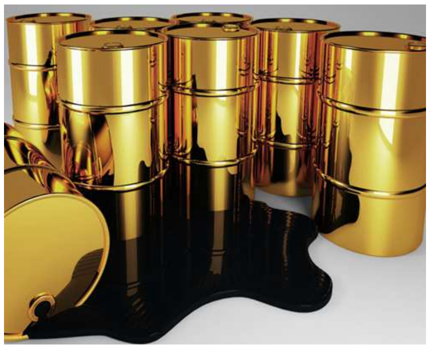
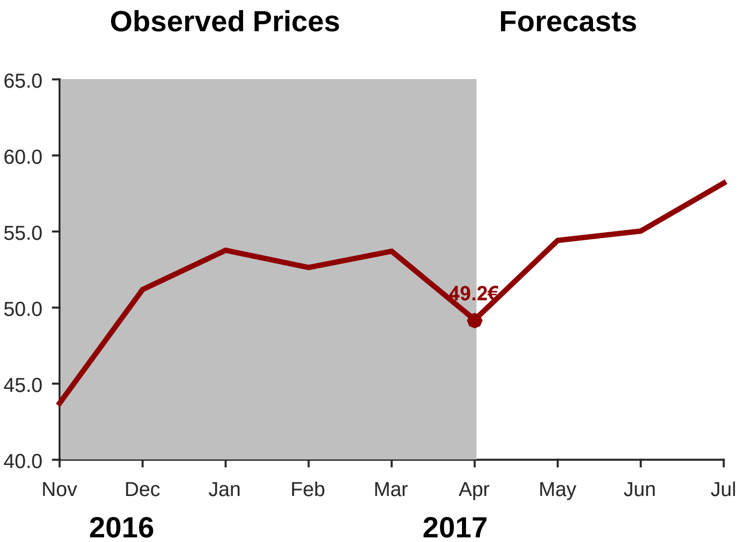
Forecasting the Price of Oil

Commodity	Brent Oil (FOB)
Forecast Period	May 2017 – October 2017
Currency	€
Unit	Barrel
Observations	Monthly forecasts of the spot price in the first day of the month



Forecasts



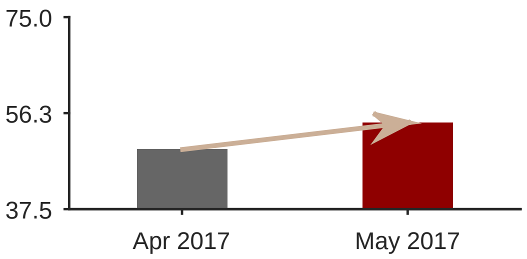
Month/Year	Forecast	Prob. of Raise
May 2017	54.4€	58 %
Jun. 2017	55.0€	71 %
Jul. 2017	58.2€	67 %

Suggested Action for Procurement

Purchase Limit Month	Suggested Action
May 2017	Buy in April at 49.2€
June 2017	Buy in April at 49.2€
July 2017	Buy in April at 49.2€

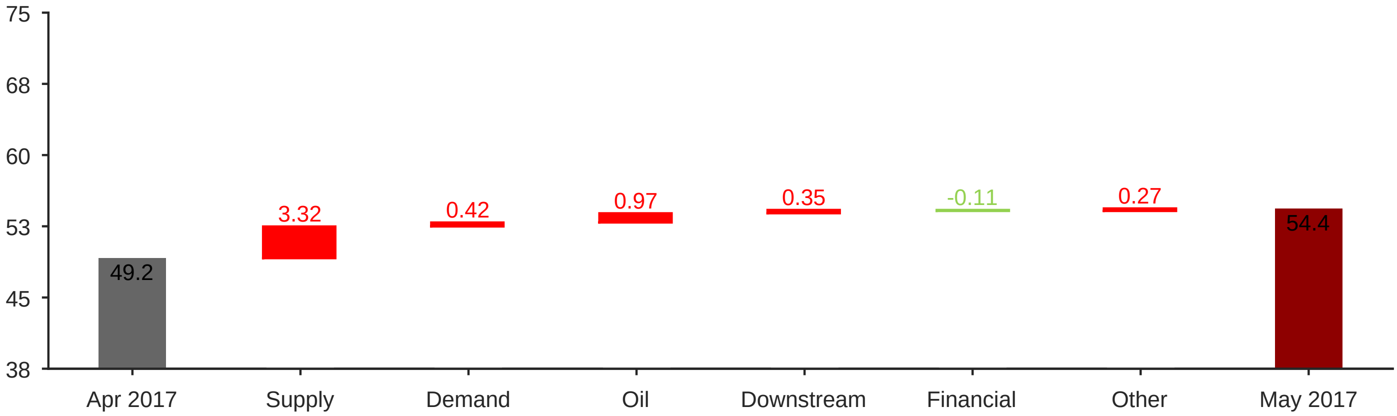
Forecasting the Price of Oil

Impact Analysis: One Month Forecast



Our algorithm forecasts a higher price of Oil in one month: it is expectable that the price increases 10.59% from 49.2€ para 54.4€ until the beginning of May.

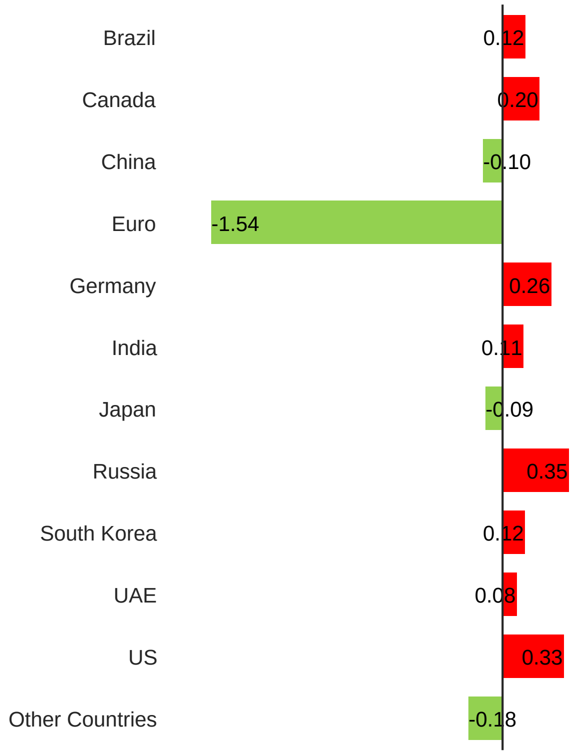
Indices of Factors



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 Oil
- Positive pressure of the index of variables representing the market downstream
- Slightly negative pressure of the financial index
- Positive pressure of other commodities and other factors
- Focus on Euro, Iran, and Iraq

Impact per Country



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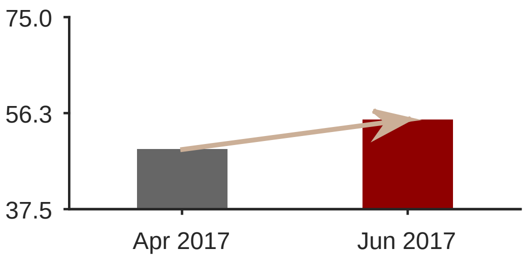
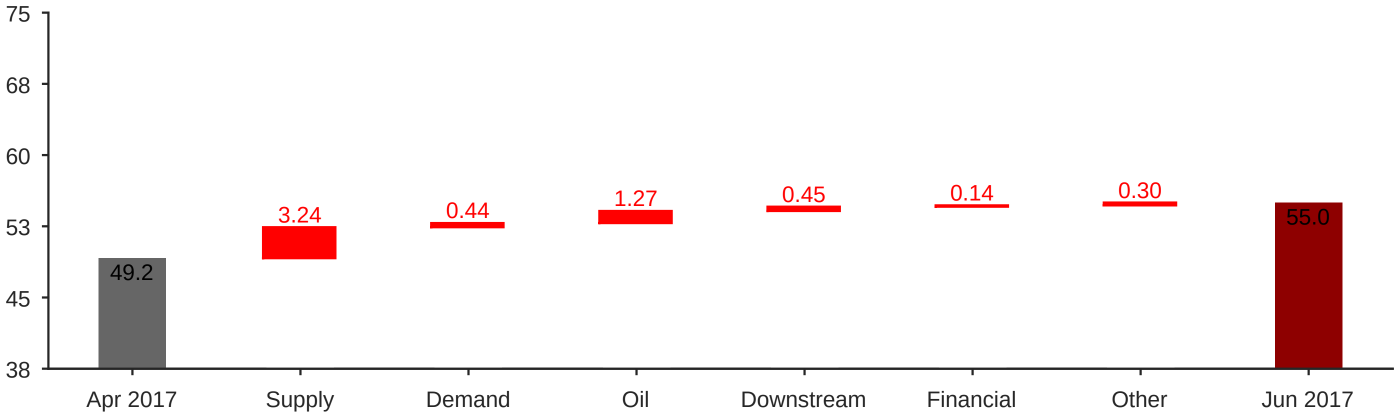
Forecasting the Price of Oil

Impact Analysis: Two Months Forecast



Our algorithm forecasts a higher price of Oil in two months: it is expectable that the price increases 11.84% from 49.2€ to 55.0€ until the beginning of June.

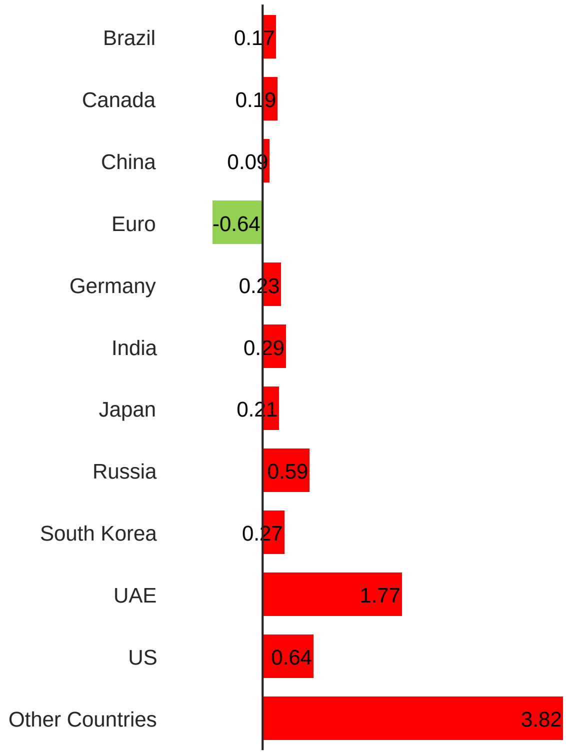
Indices of Factors



Interpretation

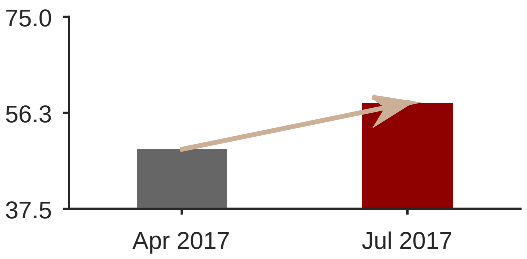
- **Considerable decrease of Supply**: Positive pressure of the Supply index
- **Increase of Demand**: Positive pressure of the Demand index
- Positive pressure of the index of Oil
- Positive pressure of the index of variables representing the market downstream
- Slightly positive pressure of the financial index
- Positive pressure of other commodities and other factors
- Focus on UAE, Mexico, and US

Impact per Country



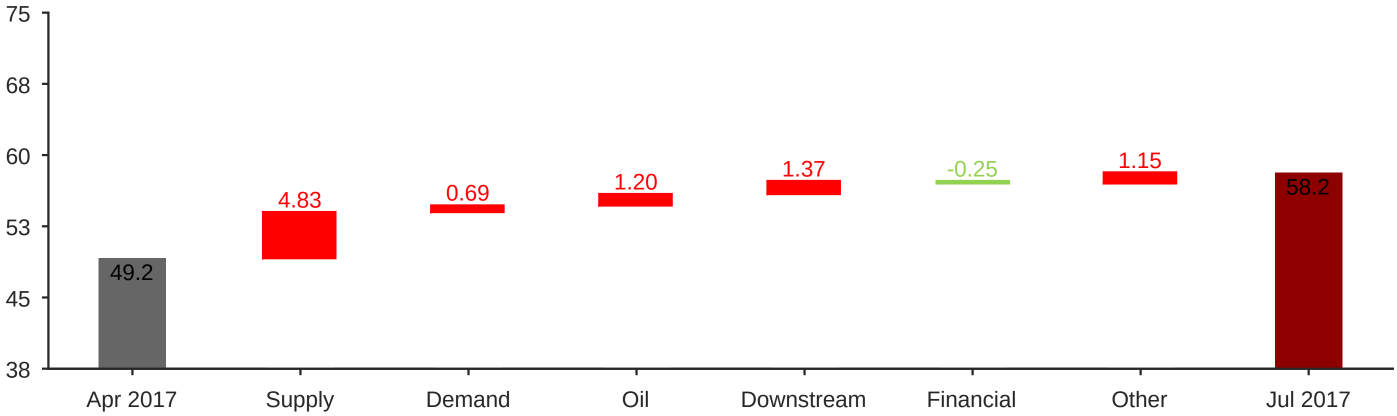
Forecasting the Price of Oil

Impact Analysis: Three Months Forecast



Our algorithm forecasts a higher price of Oil in three months: it is expectable that the price increases 18.26% from 49.2€ to 58.2€ until the beginning of July.

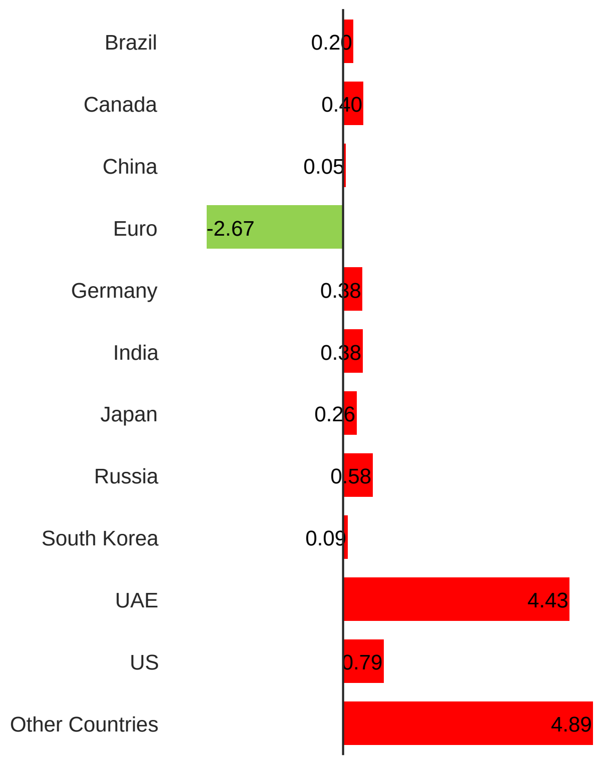
Indices of Factors



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 Oil
- Positive pressure of the index of variables representing the market downstream
- Slightly negative pressure of the financial index
- Positive pressure of other commodities and other factors
- Focus on UAE, Euro, and US

Impact per Country



Forecasting the Price of Oil

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;

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

Downstream index: composed of variables related to commodities, such as Gasoline and Naphtha. It includes variables such as the exports, imports, and prices in different regions. For example, an increase in the demand of Gasoline should (in linear, general, and ceteris paribus terms) generate an increase in the price of Oil;

Forecasting the Price of Oil

APPENDIX – Technical Explanation of the Impact Analysis (II)

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

Other Variables Index: composed of variables related to other commodities, such as Natural Gas and Coal. 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 Oil, and thus, of the price of Oil.

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 Oil.

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.