

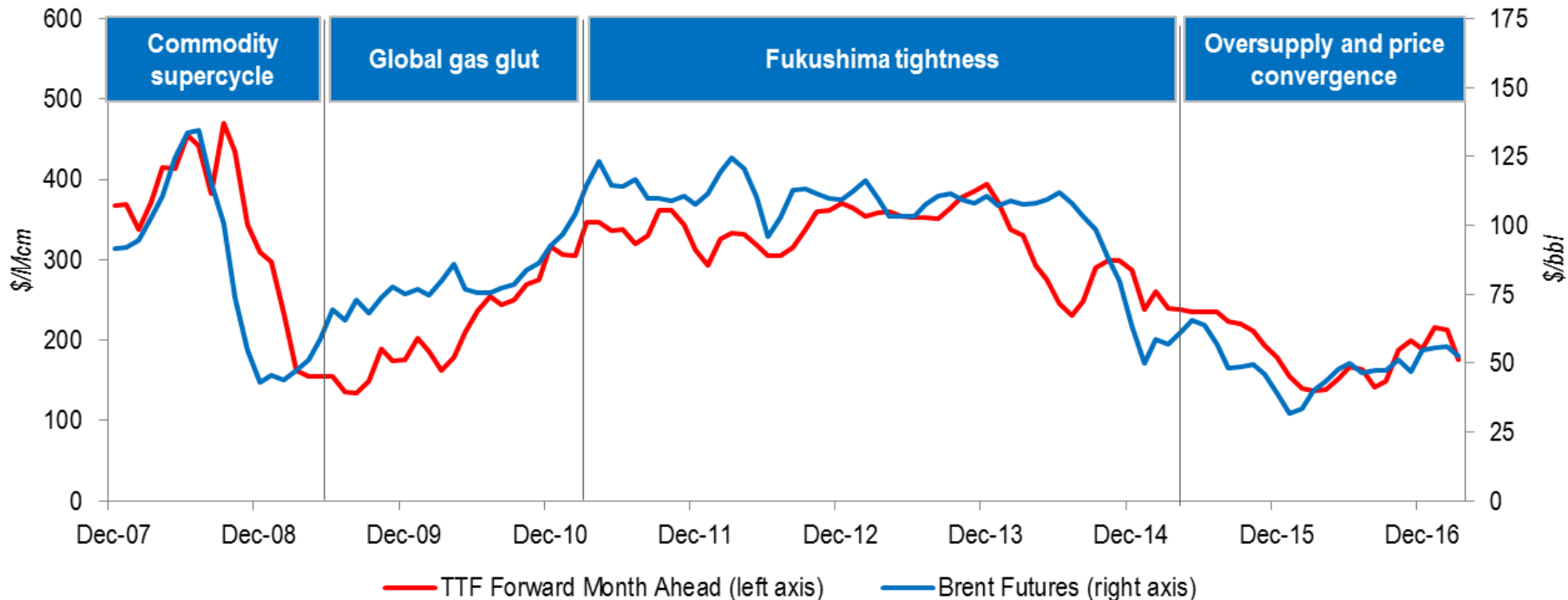
Gas Prices in Europe: What Affects What

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European Gas Pricing History by Periods

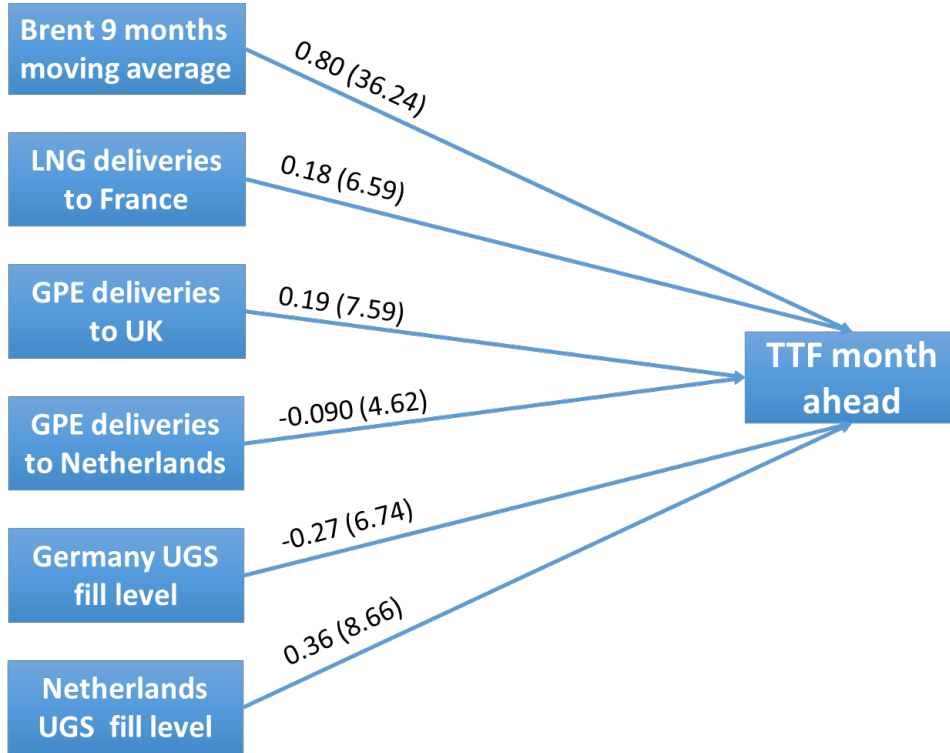


Source: adapted Timera Energy periodization given in article "The next phase of global gas pricing"
 See: <http://www.timera-energy.com/the-next-phase-of-global-gas-pricing/>

- monthly Brent and nine months moving average Brent prices
- volumes of gas consumption and production in North-Western Europe*
- Gazprom export deliveries
- LNG imports to these countries (if any) and Europe at whole
- storage volumes

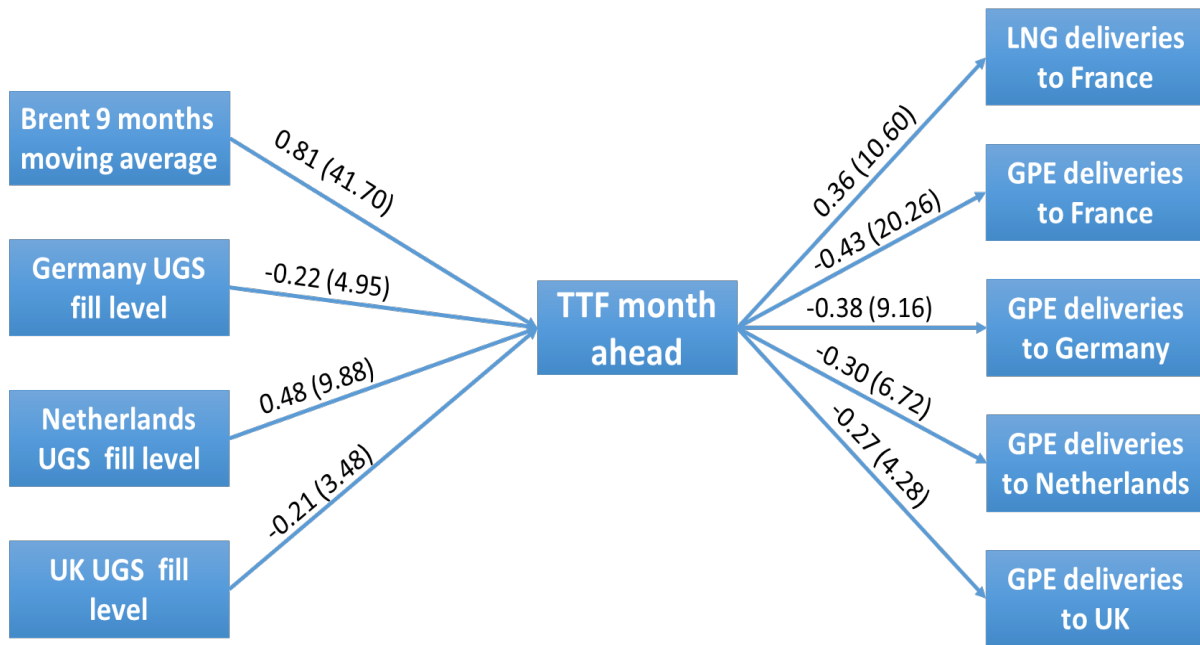
* Belgium, France, Germany, the Netherlands and the United Kingdom

Determinants of TTF Dynamics



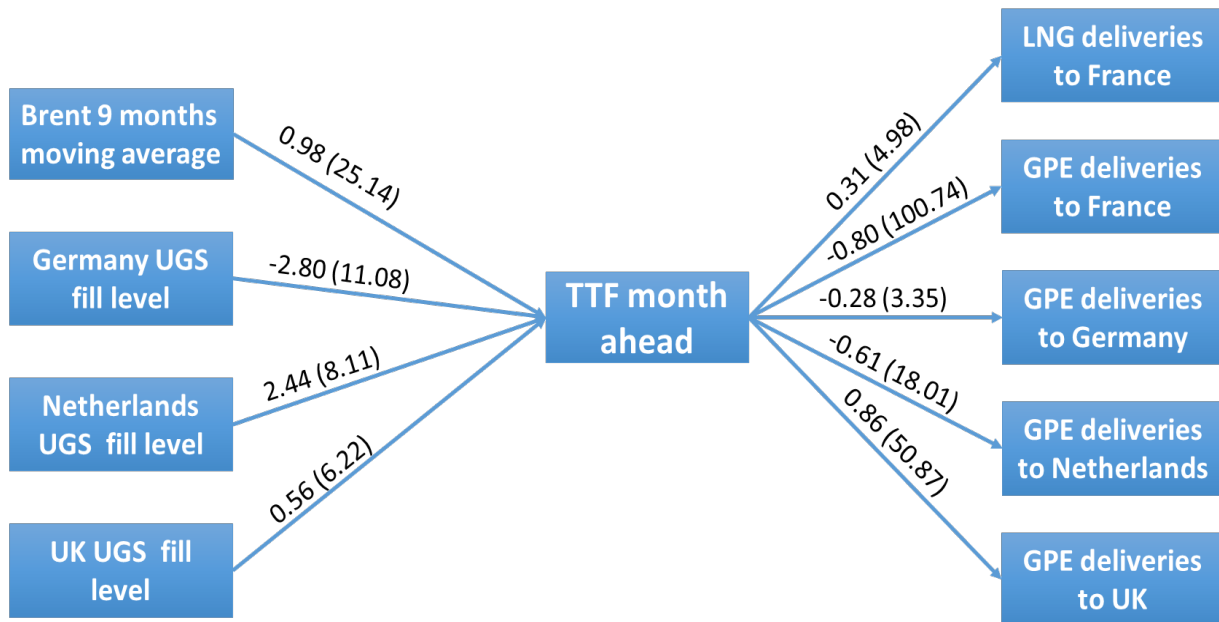
- neither consumption, nor production volumes in any of five aforementioned countries exert significant influence on TTF price
- Gazprom deliveries to the Netherlands exert negative effect on TTF prices, although overall play an insignificant role in price setting
- larger Gazprom deliveries to the UK and storages fill level in the Netherlands as well as LNG deliveries to France trigger higher TTF price, which runs against the common sense and market logic

Causes and Effects of TTF Month Ahead Prices

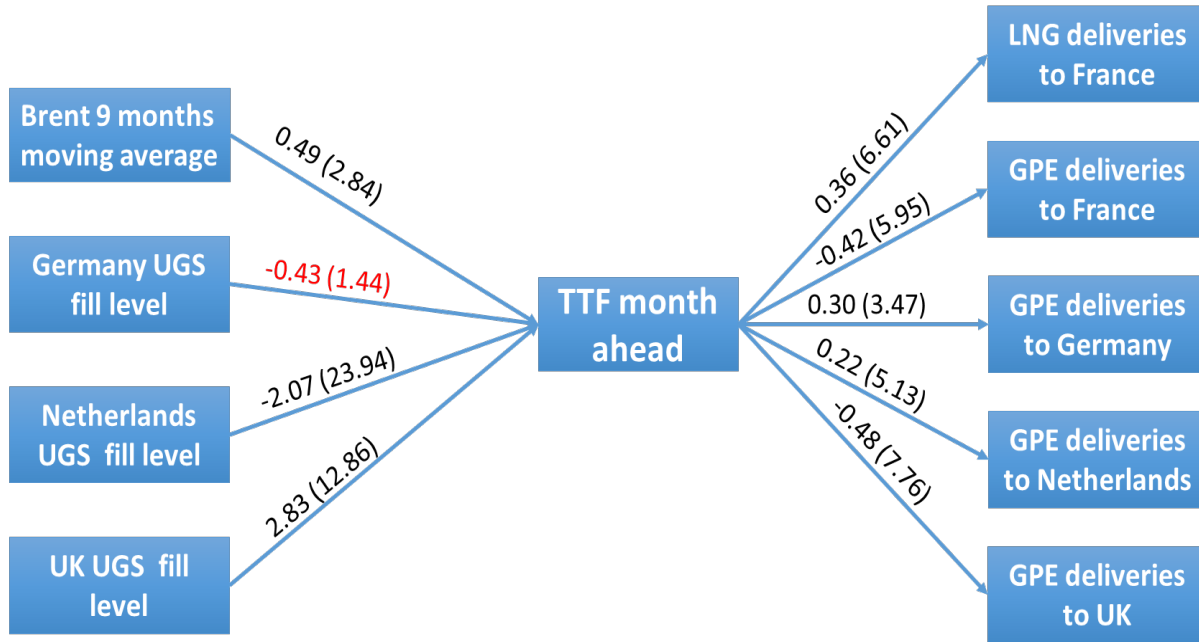


- positive link between the fill level of UGSs in the Netherlands and TTF prices
- Gazprom export deliveries to France, Germany, the Netherlands and the UK are negatively affected by TTF prices
- LNG deliveries to France are positively affected by TTF prices

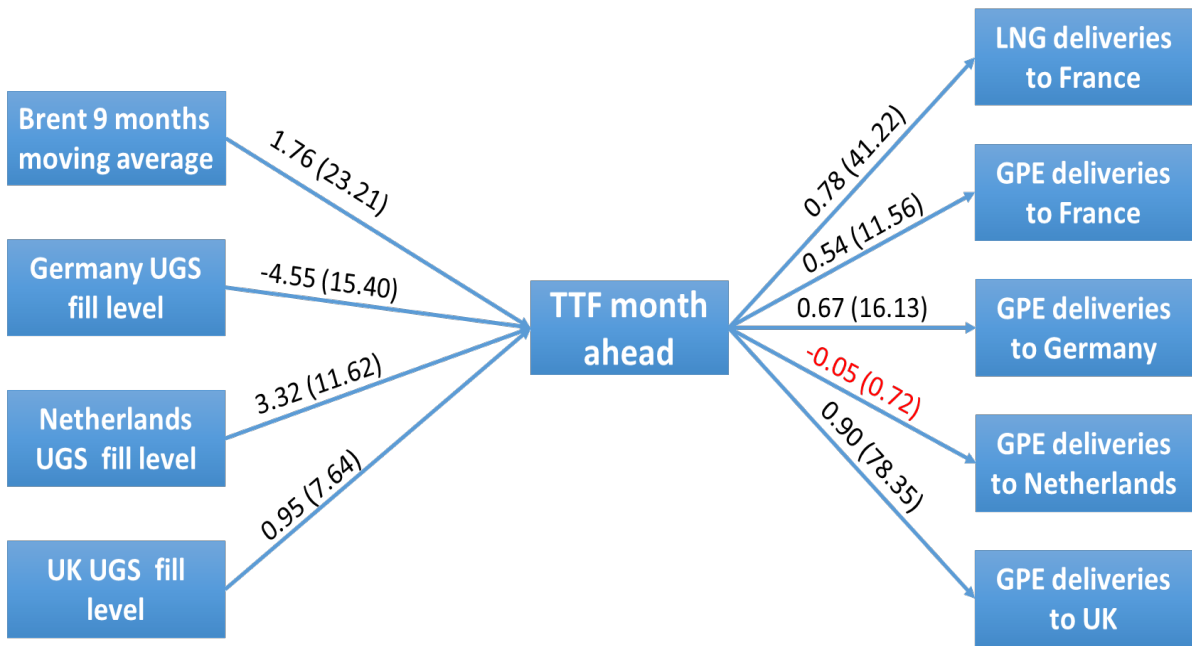
Testing the model for distinctive periods



- historical maximum level of LNG supplies to Europe
- oil price increase
- oil prices increase, which served as the major determinant of TTF price
- “global gas glut” ending up in higher European prices



- Gazprom deliveries smaller than usual
- market prices did not respond to this factor
- low consumption, full storages
- Gazprom export deliveries to Germany and the Netherlands as well as LNG imports are positively affected by TTF prices



- positive link between Brent nine months moving average again, storages in the Netherlands and the UK and TTF prices
- negative link between the storages in Germany and TTF price
- higher TTF prices lead to higher LNG deliveries to France and larger Gazprom export deliveries to France, Germany and the UK

Traders are assigning a key part to oil with one mind

Sources have said correlation between trade on the oil benchmark and NBP curve has increased in the last week. Indexation of long-term gas supply contracts in Europe to the oil benchmark means the NBP curve can draw sentiment from movements on the Brent crude market.

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Oil price gained value at the end of the week, following sharply in the morning. Dutch far-curve contracts often track oil price moves due to the need to hedge against oil indexation in some long-term gas supply deals. This correlation can become stronger in summer and move to other contracts as there are often fewer drivers.

Gains on the far curve were smaller than on the prompt and near curve, which may have been linked to the early oil weakness.

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After sharply dipping in the morning, the Brent crude price increased by \$0.29/bbl. Austrian and Czech forward curve contracts rose on the back of a bullish oil price. Curve contracts in the region tend to follow the direction of the oil price due to linking in some long-term supply agreements.

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A second trader said a rising oil price was the key driver behind Thursday's higher European gas hub prices, with market participants eyeing a key OPEC meeting in Vienna next week.

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Movements in oil can have a knock-on effect on gas hub prices, due to oil-indexation in many long-term gas supply contracts.

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Brent crude closed higher session on session, which lifted outright Zeebrugge curve products as a knock-on implication of oil indexation in some long-term gas supply deals.

"The biggest factor could be whatever leaks out before the OPEC meeting," the trader said. The Organization of the Petroleum Exporting Countries (OPEC) is due to meet on 25 May and there is speculation around whether there will be an extension to an oil production cut.

Over the past weeks, the oil-gas correlation has strengthened in the absence of other dominant drivers. As spreads between contracts often remain stable, developments in the Brent crude futures market can have an impact on the prompt.

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- oil price is the most powerful determinant of European gas hub prices
- storages fill level, although being far behind, is still exerting logical influence in some cases
- both LNG and Gazprom export deliveries are not determining European gas hubs prices
- prices themselves may affect supply volumes
- the widely accepted assumption that new LNG volumes will break down the market is somewhat questionable

Thank you for your attention

See: Blue Fuel vol.42, May 2017

<http://www.gazpromexport.com/en/presscenter/publications/>