JIBAR Futures

Trading Strategies

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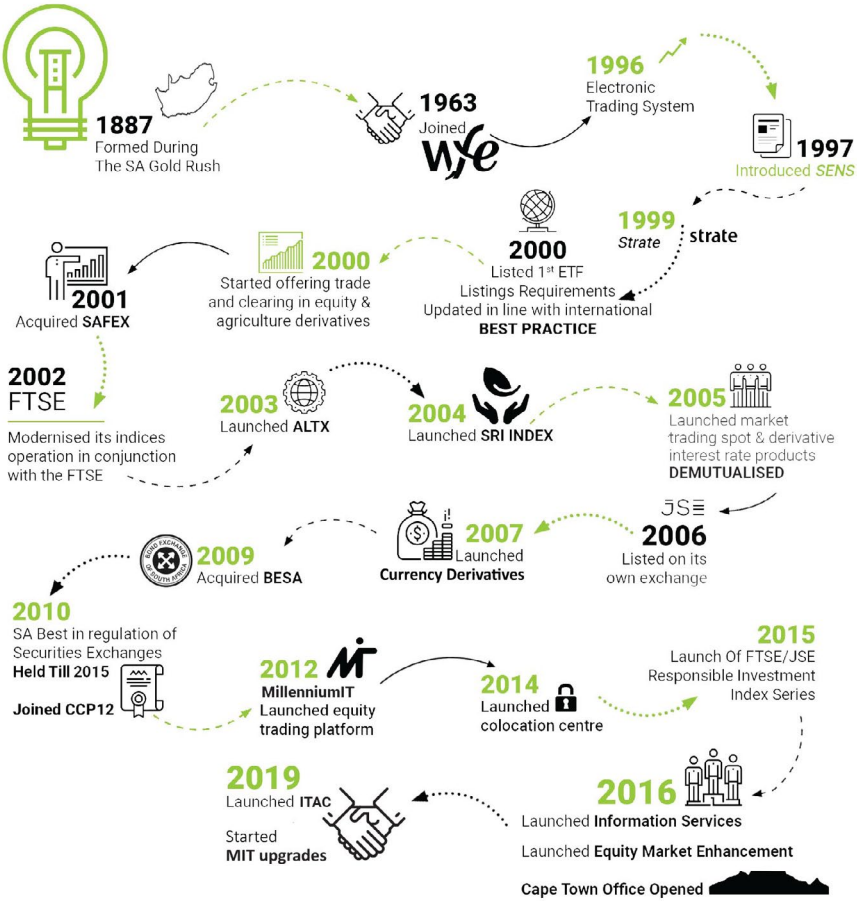

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The Short Dated Interest Rate Market – trading JIBAR Futures

JIBAR Futures are Short Term Interest Rate (STIR) Futures based on the 3-month Johannesburg Interbank Average Rate (JIBAR) and they are listed and traded on the Johannesburg Stock Exchange (JSE). Trading is conducted on the JSE's trading platform where bids and offers can be placed on a central order book. The aim of this document is to provide examples of how to use JIBAR Futures to trade and hedge interest rate risk.

The 3-month JIBAR rate

The Johannesburg Interbank Average Rate (JIBAR) is an average rate that is independently derived from quotes obtained from a number of different banks for one, three, six and twelve month deposits.

In particular, the 3-month JIBAR rate is used as a benchmark and is considered to be an indication of the mark to market yield on 3-Month Negotiable Certificates of Deposit (NCD's).

Figure 1 illustrates the history of the 3-month JIBAR rate.

The JIBAR Future represents an opportunity for hedgers to manage the interest rate risk associated with interest rate volatility, as well as for market participants wishing to exploit this volatility.

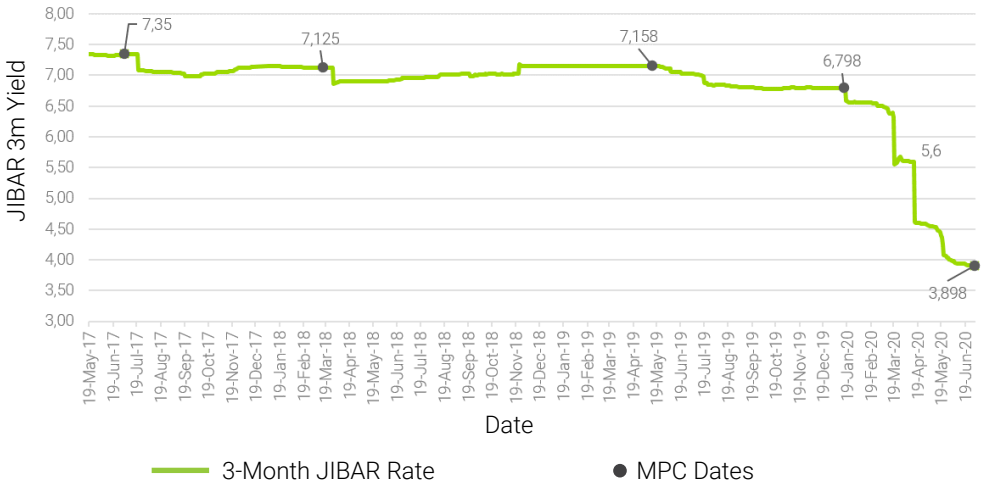

Figure 1: 3 Month JIBAR

Defining the JIBAR Future

Pricing patterns in JIBAR Futures are very much a reflection or mirror of conditions prevailing in the money markets moving outwards on the yield curve. The JIBAR Futures are based on a R100,000 face value, 3-month maturity JIBAR rate and are quoted as an interest rate. The price of a JIBAR Futures contract is 100 minus the rate. The summarised contract specifications are given in the following table:

Contract Specifications (summarised)	
Contract Base	The 3-month Johannesburg Interbank Average Rate (JIBAR)
Contract Notional	ZAR 100,000 face value
Contract Quotation Style	The effective interest rate per contract
Settlement Yield	3-month JIBAR rate at expiry
Contract Months	12 available contracts made up as follows: The nearest 8 months in the March, June, September and December quarterly cycle, plus the 4 nearest serial months (those not in the March quarterly cycle) such that the 6 nearest months are available for trading
Minimum Tick Size	0.001% (1/10 of a basis point)
Basis point value	ZAR 2.50 per basis point per contract
Settlement	Cash

For all the following examples, we assume that it is currently February 20xx and that the rates for quarterly JIBAR Futures contracts are as follows:

Mar 'xx	Jun 'xx	Sep 'xx	Dec 'xx
4.164%	4.500%	4.550%	4.800%

Table 1: Strip of JIBAR Futures Prices

Table 1 shows a normal positively sloped yield curve with the long rates higher than the short rates. These rates are indicative of the expected level of 3-month JIBAR rates going out over the term. If a trader's view of the market does not agree with the rates implied by the market (or if the trader faces losses from interest rates moving in an adverse direction), the trader can attempt to profit from this view by taking a position in JIBAR Futures.

The trader's positions can be summarised as follows:

Trader expects interest rates to fall (or trade below the market's expectation of future rates): **Go Long (Buy a JIBAR Future)**

Trader expects interest rates to rise (or trade above the market's expectation of future rates): **Go Short (Sell a JIBAR Future)**

Example 1: How to profit from declining interest rates

A trader believes that short dated interest rates will decline (or rates will turn out lower than what the market currently expects) and in order to profit from the anticipated movement in rates, the trader decides to buy 10 March 'xx JIBAR Futures contracts at a yield of 4.164%.

Day	Description	# of contracts	Yield %	MTM	Position Yield Change	Initial Margin	Variation Margin	Cash Flow	P/L
0				4.164%					
1	Trader buys 10 contracts	10	4.164%	4.10%	-0.064%	-2,000	160 (10 x 2.5 x 6.4)	-1840	160
2				4.12%	0.02%		-50 (10 x 2.5 x 2)	-50	110
3				4.09%	-0.03%		75 (10 x 2.5 x 3)	75	185
4	Trader sells 10 contracts	-10	4.08%	4.08%	-0.01%	2,000	25 (10 x 2.5 x 1)	2025	210

Table 2: Trader's Variation Margin

Table 2 illustrates what the trader's P&L's could look like as a result of his/her transaction.

The use of leverage

Note that the trader in this example makes a gain of 8.4bp (4.164% - 4.080%) which translates into a profit of R210 (10 contracts x R2.50 x 8.4bp). This is achieved by taking exposure to a R1m investment by allocating margin of R2,000 (R200/contract x 10 contracts). This shows the gearing or leverage that is inherent in the futures market. In contrast, a trader would have to invest a full R1m in Negotiable Certificates of Deposit (NCD's) to achieve a similar outcome.

Conversely, if the trader believes that short dated interest rates will increase (or rates will turn out to be higher than what the market currently expects), the trader can look to profit from this view by shorting JIBAR Futures contracts.

Example 2: Hedging a JIBAR-linked loan (the simple hedge)

A Corporate Treasurer has borrowed R10 million for three months which is due to be rolled-over on the 3rd Wednesday of March. It is now February 20xx, and the Corporate Treasurer is worried that interest rates will rise (by more that the market expects) between February and March.

Rather than waiting until the next rollover date, the Treasurer decides to hedge the exposure. The March JIBAR Futures contract references the value of the 3-month JIBAR rate on the third Wednesday of March 20xx, which in this case happens to match the Treasurer's rollover date perfectly.

The Treasurer thus decides to sell 100 JIBAR Futures contracts (R10m divided by R 100,000 per contract) at 4.164%.

Assume that on the expiration of the March Futures contract (March 20xx) the interest rates have risen (as expected) and the expiration level of the Futures contract is 4.5%. The Treasurer would make a profit on his Futures position as follows:

Profit on Futures = Number of contracts x change in futures yield (basis points) x basis point value
= 100 x (4.5% – 4.164%) x R2.5/bp
= 100 x 33.6 bp x 2.5
= R 8,400.

This profit offsets the extra borrowing cost on the JIBAR linked loan that the Treasurer incurs in March 20xx (as a result of rising interest rates).

Extra borrowing cost = Actual borrowing cost less expected borrowing cost
= [R 10m x (0.045 x (90/365))] – [R 10m x (0.04164 x (90/365))]
= R 184,391.51 – R 176,646.58
= R 8, 284.93.

The profit from the futures hedge offsets the loan cost as follows:
R 8,400 – R 8, 284.93 = R 115.07.

The R 8,284.93 represents the loss that the Treasurer would have incurred without the hedge. The small profit that is made on the hedge is a result of the (Actual/365) day-count convention of the South African Money Market differing from the "1/4 of a year" nature of the Futures market, combined with the difference in convexity between the loan and the hedge.

Using the Hedge Ratio to increase the effectiveness of the hedge

The JIBAR Future has a fixed Rand per point value while a loan has a varying Rand per point value dependent on the prevailing interest rate. Hence, a movement of one basis point in the loan position does not correspond to a movement of one basis point in the hedge – a more accurate hedge must incorporate this difference. This is done by the use of a Hedge Ratio as shown below.

$$\text{Hedge Ratio (HR)} = \frac{\text{Change in value of position}}{\text{Change in value of futures}}$$

An illustration of the use of the Hedge Ratio is outside the scope of this document.

Strip Hedges and Stack Hedges

A "Strip Hedge" is where a trader uses a number of different contract months to hedge a position.

A trader can, for example, use 4 consecutive quarterly contracts (March, June, September and December) to hedge a one-year rate. This is called a "Strip Hedge" because the trader is using a "strip" of futures prices to replicate a one-year rate.

A "Stack Hedge" is where a trader uses just one futures contract month to hedge a position in order to cover the period concerned which would normally require a consecutive series of futures contract months to be bought or sold.

For example, a trader can use only the March futures contract to hedge a one-year rate. This is called a "Stack Hedge" because the trader is effectively stacking up all of the position into one contract month only. However, the trader would need to roll the position as it approaches its expiration and thus, the trader is exposed to rollover risk.

A trader may employ this type of strategy for various reasons (e.g. there may be a lack of liquidity in the far dated contracts) but should bear in mind that by doing this, the trader is effectively hedging one section of the yield curve with a different section, i.e. there is exposure to a change in the slope of the yield curve.

Example 3: Trading the shape of the yield curve using calendar spreads

It is also possible for traders to trade one contract month against another, this is referred to as: trading "calendar spreads".

If the current zero curve is positive (i.e. short term interest rates are lower than long term interest rates), then this will be reflected in the current JIBAR Futures curve, implying that near term futures prices will be lower than subsequent contract months (as shown in Table 1).

A Trader might expect near term rates to remain static, but longer-term rates to rise more than implied by the futures rates. The trader can simulate this trade in the futures market by buying 100 near date contracts (March at 4.164) and selling 100 far date contracts (Dec at 4.8) at a differential of +63.6 bp.

As the March expiration approaches, assume that the rates for the JIBAR Futures contracts are as follows:

Mar 'xx	Jun 'xx	Sep 'xx	Dec 'xx
4.200%	4.530%	4.800%	4.920%

Table 3: Strip of JIBAR Futures Prices

The profit that the trader thus made on his December Futures position is as follows:
Profit on December Futures = Number of contracts x change in futures yield (basis points) x basis point value
= 100 x (4.92% - 4.8%) x R2.5/bp
= 100 x 12 bp x 2.5
= R 3,000.

On the other hand, the loss made on the March Futures positions is as follows:
Profit on March Futures = Number of contracts x change in futures yield (basis points) x basis point value
= 100 x (4.164%-4.2%) x R2.5/bp
= 100 x (-3.6 bp) x 2.5
= -R 900.

The total profit made by the trader is thus:

Profit on December Futures position – Loss on March Futures position
= R 3,000 – R 900
= R 2,100.

This type of strategy is known as: 'buying the spread',
i.e. buy near date and sell far date, and profiting from an expansion of the spread.
Conversely, suppose the trader expects longer term rates to fall relative to near term rates. The trader can simulate this trade by selling the near date contract (say March at 4.164) and buying the far date (say September at 4.55) at a differential of +38.6. This type of strategy is known as: 'selling the spread', i.e. sell near date and buy far date and profiting from a decline in the spread.

These actions can be summarised as follows:

Yield curve expected to steepen (or steepen more than the market expects):
"Buy the curve," i.e., buy nearby and sell deferred futures.

Yield curve expected to flatten or invert (or flatten or invert more than the market expects):
"Sell the curve," i.e., sell nearby and buy deferred futures.

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