

MARKET NOTICE

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SUBJECT: PROPOSED VALUATIONS CHANGES FOR ALSI MTM AND ALSI VOL

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Designation: Indices & Valuations

INTRODUCTION

This note proposes an update to the methodology used to price liquid instruments in the Equity Derivatives Market. This proposal focuses exclusively on the Futures Mark-to-Market (MTM) and the At-the-Money Volatility (ATM Vol) for the ALSI contract, which is a derivative of the FTSE/JSE Top 40 Index.

The current valuations methodology utilizes a narrow subset of the available market data, and this proposal increases the range of market data that is considered in the valuations process. This in turn will improve the accuracy of the daily valuations, particularly for those expiries that are less liquid.

This proposal is presented broadly so that all interested market participants have an opportunity to comment on it. Any feedback will be carefully considered before making a final determination on changes to the existing methodology

EXISTING METHODOLOGY

Futures MTM

The ALSI MTM is currently based on a snapshot of the ALSI Order Book, taken at a random time between 17:00 and 17:05. For those expiries where there is both a Bid and an Offer on screen at the time of the snapshot, the mid-price of this Bid and Offer is taken as the final futures MTM for the day. This is typically the case for the near expiry, and often the next-to-near expiry too.

In the event that there is no double on screen at the time of the snapshot, the MTM is calculated using the model: $\text{Future MTM} = \text{Near Contract MTM} + \text{Points From Near}$. The Points From Near is a static spread capturing the last confirmed difference between the MTM of the near expiry and the MTM of the expiry in question. This spread is only updated when the non-near expiry in question has a double on screen at the time of the snapshot. This has led to the situation where a contract may see significant trade during the day, but the spread is not re-marked because there is no double on screen during the 17:00 window. As a result, the daily MTM is not a reflection of the levels that trades were booked at.

Options ATM Volatility

The ATM Volatility for ALSI options is determined from 16:00. The current process is as follows:

- Determine the Anchor Strike as the near future price at 15:50, rounded to the nearest 500 index points. This Anchor Strike is used for all expiries and not just the near contract.
- Determine the Model Anchor Volatility at 15:50 using the previous day's ATM Volatility adjusted to the new Anchor Strike using the sticky strike methodology and the prevailing volatility skew.
- Members can enter volatility doubles at the Anchor Strike for any expiry over the period 16:00 to 16:05 (the Volatility Period).
- Determine the Anchor Volatility for the day:
 - If there are trades at the Anchor Strike in the Volatility Period then calculate the volume weighted average price, subject to a minimum deal size of 10 contracts.
 - If there are no trades, but there are bids and offers on screen for the Anchor Strike then calculate the middle of the double, subject to a minimum order size of 100 contracts, and a volatility double no greater than 1.5 vols.
 - If there are no trades and no *qualifying* volatility double, then adjust the Model Anchor Volatility using the Better Bid / Lower Offer rule.
 - If there are no qualifying trades or orders, then the Anchor Volatility remains unchanged at the Model Anchor Volatility.
- At 17:00, the final ATM Volatility is calculated for the MTM futures point by using the Anchor Volatility and the skew. The ATM volatility is rounded to the nearest 25bp.

A number of concerns have been raised with the current methodology, including:

- Only activity at the Anchor Strike is used to determine the ATM Volatility – activity at any other strike is ignored.
- Only market activity in the Volatility Window 16:00 to 16:05 is considered when calculating the ATM Volatility – this could be expanded to include a broader range of market activity.
- The sticky strike adjustment is distorted both by stale futures MTM levels, and also using the same Anchor Strike at all expiries.

PROPOSED METHODOLOGY

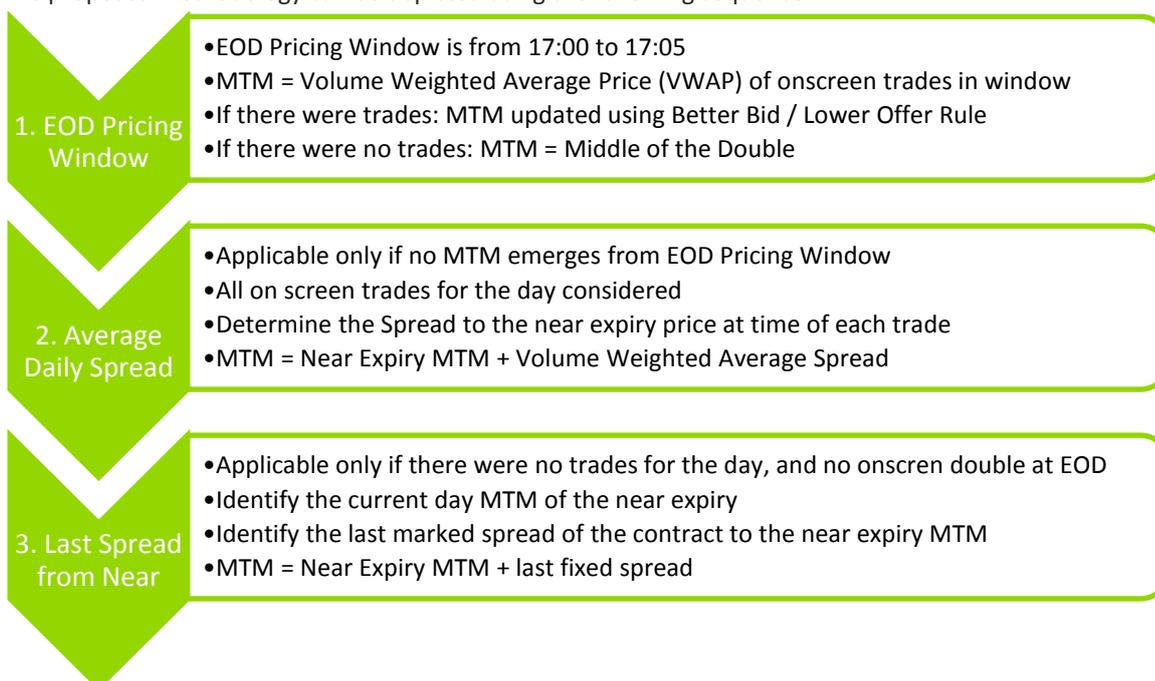
Futures MTM

While the near ALSI expiry is the most liquid contract on the exchange, the other expiries do not exhibit the same levels of liquidity. The existing methodology is effective for the near expiry, but needs to be modified to consider a broader range of data, particularly for the other expiries.

There are effectively three scenarios that the proposed methodology captures:

- Where there is significant on screen activity at the end of day, then the contract should be marked directly off market levels.
- Where there is no qualifying market activity at the end of day, then trades booked during the course of the entire day should be considered.
- Where there are no trades for the day then the contract should be marked at its last known spread to the near expiry.

The proposed methodology can be depicted using the following sequence:



EOD Pricing Window

The first mechanism for MTM is designed to capture the price of contracts that are actively traded. In the same way as the current methodology, it considers a time window of 17:00-17:05. However, instead of relying on a random snapshot in this period, a volume weighted average price is calculated using all the on-screen trades booked in the window, subject to a minimum of 100 quantity traded in aggregate.

If there was a minimum quantity traded of 100, and there is any order that is onscreen at the end of the EOD Pricing Window that is more aggressive than the calculated VWAP price, then the MTM will be updated to the level of this Better Bid / Lower Offer.

If there are less than 100 contracts traded in the EOD Pricing Window, but there is both a Bid and an Offer on screen at the end of the window, then the MTM will be updated to the mid-point of the best Bid and Offer.

Average Daily Spread

The second mechanism for MTM is designed to capture the price of contracts that are less actively traded, with no market activity in the EOD Pricing Window. This attempts to strike the difficult balance between obtaining a price that is still relevant at the end of the day and trying to include as much market data as available for illiquid contracts.

Where there is no price emerging from the EOD Price Window, then all on-screen trades for the day are considered, up until 17:05. For each of these trades, the spread from the dealt price to the last traded price of the near contract at that point in time is determined. These spreads are then averaged for the day, weighted by quantity traded. The final MTM for the expiry uses the end of day MTM for the near expiry, plus this volume weighted average spread.

Last Spread from Near

Where there is no price emerging from either the EOD Price Window or the Average Daily Spread process, then the price is calculating using the “Points From Near” model. Under this model, the MTM is determined using the formula:

$$\text{MTM} = \text{Near Contract MTM} + \text{Points From Near}$$

The Near Contract MTM will typically be priced in the EOD Pricing Window, due to its liquidity. The Points From Near indicates the difference in index points between the Near Contract MTM and the contract being priced. The Points from Near is initially set on listing date, and then remarked whenever a price is obtained for that particular expiry from either the EOD Pricing Window or the Average Daily Spread.

Stale Points From Near

There is no guarantee that there will be sufficient market activity to update the Points From Near on a frequent basis, and the resultant MTM may thus become stale, particularly for long-dated contracts. Any expiry where the Points From Near has not be re-marked in the past two weeks will be viewed as stale, and will be reviewed periodically by the JSE Valuations team, taking the following data into account:

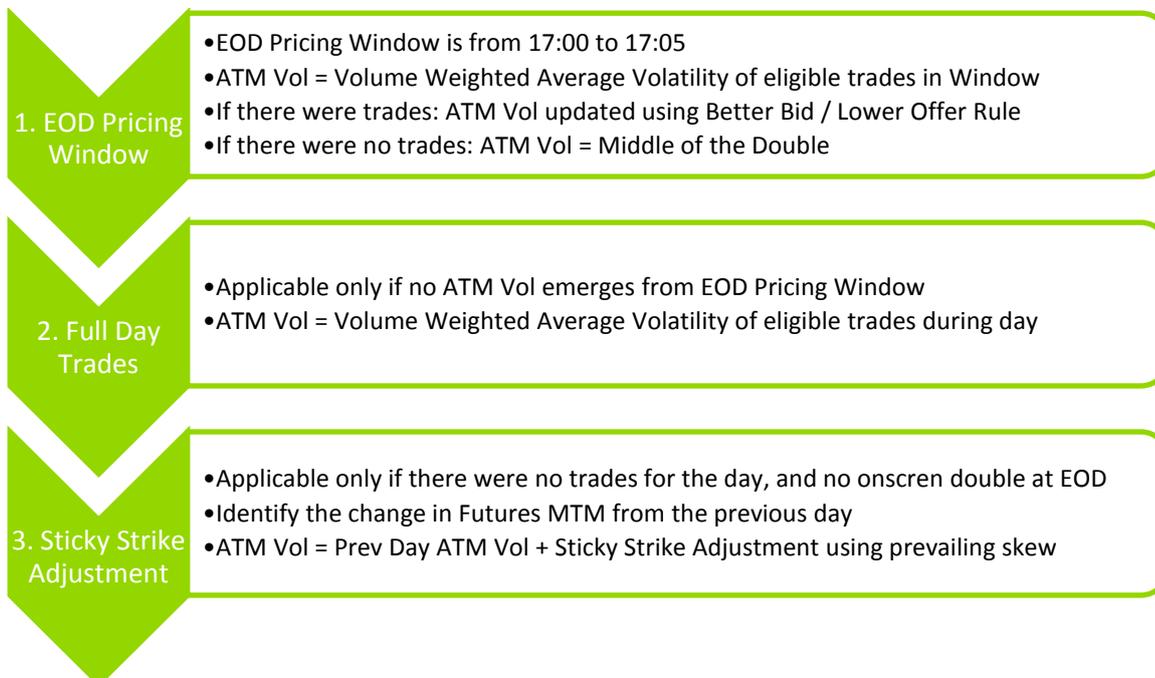
- Recent Volume Weighted Average Spread adjustments made to other expiries
- Weighted results of JSE Cost-of-Carry models on underlying single stock futures

This data may be used to adjust the Points From Near for stale contracts, bringing the basis for valuations in line with other pricing models applied in the Equity Derivative Market.

Options ATM Volatility

The proposed methodology to determine ATM volatility for ALSI contracts is designed around the same principles of that proposed for the ALSI MTM and will consider three tiers of data:

- Where there is significant onscreen activity at the end of the day, then the volatility should be marked directly off observed market levels
- Where there is no qualifying market activity at the end of the day, then trades booked during the course of the entire day should be considered
- Where there are no trades for the day then last known ATM Vol should be used, adjusted for any movement in the underlying Future MTM



EOD Pricing Window

The first mechanism for ATM Vol is designed to capture the volatility of contracts that are actively traded. In the same way as the proposed Futures MTM methodology, it considers a time window of 17:00-17:05. Using the closing Futures MTM as a reference, onscreen trades in all options and delta options with a moneyness in the range of 90%-110% in the time window are considered. Each traded volatility for strikes that are not at-the-money is adjusted using the prevailing volatility surface, and multiple trades are aggregated using a volume weighted approach, subject to a minimum quantity of 10 traded in aggregate in the EOD Pricing Window.

If there was a minimum quantity traded of 10, and there is any order that is onscreen at the end of the EOD Pricing Window that is more aggressive than the calculated average volatility, then the ATM Vol will be updated to the level of this Better Bid / Lower Offer.

If there are less than 10 contracts traded in the EOD Pricing Window, but there is both a Bid and an Offer on screen with a double no greater than 1.5 vols at the end of the window, then the MTM will be updated to the mid-point of the best Bid and Offer.

Full Day Trades

The second mechanism for MTM is designed to capture the volatility of contracts that are less actively traded, but nevertheless do see trading activity during the day. All options traded before 17:05 during the day with a moneyness in the range 90%-110% are considered, with the traded volatility adjusted using the sticky strike model. These trades are then aggregated on a volume weighted basis, and the ATM Vol for the day will be set to the average traded volatility, subject to a minimum of 100 contracts being traded for the day.

Sticky Strike Adjustment

The third mechanism for MTM is designed to model the volatility of contracts that have insufficient trading activity during the day to perform a meaningful mark-to-market process. In this event, the previous day's ATM Vol is adjusted on a sticky strike principle using the prevailing volatility surface and the change in the Futures MTM for the day.

NEXT STEPS

The JSE has prepared this proposal in the belief that including a broader range of market values in the ALSI MTM will result in a material improvement in the quality of the published price. The proposed changes to both the Futures MTM and ATM Volatility are more complex than the current process, but should deliver a commensurate improvement in accuracy. Should the changes prove successful, similar principles will be analysed for other types of instruments, including SSFs, Anyday futures and volatility surfaces.

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. Therefore, the JSE requests comments from any interested party.

Please provide your comments and suggestions by Friday 24 June 2016 to valuations@jse.co.za

The JSE would also like to meet with market participants directly to discuss any further comments, suggestions or concerns, or to provide further context or analysis. Should you wish to arrange a meeting in this regard, please contact us at the email address provided above. All feedback will be carefully considered before making any final decisions.

This document is not confidential and should be distributed as widely as possible to all stakeholders.

Should you have any queries regarding this notice, please contact valuations@jse.co.za

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