

# 26<sup>th</sup> World Gas Conference

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## EUROPEAN SPOT GAS PRICES DRIVERS

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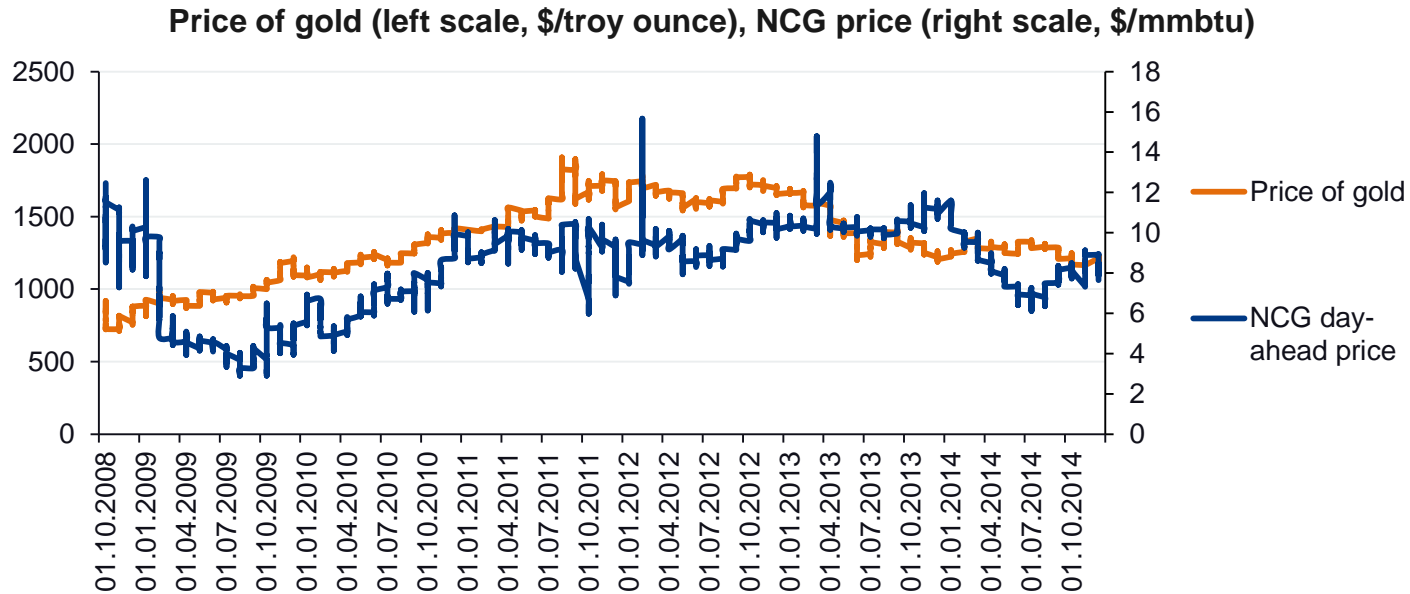


# Background and methods

- The formation of liberalized European gas market is followed by discussions on measure of its self-sufficiency and dependence on oil and financial market. Is it oil price or gas supply-demand balance that defines European spot gas prices? To what measure could spot gas prices as well as oil prices be driven by non-fundamental factors, especially for speculative purposes?
- The presented results are based on analysis of coefficients of pair linear correlations with gas hub prices and optimization modeling for estimations of supply and demand factors conducted using the NEXANT World Gas Model (WGM) integrated with the ERI RAS modeling complex named SCANNER.

# Non-fundamental factors of gas spot prices

*None of investigated financial and macroeconomic factors, except for the GDP, had strong correlation coefficients with gas hub prices in Europe.*



Sources: NCG, USAGold.

# Fundamental factors of gas spot prices in the US

*At the world's most-developed gas market, that of the United States, the wellhead price - the supply side - determines the level of Henry hub price.*

U.S. Wellhead price and Henry Hub spot price, Jan1997-Apr2015, \$/mmbtu



# Fundamental factors of gas spot prices in Europe

*The time series analysis for European spot gas prices and fundamental factors of supply and demand showed very weak correlations.*

The investigated fundamental factors included production, consumption, imports volume, production costs, proved reserves, price of CO<sub>2</sub> emissions, volume of gas stored in UGS, volume of LNG stored and delivered to network, air temperatures.

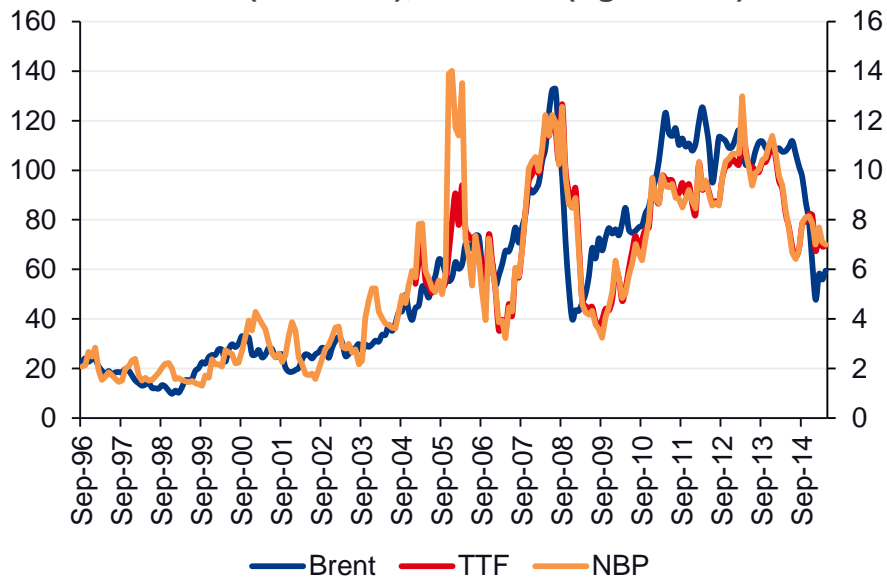
Thus, the investigation of European gas supply and demand needs more complicated by country analysis of demand and world gas supply curves in every single period.

Calculations made using Nexant World Gas Model demonstrate strong fundamental factor influence on spot gas prices. For instance, increasing European gas demand from 500 to 560 bcm in 2015 would lead to European spot gas price increase nearly by half.

# Oil price as a factor of European spot gas prices

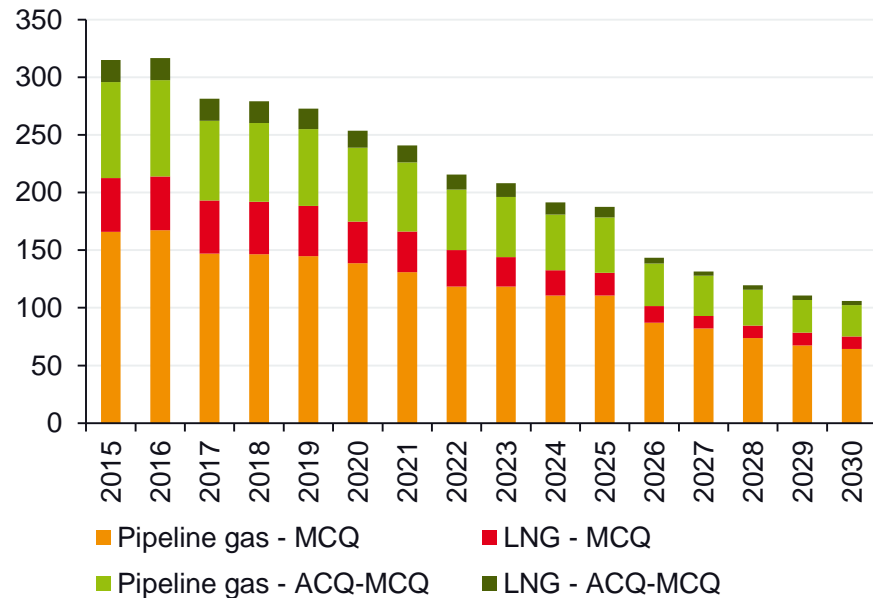
*Unlike the US, in Europe spot gas prices strongly correlate to oil price.*

Brent, NBP and TTF hub prices, Sep1996-Apr2015, \$/bbl (left scale), \$/mmbtu (right scale)



Sources: EIA, GME, NCG.

Oil indexed gas supply contract to Europe, bcm

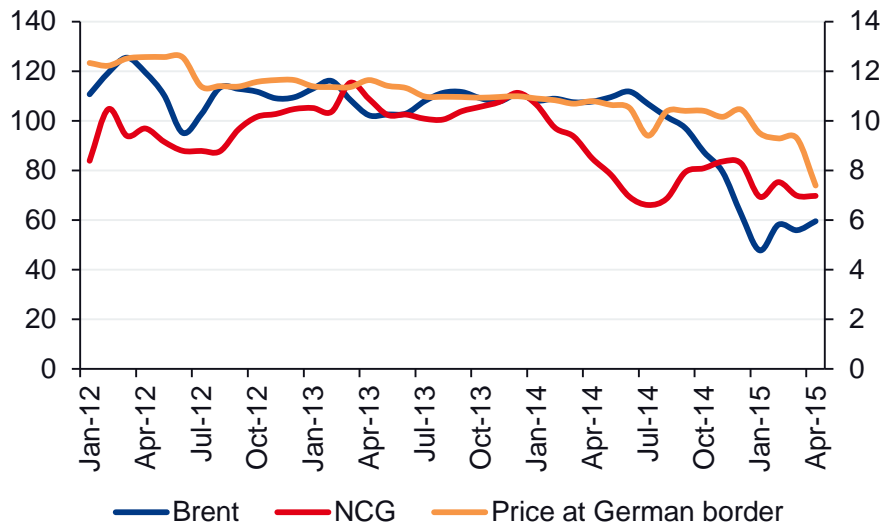


Source: Nexant World Gas Model.

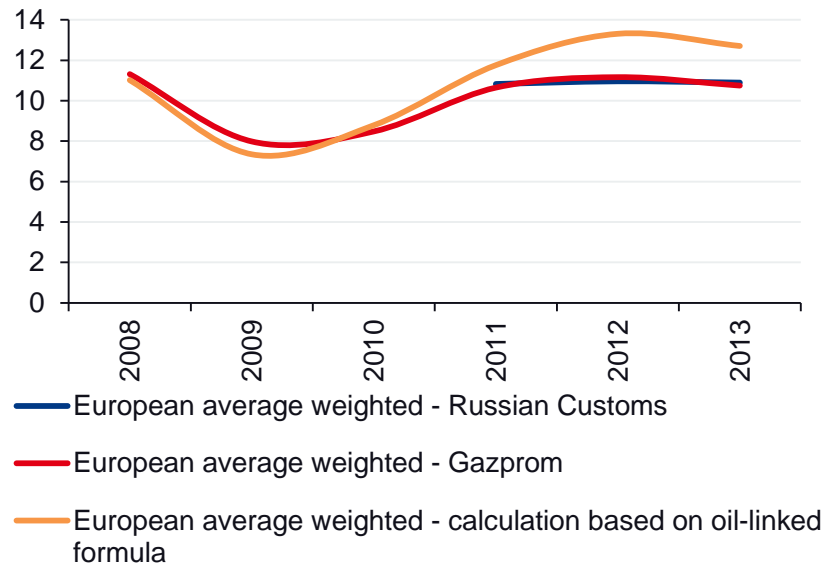
# Oil indexed and spot gas prices in Europe

*Oil indexed natural gas prices in Europe are declining. The traditional Russian gas export strategy is being adapted.*

Brent, NCG and German border price, Jan2012-Apr2015, \$/bbl (left scale), \$/mmbtu (right scale)



Calculated traditional oil-linked price and real Russian gas export prices to Europe



Sources: EIA, IMF, NCG, Gazprom, Russian Customs.

# Conclusions

- Time series correlation analysis has shown no correlation between European spot gas prices and financial and macroeconomic factors, except for the GDP.
- Nexant World Gas Model shows strong dependence of spot gas prices in Europe on changes of fundamental factors of demand and supply.
- The portfolio of long-term oil-indexed contracts substantially influences the dynamics of gas spot prices in Europe. Their relatively low level, in turn, induced renegotiations of contracts terms and already lead to gradual changes in gas contractual structure, caused narrowing of the gap between spot and oil-indexed long-term contract prices.
- While gas is increasingly traded at European exchanges the price of oil as one of the main investment goods probably will to continue to correlate with spot gas prices in Europe.