflect the difference in price levels between countries, a given item will thus in theory have the same price in two countries adjusted by the prevailing exchange rate.

Individuals, in other words, have no limits to the value traded in the currency futures market

Currency Futures dispensations

Currency futures were launched predominately as a retail product. The initial dispensation granted by the Minister of Finance in 2007 allows individuals to trade over and above their two million Rand foreign allocation allowance stipulated by the South African Reserve Bank. Individuals, in other words, have no limits to the value traded in the currency futures market.

The Minister of Finance in his 2008 budget speech extended the currency futures qualifying audience to include all South African corporate entities. Corporate entities, including limited or unlimited companies, private and public companies, close corporations, partnerships, trusts, hedge funds and banks are authorised to trade currency futures with no restrictions on the value traded. Corporate entities do not need to apply to Reserve Bank for approval to trade the currency futures nor do they have to report their trades.

Currency Futures qualifying clients

The following categories of clients are permitted to trade and hold positions in currency futures and are referred to as "qualifying clients."
▶ A South African individual with no limits applicable.
▶ A South African corporate entity with no limits applicable.
▶ A non resident individual or non resident corporate entity with no limits applicable.
▶ A resident financial service provider and collective investment scheme subject to their foreign portfolio allowance.
▶ A resident pension fund organisation subject to their foreign portfolio allowance.
▶ A resident long-term or short-term insurer subject to their foreign portfolio allowance.
▶ A hedge fund may trade in an unlimited capacity provided that they are not regulated under investment managers' rules.

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Market participants

There are four categories of participants in the currency derivatives market:
- ► Hedgers
- ► Arbitrageurs
- ► Investors
- ► Speculators

Hedgers use currency futures to protect an existing portfolio (or an anticipated investment) against possible adverse currency movements. Hedgers therefore seek to reduce risk. Hedgers have a real interest in the underlying currency and use futures as a way of preserving their performance.

Arbitrageurs profit from price differentials of similar products in different markets, e.g. price differentials between the spot exchange rate and futures price.

Investors use currency futures to enhance the long-term performance of a portfolio of assets.

Speculators use currency futures in hopes of making a profit on short-term movements in prices. Speculators therefore seek to enhance risk with the aim of making a profit. Speculators have no interest in the underlying currency other than taking a view on the future direction of the currency's price.

A successful and efficient market is made up of a healthy balance of the abovementioned participants.

Forward Contracts versus Futures Contracts

Forward and futures contracts share characteristics. Both allow investors to hedge against currency risk. Forward contracts differ to futures contracts in that they are over-the-counter (OTC) contracts traded directly between banks and financial institutions. OTC contracts are often tailored to meet the needs of each individual customer. The disadvantage, however, is that forward contracts are often reserved for larger institutions. Institutions that trade forwards are also required to have all the necessary transactional documentation before a forward contract can be entered into. The buyers and sellers of OTC derivatives are also subject to counterparty risk.

Futures contracts are exchange traded contracts and thus standardised with respect to quantity and value of the underlying, quotation method and date of expiry.

Prices for each contract are negotiated between buyers and sellers via the electronic order matching platform. Currency future brokers input orders which are automatically matched on the basis of time and price priority. Currency futures therefore allow for transparent pricing. Currency futures also equalise the playing field for all investors.

The product allows for individuals to access the currency market generally reserved for institutions and allows for smaller corporate entities to access favourable rates generally reserved for the larger corporates.

Currency futures unlike forwards allow investors to take a view on the movement of the underlying exchange rates.

Performance by the counterparties to a futures contract is guaranteed on Currency Derivatives via JSE Clear (the JSE's clearing house) for all derivative contracts. Standardised contracts traded on a regulated exchange enable the risk of both parties to be reduced and also increases the liquidity in the secondary trading market. Liquidity refers to the ability of trading participants to get in and out of their positions when they choose to.
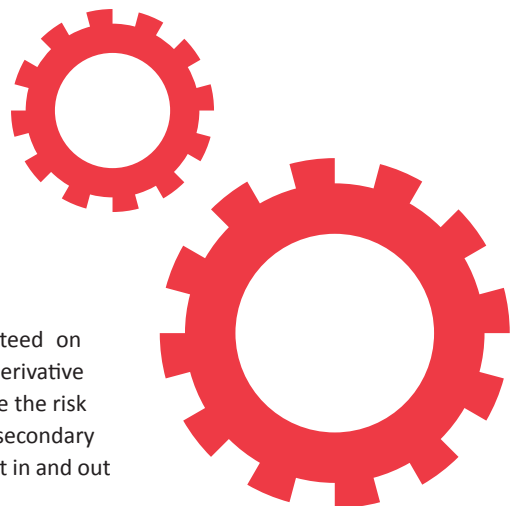
How are Currency Futures quoted on the Exchange's Platform?

The system quotes all currency future prices in the same way as the underlying spot exchange rate. This is represented as the number of Rand per foreign currency to four decimal places, e.g. 1$ to R 8.2709.

Exchange rate, ratio of exchange between two currencies

Base currency	US$1	€1	£1
Quoted currency	ZAR 8.2709	ZAR 12.834	ZAaR 16.4098

Note: Please refer to page XX for details, as the Japanese Yen/Rand contract differs.

Pricing Currency Futures Contracts

Currency futures prices are dependent on the underlying spot exchange rate as well as the interest rates differential between the two relevant countries in question. The following equation explains the currency future pricing model:

$$\text{forward rate} = \text{spot rate} \left[\frac{1 + \dfrac{\text{interest rate}_{\text{quoted currency}} \times \text{day count}}{\text{annual basis}_{\text{quoted currency}}}}{1 + \dfrac{\text{interest rate}_{\text{base currency}} \times \text{day count}}{\text{annual basis}_{\text{base currency}}}} \right]$$

Where:
▸ **Forward rate** is the futures contract price quoted in local currency units per one unit of foreign currency.
▸ **Spot rate** is the rate quoted in local currency units per one unit of foreign currency.
▸ **Day count** is time to maturity.
▸ **Quoted interest rate** is the domestic interest rate.
▸ **Base interest rate** is foreign currency interest rates.

Currency Futures price sensitivity

Currency futures prices are sensitive to changes in each of the components in the pricing model. In other words, currency future prices are sensitive to changes in the underlying exchange rate and the interest rate differential between the two countries in question.

The basis

The difference between the currency futures and the underlying exchange rate is called the 'Basis'. The Basis reflects a number of factors, collectively called 'Carrying Costs' (e.g. interest differential). The Basis difference narrows as the currency future contract nears expiry, this is known as basis convergence.

Minimum contract size

Currency futures have a minimum contract size of 1 000 foreign underlying currency (e.g. $ 1 000).

Note: Please refer to page 9 for details, as the Japanese Yen/Rand and Dollar/Rand Maxi contract differs.

Expiry months and date

The expiry months specified for foreign currency futures contracts are March, June, September and December. All currency futures contracts expire two business days prior to the third Wednesday of the expiry month or, if that day is not a business day, then the previous business day.

Currency Futures prices vs Spot Currency prices nearing expiry
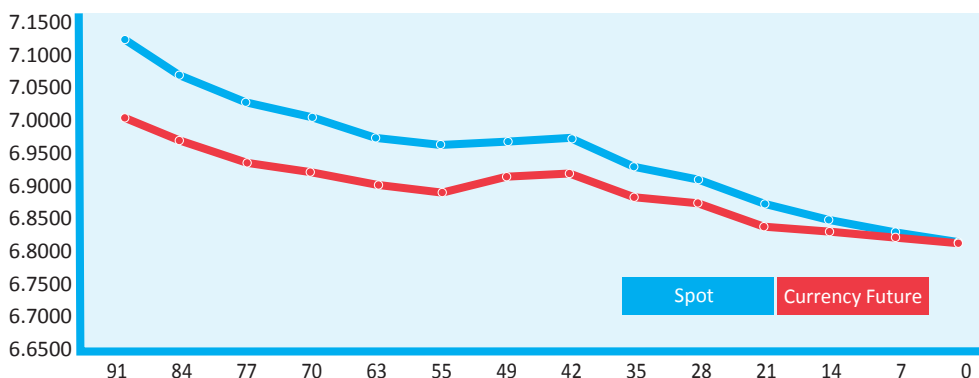
Expiry prices

The price at which the foreign currency futures contracts expire is calculated from an arithmetic average of the underlying spot taken every 30 seconds for 5 minutes, ending at 10h00 New York time. SA Summer: 16h31 -17h00 and SA Winter: 15h31 - 16h00

Settlement

The foreign currency futures contracts are cash settled in Rand. In other words, no physical delivery of the underlying currency will ever take place.

Margining

Each trade is matched daily on the JSE's trading system, ie. the exchange ensures that there is a buyer and a seller to each contract traded. The JSE's clearing house, JSE Clear, becomes the counterparty to each trade once each transaction has been matched and confirmed. The clearinghouse therefore ensures settlement takes place on each trade. To protect itself from non-performance, JSE Clear employs a process known as margining. This mechanism is two-fold:

▶ **Initial margin**
   Firstly, when a position is opened (either long or short), the investor is required to pay an initial margin in cash with the broker who subsequently deposits it with the clearinghouse. This amount remains on deposit as long as the investor has an open position. The initial margin attracts a

market related interest rate which is refunded to the investor once the position is closed out, or if the contract expires. The initial margin requirement varies between the different currency futures offered.

- ▶ **Variation margin – daily settlement of profits and losses**
  Secondly, the exchange re-values each position at the close of each business day, and this process is known as Mark-to-Market (MTM). Between 16h55 and 17h00 the exchange takes an arithmetic average of every traded price that occurs within the last 5 minutes of the trading day. This price becomes the market price to which forward points are added to deliver the final currency future MTM price used in the daily MTM process. Any difference from the previous day's MTM price is either paid to the investors, or paid by the investors to the clearinghouse, in cash and Rand denominated. This payment is called variation margin and is simply the profit or loss on the position.

Contracts are automatically closed out on expiry

All contracts that have not been closed out or rolled over before expiry will go through the expiration process. All contracts held on expiry will be automatically closed out by the exchange. The investor will receive a final variation margin flow which is calculated using the final or closing currency future price and the previous day's closing price. The exchange charges trading fees for all contracts that expire.

How to close a trade position

Currency Future contracts are closed out by entering into an equal but opposite transaction. For example, if an investor had entered into a Long currency futures contract, the investor would close out the trade by selling the contract, i.e. by entering into a Short currency futures contract. The exchange charges trading fees for all contracts that are closed out.

How to roll over a position

All investors who wish to hold their positions beyond the expiry date will be required to roll their positions over into the next expiry date. In other words all investors holding a December contract will need to roll their position into the March contract. Investors will need to close out their positions (as explained) & subsequently enter into the next contract expiry. In other words, if an investor was long a December contract, the investor would have to short the December contract and subsequently enter into a long March contract. The benefit to the investor is that the same exposure is maintained. The exchange offers discounted trade fees for all positions that are rolled over.

Risk of trading Currency Futures

No investment or trading product can offer returns without the investor having to assume some risk. The main risk associated with currency futures trading is attributable to the effect that gearing or leverage has on a position.

A geared transaction is simply 'the deposit of a smaller amount of cash, but being exposed to the full value of the transaction'. Investors deposit the 'initial margin amount' but are exposed to the full nominal value of the contracts traded. Gearing can cause significant profits or losses on a currency future position in a short period of time because of the effect of any movement in the underlying currency. The profits and losses on the underlying currency can be up to ten times more than on the future.

Assume an investor is long the Dollar/Rand futures contract. This investor thus starts to lose money if the Dollar weakens.

▶ *At transaction date*
Number of contracts: Seven contracts at US$ 1 000
Futures price: R 8.2925
Exposure at transaction date: R 58 048 or $ 7 000
Deposit / initial margin: R 2 170 (R 310 initial margin x 7 contracts)
Number of times geared: 26.75 times

▶ *A few days later, assuming significant US$ weakens*
Futures price now: R 7.8250 (5.63% drop in currency)
Exposure at transaction date: R 58 048 or $ 7 000
Deposit / Initial margin: R 2 170 (R 310 initial margin x 7 contracts)
Losses Incurred: R 3 273 (R 7. 8250 – R 8. 2925 x 7 contracts x 1 000)

The investor has thus lost more than the deposit of R 2 170. Losses stand at R 3 273 which are required to be deposited by 12h00 the next day. If the investor cannot meet this demand, the position will be closed out and the R 2 170 deposit is refunded to the account. The net amount owing of R 1 103 is still due and payable by the investor. Even though leverage is also referred to as a benefit, the risk is equal and opposite to any profit that could be earned from a futures trade.

Detailed example of Cash Flows on a Long Currency Futures Position

This table details the daily cash flows that will be debited or credited to the investors trading account during the life of the position.

	Day 1 Trade day open position	Day 2	Day 3	Day 4	Day 5 Trade day close position
Currency future trade price	R 8.2925	R 0	R 0	R 0	R 8.7035
Initial Margin per contract	(R 2 170)	R 0	R 0	R 0	R 2 170
MTM price	R 8.4405	R 8.5515	R 8.3085	R 8.6055	n/a
Profit/(loss) for the day	R 1 036 (8.4405 - 8.2925 x 7 x 1000)	R 777 (8.5515 - 8.4405 x 7 x 1000)	(R 1 701) R 8.3085 - (8.5515 x 7 x 1000)	R 2 079 (8.6055 - 8.3085 x 7 x 1000)	R 685 (8.7035 - 8.6055 x 7 x 1000)
Net cash in/ outflow for the day	(R 1 134) (-2 170 + 1036)	R 777	(R 1 701)	R 2 079	R 2 856 (2 170 + 686)

Summary of Cash Flows: Initial margin R 0 (-2 170 + 2 170) Variation Margin R 2 877 (+ 1 036 + 777 – 1 701 + 20 796 + 686)

Note: this example excludes any trading fees charged by a currency future broker.

Hedging

Currency futures can be used to hedge against currency risk. Currency hedging refers to the elimination of currency risk by entering into an equal but opposite position which responds to a change in the exchange rate in the opposite manner to the position being hedged.

Participants would enter in a long currency futures position in order to protect themselves against depreciation in local currency i.e. ZAR weakening. These investors may have a payment, quoted in a foreign currency, expected in three months time, and are thus exposed to an increase in the exchange rate, i.e. an appreciation of the foreign currency (given the exchange rate is quoted in the home currency per one unit of foreign currency).

Depreciation in local currency escalates the cost of foreign goods in local currency terms, resulting in reduced margins.

The long futures position provides the hedge against the weakening local currency such that losses incurred from purchasing foreign currency at unfavourable level in spot is offset by the gains on the futures contract.

Short currency future investors enter into currency futures contracts to eliminate local currency appreciation. These investors may have foreign currency receivables expected in three months time and are thus exposed to local currency appreciation (local currency strengthening), i.e. a depreciation of the foreign currency.

Local currency appreciation results in less revenue received for the sale of foreign currency. The short futures position provides the hedge against local currency appreciation such that losses incurred from selling foreign currency at spot is offset by the gains on the futures contract.

Example: Hedging transaction in a weakening Rand scenario

Joe is traveling to the USA in December and wants to reduce his risk of a weakening in the US$/R exchange rate when he buys his US$ travelers cheques or currency. In the event that the Rand weakens against the Dollar, the US $ will be more expensive.

In order to hedge against the Risk of a weakening Rand, Joe can purchase a currency futures contract now (ie. September). In doing so, Joe is able to 'lock in' the current exchange rate of R 7.2125. One currency futures contract is worth $ 1 000. If Joe plans to take $ 7 000, he is required to buy 7 currency future contracts thereby making his exposure $ 7 000 and therefore equivalent to his exposure in the spot market or the amount of Dollars he will purchase for his holiday. The currency futures exposure of $ 7 000 equates to an exposure of R 50 488 ($ 7 000 x R 7.2125).

Fortunately the currency futures contract does not require Joe to deposit the full nominal exposure but instead Joe will only have to deposit the initial margin amount. The initial margin is R 1 785 (R 255 initial margin x 7 contracts). Joe will be required to pay a brokerage fee. This fee is negotiated with the member chosen.

In December Joe is ready to buy his travelers cheques at the current exchange rate. Assuming the exchange rate has now moved to R 7.6035, the US$ 7 000 would now cost R 53 226 (an extra R 2 737). Joe is therefore expected to spend more than he anticipated in September.

Although Joe has essentially made a loss after buying the travelers cheques he has made a counteractive profit on the currency futures contracts. The currency futures position has made a profit of R 2 737 (R 7.6035 − R 7.2125 x 1 000 x 7). Joe therefore sells his currency futures contract and uses the profit earned to offset the increased cost of the travelers cheques. Joe has effectively paid R 7.2125 per 1 US$ when purchasing the travelers cheques, three months later. He was therefore successful in locking in the Rand/Dollar exchange rate in September.

Speculating

Speculators are directly opposite to hedgers. Where hedgers try to eliminate risk, speculators want to increase risk in the hope that they will make a short term profit. Speculators enter into currency futures contracts in order to take a view on the movement of the underlying exchange rate. Speculators that view the spot exchange rate to increase (local currency depreciation) will go long a currency futures contract. Speculators that view the spot exchange rate to decrease (local currency appreciation) will go short a currency futures contract.

Example: Speculative transaction in a strengthening Rand scenario

Jill is a trader and she has a view that the US$ will be weakening against the Rand as she thinks interest rates will be falling in the US. Jill expects to profit from such a move. Jill therefore sells 10 currency future contracts at R 8.2245. In doing so she is now 'short' the Dollar and 'long' the Rand.

This position will thus profit from a decrease in the Rand/Dollar exchange rate, i.e. a fall in the Dollar. Jill is therefore exposed to $ 10 000 at R 8.2245 which equates to R 82 245.

Jill is required to deposit initial margin of R 3 100 (R 310 initial margin x 10 contracts). Assuming that over the next few days the Rand strengthens against the Dollar and moves to R 7.8545. Jill decides to close her position by buying 10 currency futures contracts at R 7.8545. Her total profit earned is R 3 700 (R 8.2245 – R 7.8545 x $ 1 000 x 10 contracts).

Jill has therefore made a profit of R 3 700 on an investment of R 3 100, this equates to a return on investment of 120% (3 700/3 100 x 100).

Cash flows on Jill's speculative short Currency Futures position

This table details the daily cash flows that will be debited or credited from Jill's trading account during the life of the position.

	Day 1 Trade day open position	Day 2	Day 3	Day 4	Day 5 Trade day close position
Currency future trade price	R 8.2245	R 0	R 0	R 0	R 7.8545
Initial Margin per contract	(R 3 100)	R 0	R 0	R 0	R 2 170
MTM price	R 8.1405	R 8.1015	R 7.9085	R 7.9000	n/a
Profit/(loss) for the day	R 840 (8.1405 - 8.2245) x - 10 x 1 000	R 390 (8.1015 - 8.1405) x - 10 x 1 000	R 1 930 (7.9085 - 8.1015) x - 10 x 1 000	R 85 (7.9000 - 7.9085) x - 10 x 1 000	R 455 (7.8545 - 7.9000) x - 10 x 1 000
Net cash in/ outflow for the day	(R 2 260) (-3 100 + 840)	R 390	R 1 930	R 85	R 3 555 (3 100 + 455)

Summary of Cash Flows: Initial margin R0 (-3 100 + 3 100) Variation Margin R 3 700 (+840 + 390 + 1 930 + 85 + 455)

Note: this example excludes any trading fees charged by a currency future broker.

All short positions are valued using the formula: $CF_1 - CF_0$ i.e. Today's price minus yesterday's price.

Note: this example excludes any trading fees charged by the exchange, the clearing member or the currency future broker.

Currency Derivatives Specifications	
Name	j-Rand: Derivatives on foreign currencies
Underlying Instrument	Rate of exchange between one unit of foreign currency and SA Rand.
Codes	e.g. Dec 09. ZAUS
Contract Months	March, June, September and December.
Listing Programme	Near, middle and far contracts. Specials on demand.
Expiry Dates & Times	At 10h00 New York time (i.e. 16h00 in SA winter and 17h00 in SA summer) two business days prior to the 3rd Wednesday of the expiry month (or the previous business day if that day is a public holiday).
Expiration Valuation Method	10 Iterations, Arithmetic average of the underlying spot taken every 30 seconds for a period of 5 minutes, ending at 10h00 New York time. (SA Summer: 16h31 – 17h00 and SA Winter: 15h31 – 16h00.
Contract Size	USD: 1,000 nominal JPY: 100,000 nominal USD (Maxi): 100,000 nominal (minimum 3 contracts traded)
Quotations	In Rand per one unit of foreign currency to four decimals; (JPY/ZAR to six decimals)
Minimum Price Movement	0.0001 (R0.10); (JPY/ZAR and $/R Maxi 0,000001)
Settlement	Cash settled in ZAR.
Initial Margin Requirements	As determined by JSE Portfolio Scanning Methodology.
Mark-to-market	Explicit Daily. The forward value of the arithmetic average of the traded underlying taken for a 5 minute period between 16h55 and 17h00.
Exchange Fees	Sliding Scale – See structure on: http://www.jse.co.za/currenciesfees.
Market times	As determined by the JSE (9 am – 5 pm)

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