

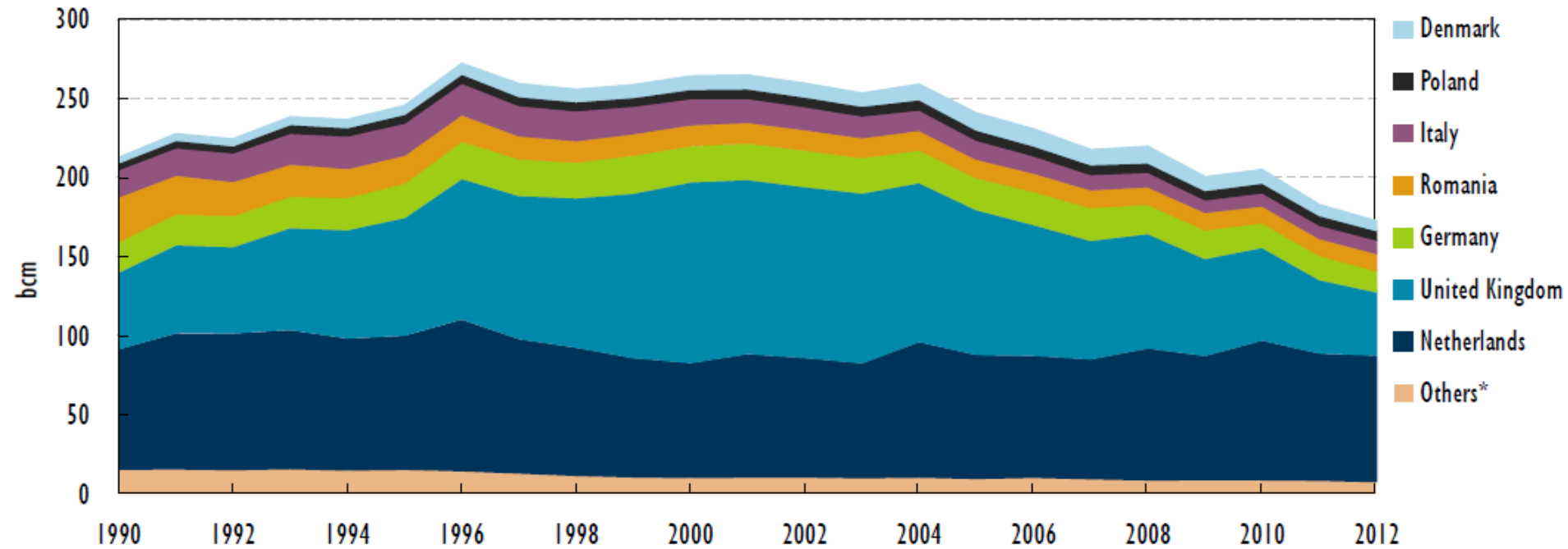
IEM: Natural Gas Market

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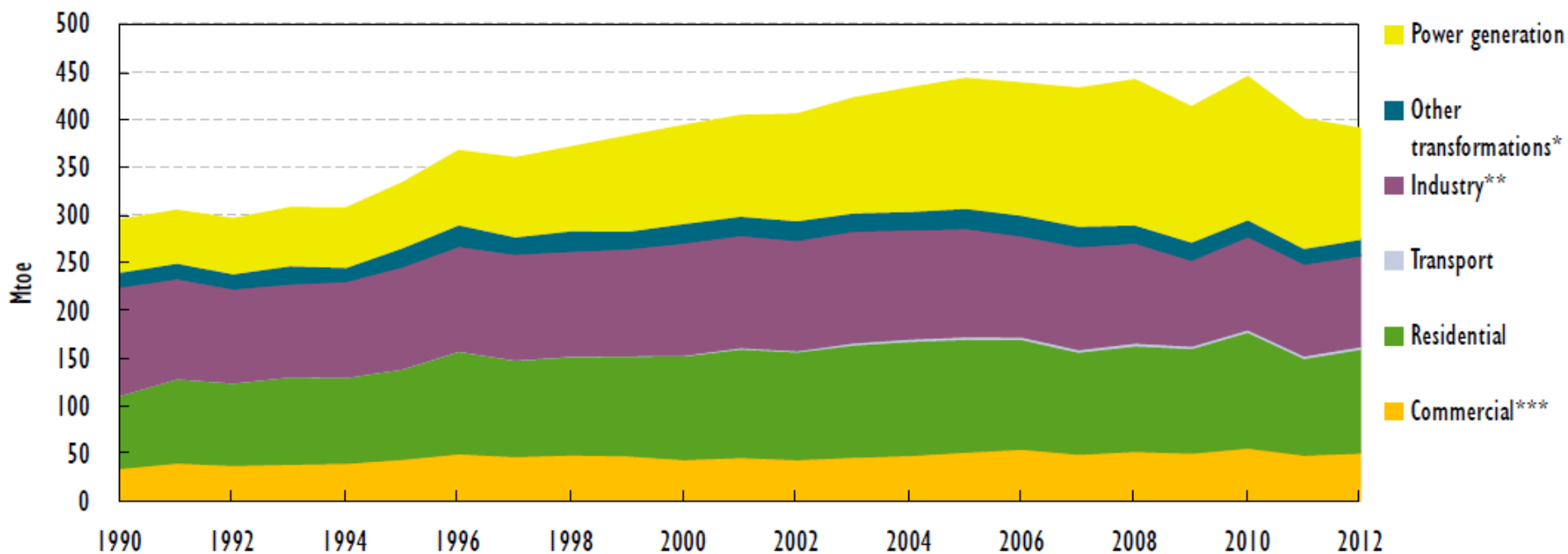
Key data (2012)

- Production: 173,7 bcm, -33,2% since 2002
- Total EU imports: 330 bcm
- Consumption by sectors: 29,5% power generation (second largest fuel), 27,6% residential, 24,3% industry, 13,3% commercial and other services
- Peak demand in 2010
- Between 2008-2013 large investments in gas-fired power plants, LNG terminals, storages and pipelines
- Market opening and liberalisation, increased hub trading and short-term flexibility, lowering the link between oil and gas prices

Natural gas production, 1990-2012



Natural gas supply by sector, 1990-2012



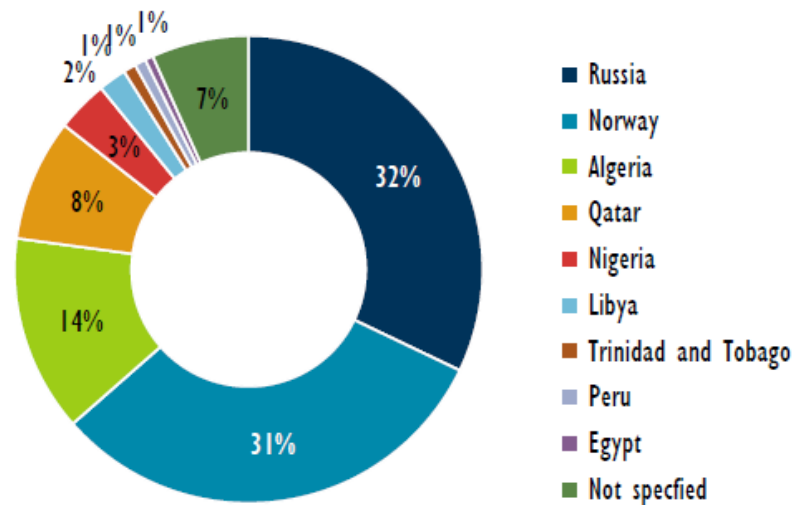
Notes: TPES by consuming sector.

* *Other transformations* includes refining and energy-own use.

** *Industry* includes non-energy use.

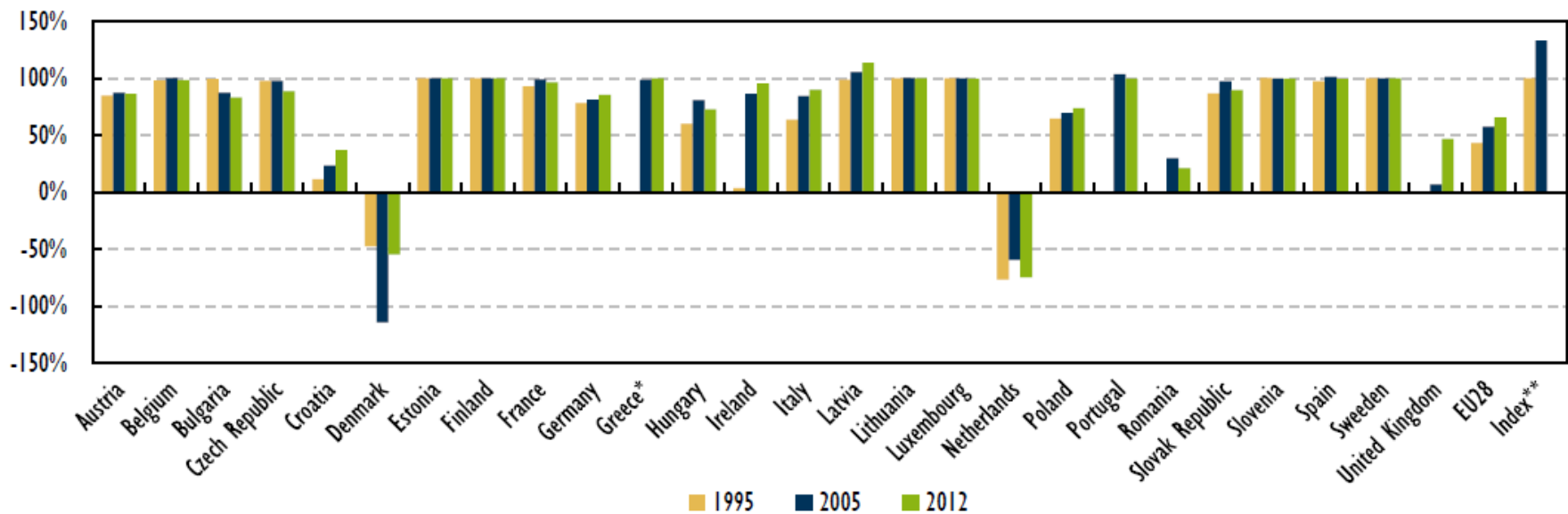
*** *Commercial* includes commercial and public services, agriculture/fishing and forestry.

Gas imports to the European Union, 2012



Source: Eurostat, 2014.

Gas import dependency of EU member states, 1995, 2005 and 2012



Note: import dependency can be higher than 100% in case the country imported more gas to refill storage. Only countries with gas supplied are included.

LNG

- 19 LNG terminals (2013) with total nominal re-gasification capacity of 186 bcm/y. Klaipėdos in Lithuania, Swinoujście in Poland and Dunkerque in France to be opened
- Utilisation of 23,5%
- Higher prices in Asia and Latin America (Brazil and Argentina)
- LNG terminals used for re-export to reduce the costs and losses

Europe



Regulation

- The same structure as in the electricity sector
- Based on the third internal market package, an effort to increase market effectiveness, liquidity and cross-border trade
- Strengthening of the independency and powers of NRAs and their EU co-operation (ACER)
- Active role of TSOs and their EU wide co-operation
- Common rules for the gas market – Framework Guidelines, Network codes

Wholesale market

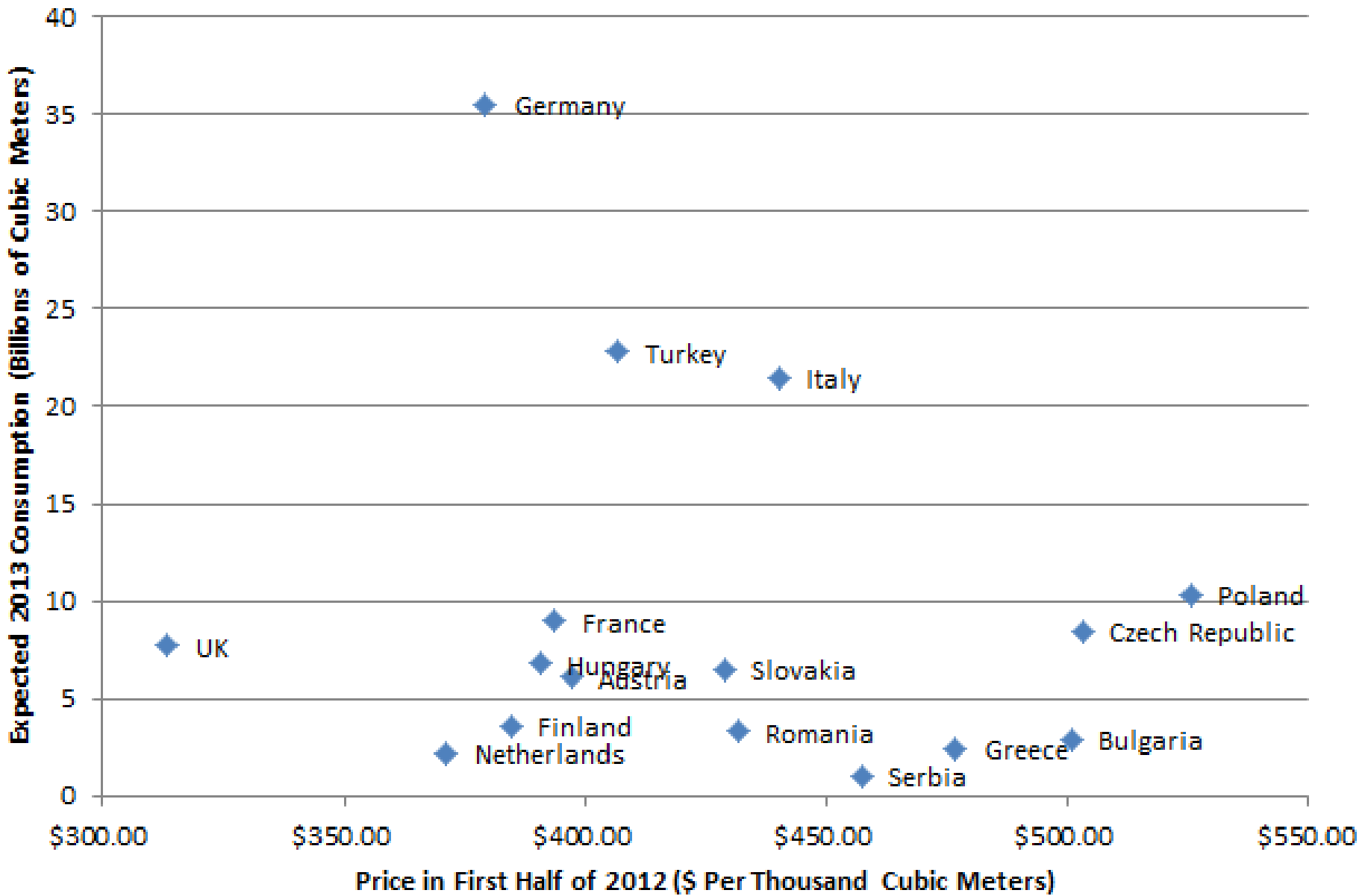
- Shift from TOP LTCs to hub trading

Traditional gas market model

- LTC + ToP
- Pricing formula linked to gas replacement values (oil indexation)
- Net back replacement value gas pricing
- Territorial restrictions
- In the EU physical fragmentation of the market

Traditional gas market model

- Competition is limited
- Suppliers with significant market power
- Price arbitrage is limited, resulting in different prices over the EU



IEM

- Competition (TPA, unbundling)
- Common regulatory framework with independent regulatory bodies
- LTCs and destination clauses etc. under pressure (foreclosure potential), shift to hub-trading
- Interconnectors

LTCs

- Anti-competitive foreclosure effects → questioned by the EU's antitrust policy
- Gas Natural, Distrigaz, E.ON Ruhrgas, Repson, Synergen, etc.
- Not forbidden per se, but volumes locked-in under the contract, duration, cumulative effect and efficiencies are evaluated

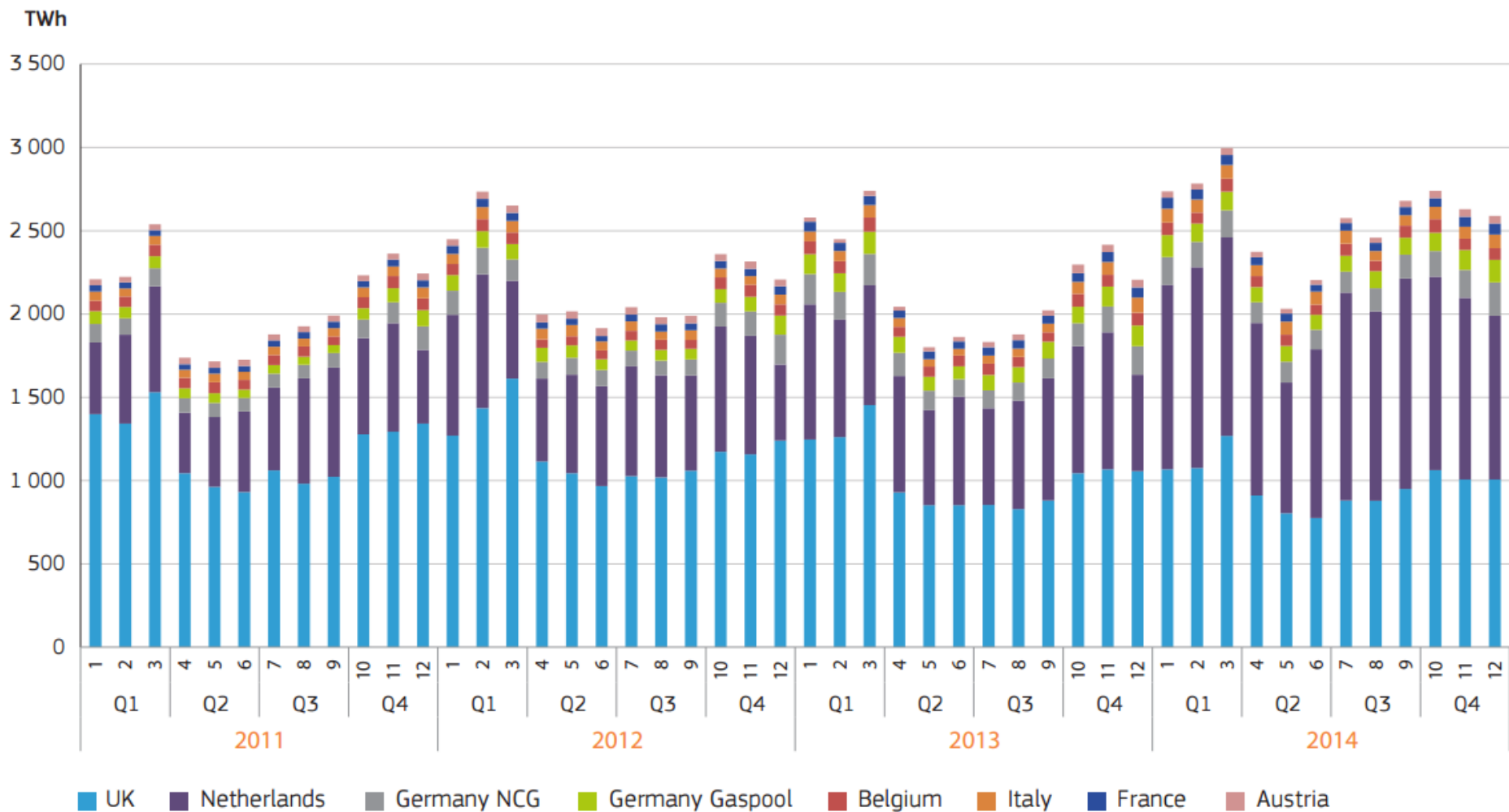
Territorial restrictions

- In 2004 EC confirmed that they restrict competition (GDF with ENI/ENEL contract)
- 2009 EC fined EDF and E.ON (partitioning the markets, MEGAL pipeline)
- Intervention to the Gazprom-ENI, Gazprom-OMV, Gazprom-E.ON or Gazprom-PGNiG agreements
- Territorial restrictions no longer acceptable on the EU market

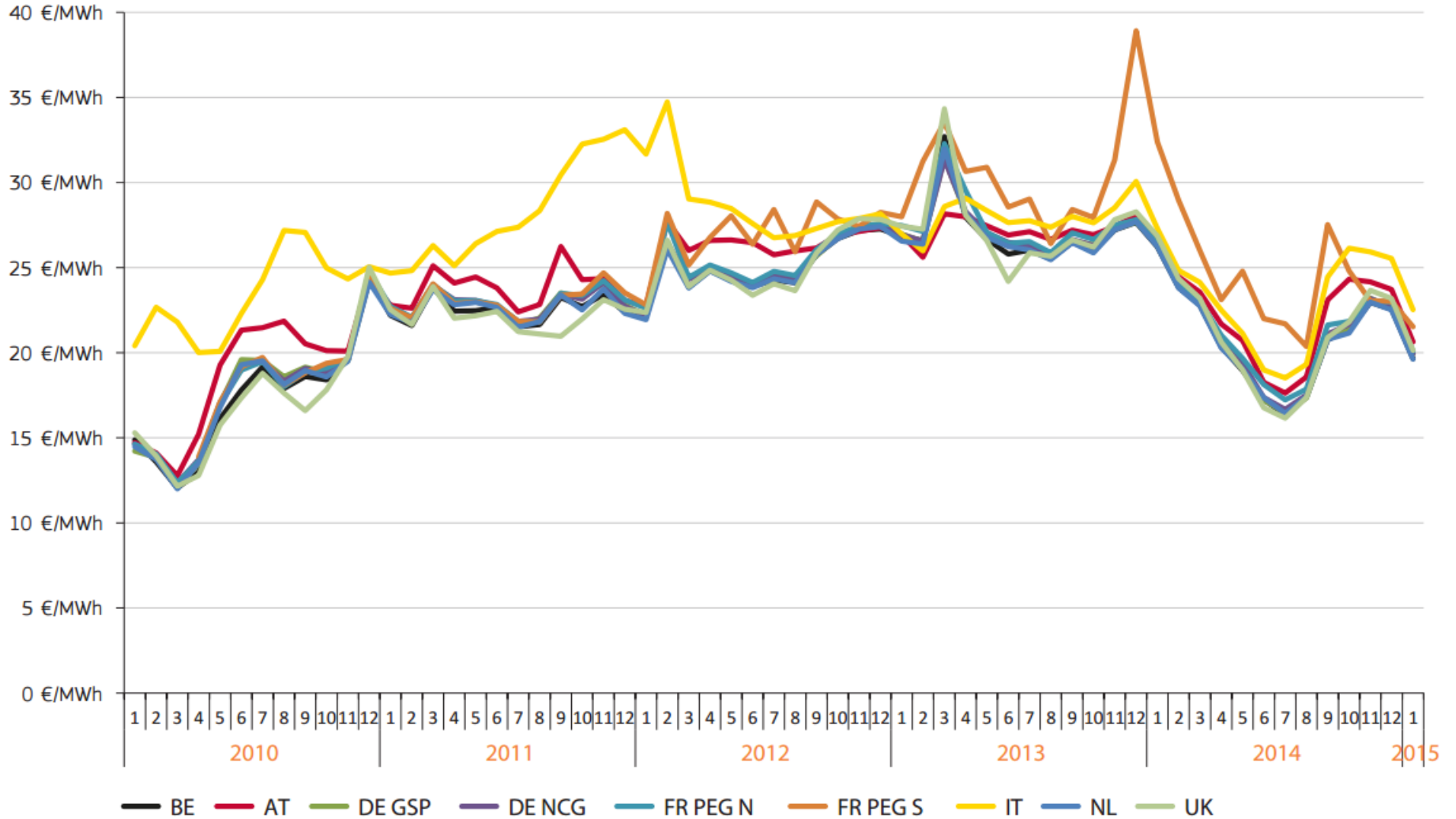
Oil indexation

- Oil products are no longer substitutes for natural gas in Europe, Gazprom still defends this pricing mechanism
- Questioned by EC in antitrust proceeding against Gazprom (Sept 2011)

TRADED VOLUMES ON EUROPEAN GAS HUBS

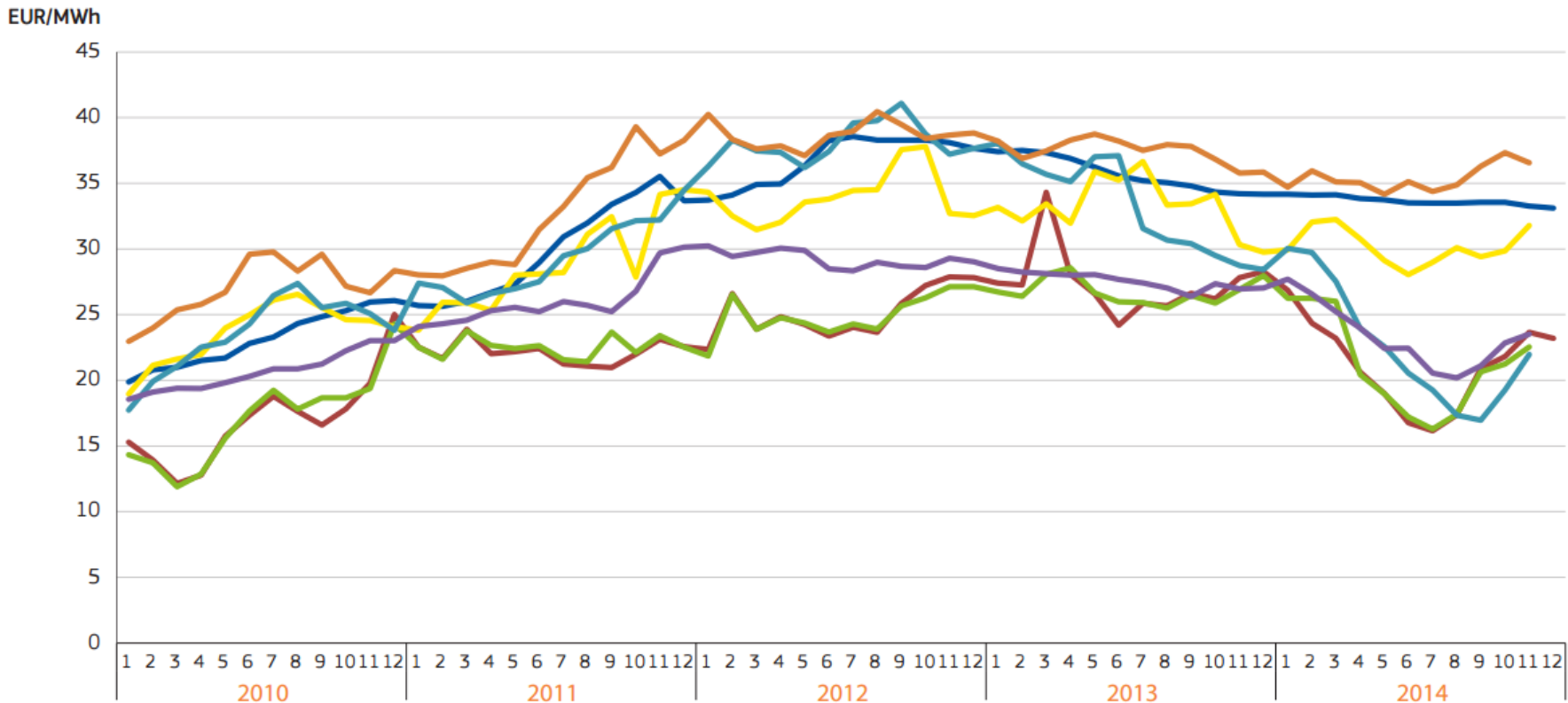


WHOLESALE DAY-AHEAD GAS PRICES ON GAS HUBS IN THE EU



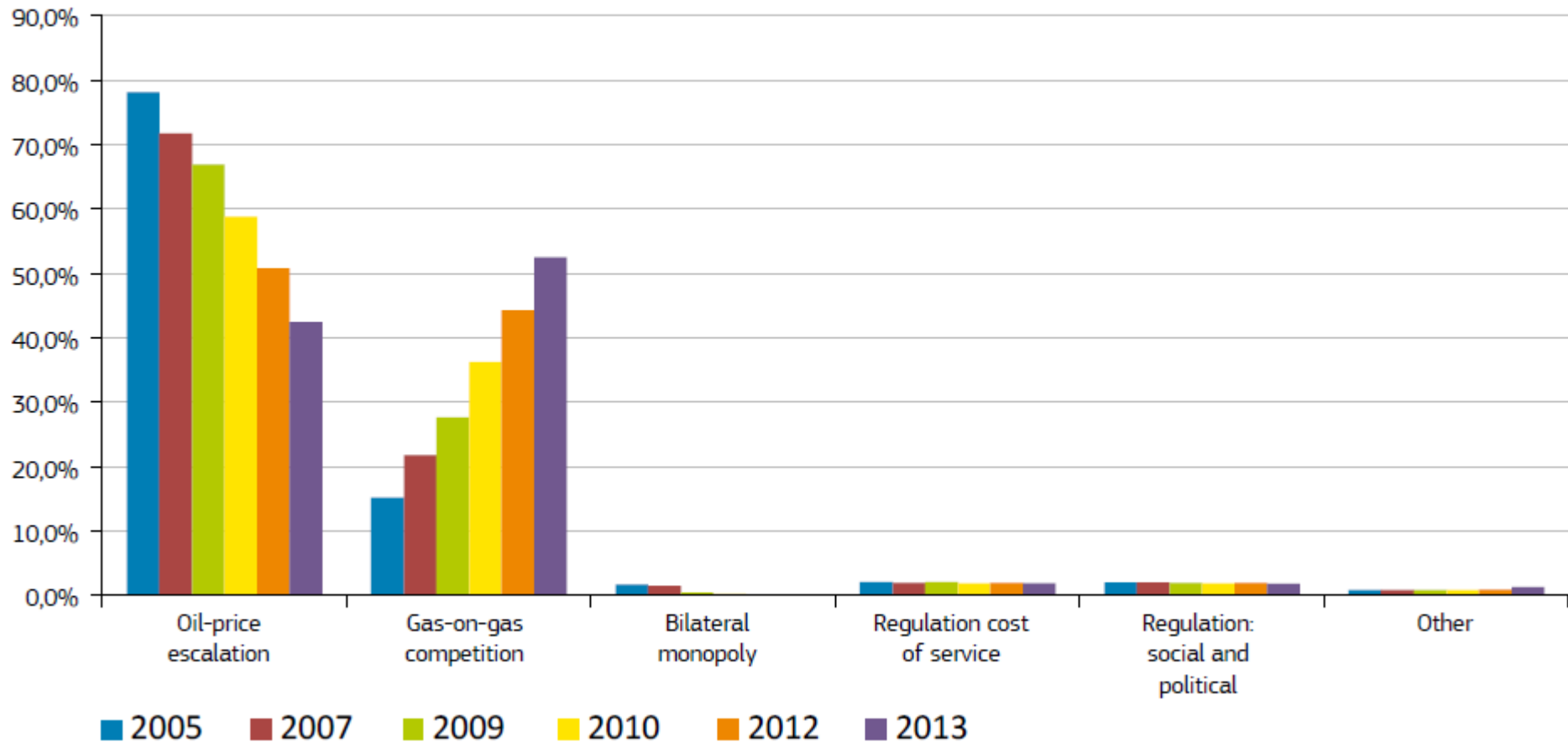
Source: Platts

COMPARISON OF EU WHOLESALE GAS PRICE ESTIMATIONS

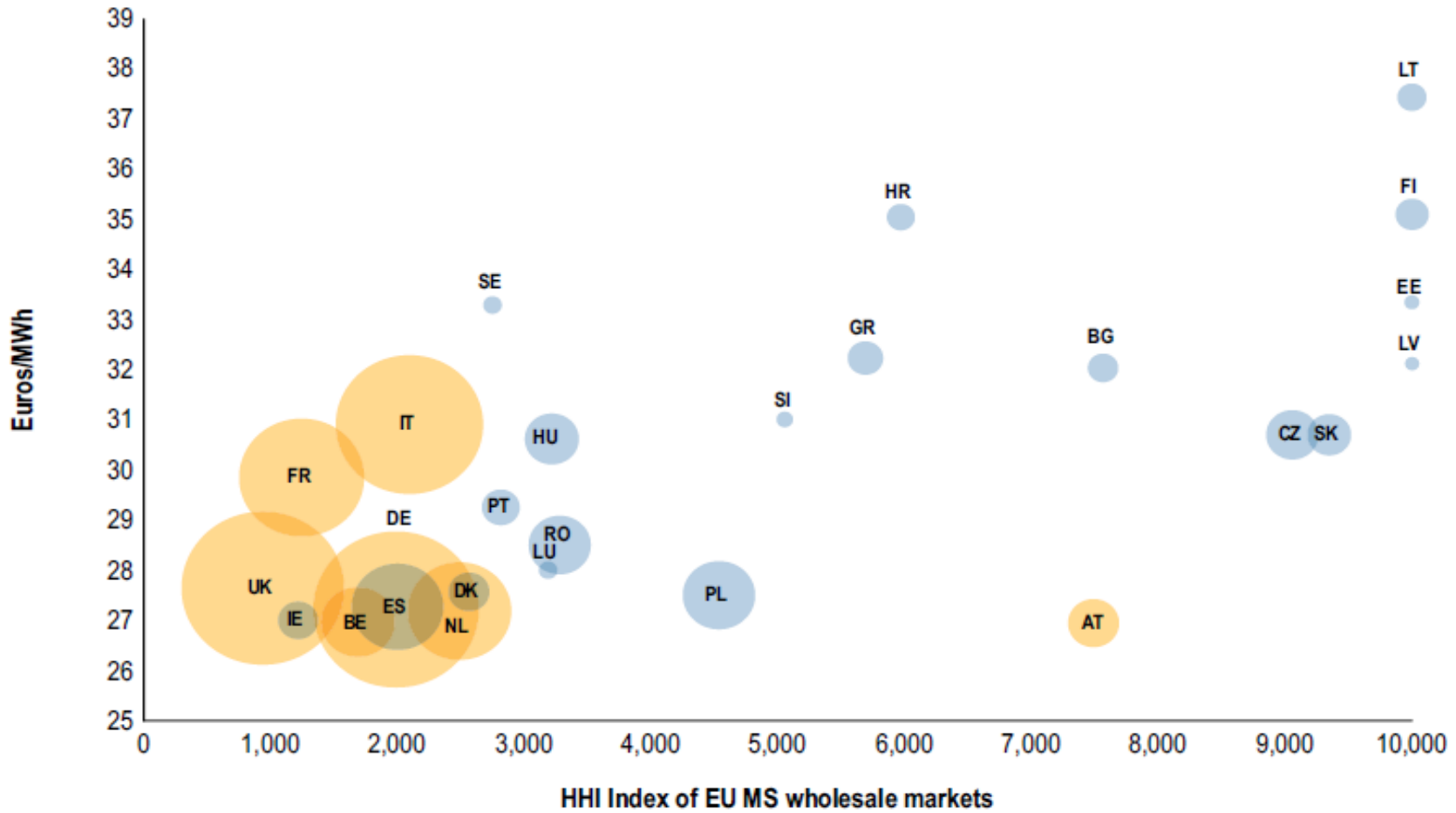


- Platts North West Europe Gas Contract Indicator (month-ahead)
- Norwegian gas to Belgium
- Russian gas to the Czech Republic
- Average German border price
- UK NBP hub day-ahead price
- Algerian gas to Italy
- Russian gas to Lithuania

WHOLESALE PRICE FORMATION MECHANISMS IN EUROPE: 2005-2013



Gas wholesale prices in EU MSs compared with market concentration and gas demand – 2013 (euros/MWh)



Impact on Gazprom

- G. forced to offer retroactive discounts on existing contracts (ENI – 7%, GdF, PGNiG, Eon; in 2013 USD 800 – 900 mil.), some other cases still in negotiation (Edison)
- G. accepts fundamental changes in the contracts in terms of oil indexation, ToP clauses (RWE's Czech subsidiary in 2013 – Court of Arbitration of the International Chamber of commerce)
- = G. is slowly willing to accept spot indexation in its future gas contracts (5/2014 – ENI – prices aligned with the market)

Impact on Gazprom

- G. reduced the ToP minimum to 70% of annual contract quantity (from 85%), volumes taken in excess sold at hub-based prices.
- = oil indexation preserved in Gazprom's contracts, but base price lowered to adjust to hub prices.

Retail markets

- Still national in scope
- Increasing competition but the market share of the incumbent supplier remains high in many countries
- Still regulated prices in 15 MS

Presence of foreign players (capital city)	Estimated incumbent market share in the household market – December 2012 (capitals)		
	More than 90%	Between 50% and 90%	Less than 50%
More than 50%	Romania (1/1)		Spain (4/6); The Slovak Republic (9/12)
Between 20% and 50%		Italy (4/8); France (3/8); Ireland (2/4); Belgium (2/4)	The Netherlands (6/18), The Czech Republic (4/18), The Great Britain (4/14)
Between 0% and 20%			Austria (2/10), Denmark (2/11), Germany (4/74), Sweden (1/6)
0%	Greece (0/1), Bulgaria (0/1), Estonia (0/1), Finland (0/1), Lithuania (0/1), Latvia (0/1), Poland (0/1), Portugal (0/3)	Slovenia (0/6)	

Sources

- IEA (2014): Energy Policies of IEA Countries – The European Union.
- Jirušek et al.(2015): Energy Security in Central and Eastern Europe and the Operations of Russian State-Owned Energy Enterprises