

## MARKET NOTICE

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Stock Exchange

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**Number:** 040/2020  
**Relates to:**  Equity Market  
 Equity Derivatives  
 Commodity Derivatives  
 Interest Rate and Currency Derivatives  
**Date:** 20 February 2020

**SUBJECT:** PROPOSED VOLATILITY SKEW METHODOLOGY FOR COMMODITIES

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### 1. INTRODUCTION

The JSE determines closing prices daily for all listed instruments at the Exchange. This notice provides the proposed volatility skew methodology to be applied for the valuation of option contracts in the Commodity Derivatives Market. The JSE wishes to notify the market of its intention to switch, from the current flat skew methodology to using traded data sourced from completed orders for the commodities market. The JSE's valuations are based solely on market data and specifically on the last traded price principle wherever possible

### 2. PROPOSED VOLATILITY PROCESS

Currently, options contracts on the Commodities market are priced by the JSE using a flat volatility skew. A flat volatility skew is applied to all contracts, and the JSE publishes At-The-Money (ATM) volatility applicable to each expiry, and all derivative options. This methodology is an attempt to reflect the price levels at which individual contracts are trading at the closing time of the particular market. The flat skew is not reviewed or updated based on market activity.

The JSE proposes introducing a volatility skew calibrated from observed trade data to replace the current flat volatility skew. The JSE will review trade data once a month and update the skew accordingly. The first phase of the volatility skew will be focused on the physical settled agricultural contracts. We do note that cash-settled agricultural contracts; namely CORN, REDW, KANS, BEAN, MEAL, OILS reference CME contracts on the expiry date. These contracts have well-known volatility skews which can be referenced to replicate the local skew. The Valuations team has conducted a pilot project using trade data for and noted the following,

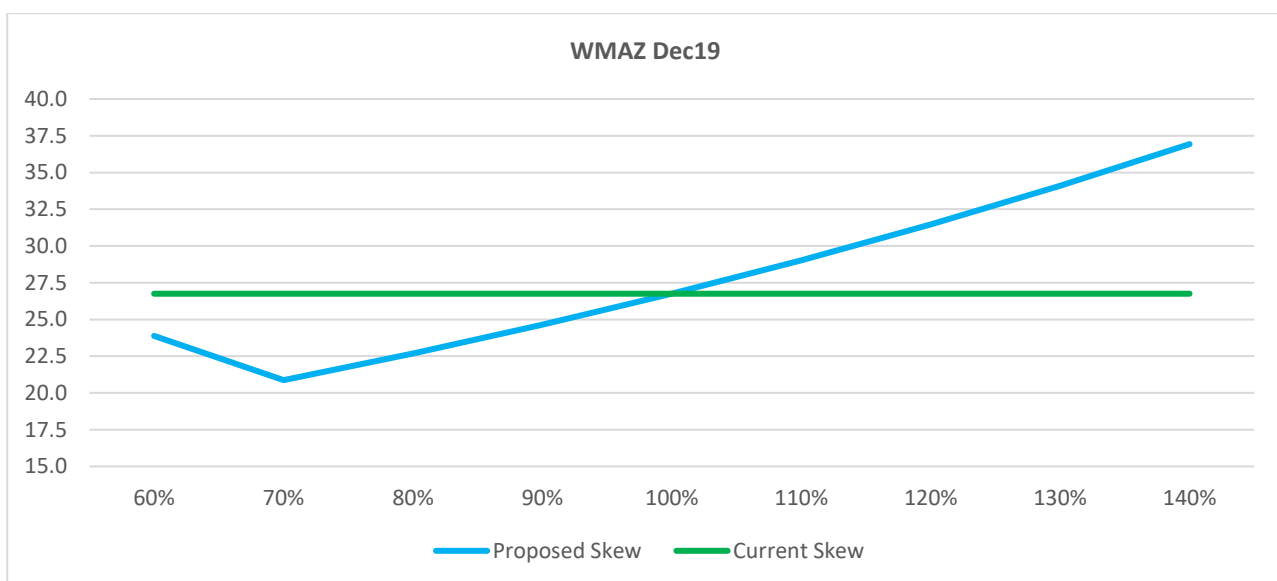
- There is sufficient trade data to create volatility skew for WMAZ and YMAZ skews.
- There is insufficient trade data for SOYA and WEAT to create a meaningful skew.
  - Other physically settled contracts SUNS, SORG did not have data for the period.
- There is insufficient trade data for CORN to create a meaningful skew.
  - Other cash-settled contracts REDW, KANS, BEAN, MEAL, and OILS did not have data for the period.

It should be noted that the moneyness range is set to 60% - 140%. The methodology linearly interpolates between the range of 60% to 140% moneyness. The methodology linearly extrapolates using the two last data points at the short and far ends of the skew to determine Far Out(and In) the Money options on both sides of the skew (i.e. values greater than 140% moneyness and less than 60% moneyness).

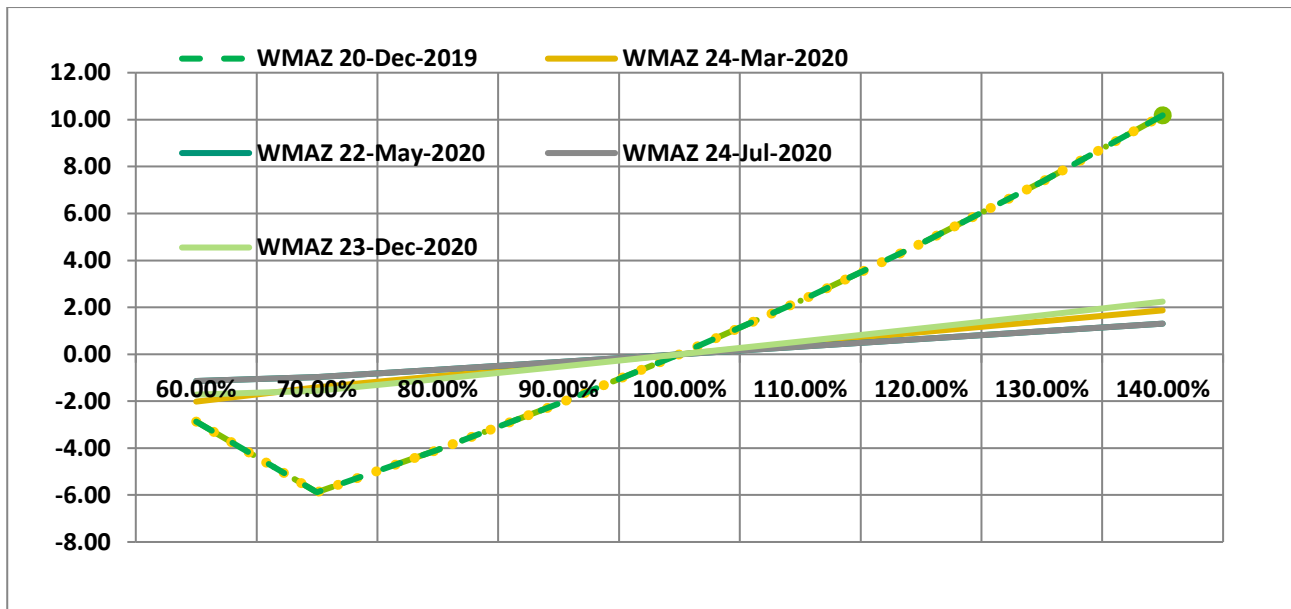
Based on traded data the volatility skew for WMAZ Mar20 was calculated and is shown below.

DATE :	06-Nov-19				
CONTRACT	WMAZ				
EXPIRY	20-Dec-19				
				<b>Moneyness</b>	<b>Relative Vol</b>
LOWEST STRIKE	1633	VOL	23.63	60.00%	-2.87
STRIKE	1905	VOL	20.62	70.00%	-5.88
STRIKE	2177	VOL	22.44	80.00%	-4.06
STRIKE	2449	VOL	24.39	90.00%	-2.11
STRIKE	2721	VOL	26.50	100.00%	0
STRIKE	2993	VOL	28.77	110.00%	2.27
STRIKE	3265	VOL	31.21	120.00%	4.71
STRIKE	3537	VOL	33.85	130.00%	7.35
HIGHEST STRIKE	3809	VOL	36.68	140.00%	10.18
FUTURE PRICE	2721				
BASE VOLATILITY	26.5				
MAX VOLATILITY	65				
MIN VOLATILITY	8				

The chart below illustrates the proposed skew and the current flat skew used. The smirked shape of the proposed skew is characteristic of most physically settled agricultural volatility skews. Higher volatility on the right side of the skew, reflecting the commodity inflation risks.



The chart below illustrates the proposed skew across expiry dates. The smirked shape is maintained out to the most liquid expiry date, thereafter the skew flattens.



### 3. LACK OF TRADE DATA

As mentioned in section 2 the JSE has observed that less liquid contracts may have limited trades not sufficient to build a skew. If there are no trades for the less-liquid contracts, the JSE proposes the adoption of one of the following options:

- The use of an observed skew from other liquid contracts.
- The use of an observed skew from the CME and other platforms.
- The use of a generic skew to be agreed with the market across the expiries.

Key issues that warrant further investigation and input from the market.

- The skews will be updated monthly due to liquidity issues.
- The moneyness range is set to 60% - 140%. The JSE system linearly extrapolates at the far ends which impacts far out the money contracts.
- The appropriate skew to be used for the less liquid contract.

### 4. ATM VOLATILITY METHODOLOGY

The determination of the At-the-Money Volatility will not change, i.e. considering all onscreen trade for the day and applicable quotes near the end of the day. The final methodology applied to determine the closing ATM volatility is as follows:

- Start with the previous day's ATM volatility
- Where there is eligible onscreen traded volatility the ATM volatility is set to this value.
- Where there is an eligible delta option quote with a higher bid then set the ATM volatility to this value.
- Where there is an eligible delta option quote with a lower offer then set the ATM volatility to this value.
- Where options on a future trade for the first time, the JSE will use all the available trade statistics to determine the ATM volatility.

## 5. NEXT STEPS

The JSE has prepared this proposal in the belief that using a more transparent methodology which is in line with current valuation methodology will improve the quality of the published price. Notwithstanding the methodology presented in this guide, the JSE reserves the right to make a final decision regarding the valuation of any listed security. In particular, the JSE may deviate from this methodology in the event of non-standard market hours, technical issues with pricing systems, or observed anomalies in market data.

It is important to the JSE to be aware of the impact to all market participants as well as to identify all potential consequences of the proposal. All feedback will be carefully considered before making any final decisions. Therefore, the JSE requests comments from any interested party.

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

This Market Notice will be available on the website at <https://www.jse.co.za/redirects/market-notices-and-circulars>