



Agricultural Market Information System



# ENHANCING MARKET TRANSPARENCY



# Futures markets signal change: Interpreting price behaviour

Greater understanding of global markets is one of the main objectives of AMIS. For this reason, identifying indicators which can signal changing market conditions on a timely basis will be among its first outputs. This section briefly describes two indicators, commonly used by participants in the futures and cash markets, which are relevant to importers and exporters. The first indicator, calendar spread differentials, provides a gauge of the overall supply and demand of the commodities covered by AMIS; the second, price arbitrage, provides a gauge of geographical (United States and Europe) supply and demand. In addition, this section describes a methodology for improved understanding of price behaviour which calls for mapping price together with volume in the form of a market profile.

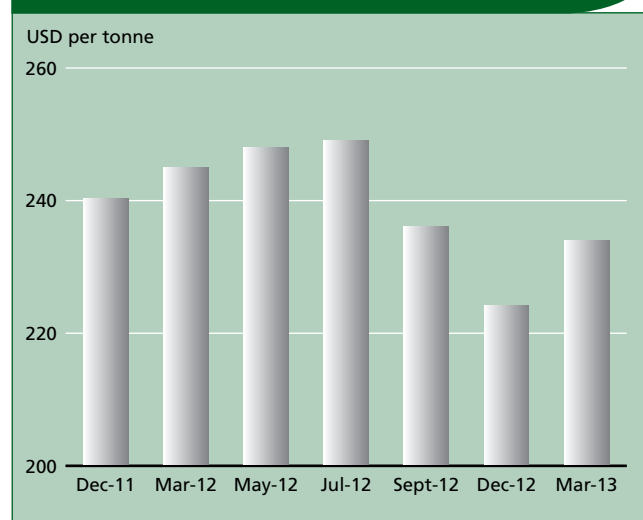
## Calendar spread differentials

Calendar spread differentials (hereinafter called “spreads”) are derived from the closing prices of the sequential contract months of any commodity futures contract. They indicate expectations of near and distant prices, which are particularly relevant for renewable commodities such as grains and oilseeds which experience a yearly harvest, in contrast to metals and most energy products that are stored in the earth until extracted. Spreads in grains usually reflect the northern hemisphere crop cycle, which commences in June/July for winter wheat and October/November for maize, rice, soybeans and spring wheat. However, southern hemisphere crops, particularly soybeans, that are harvested mostly in April/May have increasingly impacted spreads as these supplies have grown enormously in the past 20 years and comprise a significant part of the export market.

Futures prices are characterized as either upward sloping, meaning that futures contracts reflect successively higher prices, called “contango”, or downward sloping, called “backwardation”. Markets exhibiting contango indicate a surplus supply situation and those exhibiting backwardation a deficit. Historically, most grains and oilseeds exhibit both within the crop year. The contract

months representing harvest through mid-season usually configure in contango, reflecting the market’s willingness to store commodities. The contracts representing the latter half of the crop cycle often configure in backwardation, reflecting the market’s need to draw out the diminishing supplies or, in cases of extreme supply deficits, the market’s need to ration demand.

**Figure 1: CBOT maize futures settlement prices 10 October 2011 showing both contango and backwardation, a normal configuration for most grain and oilseed commodity futures markets**



The arithmetic differences between the various contract months of a single commodity futures contract are called “calendar spreads” and quoted as tradable differentials in the marketplace. When the deferred month of the spread is higher than the nearby month, then the spread is quoted on a negative basis. If, for example, 2011 December maize is trading at USD 240/tonne (USD 6.09/bu) and the 2012 March maize is trading at USD 245/tonne (USD 6.22/bu), given liquid arbitrage between these two prices, the December/March maize spread would be quoted at minus USD 5.00/tonne or USD 5.00 under (-USD .13/bu). Conversely, if the July 2012 maize is trading at USD 249/tonne (USD 6.32/bu) and can be arbitrated against the December 2012 maize at USD 224/tonne (USD 5.69/bu), then the spread would be quoted at plus USD 25/tonne or USD 25 over (+USD .63/bu). Spreads are heavily traded as differentials by both commercial and speculative traders; indeed the Commitment of Traders Report (CFTC) reserves a separate category for spread trading as a percentage of open Interest by both managed money and swaps dealers.



The trade strategy of buying the nearby month and selling deferred is called a “bull spread”, while doing the opposite is called a “bear spread”. The spreads representing the old and new crop months, i.e. the July/December maize spread or the July/November soybean spread are the most highly watched and the most revealing of the supply-and-demand situation. They indicate both the resolution of the old crop balance sheet and the harvest crop prospects.

Spreads are dynamic price indicators as evidenced by the 2010–2011 marketing season. The CBOT July/September

2011 wheat spread experienced an historical move from a steep contango of -USD18/tonne (-USD.50/bu) to even money (zero differential) in July 2011 when the wheat basis in the delivery market shot up sharply. Traders cited heavy substitution of wheat for maize by both feeders and ethanol plants, owing to wheat’s discount to maize. As a result, the end users in Chicago and Toledo accustomed to buying spot were caught short of the physical supplies and they, as well as other traders, used the July contract as a long hedge against their shorts. With respect to maize, both

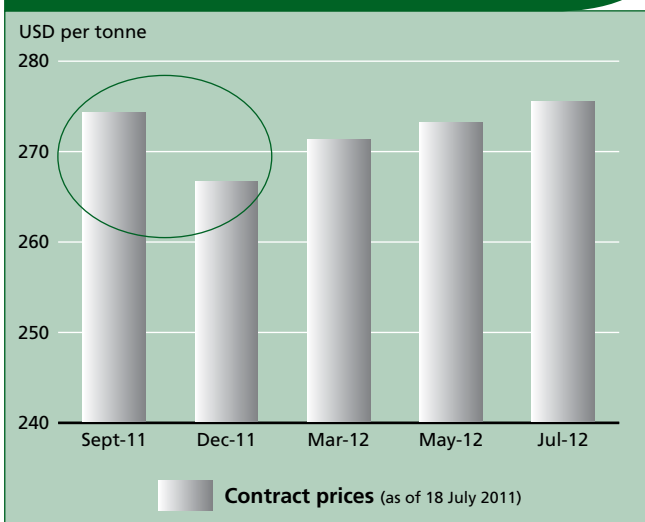
**Figure 2: CBOT Wheat Calendar Spreads during May 2011, exhibiting July-September Contango**



**Figure 3: CBOT Wheat Calendar Spreads during July 2011, exhibiting July-September Even Values**



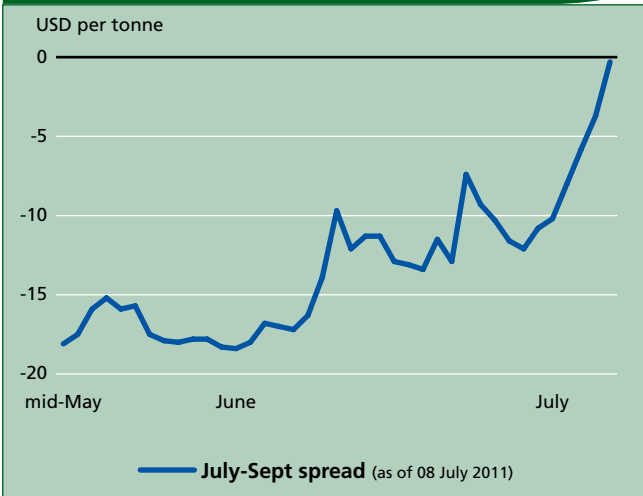
**Figure 4: CBOT Maize Calendar Spreads during July 2011, exhibiting September-December Backwardation**



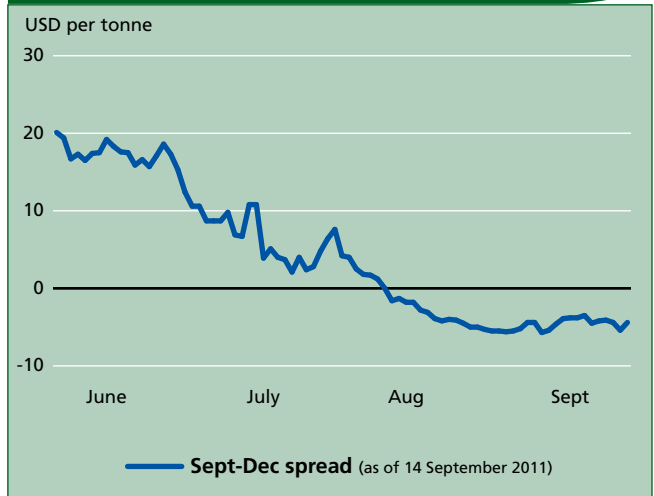
**Figure 5: CBOT Maize Calendar Spreads during September 2011, exhibiting September-December Contango**



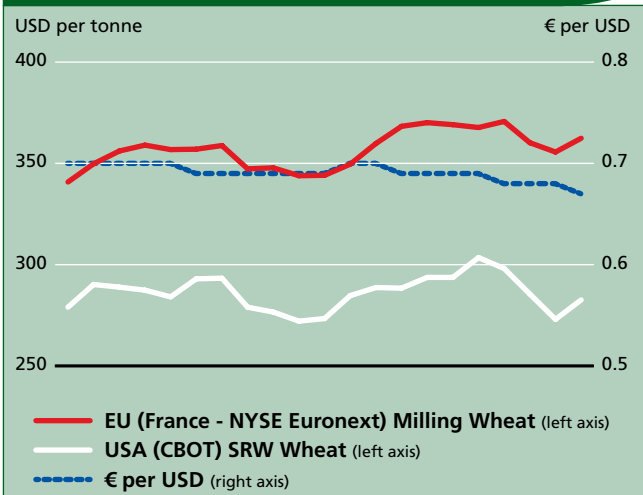
**Figure 6: July/Sept 2011 CBOT wheat spread – Range from - USD 18 to USD 0 (per tonne)**



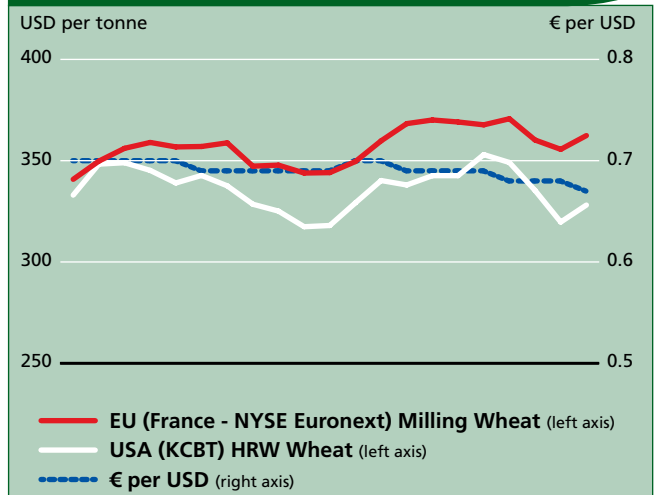
**Figure 7: September/December 2011 CBOT maize spread – Range from + USD 20 to - USD 5 (per tonne)**



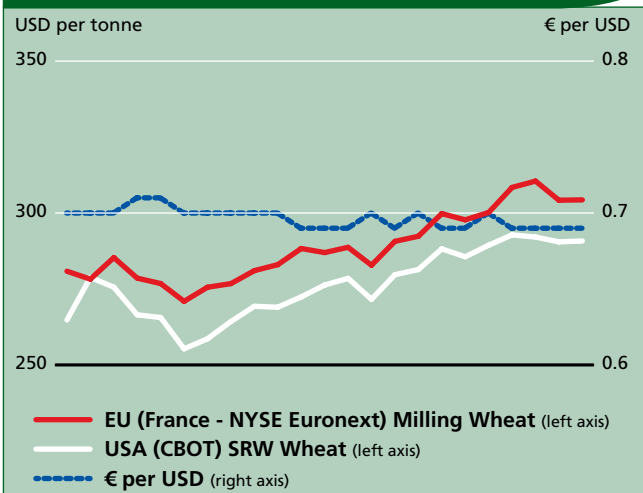
**Figure 8: April 2011: CBOT and NYSE Liffe (Matif) Wheat Futures (May 2011 contract)**



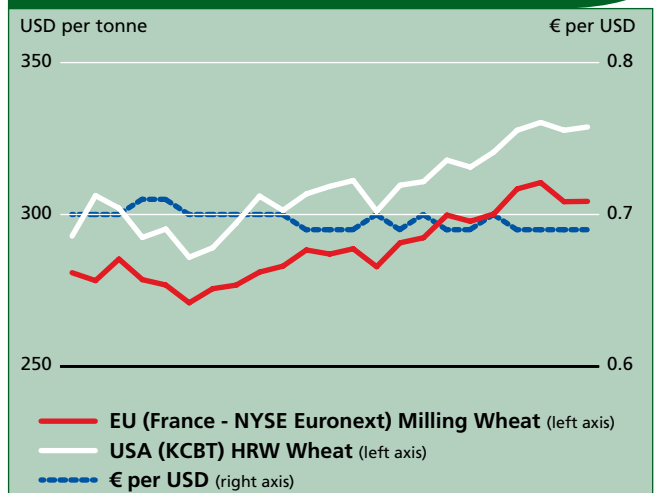
**Figure 9: April 2011: KCBT and NYSE Liffe Wheat Futures (May 2011 Contract)**



**Figure 10: August 2011: CBOT and NYSE Liffe Wheat Futures**



**Figure 11: August 2011: KCBT and NYSE Liffe Wheat Futures**



wheat for maize substitution and overall demand rationing as a result of the sustained high price was signalled by the September/December maize spread: it collapsed from its backwardation level of USD 20/tonne over (+USD .51/bu) to USD 5.5/tonne under (-USD .15/bu). Indeed, the USDA 30 September 2011 stocks report validated the amount of demand rationing that occurred during the last quarter of the crop year by publishing an ending stock figure of 1.13 billion bushels (28.7 million tonnes) for 2010/11 season, 22 percent higher than previously reported. Spreads are significant warning mechanisms of changed market conditions. As such, spreads need to be monitored on a regular basis.

## Price Arbitrage – United States versus French Wheat

Although the CBOT soft red wheat contract remains the most liquid wheat contract in the world, the Matif milling wheat contract, has grown rapidly in volume since the 2007 food crisis and now provides a valuable enhancement to the global wheat price picture. Unlike many recently developed futures contracts that seek to manage price on a country level (China, India, South Africa), the Matif contract is an export contract with its price determined by deliveries in-store Rouen, a deep water port in northern France. The open interest in the Matif contract stood at around 245 000 contracts (12.25 million tonnes) at the end of September 2011 and daily trading volume has averaged around a million MT per day since the start of 2011.

A comparison between the Matif wheat and CCBOT/KCBT wheat would help to explain regional supply and demand balances at a glance. An examination of the two pairs of monthly wheat price charts, April 2011 and August 2011, reveals the price response to the changing regional balance sheets. During April, Matif wheat was a large premium to CBOT wheat and lesser premium to KCBT Hard Red Wheat, as a result of the diminished production and export controls in the Black Sea region. Following the favourable early outlook for the 2011 crop and the Russian Federation's announcement in July 2011 that it would resume wheat export shipments, French wheat experienced a sharp decline in its premium over CBOT and a reversal, from premium to discount, against KCBT.

## Market Profile

Market profile is a system developed by the CBOT together with an independent trader 25 years ago that examines price and volume data to determine a price range of "market acceptance". According to market profile theory, the price auction process organizes price and volume into a bell curve over time, with the mode reflecting the highest volume. The prices that represent 70 percent of the trade are considered the "value area" and the prices below and above (approximately one standard deviation from the mean) are deemed the support and resistance levels. Prices approximately two standard deviations away from the mode are deemed "rejected". Prices remain range bound until a new set of prices begins to build in volume outside the bounds of the previous bell curve. Proponents of this methodology claim that organizing price data in the form of a bell curve based on trade volumes provides a map of the price discovery, rendering a more meaningful picture of transactions than charting, which focuses solely on the price series over time.

Analysts cite the strength of this trade system (i.e. the bell curve) because it:

- is statistically valid;
- reflects actual market development;
- reveals depth and breadth of market;
- identifies support and resistance levels;
- eliminates the seeming randomness of markets;
- validates the auction market theory which posits that prices cluster around a value area mutually determined by buyers and sellers;
- reveals how markets spend most of their time in horizontal development (price consolidation) rather than trending.

Market profiling appears to be undergoing a revival following some adjustments to its methodology, necessitated in part by the migration from pit trading to electronic. The system appears to contain medium- to long-term price analysis that could qualify it as another sound market indicator. Because it can readily identify the value



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area of every grain and oilseed commodity, it could prove particularly useful to food-deficit countries trying to cope with commodity price volatility. Shown alongside a standard price chart, it would immediately identify which price spikes

(both up and down) failed to gain “market acceptance.” As such, Market Profile would complement historical/implied volatility, which reflects price variability without regard to volumes traded.

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