FEAR FACTOR RETURNS TO A SCREEN NEAR YOU !!

Many participants are aware of the popular TV series “fear factor” and the various challenges the participants are required to overcome. The Commodity Derivatives Market has recently launched a white maize index that could serve as a transparent reference tool of the level of fear in the market.

The South African Volatility Index (SAVI) for white maize is merely an expansion of the work that was done on the SAVI-Top 40 (T40) that was launched at the start of 2007 on the JSE Equity Derivatives Market. The SAVI-T40 is based on similar methodology as the VIX. The VIX is a popular measure for the volatility of the S&P500 and is traded on the Chicago Board Options Exchange. The index is based on the forward looking option volatility which therefore means it provides a transparent reference tool for the market to better understand the potential uncertainty in the market.

What is volatility? When we look at the maize market, the traded volatility is a measure that describes the tendency of the maize market to move either up or down and to what extent the anticipated move could be. In essence it is a fear factor. If the price jumps large amounts in a short space of time then the volatility of the maize market will be high. If the market movement is small, steady and predictable then the volatility will be low.

The question then is, how do we make use of the volatility? In the options market, the price of the option can be determined by means of the ‘Black-Scholes (1973) Option Pricing Formula’. To use this formula to arrive at a price you need to fill in the following fields on the JSE Market

Strike price- The price at with the option will expire
Spot Price - The Current value of the underlying
Interest rate- This is the rate that SAFEX use in our calculations
**Time -** The amount of time to the expiry to the option

**Volatility** - This is basically the determining factor of the price

Most of the above is known. The only criteria people differ is on the volatility. This is because the volatility that is entered is the expected or forward looking volatility or otherwise known as the implied volatility. Thus they input the implied volatility. The more uncertainty about the market the more volatile it is and the more expensive the option will be.

With the SAVI-White Maize the JSE is constructing a 3 month forward looking index. In essence we want to know what the market volatility is three months from today, every day. On the JSE we don’t have option expiring every day and thus can’t reference the traded volatility for one of these contracts. We have 5 expiry months per underlying white maize futures contract available each year. To ensure we consider the most liquid trading months we incorporate option trading data largely from the months of March, July and December. To be able to provide a 3 month forward looking index we consider the above 3 expiries and interpolate the necessary data to ensure we have 65 trading days data included in the index value. That means that the time period that we are interested in will fall within the period of our next expiry and the one just after that (then next-near expiry), as can be seen here in this illustration.

![Diagram](image)

The SAVI-White Maize is based on the at-the-money volatility (the strike price closest to the spot price) for the near and the next-near option expiry. It relies on linear interpolation to calculate what the volatility would be for the period required –approx 3 months.

In essence the index serves as a transparent volatility indicator. Because it’s a forward looking indicator and not based entirely on the historic values but rather more on participants opinions, one will be able to notice that as people get more fearful of market conditions, the value of the indicator will start to rise. This can be seen in the graph below which plots the SAVI white maize index versus the spot price for white maize going back to 2002. The volatility or fear in the market increases particularly around the local weather market (Jan- Mar) when follow up rains are crucial to ensure a good crop. Due to the uncertainty around this period, particularly when stock levels are tight, the volatility increases to over 60% in certain seasons.
Continuing, the SAVI white maize is a transparent indicator of the market sentiment and easily allows market participants to gauge how fearful the market really is. The index at this point is not a tradable product. When considering the history of the index, with the index below 30% the market is complacent with limited uncertainty envisaged for the 3 months ahead, whilst anything over 30% implies a higher degree of uncertainty.

The intension is that this index becomes a benchmark indicator for economists and market participants to gauge the fear in the white maize market. This index could therefore assist with any forward planning decisions to ultimately ensure price risk management for your white maize business.

All price history is maintained on the web page, http://www.safex.co.za/ap/docs/price_history/savi/SAVI_price_history_01.xls whilst any queries can be sent to commodities@jse.co.za.