



**Powerful tools for investing,
speculating or hedging**

JSE

DERIVATIVE MARKET

Equity Derivatives

Single Stock Futures

www.jse.co.za



Johannesburg
Stock Exchange

Single Stock Futures are powerful tools for investing, speculating or hedging. They are a capital efficient method of investing as they provide exposure at a fraction of the cost of buying the underlying shares.

Overview of Single Stock Futures

Single Stock Futures (SSF) have taken the world by storm and the Johannesburg Stock Exchange (JSE) was recently ranked number one in the world in terms of volume (number of contracts traded).

SSF are futures contracts on individually listed shares.

A futures contract is a legally binding agreement that gives the investor the right to buy or sell an underlying listed share at a fixed price on a future date.

SSF are traded on an exchange – in South Africa's case, the JSE. They are standardised contracts with set specifications regarding size (the number of shares per contract), futures contract's expiry dates and tick movement (the minimum upward or downward movement in the price of a security).

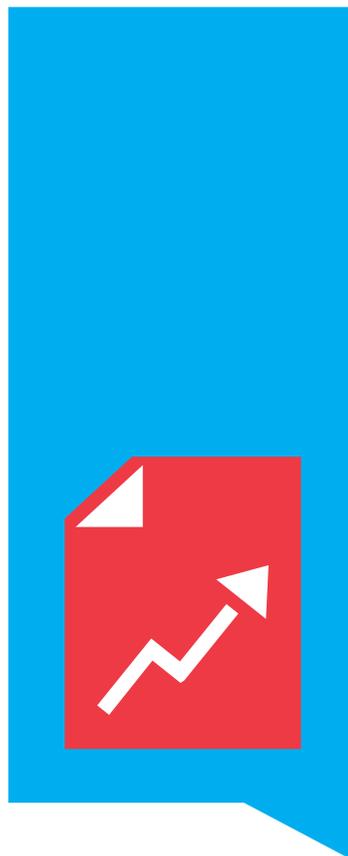
Investors are required to pay an initial margin ('good faith' deposit) upfront when trading in SSF. Interest is earned daily, but paid out monthly, on this margin which is held by the exchange. When positions are closed the initial margin plus interest is paid back.

The notional value of a SSF contract is usually equal to 100 times the underlying share's futures price. This is because the futures contract is an agreement to buy or sell 100 shares at a certain point in the future. This is the case for physically settled SSF. For Cash Settled SSF only the difference in purchasing price and sales price would be transferred between the parties.

For example, if company A is trading at R20 then holding one futures contract is equivalent to investing R2,000 in that company. However, the investor is only required to pay an initial margin of R2 per share or $R2 \times 100 = R200$ per contract. Initial margin is usually 10% - 15% of the value of the underlying shares. Due to this gearing, SSF provide exposure to the underlying share at a lower cost and using much less capital up front than trading in the underlying share. Effectively the investor has agreed to buy 100 shares in the company when the contract expires and to pay interest on the loan of the R2000. This interest is agreed upon in the futures price.

So instead of paying R20 per share the investor will pay R21 per share in 6 months time. This R1 over the spot price indicates the terms of the loan an interest rate of 5% over 6 months. To guarantee that both parties will fulfill their side of the trade deposits of initial margin are placed with the clearing house.

A contract holder can exit a futures contract before the expiry date (this is called closing your position) or keep the contract until the expiration date.



Who uses Single Stock Futures?

SSF appeal to a wide audience – from the sophisticated retail investor to a range of professional traders, asset managers and short-term equity traders. Buyers and sellers of SSF will normally either be hedgers or speculators. Hedgers seek to reduce risk by protecting an existing share portfolio against possible adverse price movements in the physical (or spot) market. Hedgers have a real interest in the underlying shares and use futures as a means of preserving their performance. Speculators use SSF in the hope of making a profit on short-term movements in the futures contract price. They often buy and sell derivatives contracts in their own right without transacting in the underlying share. Speculators may have no interest in the underlying shares other than taking a view on the future direction of its price.

Benefits of SSF

- ▶ SSF offer you an opportunity to protect/hedge your share portfolio by trading SSF in the same underlying share.
- ▶ SSF incur lower brokerage costs than actually trading in the underlying shares.
- ▶ Your initial margin earns interest for the duration of your contract.
- ▶ Corporate actions affecting the underlying shares are taken into account on the futures contract.
- ▶ SSF are characteristically liquid and easily traded.
- ▶ With margin requirements of approximately 10% – 15% of the total exposure, SSF provide a highly capital efficient way to participate in shares. This “gearing” frees up capital for other investments.
- ▶ The JSE independently calculates the closing price on all listed SSF.
- ▶ You can sell/short futures, benefiting from a downward price movement.
- ▶ Transparency – The pricing of SSF is totally transparent. The movement of the futures contract mirrors almost exactly the movement in the spot market.
- ▶ Interest rates – wholesale interest rates are used in pricing and trading these instruments even for a retail investor. The end result is that through the JSE’s clearing and risk management systems, the investor gains a far cheaper cost of funding than is usually available. This is because through deposits and daily margining your credit risk becomes immaterial to the counterparty.
- ▶ SSF are exchange regulated and are guaranteed by JSE Clear the JSE’S clearing house. This means that even if the losing party is unable to pay their losses the clearing house will ensure that any profits due are paid.

Trading in SSF

Opening an account

Like all securities listed on the JSE you have to trade through a JSE member (broker). For a full list of members please visit www.jse.co.za/members. Alternatively you can contact the JSE’s Derivatives Trading Division on 011 520 7000 or derivativestrading@jse.co.za.

Trading Positions

When trading in futures contracts there are two positions that an investor can take:

Long Position – Go Long – Buy Future

Short Position – Go Short – Sell Future

When you ‘go long’ you are buying exposure to the underlying share because you believe the price of the underlying share will increase. If it does so by the time the contract expires (or before the contract expires), you will be able to sell or ‘close’ your position, thereby realising a profit.

You will 'go short' if you believe the price of the underlying share will decrease, thereby realising a profit if the futures price goes down over the life of the contract.

Trading Fees

A trading fees calculator can be found on our website. The fee each investor will pay depends on their broker and the size of their position. The JSE's fee is usually under 2 basis points (0.02%) of exposure and will fluctuate depending on whether your broker trades onscreen or off-screen. Brokers fees are a competitive market and you should compare rates to find the broker that's combination of service and pricing best suits you.

How to price a Single Stock Future

There are 4 factors that determine the price of a Single Stock Future.

- The spot price of the underlying share.
- The financing cost of borrowing funds to buy the underlying share for a specified period.
- The dividends that can be generated by the share.
- Supply and demand.

A futures price is often called a fair value price. To calculate this price the below formula can be used

$$SSF = C - DD + F$$

Where

- ▶ SSF = Fair Value of the futures contract
- ▶ C = Current Spot price
- ▶ F = Financing Cost = $C \times (r/100 \times t/365)$

Where

- ▶ r = annual borrowing rate
- ▶ t = days between entering into the futures contract and the expiry thereof
- ▶ DD (Discounted Dividend) = dividend likely to be received during the life of the futures contract (if no dividend is expected during the contract period this element is ignored).

It is necessary to derive a present value of the dividend based upon the following formula:

$$DD = \text{Dividend} / ((1+r/100)^{(v-p/365)})$$

Where

- ▶ r = annual borrowing rate
- ▶ v = dividend payment date
- ▶ p = current date

If company XYZ's share price is going up and you would like to calculate a Fair-Value price for the March 16th 2010 expiry you will need the following data:

- ▶ Their share price C is trading at R100.
- ▶ You will be charged an Interest/Funding rate of 8.5% p/a
- ▶ XYZ are expected to pay a dividend of R3 on the 4th of February

Today is the 8th of January 2010. Now we remember our formula of $SSF = C - DD + F$. There are 67 days till the contract expires and 31 days until the dividend is paid.

- ▶ $F = R100 \times (8.5\% \times 67/365) = R1.56$ (this is the interest amount that you will pay for the period)
- ▶ $DD = R3.00 / (1.085)^{31/365} = R2.98$ (this is the amount by which the dividend will reduce the loan.)
- ▶ $C - DD + F = SSF$
- ▶ $R100 - R2.98 + R1.56 = R98.58$

As we can see from the above example the effective interest rate charged is very low as the liquidity provider (often a bank) / individual who is writing you the SSF is receiving the dividend which partially offsets the interest costs.

A Single Stock Future when hedged by entering the opposite trade in the stock is effectively a fully collateralised low credit risk interest rate instrument. The liquidity provider is charging you a low rate of interest because even if you default they can sell the shares by the next day and will retain your initial margin.

As share markets are liquid and relatively cheap to transact in, the loan becomes in effect fully collateralised allowing the profiting counterparties and the clearing house to still make a profit or not suffer a loss in the event of a default.

For a “short” price from a liquidity provider you will receive slightly less interest as they will need to borrow the script and will be paying you interest rather than charging you interest. They will pay someone who owns the stock a fee. This borrowing fee is currently about 50 – 80 basis points (0.5% or 0.8%) of the value of the stock.

The liquidity provider will then sell this borrowed stock and receive interest on the proceeds of the sale. The liquidity provider must replace the loaned stock at a later date.

The bank/liquidity provider invests the proceeds of the sale of the borrowed stock and earns interest on this money.

When the contract expires they will have sufficient interest to pay you back and make a profit. They will buy the stock from you and return it to the party they borrowed it from. In this case by going short you are agreeing to sell your stock at a point in the future at a certain price let’s say R90.

You hope when shorting the future that the price will go down to R60. If it goes down to R60 you can buy the stock at R60 and sell it to the “long” for R90 plus interest on expiry. You will make a profit of R30 plus interest.

Margining

There are two types of margins: initial margin and variation margin.

▶ Initial margin

When a position is opened (either long or short), the investor is called on to pay an initial margin. The initial margin is approximately 10% – 15% of the value of the underlying share. This is an estimate of the maximum amount that is likely to be lost in one day. This amount remains on deposit as long as the investor has an open position. It attracts a market related interest rate, which is refunded to the investor once the position is closed out, or the contract expires.

The initial margin protects investors from counterparty risk (the risk associated with one of the initial parties defaulting).

Example

A deal was concluded whereby a client of Broker ABC bought a Single Stock Future (SSF) contract to the value of R1,700. Broker ABC would also have arranged a seller of one contract at this price. The JSE would require an initial margin deposit of approximately R170 from both the buyer and the seller of the contract.

► **Variation margin**

This can be seen as your daily profit or loss. At the end of each trading day, contracts are Marked-to-Model (M-t-M). The exchange independently calculates a fair value (or closing price) for each contract. The difference between your traded price, if traded on the day, and that day's closing M-t-M will result in profit or loss. The following day when this position is brought forward, the difference between the current day's M-t-M and the previous day's M-t-M results in a profit or loss.

This variation margin is a daily cash-flow that is payable to the clearing house via the clearing member. The idea behind variation margin is that each contract is paid each day and thus only retains one day's credit risk which is offset by initial margin. It also makes the contracts fungible/exchangeable as you couldn't swap a contract where you are owed R500 for a contract where you are owed R200.

Example

	Date	Closing price	Change	Seller		Cash Flow	Buyer	
				Payment	Balance		Payment	Balance
Initial Margin	Day 1	R 1,700		R -170	R 170		R -170	R 170
Variation Margin	Day 2	R 1,720	R 20	R -20	R 170	20 >>		R 190
Variation Margin	Day 3	R 1,650	R -70		R 220	70 <<	R a50	R 170
Variation Margin	Day 4	R 1,740	R 90	R -90	R 170	90 >>		R 240
Margin Account Settled	Day 4			R 170	Nil		R 240	Nil
Net Cash flow	Day 4		R 70	R -70			R 70	

Note: Above example uses a nominal of 100

In our variation margin example on page 4, during its term, there are only three different M-t-M prices for a Company X SSF (expiring on Day 4). The table on page 4 shows the treatment of both the buyer's and the seller's margin accounts held (interest on margin accounts, booking and clearing fees have been ignored for this exercise):

On Day 1 a client of Broker ABC buys one SSF contract on Company X for R1,700 (100 shares at R17) and contract is M-t-M at the same price, therefore there is no variation margin. On Day 2 the exchange establishes the closing price for that future to be R1,720 (100 shares at R17.20). This is deemed to be the M-t-M price for Day 2. The price movement represents a positive movement of R20 for the buyer of the SSF contract, resulting in a R20 profit (R20 x 1 contract).

Conversely, this represents a negative movement of R20 for the seller of the SSF contract. The exchange will require that the seller pay R20 into his variation margin account which will then be paid into the buyer's variation margin account.

The margin required to be paid by the buyer on Day 3 is R70 (representing the R70 price movement from the previous close). The buyer has kept R20 in his variation margin account and is therefore called on to pay an extra R50 (R70 minus R20).

The margin required to be paid by the seller on Day 4 is R120 (representing the R120 price movement from the previous close). The seller has R70 in his variation margin account and is therefore called on to pay an extra R50 (R120 minus R70).

During the contract period, the futures price moved a total of R70 higher. This represented a total profit to the buyer of R70 and a total loss to the seller of R70. The margining system is effective in ensuring that both buyer and seller are constantly up-to-date in their profits and losses. This daily margining mitigates the risk of either party defaulting on a payment to one day's price movement.



The Johannesburg Stock Exchange

was recently ranked number one in

the world in terms of volume

Through the variation margin process the status of each position is managed so that each investor is aware, on a daily basis, of their cash flow commitments on an open position. In this regard, the investor must be confident that they have the resources to maintain the position for the intended period.

Failure to honour a variation margin call within the prescribed time (i.e. by 12h00 on the following business day) will result in the position being closed out immediately by the broker. To mitigate this risk, many brokers require an extra deposit to be paid to them in advance.

Upon expiry of a SSF contract or the closing of a position, the economic effect of all cash flows representing margin payments or receipts must reflect the total profit or loss to the holder of a contract. Each investor's initial margin (with interest) is repaid together with any surplus margin balance (where applicable).

Closing a position

A SSF contract holder has two options, either wait until expiry or arrange with his/her broker to close the position before expiry. The official close out price (expiry price) will be determined by the JSE on the expiry date of the contract.

The holder also has the option to roll (close current contract and open a new contract for a future expiry date). SSF can either be cash settled or physically settled.

If the physically settled SSF is not rolled, physical delivery will follow. Most SSF on the JSE are physically settled.

Corporate Actions

A corporate action is an event initiated by a Listed Company and their Sponsor (or by the JSE in the event of a censure measure) that affects one or all of these aspects of a company:

- ▶ Its structure, key attributes, status, value, price (where not purely a result of traditional supply and demand market forces), market capitalisation or shareholder's entitlements (the return a shareholder would be entitled to from a listed company in relation to a current shareholding as at a predetermined registration date). If one or all of these aspects of a company are affected by a corporate action then that company's underlying instruments and derivatives need to be adjusted to reflect these changes.

Some examples of corporate actions include:

- ▶ Stock Splits, Conversions, Capitalisation Issues, Schemes of arrangement, Suspensions, Unbundling's, Capital Reductions and Terminations

Adjustments for corporate actions are made to positions held in Single Stock Futures and Options on Single Stock Futures whenever deemed necessary. An experienced and dedicated team ensures that any adjustments made are fair and replicate the effect which the corporate action has on the underlying share.

FUTURES

Dividend Futures

When a company pays a dividend its share price usually declines by a corresponding amount. The reason for this price decline is that part of the company's available capital has now been paid back to shareholders.

When you buy a SSF, the liquidity provider has already estimated the dividends that will be paid prior to expiry and removed them from the price. You can limit this estimation risk (the risk associated with an incorrect calculation by the liquidity provider) by buying a dividend future along with your SSF.

Let's look at an example if you are buying a future on a share trading at R50 and the liquidity provider has estimated a R1 dividend- then they will lower the funding interest they charge you by R1 (adjusted for the time value of money.) If the company instead pays a dividend of R3 then the liquidity provider will have charged you about R2 more than they should have. If the company does not pay the dividend then the liquidity provider will have charged R1 less than they should have. This is dividend estimation risk.

On one or two contracts the amounts are usually fairly small but on large deals the amounts can be very significant. What the dividend future does is transfer the risk with a cash payment from the one party to the other, effectively re-pricing the SSF correctly when the dividend goes ex. This ensures that neither party loses out due to an incorrect dividend assumption.

Some liquidity providers will require you to purchase a dividend future when purchasing a SSF.

For more information regarding dividend futures, the reader is referred to the dividend future brochure which can be found at the following URL: <http://www.jse.co.za/dividendfutures>

Clearing and Guarantee

All trades on the JSE are M-t-M, margined daily and guaranteed by the clearing house.

Due to the clearing house guarantee and our regulatory framework, investing through the JSE exposes the investor to less counterparty risk than investing in over-the-counter products (like CFDs). The clearing house guarantee and the daily margining process ensure that investors' margins are safer from the risk of a defaulting counterparty.

Risks

Gearing offers significant returns but can also result in significant losses if the market moves against your position. Only experienced investors or investors with the help and advice of an experienced adviser should participate in this market. It is important for investors entering this market to be aware of the risks involved.

SSF are not capital protected. Investors may lose or make significantly more money than their initial margins.

Links

- ▶ **Single Stock Futures:**
www.jse.co.za/ssf
- ▶ **Equity Futures:**
www.jse.co.za/equityindexfutures
- ▶ **Dividend Futures:**
www.jse.co.za/dividendfutures
- ▶ **Options:**
www.jse.co.za/options
- ▶ **Can Do Futures and Options:**
www.jse.co.za/CanDo
- ▶ **International Derivatives:**
www.jse.co.za/idx
- ▶ **SAVI Top40:**
www.jse.co.za/SAVITop40
- ▶ **Variance Futures:**
www.jse.co.za/VarianceFutures
- ▶ **Complete list of contract data:**
www.jse.co.za/contractdata
- ▶ **List of members:**
www.jse.co.za/members
- ▶ **How to become a client:**
www.jse.co.za/clients
- ▶ **Margin Calculator:**
www.jse.co.za/margincalculator
- ▶ **Margin requirements:**
www.jse.co.za/PUB/Margin_Requirements/
- ▶ **M-t-M spreadsheet:**
www.jse.co.za/mtm
- ▶ **Historic data:**
www.jse.co.za/pub/EdmStats

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