# Forecasting the Price of Pork

| | |
|---|---|
| **Commodities** | Pork (France) |
| **Forecast Period** | March 2017 – August 2017 |
| **Currency** | Euros (€) |
| **Unit** | Kg |
| **Observations** | Monthly forecasts of the spot price in the last week of the previous month |

## Forecasts



**Observed Prices**          **Forecasts**

1,34€

2016          2017

| Month/Year | Forecast | Prob. of Raise |
|---|---|---|
| Mar. 2017 | 1,39€ | 68% |
| Apr. 2017 | 1,43€ | 81% |
| May 2017 | 1,45€ | 82% |
| Jun. 2017 | 1,47€ | 66% |
| Jul. 2017 | 1,53€ | 78% |
| Aug. 2017 | 1,56€ | 82% |

## Suggested Action for Procurement

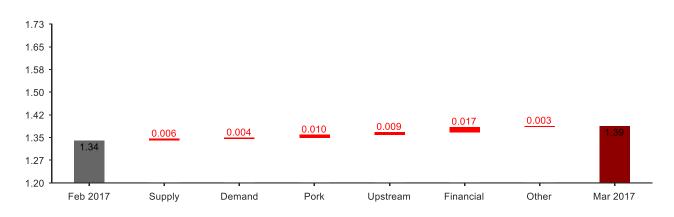| Purchase Limit Month | Suggested Action |
|---|---|
| March 2017 | Buy in February at 1,34€ |
| April 2017 | Buy in February at 1,34€ |
| May 2017 | Buy in February at 1,34€ |
| June 2017 | Buy in February at 1,34€ |
| July 2017 | Buy in February at 1,34€ |
| August 2017 | Buy in February at 1,34€ |

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# Forecasting the Price of Pork

## Impact Analysis: One Month Forecast



Our algorithm forecasts a higher price of Pork in one month: it is expectable that the price increases 3,60% from 1,34€ to 1,39€ until the beginning of March.
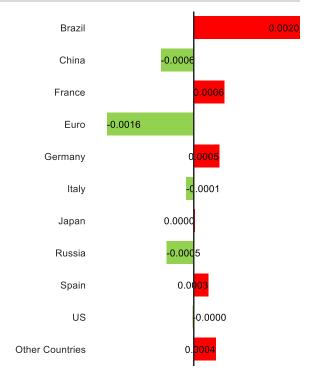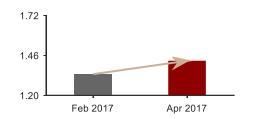
## Indices of Factors



### 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 Pork
- Positive pressure of the index of variables representing the market upstream
- **Considerably positive pressure of the financial index**
- Positive pressure of other commodities and other factors
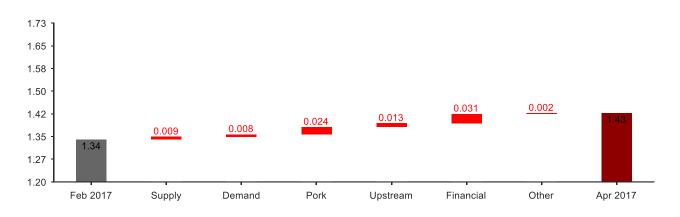- Focus on Canada, Brazil, and Euro

### Impact per Country



| Country | Impact |
|---|---|
| Brazil | 0.0020 |
| China | -0.0006 |
| France | 0.0006 |
| Euro | -0.0016 |
| Germany | 0.0005 |
| Italy | -0.0001 |
| Japan | 0.0000 |
| Russia | -0.0005 |
| Spain | 0.0003 |
| US | -0.0000 |
| Other Countries | 0.0004 |

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# Forecasting the Price of Pork

## Impact Analysis: Two Months Forecast

Our algorithm forecasts a higher price of Pork in two months: it is expectable that the price increases 6,52% from 1,34€ to 1,43€ until the beginning of April.
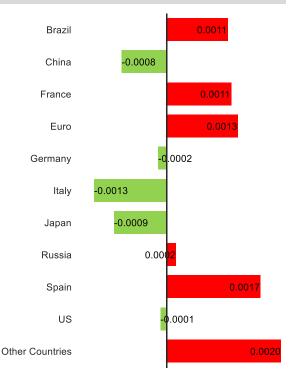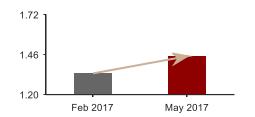
## Indices of Factors

## 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 Pork
- Positive pressure of the index of variables representing the market upstream
- **Considerably positive pressure of the financial index**
- Slightly positive pressure of other commodities and other factors
- Focus on UK, Canada, and Mexico

## Impact per Country

| Country | Value |
| --- | --- |
| Brazil | 0.0011 |
| China | -0.0008 |
| France | 0.0011 |
| Euro | 0.0013 |
| Germany | -0.0002 |
| Italy | -0.0013 |
| Japan | -0.0009 |
| Russia | 0.0002 |
| Spain | 0.0017 |
| US | -0.0001 |
| Other Countries | 0.0020 |

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# Forecasting the Price of Pork

## Impact Analysis: Three Months Forecast

Our algorithm forecasts a higher price of Pork in three months: it is expectable that the price increases 8,38% from 1,34€ to 1,45€ until the beginning of May.

## 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 Pork
- Positive pressure of the index of variables representing the market upstream
- Positive pressure of the financial index
- Positive pressure of other commodities and other factors
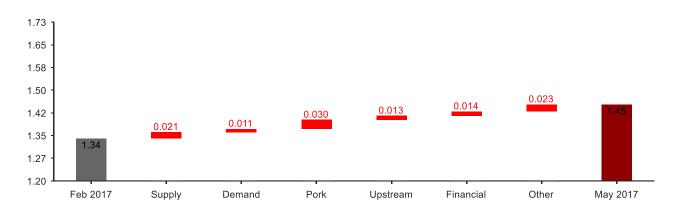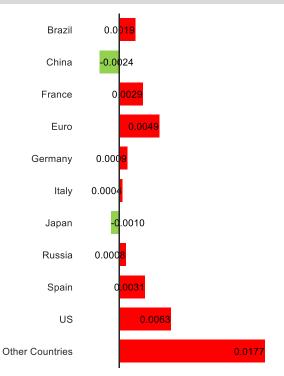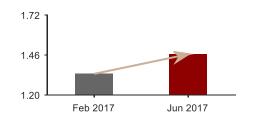- Focus on Canada, Mexico, and US

## Impact per Country

| Country | Value |
| --- | --- |
| Brazil | 0.0019 |
| China | -0.0024 |
| France | 0.0029 |
| Euro | 0.0049 |
| Germany | 0.0009 |
| Italy | 0.0004 |
| Japan | -0.0010 |
| Russia | 0.0008 |
| Spain | 0.0031 |
| US | 0.0063 |
| Other Countries | 0.0177 |

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# Forecasting the Price of Pork

## Impact Analysis: Four Months Forecast



Our algorithm forecasts a higher price of Pork in four months: it is expectable that the price increases 9,56% from 1,34€ to 1,47€ until the beginning of June.

## Indices of Factors



### Interpretation

- Slight decrease of Supply: Positive pressure of the Supply index
- Slight increase of Demand: Positive pressure of the Demand index
- **Considerably positive pressure of the index of Pork**
- Positive pressure of the index of variables representing the market upstream
- Slightly positive pressure of the financial index
- Positive pressure of other commodities and other factors
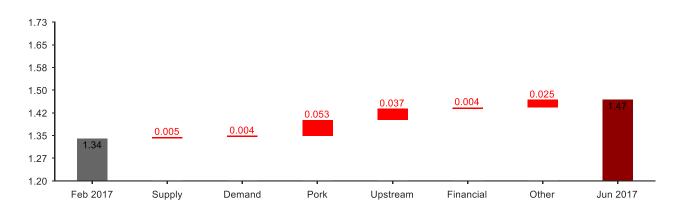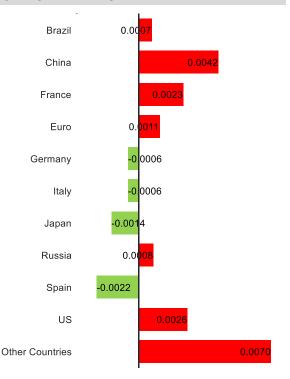- Focus on Denmark, UK, and China

### Impact per Country



| Country | Value |
|---|---|
| Brazil | 0.0007 |
| China | 0.0042 |
| France | 0.0023 |
| Euro | 0.0011 |
| Germany | -0.0006 |
| Italy | -0.0006 |
| Japan | -0.0014 |
| Russia | 0.0008 |
| Spain | -0.0022 |
| US | 0.0026 |
| Other Countries | 0.0070 |

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# Forecasting the Price of Pork

## Impact Analysis: Five Months Forecast



Our algorithm forecasts a higher price of Pork in five months: it is expectable that the price increases 14,02% from 1,34€ to 1,53€ until the beginning of July.
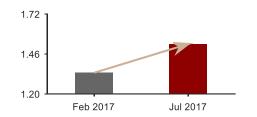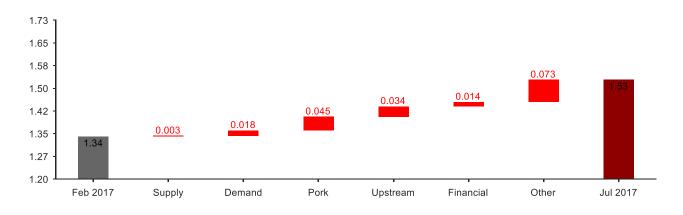
## Indices of Factors



### Interpretation

- Slight decrease of Supply: Positive pressure of the Supply index
- **Increase of Demand**: Positive pressure of the Demand index
- **Considerably positive pressure of the index of Pork**
- Positive pressure of the index of variables representing the market upstream
- Positive pressure of the financial index
- **Considerably positive pressure of other commodities and other factors**
- Focus on Mexico, Japan, and Spain

### Impact per Country

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# Forecasting the Price of Pork

## Impact Analysis: Six Months Forecast



Our algorithm forecasts a higher price of Pork in six months: it is expectable that the price increases 16,09% from 1,34€ to 1,56€ until the beginning of August.
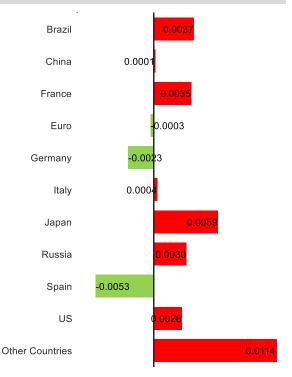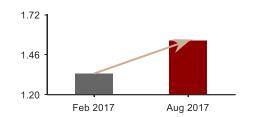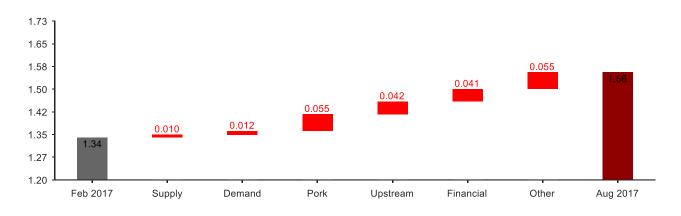
## Indices of Factors



### Interpretation

- **Decrease of Supply**: Positive pressure of the Supply index
- **Increase of Demand**: Positive pressure of the Demand index
- **Considerably positive pressure of the index of Pork**
- **Considerably positive pressure of the index of variables representing the market upstream**
- **Considerably positive pressure of the financial index**
- **Considerably positive pressure of other commodities and other factors**
- Focus on Mexico, Brazil, and UK

### Impact per Country



| Country | Impact |
|---|---|
| Brazil | 0.0112 |
| China | 0.0072 |
| France | 0.0020 |
| Euro | 0.0002 |
| Germany | -0.0016 |
| Italy | -0.0025 |
| Japan | 0.0024 |
| Russia | 0.0017 |
| Spain | -0.0031 |
| US | 0.0009 |
| Other Countries | 0.0186 |

# Forecasting the Price of Pork

## APPENDIX I – 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;

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

**Upstream index:** composed of variables related to Soybean Meal and Corn. 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 Soybean Meal should (in linear, general, and *ceteris paribus* terms) generate an increase in the price of rations, and thus, of the price of pork;

# Forecasting the Price of Pork

## APPENDIX – Technical Explanation of the Impact Analysis

**Financial Variables Index**: composed of financial market variables. It includes the share price of companies that produce pork. It also includes financial indices related to this sector. For example, a positive change in the share price of a pork producer 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 pork;

**Other Variables Index**: composed of variables related to other types of foods, such as Poultry and Beef. It includes the price, exports and imports of these commodities. For example, a positive change in the price of Beef, should (in linear, general, and *ceteris paribus* terms) imply an increase of demand of Pork, and thus, of the price of Pork.

## Country Indices

**Country Indices** 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 pork.

## 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.