

16 February 2016

# ETF Securities Commodities Research:

## Opportunity to short agriculture with La Niña

Crop production may increase if La Niña starts in winter

### Summary

- As El Niño fades, La Niña weather conditions look increasingly likely to emerge later in the year.
- La Niñas that reach a “medium” strength by northern hemisphere winter tend to help the production of grains, coffee and cocoa and so a La Niña starting in winter 2016/17 could be price negative.
- Should La Niña be delayed to spring/summer 2017, we could see mainly price positive developments.

### From El Niño to La Niña

We are currently in the one of the most extreme El Niño events on record (with records dating back to 1950). El Niño refers to the warm phase of the El Niño–Southern Oscillation (ENSO) which is a scientific term that describes the fluctuations in temperature between the ocean and atmosphere in the east-central Equatorial Pacific. The warm phase of the ENSO has led to droughts in Asia and excess rain in South America, leading to a 50% rally in sugar prices between August and December 2015 for example.

According to the Australian Bureau of Meteorology, out of the past 26 El Niño events since 1900 approximately 40% have been followed by a La Niña, the cold phase of ENSO. The International Research Institute for Climate and Society’s<sup>1</sup> regression models peg the probability of a La Niña event at 53% by September.

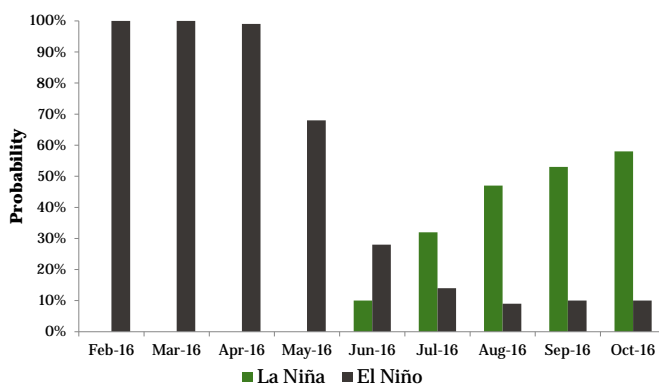
La Niña tends to have the opposite effect of El Niño: places with droughts under El Niño tend to have excess rain under La Niña and vice-versa.



Source: National Oceanic and Atmospheric Organization

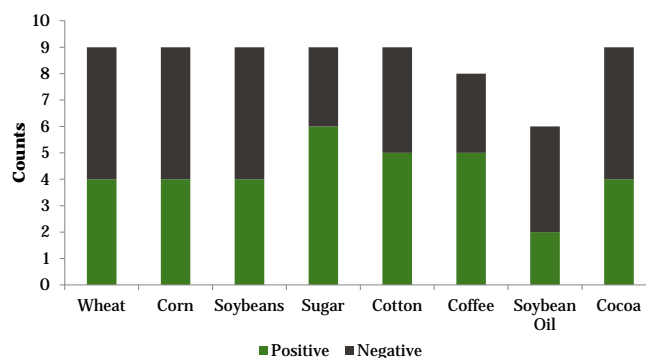
Our analysis of previous ENSO cycles identifies nine distinct La Niña events of a medium magnitude<sup>ii</sup> since 1959 (8 for coffee since 1972 and 6 for soybean oil since 1979 due to lack of price availability). We look at how commodity prices have performed one year from the date a certain threshold of La Niña intensity has been reached. At a first glance it appears as if there is no clear directional impact from La Niña events. For most commodities there have been a similar number of price-positive events as price negative.

**El Nino to give way to La Niña in 2016**  
(Probabilistic Based ENSO Forecasts)



Source: International Research Institute for Climate and Society (Columbia University), ETF Securities

**Price-positive vs. price-negative La Niña events**

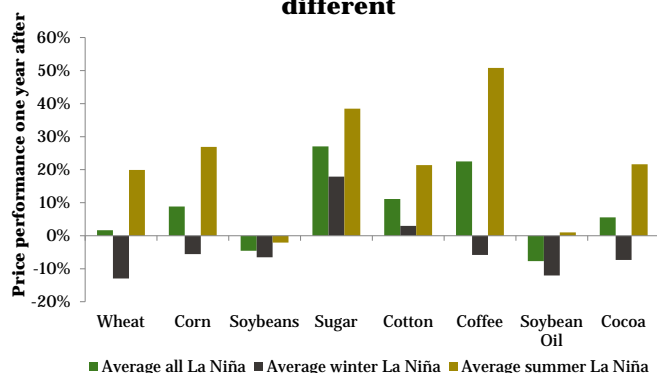


Source: National Oceanic and Atmospheric Organization, Bloomberg, ETF Securities

## Summer La Niña vs. Winter La Niña

However, a key distinguishing feature between these nine events is when the La Niña started (or more accurately when it reaches our threshold intensity). We see a clear pattern that La Niñas that reach threshold intensity in the northern hemisphere winter, drive prices of most agricultural commodities lower within one year of the event. The notable exception is sugar. La Niñas that reach threshold intensity in the northern hemisphere summer, drive prices of most agricultural commodities higher within one year of the event. Soybean is an exception here. Summer La Niñas tend to have a more substantial price impact, reflecting the fact that more northern hemisphere crops are in the ground and therefore exposed to weather changes.

**Summer and winter La Niñas are very different**



Source: National Oceanic and Atmospheric Organization, Bloomberg, ETF Securities

Based on NOAA model forecasts of a greater than 50% probability of La Niña starting in northern hemisphere Autumn, we could hit threshold intensity by winter 2016.

Looking at past price trends has limitations. We are not accounting for length or amplitude of each weather event. Nor are we conditioning for other drivers of price including: planting decisions, competing weather patterns, crop infections, starting stocks and currency movements.

## Crop cycle and weather impacts by geography

Looking at the crop cycle and weather impacts at different times of the year in various geographies, we believe there is a logical reason why prices should rise or fall in a winter La Niña. The table below is a summary of our findings. We believe that if a winter La Niña 2016 is confirmed, there is good reason to short wheat, corn, soybeans, coffee and cocoa and go long sugar.

## At meteorologists' mercy

We caution investors however, to wait for a confirmation that the weather pattern will emerge as early as winter 2016/17. If the weather event is delayed until spring/summer 2017, then the price impacts could be very different. Remember, the El Niño expected in 2014 did not emerge until 2015. In the meantime, lingering weather impacts from El Niño could provide upside price risks for cocoa in the short-term as the market has underestimated the impact of dryness on the mid-crop which will be harvested from May in most of Africa. Cocoa prices have fallen more than 20% since December as the market has focused on ample port deliveries failing to recognise that supply overall this year could be tight.

Crop	Reason for crop impact	Price positive/ price negative	% of global production	% of global exports
<b>US wheat</b>	Good snow cover during winter to reduces frost damage and improve soil moisture levels	negative	8	16
<b>Brazil corn</b>	Cooler and wetter southern hemisphere summer to reduce drought risk when crop is in ground	negative	8	17
<b>Brazil soybean</b>	Cooler and wetter southern hemisphere summer to reduce drought risk when crop is in ground	negative	31	43
<b>Brazil coffee</b>	Cooler and wetter southern hemisphere summer to reduce drought risk when coffee bush is in blooming and budding stage	negative	45% (Arabica)	28% (Arabica and Robusta)
<b>African cocoa</b>	Cooler conditions to reduce risk of heat damage	negative	73	77
<b>Indian sugar</b>	Cooler winter could reduce sucrose content of cane	positive	15	4

Source: NOAA, USDA, CONAB, ICO, ICCO

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<sup>i</sup> The organisation that jointly produces the official US meteorological forecasts with the National Oceanic and Atmospheric Organization. The official forecast is based on a consensus of forecasters and committee discussion. The probability from the regression is a purely objective input to the discussion.

<sup>ii</sup> We use an Oceanic Niño Index (ONI) of less than or equal to  $-1^{\circ}$  to identify a “medium” La Niña event. The ONI is based on Sea Surface Temperature (SST) departures in a specific region of the Pacific Ocean away from its 30-year average. While a La Niña event is technically marked by a ONI of less than or equal to  $-0.5^{\circ}$ , we have chosen to look at medium intensity of  $-1^{\circ}$ , to judge events of significant strength and reduce spurious analysis. We call this the “threshold intensity” for the purpose of this article.

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