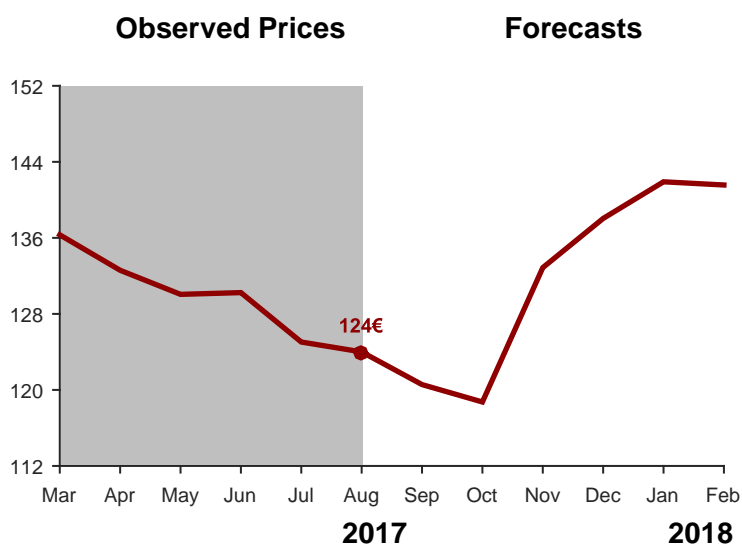


Forecasting the Price of Corn

Commodity Corn (CBT)
Forecast Period September 2017 – February 2018
Currency €
Unit Metric Tonne
Observations Monthly forecasts of the average spot price in the last week of the previous month



Forecasts



Month/Year	Forecast	Prob. of Raise
Sep. 2017	121€	28 %
Oct. 2017	119€	49 %
Nov. 2017	133€	54 %
Dec. 2017	138€	61 %
Jan. 2018	142€	66 %
Feb. 2018	142€	52 %

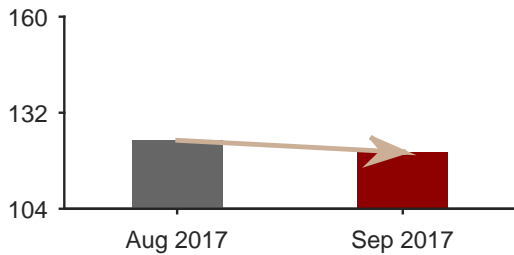
Suggested Action for Procurement

Purchase Limit Month	Suggested Action
September 2017	Buy in September
October 2017	Wait
November 2017	Wait
December 2017	Buy part of requirements
January 2018	Buy part of requirements
February 2018	Buy part of requirements

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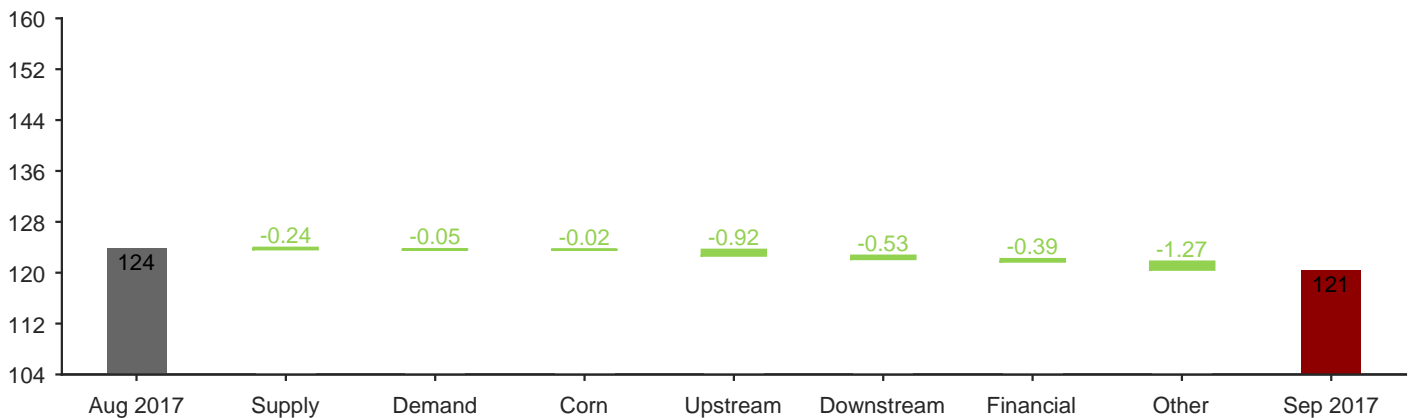
Forecasting the Price of Corn

Impact Analysis: One Month Forecast



Our algorithm forecasts a lower price of Corn in one month: it is expectable that the price decreases 2.77% from 124€ to 121€ until the beginning of September.

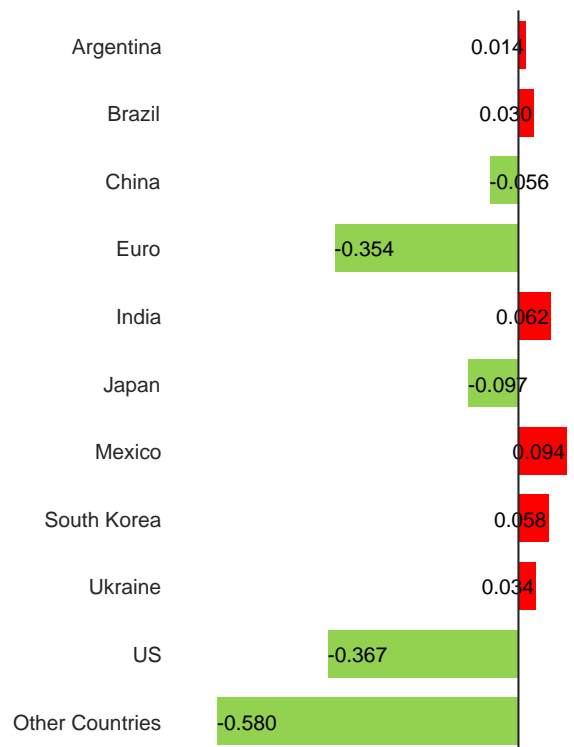
Indices of Factors



Interpretation

- **Increase of Supply:** Negative pressure of the Supply index
- Slight decrease of Demand: Negative pressure of the Demand index
- Slightly negative pressure of the index of Corn
- Negative pressure of the index of variables representing the market upstream
- Negative pressure of the index of variables representing the market downstream
- Negative pressure of the financial index
- **Considerably negative pressure of other commodities and other factors**
- Focus on US, Euro, and Canada

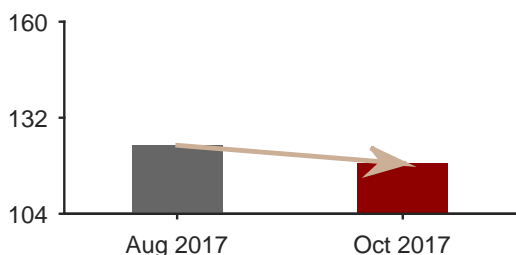
Impact per Country



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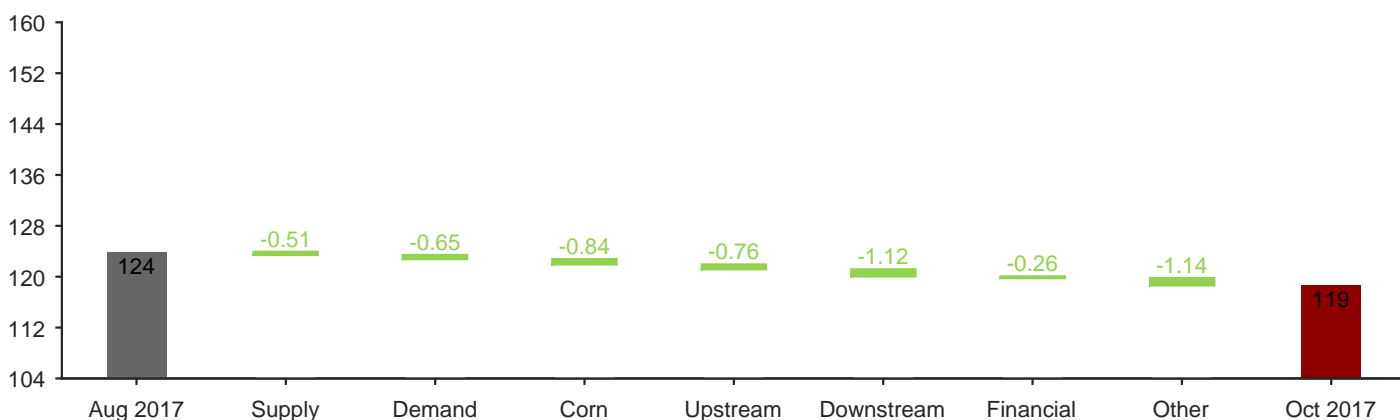
Forecasting the Price of Corn

Impact Analysis: Two Months Forecast



Our algorithm forecasts a lower price of Corn in two months: it is expectable that the price decreases 4.25% from 124€ to 119€ until the beginning of October.

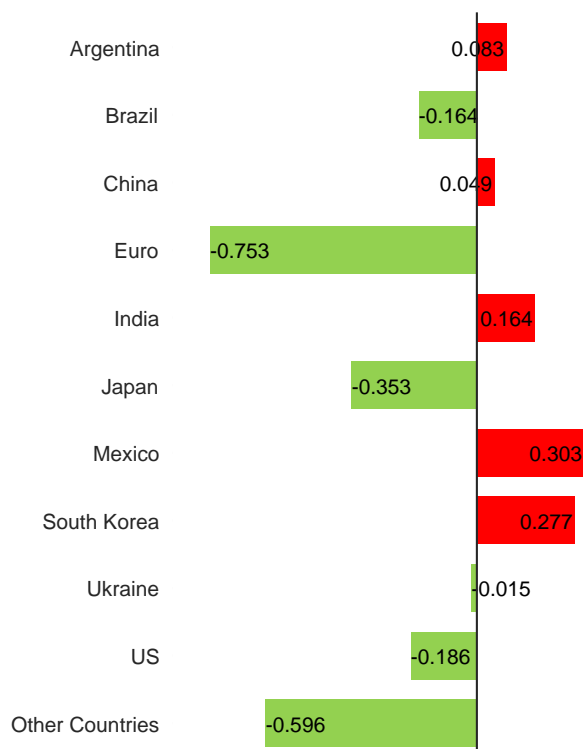
Indices of Factors



Interpretation

- **Increase of Supply:** Negative pressure of the Supply index
- **Decrease of Demand:** Negative pressure of the Demand index
- Negative pressure of the index of Corn
- Negative pressure of the index of variables representing the market upstream
- Negative pressure of the index of variables representing the market downstream
- Negative pressure of the financial index
- Negative pressure of other commodities and other factors
- Focus on Canada, Euro, and Japan

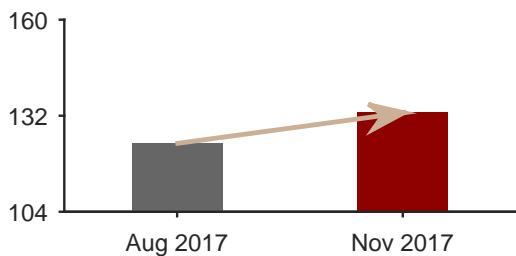
Impact per Country



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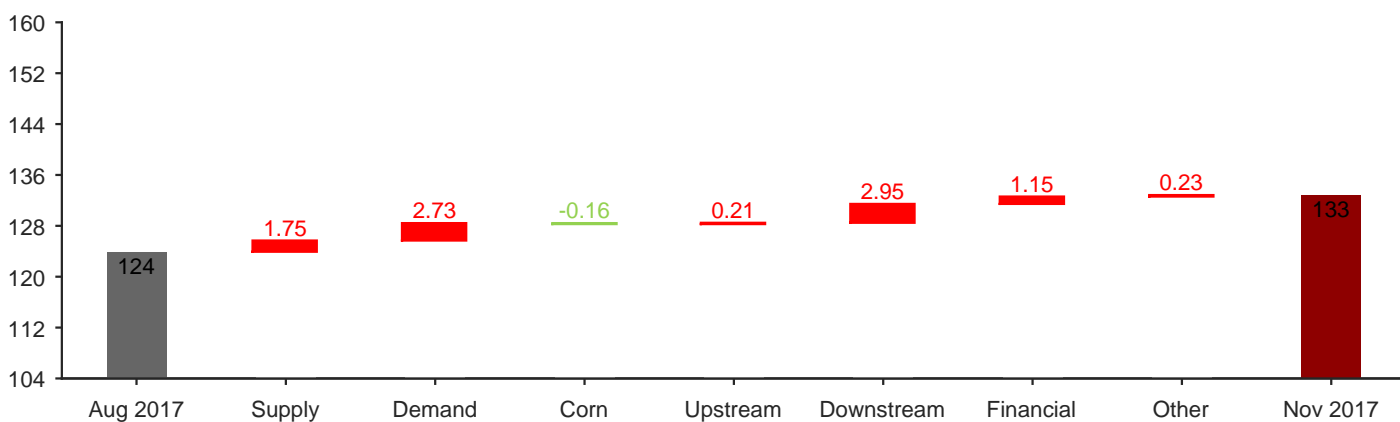
Forecasting the Price of Corn

Impact Analysis: Three Months Forecast



Our algorithm forecasts a higher price of Corn in three months: it is expectable that the price increases 7.15% from 124€ to 133€ until the beginning of November.

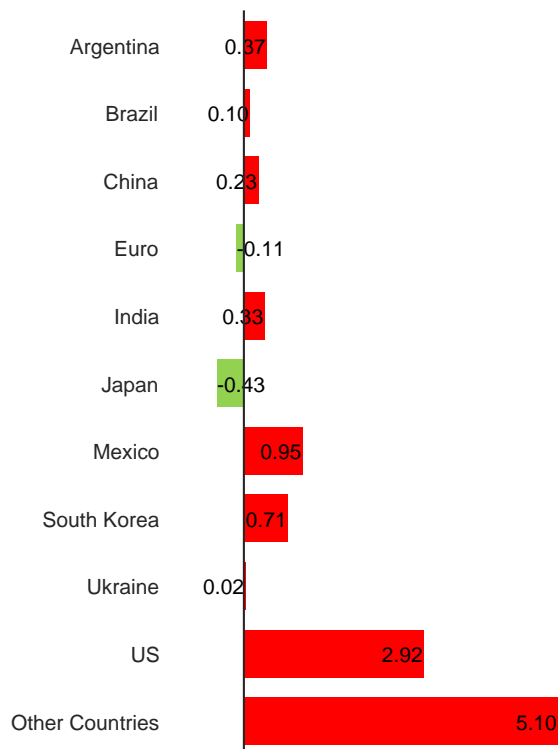
Indices of Factors



Interpretation

- **Decrease of Supply:** Positive pressure of the Supply index
- **Considerable increase of Demand:** Positive pressure of the Demand index
- Slightly negative pressure of the index of Corn
- Slightly positive pressure of the index of variables representing the market upstream
- **Considerably positive pressure of the index of variables representing the market downstream**
- Positive pressure of the financial index
- Slightly positive pressure of other commodities and other factors
- Focus on US, Mexico, and South Korea

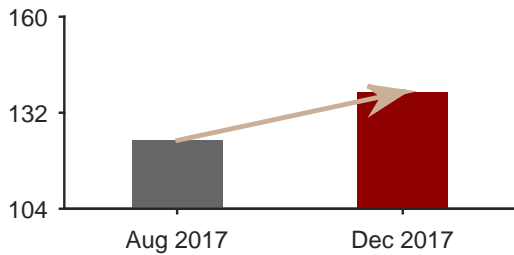
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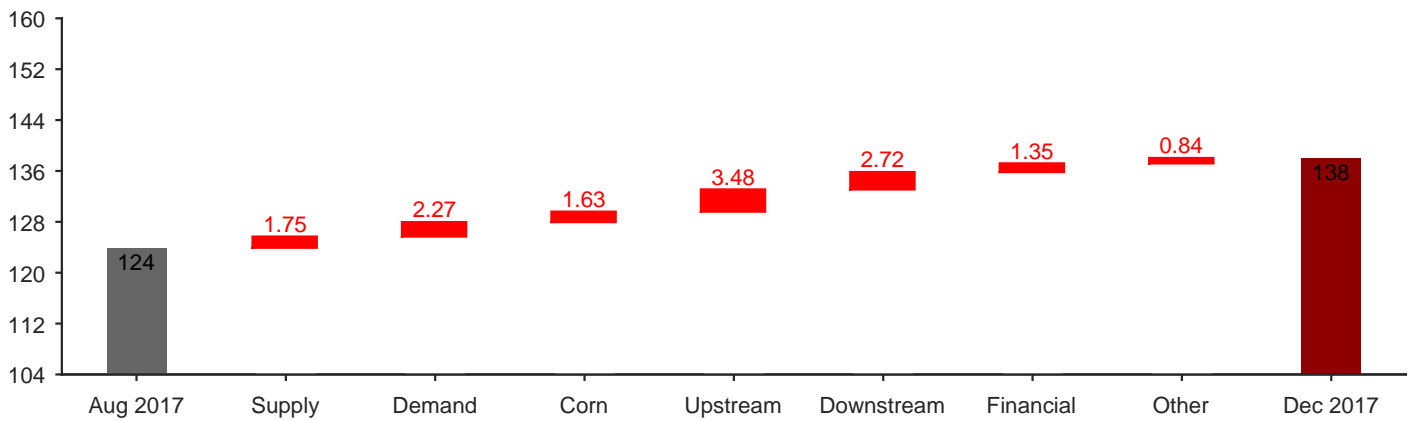
Forecasting the Price of Corn

Impact Analysis: Four Months Forecast



Our algorithm forecasts a higher price of Corn in four months: it is expectable that the price increases 11.32% from 124€ to 138€ until the beginning of December.

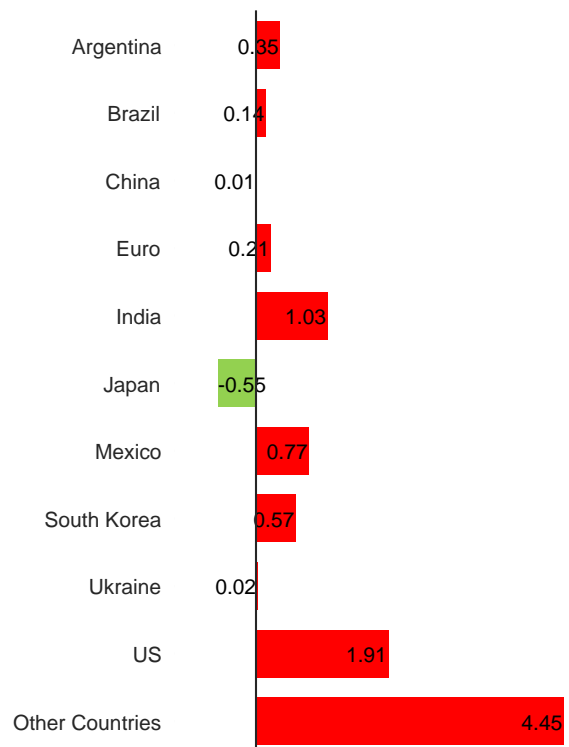
Indices of Factors



Interpretation

- **Decrease of Supply:** Positive pressure of the Supply index
- **Increase of Demand:** Positive pressure of the Demand index
- Positive pressure of the index of Corn
- **Considerably positive pressure of the index of variables representing the market upstream**
- Positive pressure of the index of variables representing the market downstream
- Positive pressure of the financial index
- Positive pressure of other commodities and other factors
- Focus on US, India, and Mexico

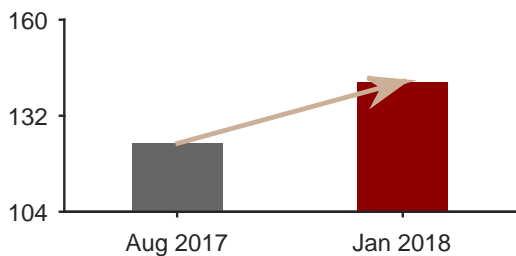
Impact per Country



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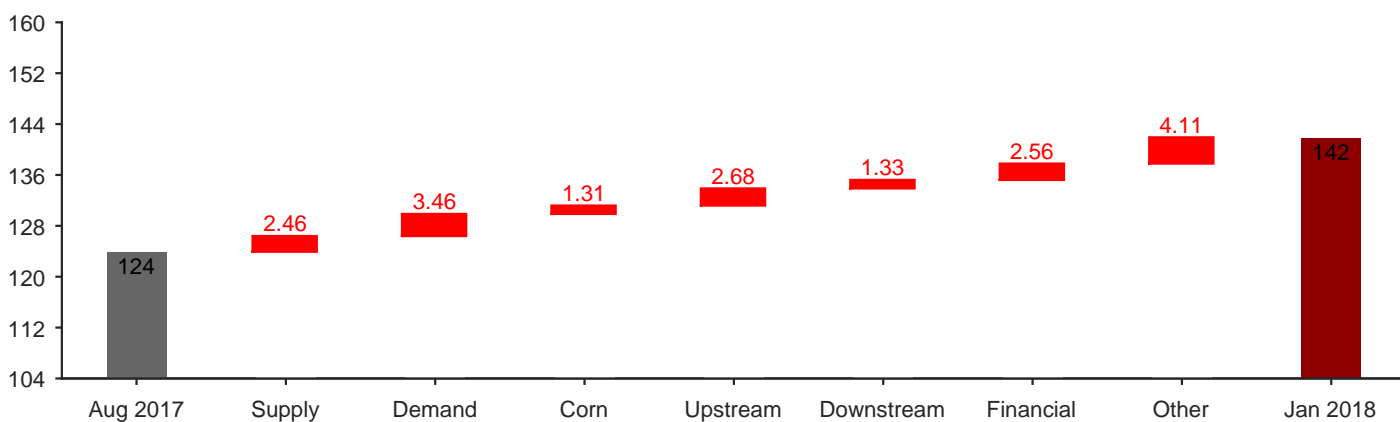
Forecasting the Price of Corn

Impact Analysis: Five Months Forecast



Our algorithm forecasts a higher price of Corn in five months: it is expectable that the price increases 14.43% from 124€ to 142€ until the beginning of January.

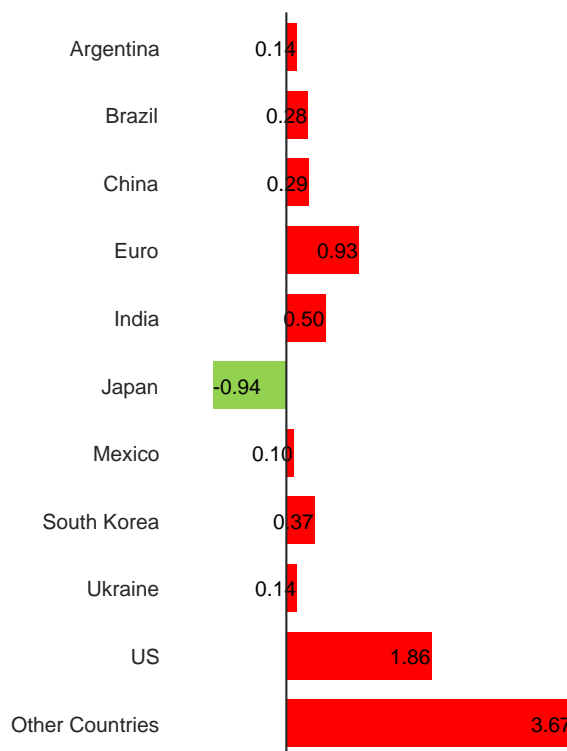
Indices of Factors



Interpretation

- **Decrease of Supply:** Positive pressure of the Supply index
- **Considerable increase of Demand:** Positive pressure of the Demand index
- Positive pressure of the index of Corn
- Positive pressure of the index of variables representing the market upstream
- Positive pressure of the index of variables representing the market downstream
- Positive pressure of the financial index
- **Considerably positive pressure of other commodities and other factors**
- Focus on US, Taiwan, and Japan

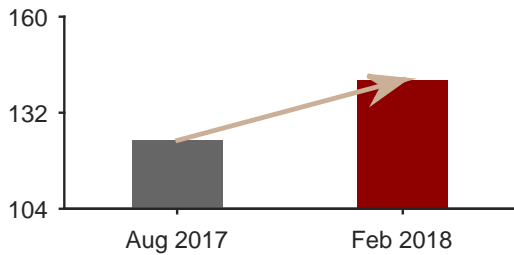
Impact per Country



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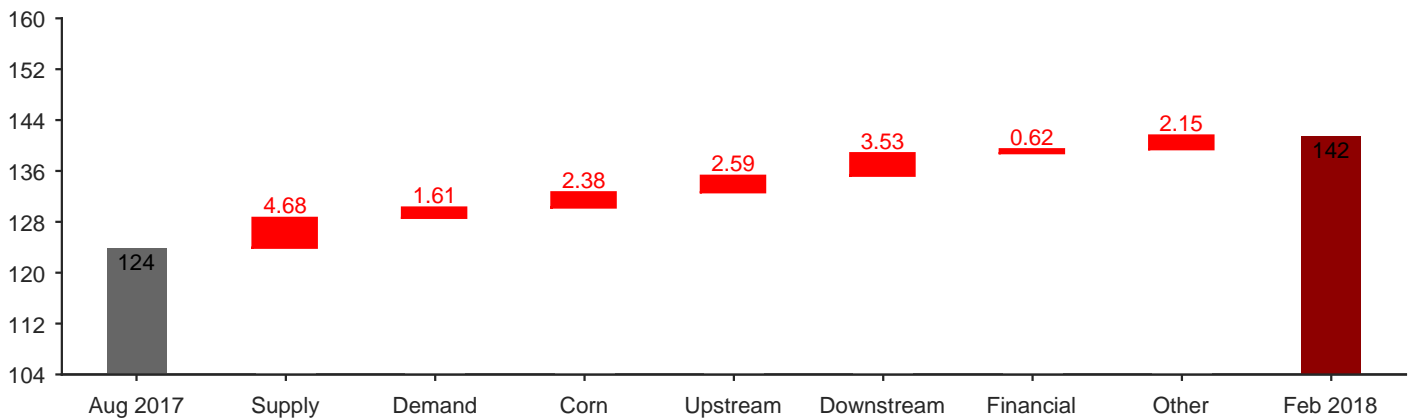
Forecasting the Price of Corn

Impact Analysis: Six Months Forecast



Our algorithm forecasts a higher price of Corn in six months: it is expectable that the price increases 14.16% from 124€ to 142€ until the beginning of February.

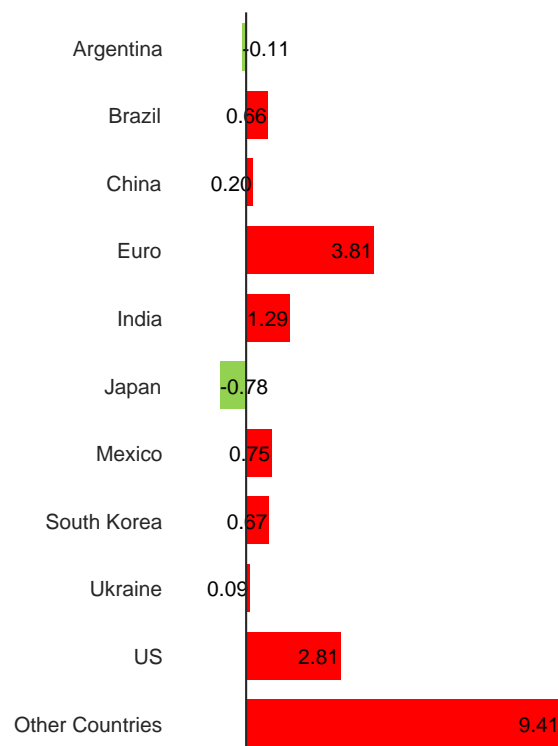
Indices of Factors



Interpretation

- **Considerable decrease of Supply:** Positive pressure of the Supply index
- **Increase of Demand:** Positive pressure of the Demand index
- Positive pressure of the index of Corn
- Positive pressure of the index of variables representing the market upstream
- **Considerably positive pressure of the index of variables representing the market downstream**
- Slightly positive pressure of the financial index
- Positive pressure of other commodities and other factors
- Focus on Euro, US, and India

Impact per Country



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Forecasting the Price of Corn

APPENDIX – Technical Explanation of the Impact Analysis

In this appendix, we explain the impact analysis of the factors that most contribute for our forecasts.

This Impact Analysis is conducted individually for **each time horizon**, allowing for a distinction between the indices of variables that contribute for our forecasts at short and medium run.

For each time horizon, our analysis has **two components**: first, we present the impact of variables grouped by **indices of factors**; second we present the impact of variables grouped by **indices of countries**.

Indices of Factors

Indices of factors are indices of the weighted contributions of the variables grouped in those factors.

Supply Index: composed of macroeconomic variables of the producing and exporting countries. It includes variables such as production, exchange rates, inflation, monetary policy, and wages. For example, an increase in wages implies higher production costs which should (in linear, general, and ceteris paribus terms) generate an incentive to increase prices;

Demand index: composed of macroeconomic variables of the consuming and importing countries. It includes variables such as production, exchange rates, inflation, monetary policy, and wages. For example, a decrease in a consumer confidence index should (in linear, general, and ceteris paribus terms) increase savings and decrease demand, leading to lower prices;

Corn Index: composed of variables related to Corn. It includes variables such as the price of Corn in different regions of the world and exports, imports, and producer prices of Corn in some countries. For example, an increase in the price of Corn in other region may imply an increase in the price of Corn in Europe due to arbitrage movements;

Upstream index: composed of variables related to Weather and Fertilizers. It includes variables such as the price and exports, imports, and producer prices of the inputs in some countries. For example, an increase in the price of Fertilizers should (in linear, general, and ceteris paribus terms) generate an increase in the price of Corn;

Forecasting the Price of Corn

APPENDIX – Technical Explanation of the Impact Analysis (II)

Downstream index: composed of variables related to the Feed Industry. It includes variables such as the exports, imports, and prices of Pork, Poultry and Beef in some countries. For example, an increase in the demand of Pork should (in linear, general, and ceteris paribus terms) generate an increase in the price of Corn;

Financial Variables Index: composed of financial market variables. It includes the share price of companies that produce Corn. It also includes financial indices related to this sector. For example, a positive change in the share price of a producer of Corn should (in linear, general, and ceteris paribus terms) imply an increase in expected profitability of the firm. This may signal an expectation of increase in the price of Corn;

Other Variables Index: composed of variables related to other cereals, such as Soybean Meal and Wheat. It includes the price, exports, and imports of these commodities. For example, a positive change in the price of a substitute commodity, should (in linear, general, and ceteris paribus terms) imply an increase of demand of Corn, and thus, of the price of Corn.

Indices of Countries

Indices of Countries: are indices of the weighted contributions of the macroeconomic variables of each country. The countries we present are the most relevant countries in the production, consumption, and international commerce of Corn.

Interpretation Warning

It is important to note that the contribution of individual variables and indices of variables is not linear. The interaction between variables and between variables of different factors may not be neglectable, which means that the importance of each variable and indices of variables is determined together with the importance of all other variables.

Furthermore, the analysis of changes in variables is not linear. This means that the same variable with the same change in different moments of time may have different impacts given its previous evolution. For example, the algorithm contrasts the change in a variable with its expected change. A positive change but inferior to the expected change may originate an effect of price correction.