

## MARKET NOTICE

**Number:** 231/2021

Relates to:

- Equity Market
- Equity Derivatives Market
- Commodity Derivatives Market
- Interest Rate Derivatives Market
- Currency Derivatives Market
- Bond Market
- Bond ETP Market

Date: 10 June 2021

**SUBJECT:** BOND OPTION IMPLIED VOLATILITY SURFACE

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### 1. INTRODUCTION

The growth in the interest rate derivatives market has brought into the spotlight the mark-to-market (MTM) methodology employed for bond options. In particular, the calibration of the bond option implied volatility surface has been subject to a few enquiries. The Valuations team is in a position to advance the intended changes to the implied volatility surface. These changes will be implemented from 17 June 2021.

### 2. SUMMARY OF CHANGES

The following changes will be implemented as from the 17 June 2021:

- Change the mapping process (mapping from bonds to swaps) from using “**forward PV01**” to using a “**forward-starting term to maturity**” (the forward starting date being the expiry date of the underlying option).
  - The settlement date of each bond is 3 business days after the option expiry date.
- Update the implied volatility surface using 3<sup>rd</sup> party vendor sourced swaption volatility surfaces on a weekly basis, at the end of every month, or on a more frequent basis as may be necessitated by market conditions.
- Change the 9 differential intervals from the forward MTM yield from, (-1.00%, -0.75%, -0.50%, -2.5%, **0.00%**, 0.25%, 0.50%, 0.75%, 1.00%) to (-**2.00%**, **-1.00%**, -0.50%, -0.25%, **0.00%**, 0.25%, 0.50%, **1.00%**, **2.00%**)

### 3. ILLUSTRATION OF SKEW INTERVALS CHANGE

Below is an illustration of the skew interval changes as per the published skews on 9 June 2021.

#### 5AUG21 R2030 Bond Future Expiry:

- Calibration under current method:

DATE :	09-Jun-2021					
CONTRACT	2030					
EXPIRY	05-Aug-2021					
VALUATION DATE	11-Aug-2021				Moneyness	Relative/Floating Vol
LOWEST STRIKE	7.750	VOL	12.10		88.57%	-0.55
STRIKE	8.000	VOL	12.22		91.43%	-0.43
STRIKE	8.250	VOL	12.37		94.29%	-0.28
STRIKE	8.500	VOL	12.52		97.14%	-0.13
STRIKE	8.750	VOL	12.65		100.00%	0.00
STRIKE	9.000	VOL	12.81		102.86%	0.16
STRIKE	9.250	VOL	13.06		105.71%	0.41
STRIKE	9.500	VOL	13.36		108.57%	0.71
HIGHEST STRIKE	9.750	VOL	13.67		111.43%	1.02
FUTURE PRICE	8.750					1.57
BASE VOLATILITY	12.65					
MAX VOLATILITY	40.00					
MIN VOLATILITY	0.10					

- Indicative calibration under new method:

DATE :	09-Jun-2021					
CONTRACT	2030					
EXPIRY	05-Aug-2021					
VALUATION DATE	11-Aug-2021				Moneyness	Relative/Floating Vol
LOWEST STRIKE	6.750	VOL	11.67		77.14%	-0.76
STRIKE	7.750	VOL	11.58		88.57%	-0.85
STRIKE	8.250	VOL	12.03		94.29%	-0.40
STRIKE	8.500	VOL	12.25		97.14%	-0.18
STRIKE	8.750	VOL	12.43		100.00%	0.00
STRIKE	9.000	VOL	12.61		102.86%	0.18
STRIKE	9.250	VOL	12.88		105.71%	0.45
STRIKE	9.750	VOL	13.53		111.43%	1.10
HIGHEST STRIKE	10.750	VOL	14.83		122.86%	2.40
FUTURE PRICE	8.750					3.16
BASE VOLATILITY	12.43					
MAX VOLATILITY	40.00					
MIN VOLATILITY	0.10					

### 3FEB21 R2030 Bond Future Expiry:

- Calibration under current method:

DATE :	09-Jun-2021					
CONTRACT	2030					
EXPIRY	03-Feb-2022					
VALUATION DATE	08-Feb-2022				Moneyness	Relative/Floating Vol
LOWEST STRIKE	8.250	VOL	10.36		89.19%	-0.57
STRIKE	8.500	VOL	10.50		91.89%	-0.43
STRIKE	8.750	VOL	10.65		94.59%	-0.28
STRIKE	9.000	VOL	10.79		97.30%	-0.14
STRIKE	9.250	VOL	10.93		100.00%	0.00
STRIKE	9.500	VOL	11.07		102.70%	0.14
STRIKE	9.750	VOL	11.27		105.41%	0.34
STRIKE	10.000	VOL	11.51		108.11%	0.58
HIGHEST STRIKE	10.250	VOL	11.78		110.81%	0.85
FUTURE PRICE	9.250					1.42
BASE VOLATILITY	10.93					
MAX VOLATILITY	40.00					
MIN VOLATILITY	0.10					

- Indicative calibration under new method:

DATE :	09-Jun-2021					
CONTRACT	2030					
EXPIRY	03-Feb-2022					
VALUATION DATE	08-Feb-2022				Moneyness	Relative/Floating Vol
LOWEST STRIKE	7.250	VOL	10.08		78.38%	-0.73
STRIKE	8.250	VOL	10.19		89.19%	-0.62
STRIKE	8.750	VOL	10.51		94.59%	-0.30
STRIKE	9.000	VOL	10.67		97.30%	-0.14
STRIKE	9.250	VOL	10.81		100.00%	0.00
STRIKE	9.500	VOL	10.95		102.70%	0.14
STRIKE	9.750	VOL	11.15		105.41%	0.34
STRIKE	10.250	VOL	11.67		110.81%	0.86
HIGHEST STRIKE	11.250	VOL	12.81		121.62%	2.00
FUTURE PRICE	9.250					2.73
BASE VOLATILITY	10.81					
MAX VOLATILITY	40.00					
MIN VOLATILITY	0.10					

#### 4. IMPLEMENTATION

The numbers will be compared to the prevailing MTM for the absolute impact in the variation margin on implementation. A phased approach may be adopted should the immediate impact be deemed significant. Indicatively, this doesn't seem to be the case at present.

Should you have any queries regarding this notice, please contact [valuations@jse.co.za](mailto:valuations@jse.co.za)

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