

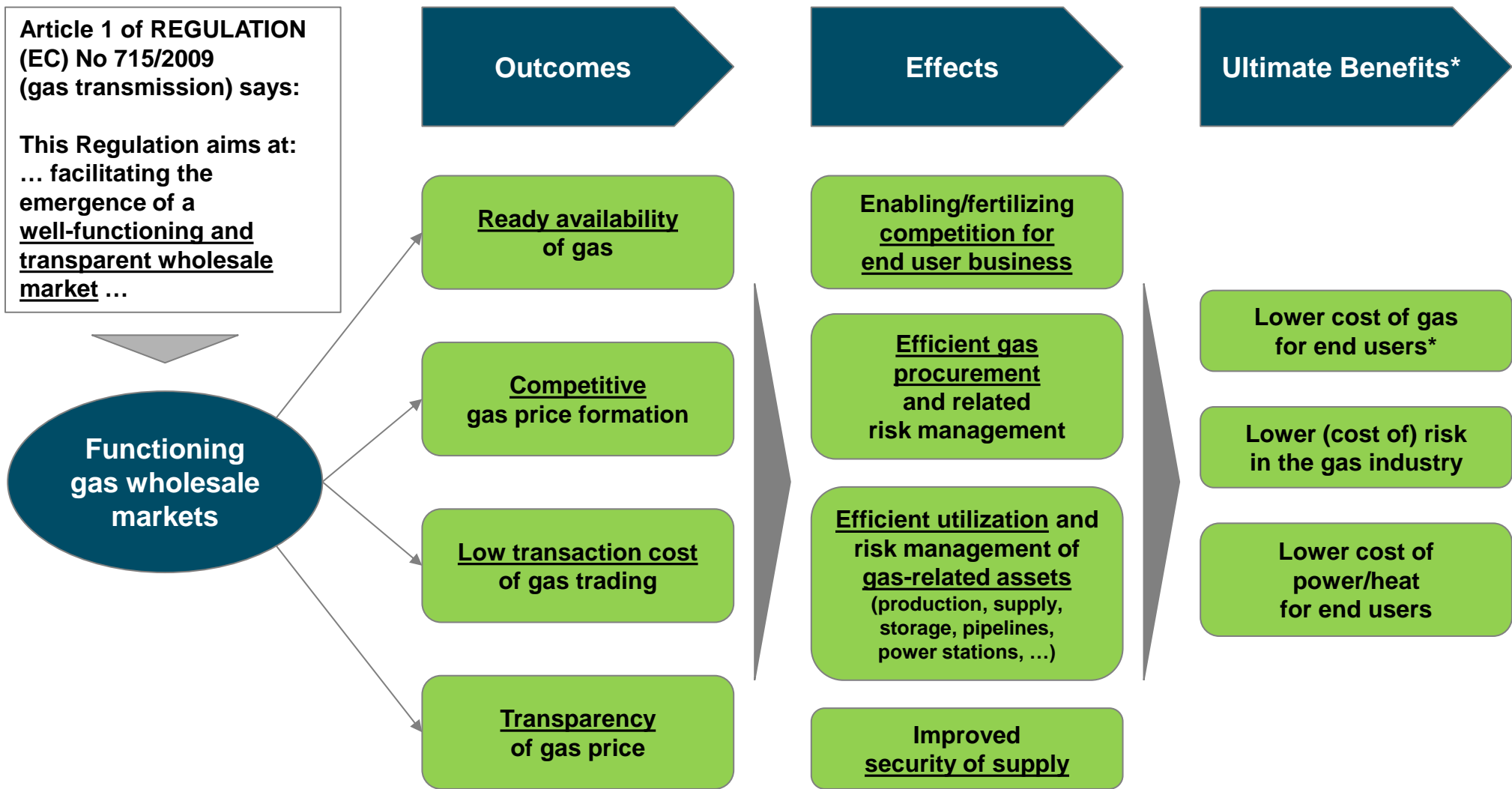
Functioning of European Gas Wholesale Markets

Quantitative Study

Brussels, 15 May 2014

Dr. Albrecht Wagner

Functioning of European gas wholesale markets



* All else being equal

Functioning of European gas wholesale markets

Phase 1: Questionnaire

What do stakeholders require of functioning gas wholesale markets?

Questionnaire was distributed all over Europe via various mailing lists (EFET, Eurogas, ACER, FSR).

Feedback was received from about twenty respondents with a variety of backgrounds (producers, wholesalers, suppliers, traders, large end users ...).

Phase 2: Measurement

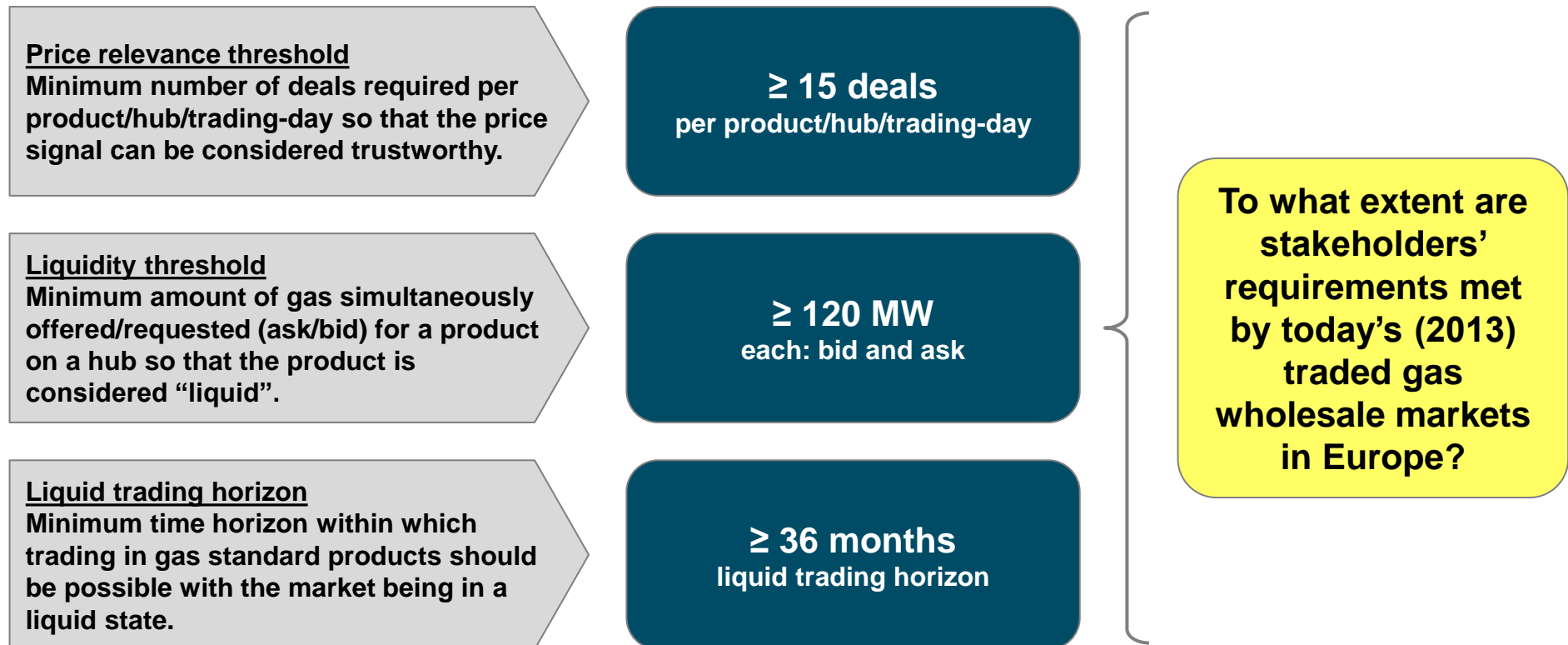
To what extent are stakeholders' requirements met by today's (2013) traded gas wholesale markets in Europe?

Focus on brokered markets
(due to their overwhelming importance)

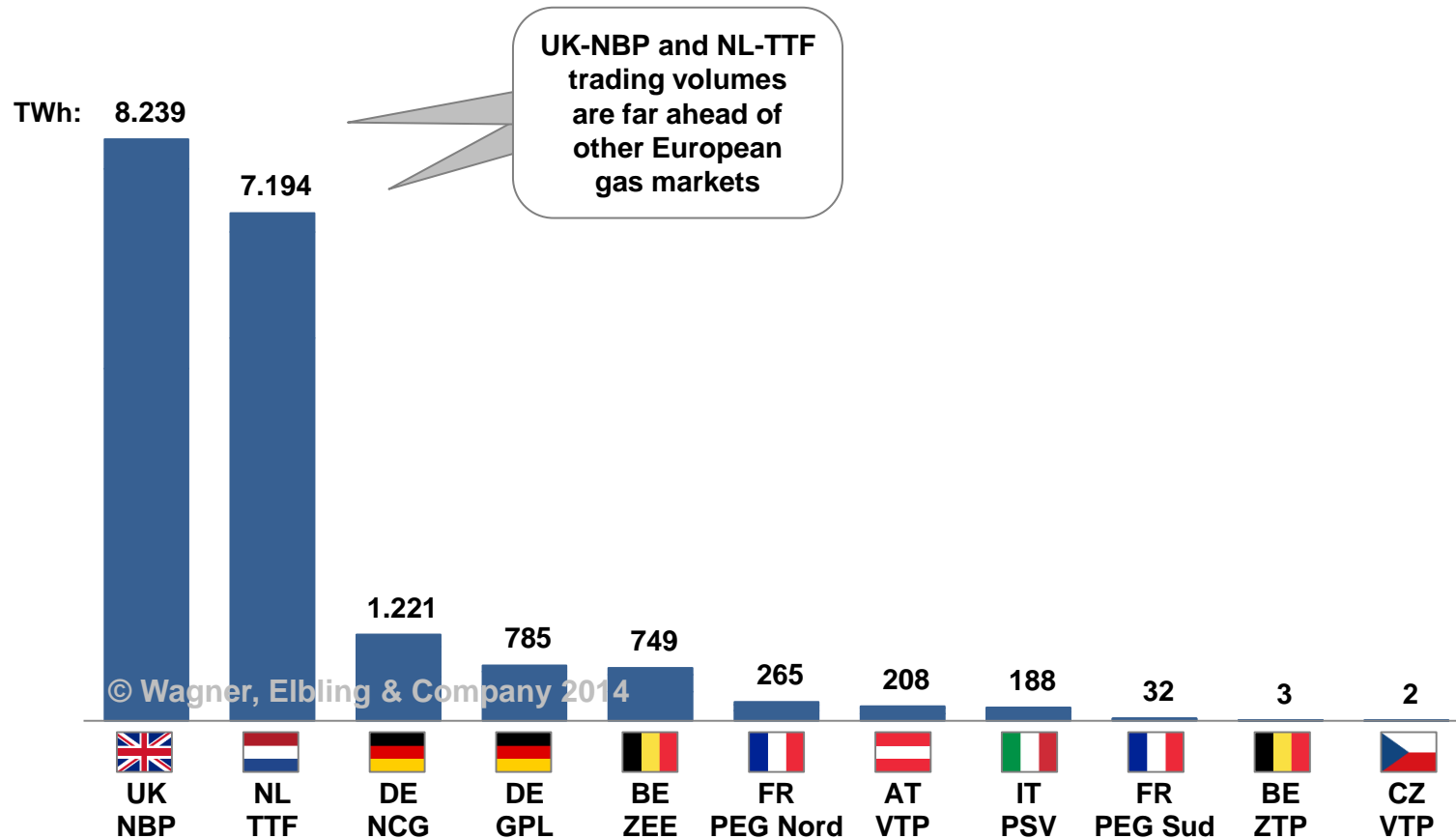
Analysis includes the following gas hubs:

- Austria – VTP
- Belgium – ZEE
- Belgium – ZTP
- Czech Republic – VTP
- France – PEG Nord
- France – PEG Sud
- Germany – Gaspool
- Germany – NCG
- Italy – PSV
- Netherlands – TTF
- United Kingdom – NBP

Results phase 1 – Questionnaire: Stakeholder requirements



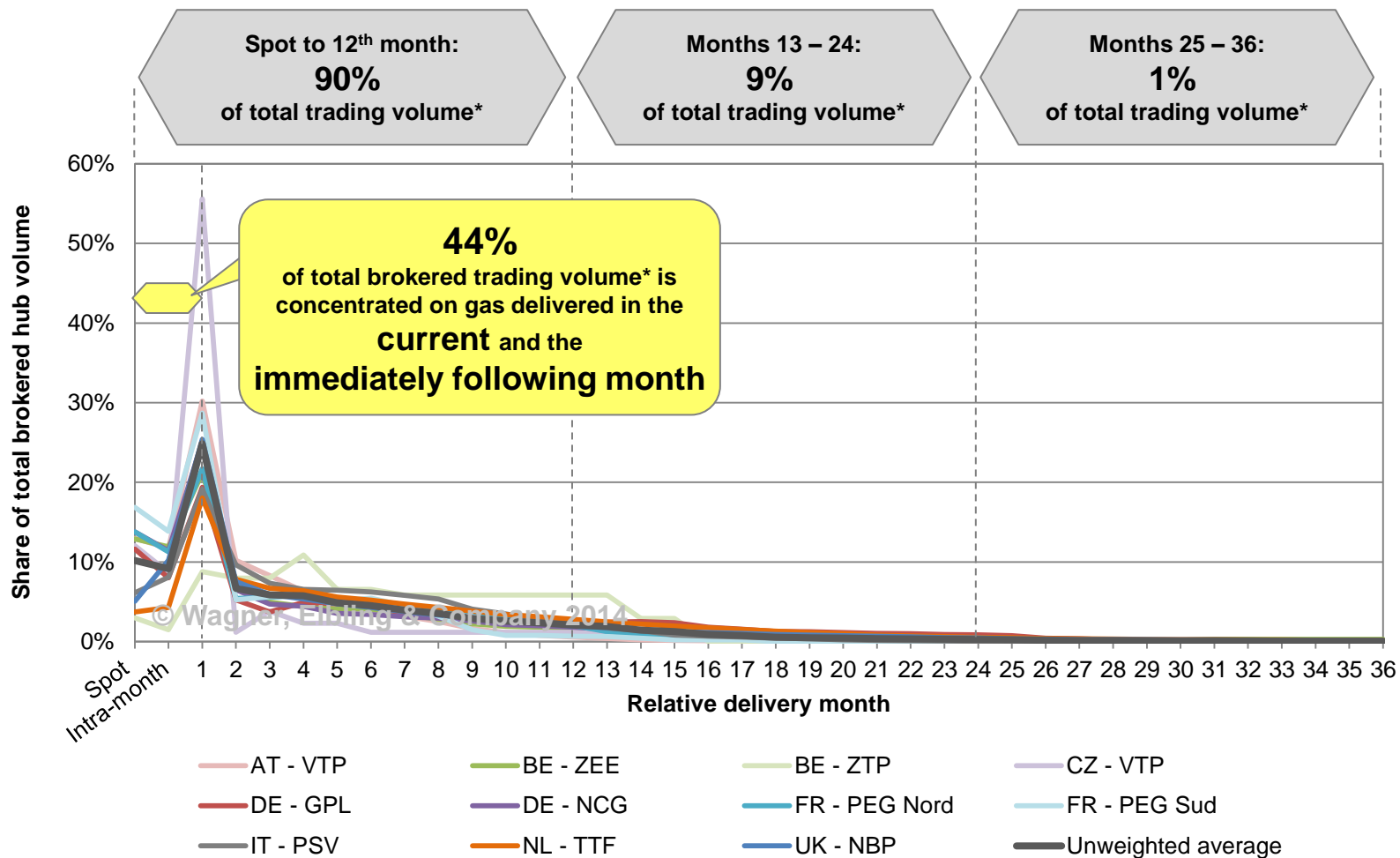
Brokered gas trading volumes at European gas markets 2013



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Split of brokered gas trading volumes to delivery months (relative to transaction date)

2013



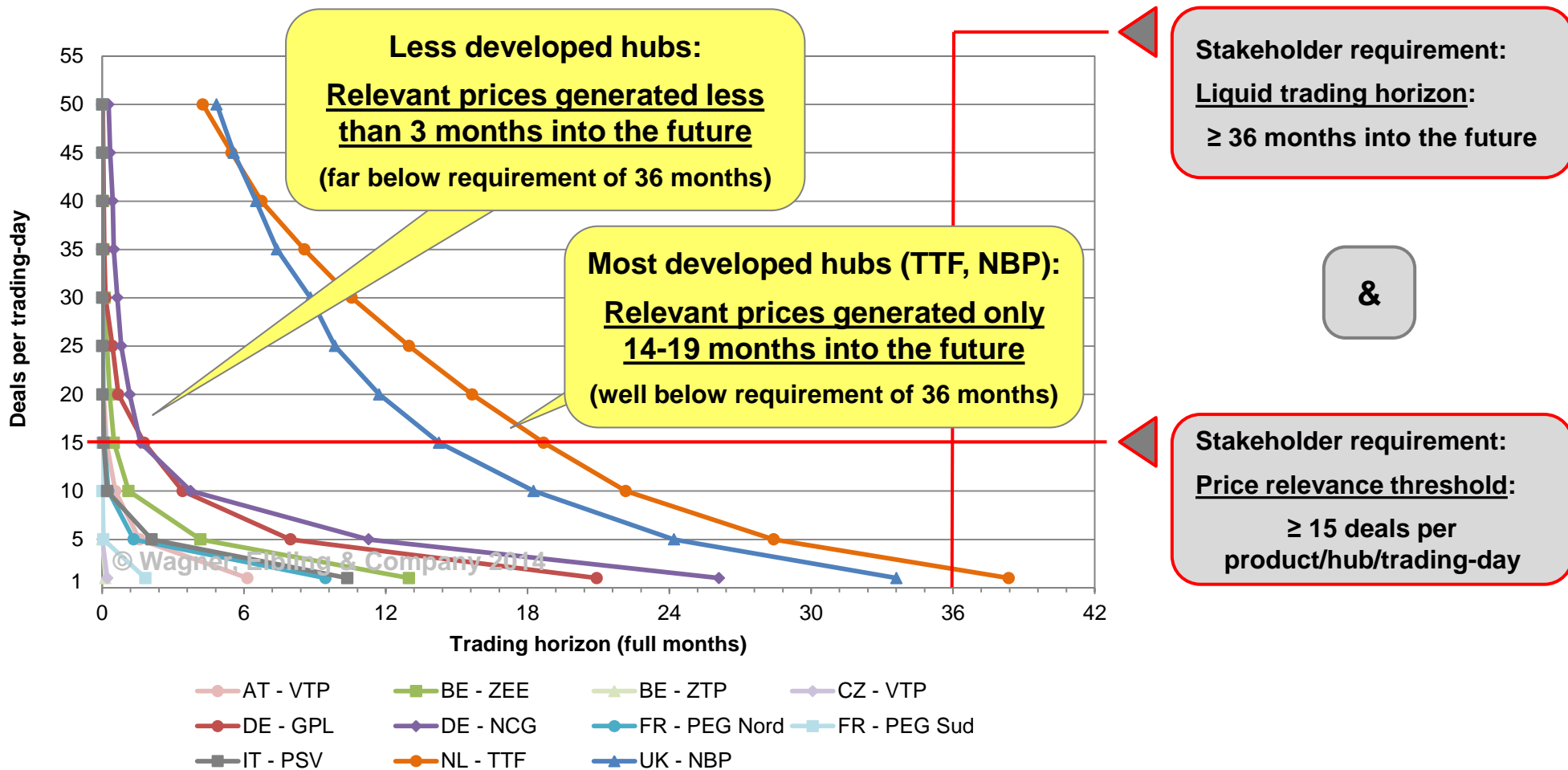
Note 1: "Relative delivery month" means relative to transaction date.

Note 2: Volumes per month are summed up over all products (per hub).

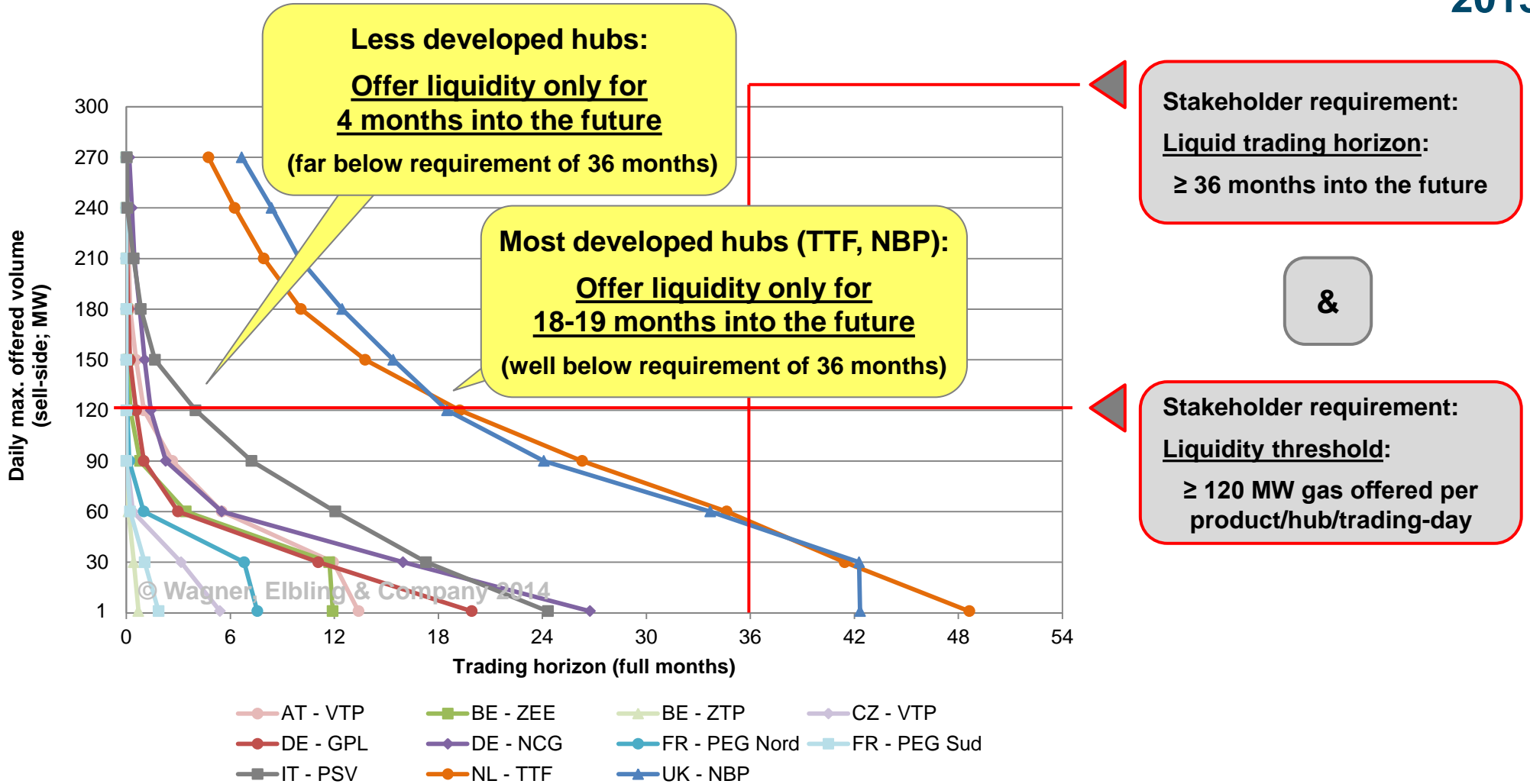
* Unweighted average of all hubs shown in the diagram.

Source and assumptions: See upcoming study by Wagner, Elbling & Company on gas market functioning.

Price discovery: Deal count per day vs. trading horizon 2013

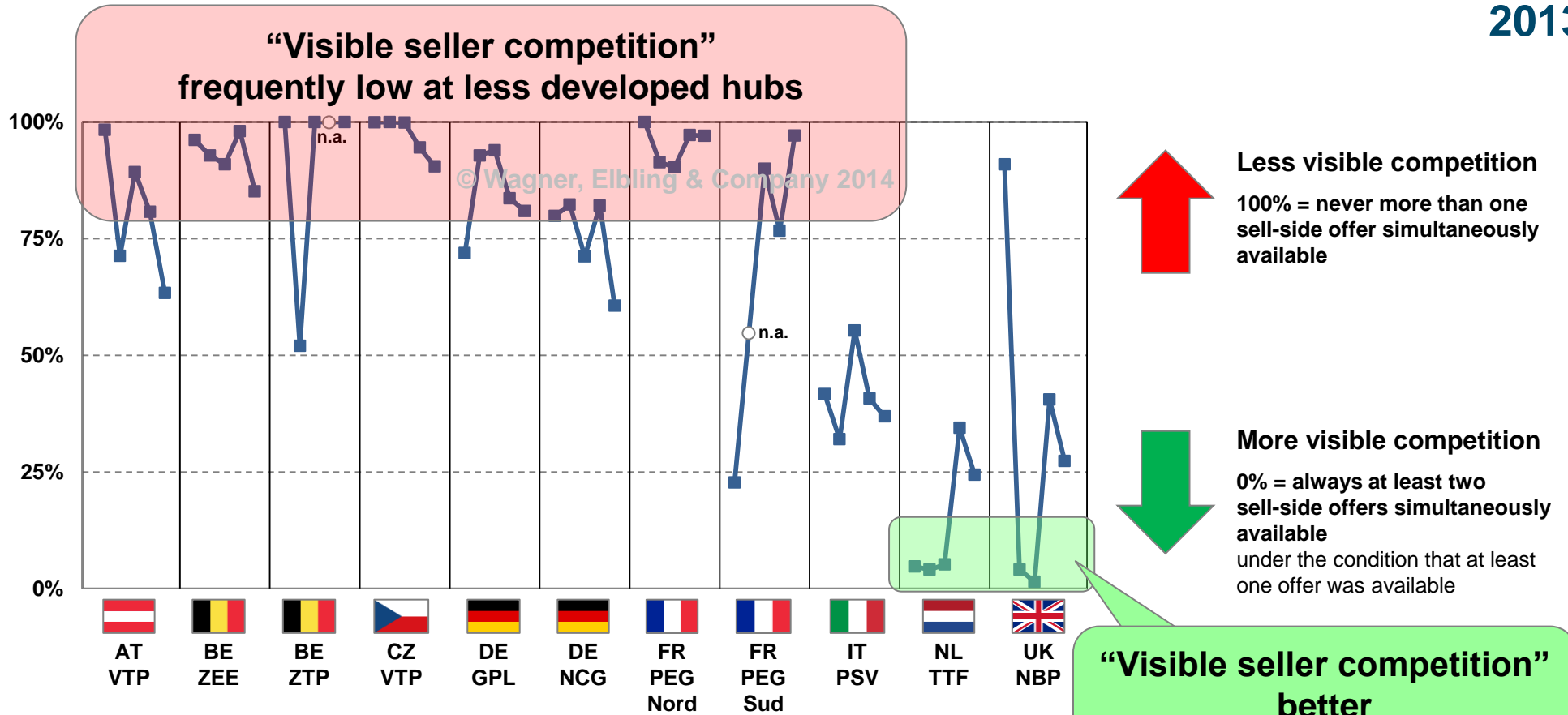


Availability of gas: Sell-side (offered) volumes vs. trading horizon 2013



Source and assumptions: See upcoming study by Wagner, Elbling & Company on gas market functioning.

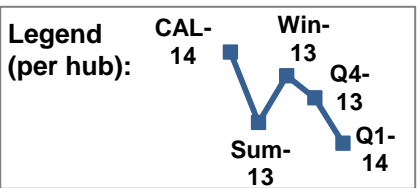
Sell-side competition: Frequency of only a single offer for the sale of gas visible on brokered gas markets* 2013



Less visible competition
 100% = never more than one sell-side offer simultaneously available

More visible competition
 0% = always at least two sell-side offers simultaneously available under the condition that at least one offer was available

“Visible seller competition” better at more developed hubs



* The diagram shows the frequency of only one single offer being available – under the condition that at least one offer was available.

Not available (n.a.) data points: no offer at all available.

Source and assumptions: See upcoming study by Wagner, Elbling & Company on gas market functioning.

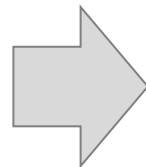
Results Phase 2 – Measurement: Interim conclusions

Interim conclusions:

- Stakeholders' requirements regarding
 - price relevance threshold,
 - liquidity threshold and
 - trading horizon

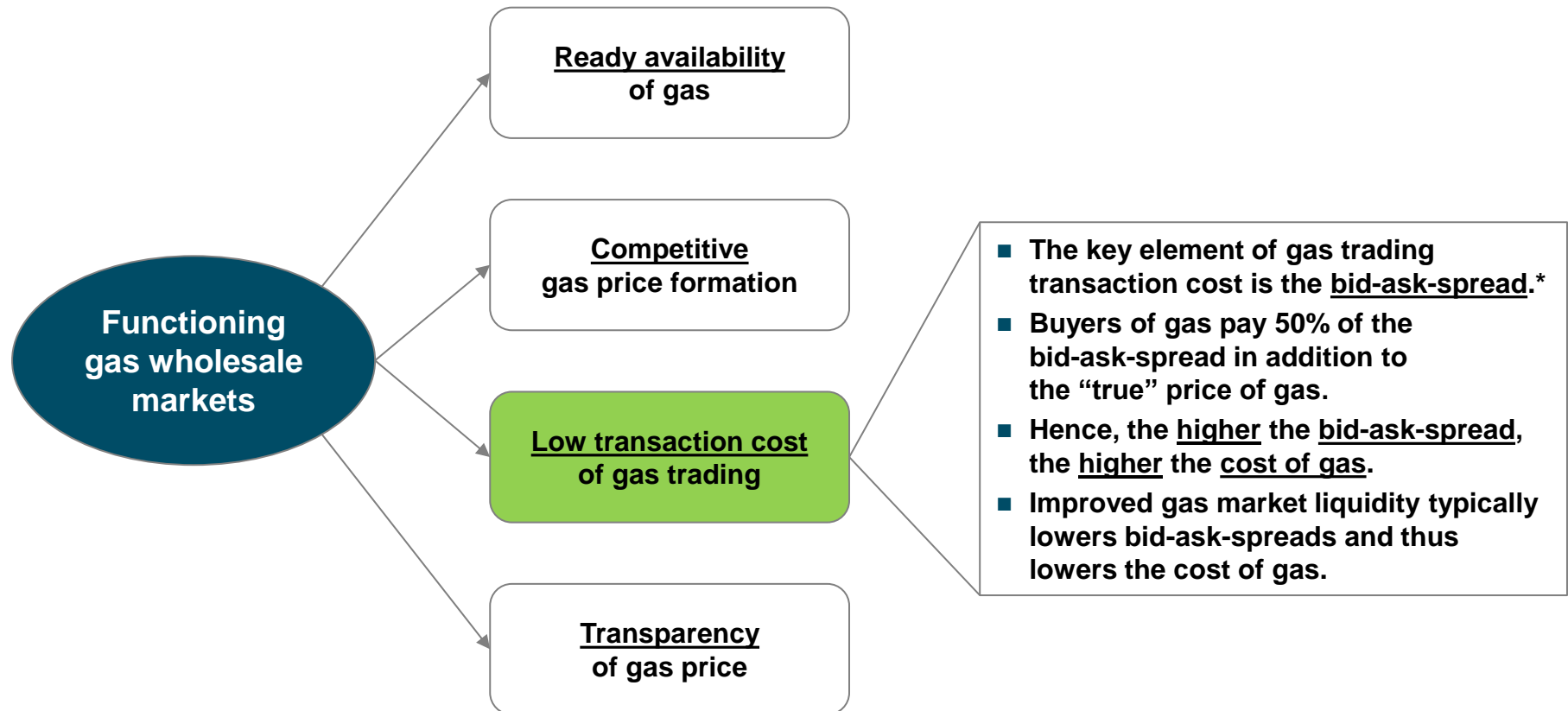
were not met by any European hub in 2013.

- Dutch TTF and British NBP score far better than all other hubs (but still fall short of stakeholders' requirements).



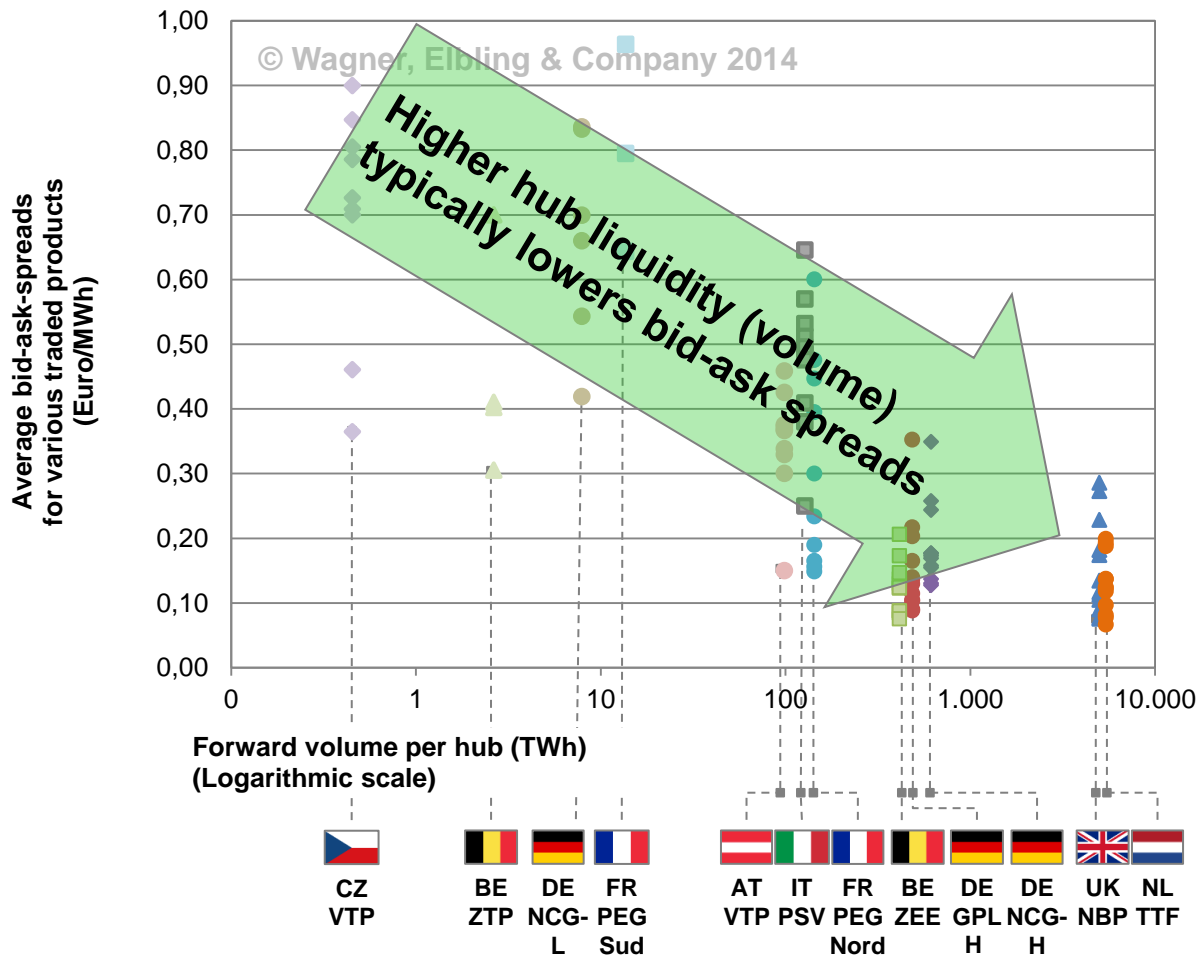
**What could be gained
from increased market liquidity?**

Benefits of improved gas market liquidity



* The bid-ask-spread is the difference in price between the lowest price for which a seller is willing to sell gas (ask-price) and the highest price that a buyer is willing to pay for it (bid-price) at the same time.

Transaction cost: Bid-ask-spreads on brokered gas forward markets 2013



Savings
 on gas cost* in the range of
30 to 140 Mio. € p.a.
 just from saved transaction cost**

Lower bid-ask-spreads

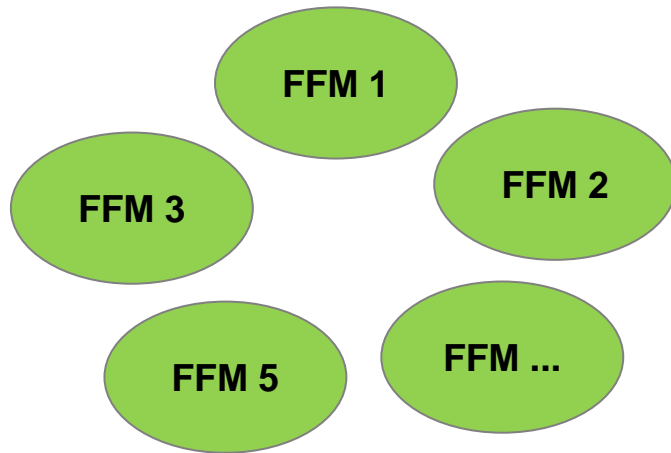
Increased gas market liquidity

* Excl. UK-NBP ** Estimate based on the difference of bid-ask-spreads of various markets/products to the TTF and current traded forward volume on the continent.
 Source and assumptions: See upcoming study by Wagner, Elbling & Company on gas market functioning.

Current discussion: Alternative market designs for European gas markets

Alternative gas market designs currently discussed for Europe

Option 1: Current (national) gas markets are enlarged as far as required so that each and every European end user is located inside (i.e. same balancing zone) a functioning forward market.



5 to 7 functioning gas forward (+ spot) markets
 (in many cases cross-border)
for Europe

Option 2: Only a certain number of European end-users is located in 2 to 3 functioning (national) forward markets; all other European end users are located in non-functioning forward markets (i.e. “balancing only” markets).



2 to 3 functioning gas forward (+ spot) markets
 (typically national)
and 20+ “balancing only” markets
 (with only short-term products being traded)
for Europe

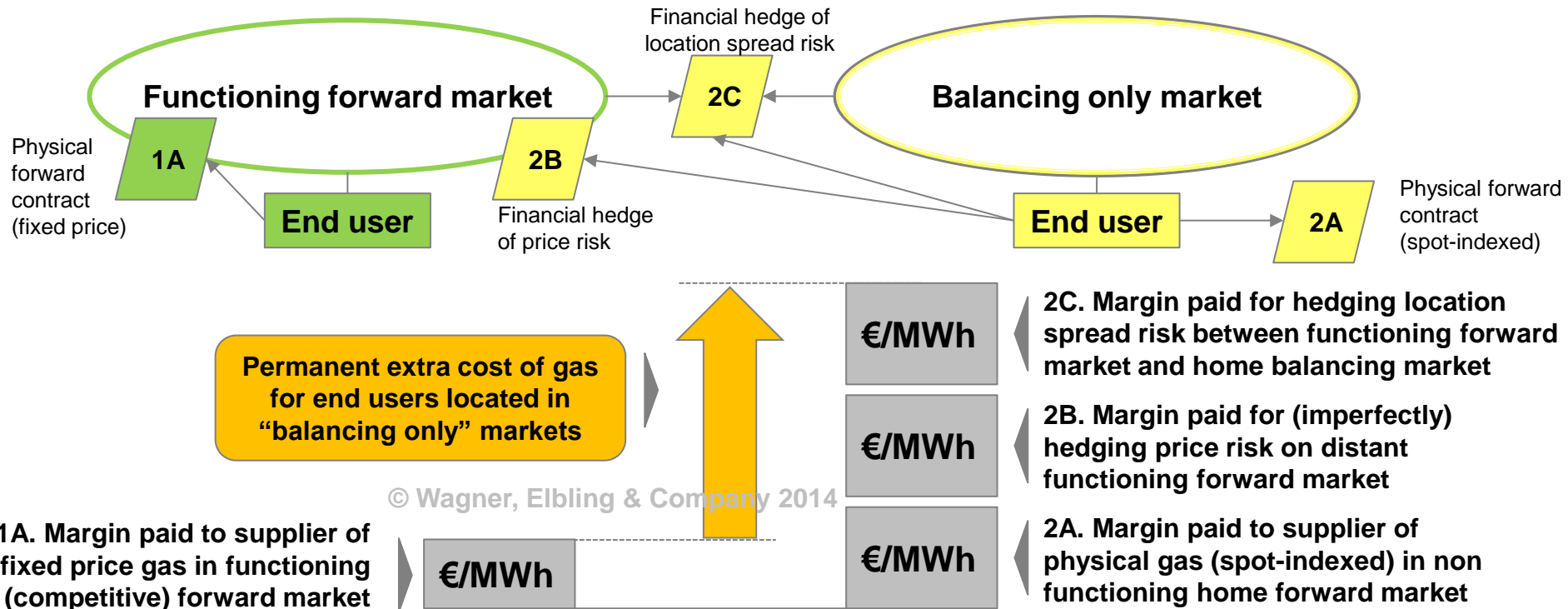
Legend:
 FFW = Functioning forward market (where gas is traded liquidly from short-term to well into the future)
 BM = Balancing market (where gas is traded liquidly only for spot (and maybe also the current and front month))

Alternative market designs for European gas markets: Impact on gas procurement cost

Analysed case: Large end user (or a supplier of small end users) intends to secure fixed price gas for the following year delivered at his home hub

Scenario 1: End user located in functioning forward market (i.e. in the same balancing zone)

Scenario 2: End user located in a “balancing only” market

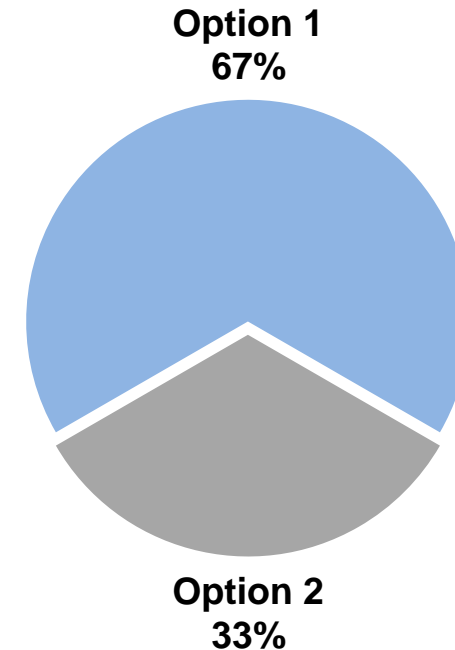


Conclusion: Under market conditions, end users located in home markets without a functioning forward market (i.e. “balancing only” markets) permanently have to pay a markup for fixing their price of gas.

Results phase 1 questionnaire: Stakeholders' preferred European gas market design

Option 1: Every gas market area should have a liquid spot and forward market*

Option 2: Every gas market area should have a liquid spot market, but forward markets should be concentrated to max. 3 of them



* The questionnaire asked for the goal to be pursued, not for the means to achieve it. According to the Gas Target Model non functioning (spot+forward) (national) gas markets can be developed to functioning (spot+forward) gas markets by fully merging them with other markets (i.e. down to end users) or by merging them on the wholesale level only (Trading Region Model).

Conclusions

1. Stakeholders' requirements on functioning gas forward markets regarding

- price relevance threshold,
- liquidity threshold and
- trading horizon

were not met by any European hub in 2013.

2. Improved market liquidity typically leads to lower transaction cost (bid/ask-spreads) allowing for significant savings on gas procurement cost.

3. End users of gas which are located in non functioning forward markets (so called “balancing markets”) face higher cost of fixing their price of gas.
(As compared to end users located in functioning forward markets.)

4. The majority of stakeholders prefers a gas market design where every end user of gas is located (same balancing zone) inside a functioning forward (+ spot) market zone.

- This can be furthered by merging existing market zones to increase market liquidity.