

European electricity mergers

Understanding unilateral effects



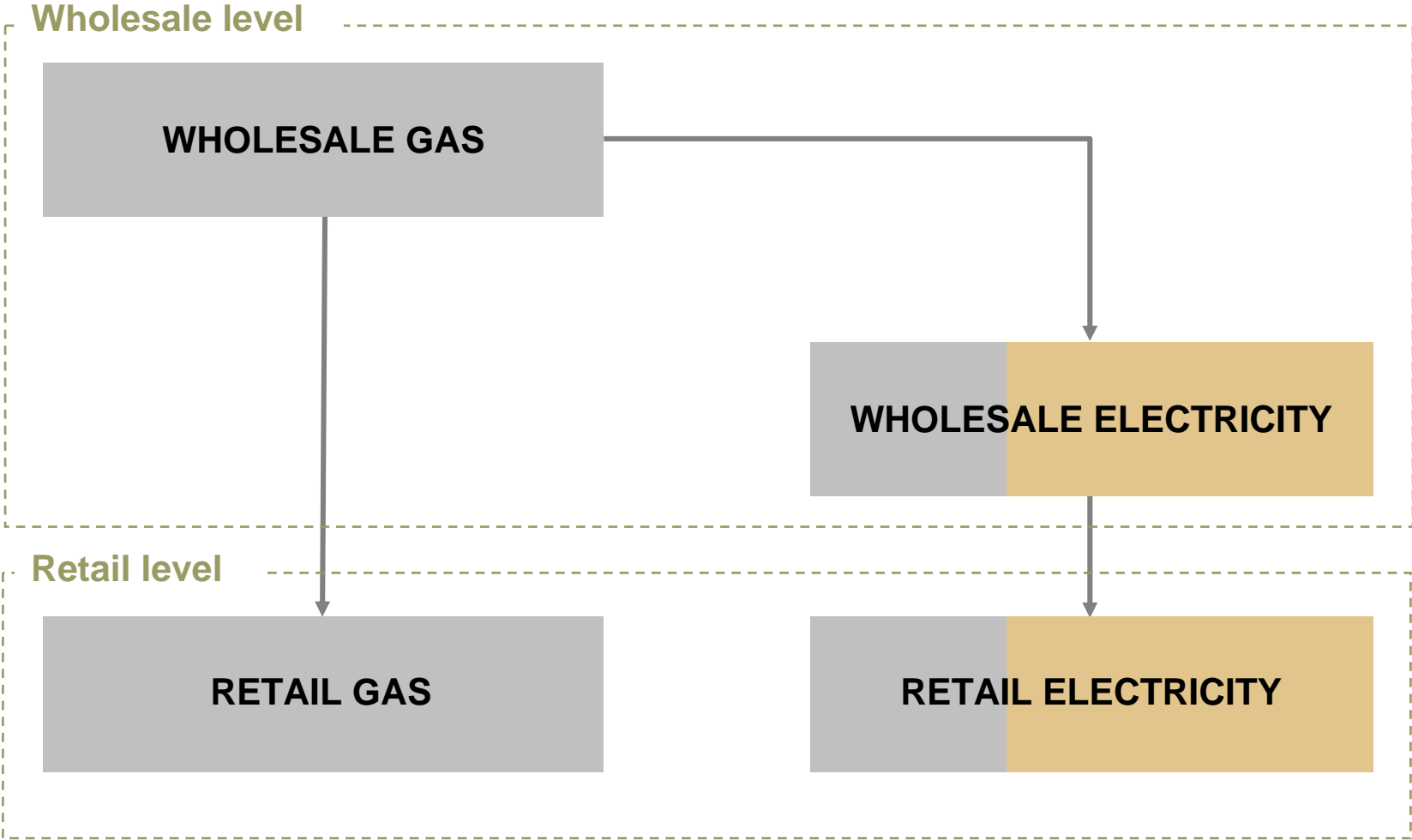
INTERNATIONAL

Giulio Federico
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Introduction

- **Energy mergers can in principle give rise to significant unilateral effects**
 - *Horizontal*: greater concentration and market power
 - *Vertical*: enhanced ability and incentives to engage in foreclosure
- **Recent European energy mergers have brought these issues into sharp focus**
- **The findings of the European Commission's Sector Inquiry and the recent non-horizontal merger guidelines (both in 2007) will inform the future assessment of energy mergers**
- **Recent transactions also show that it is crucial to understand electricity and gas markets together**

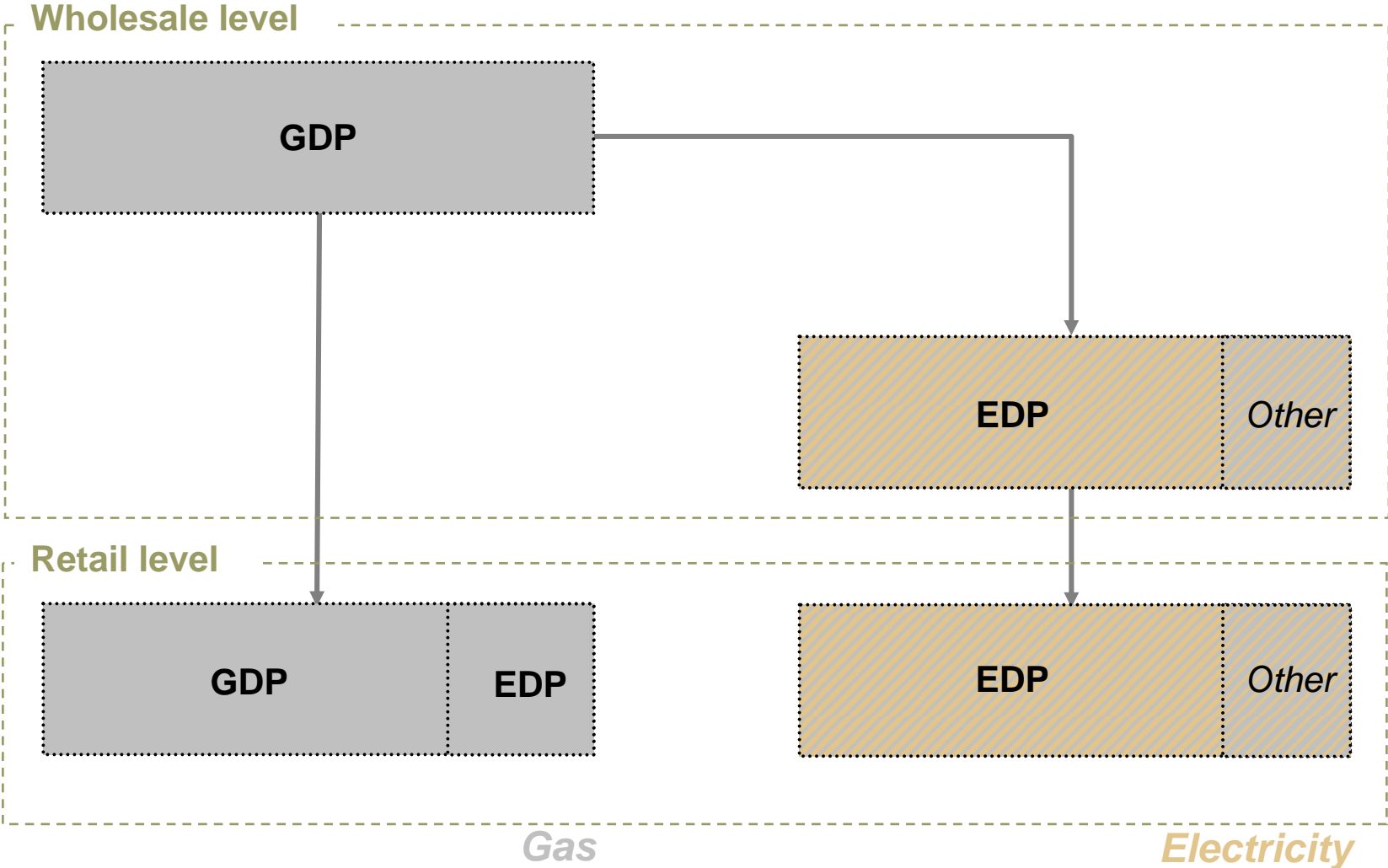
Energy markets: basic horizontal and vertical structure



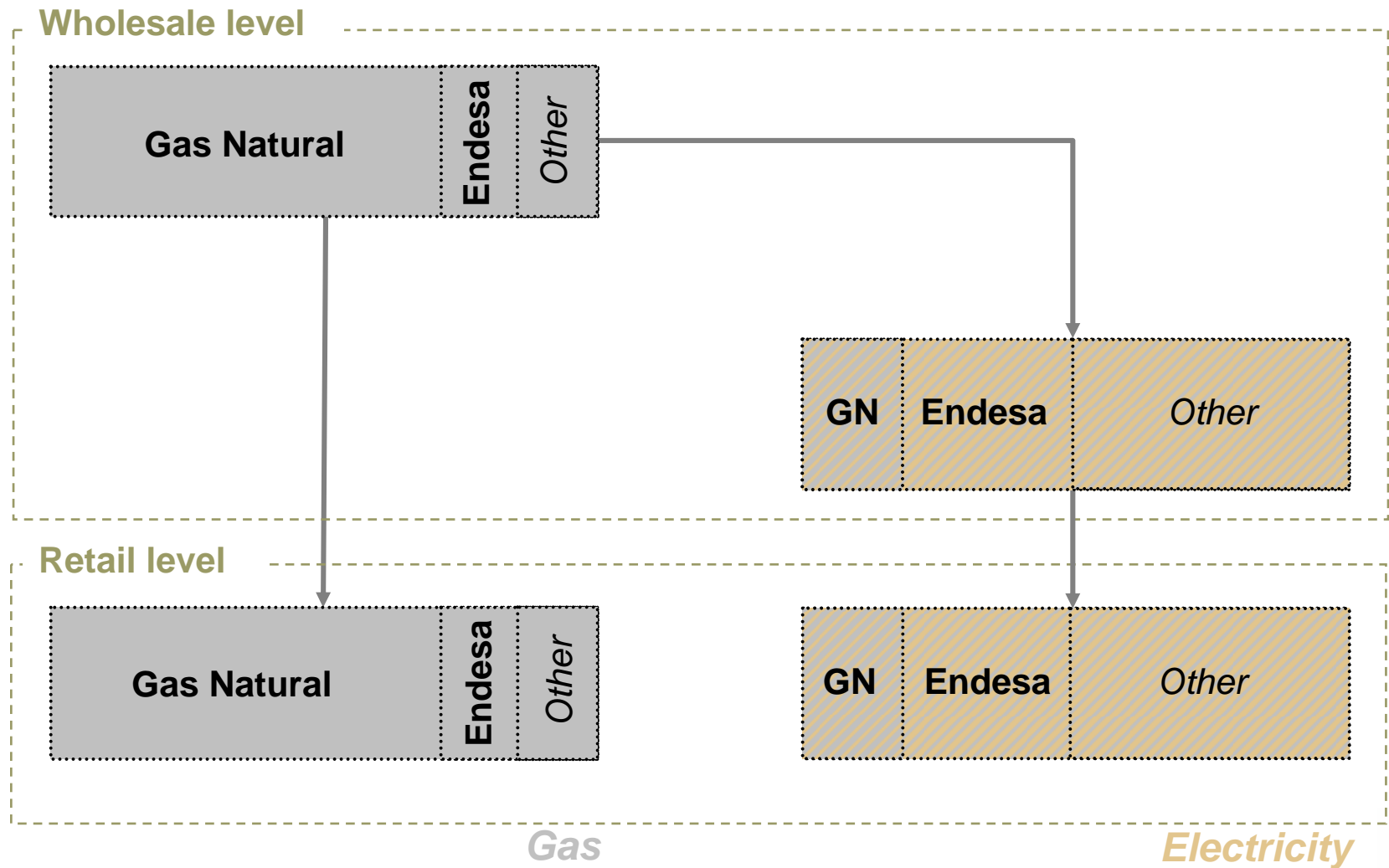
A taxonomy of recent European energy mergers

	Outcome	Jurisdiction	Horizontal Effects	Vertical Effects
<i>EDP/ENI/ GDP</i>	x	Brussels	✓	✓✓
<i>Gas Natural/ Endesa</i>	x / ✓	Spain	✓✓	✓✓
<i>GDF/Suez</i>	✓	Brussels	✓✓	✓✓
<i>Essent/Nuon</i>	??	Netherlands	✓✓	?

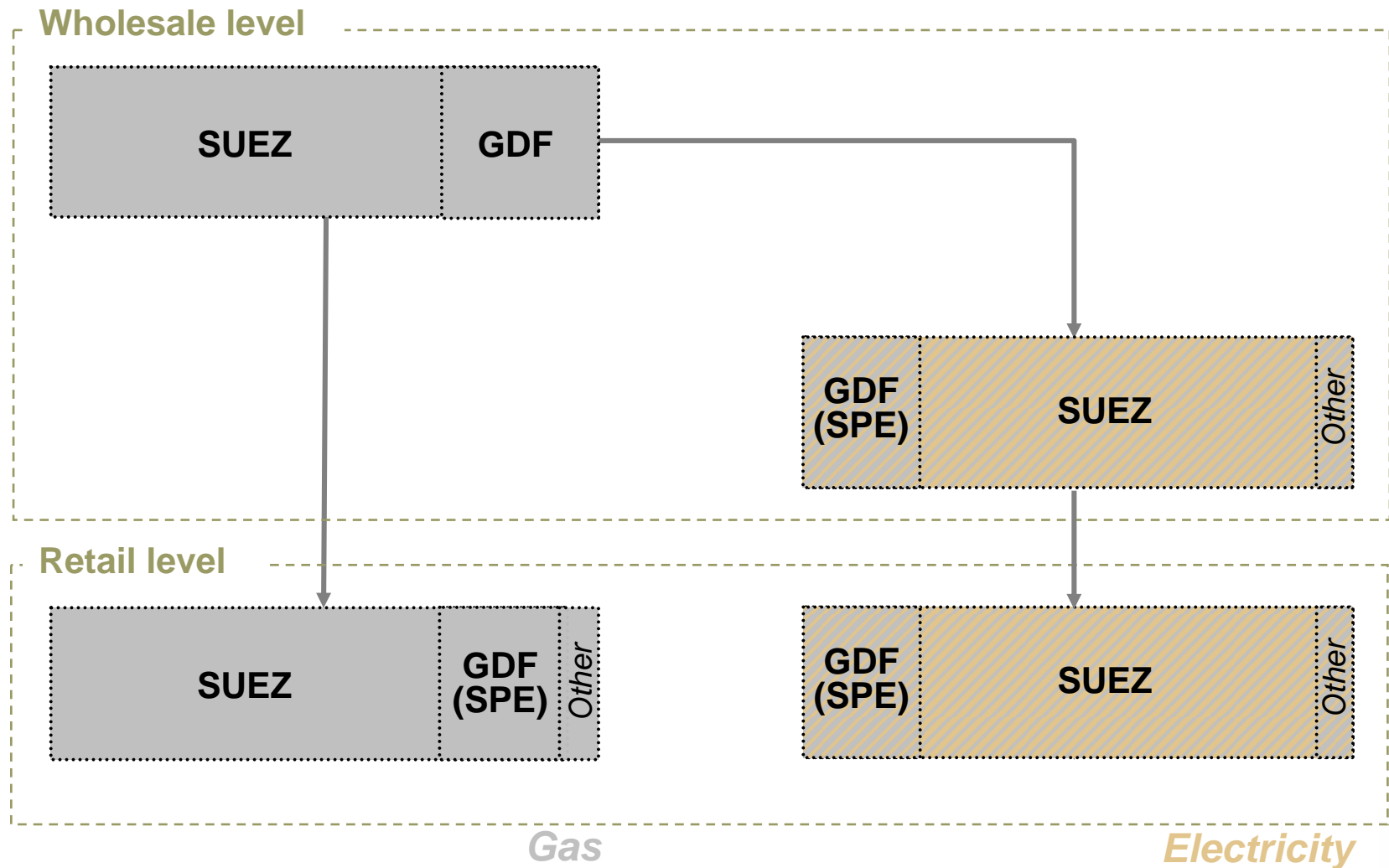
EDP/GDP: primarily a vertical transaction



Gas Natural/Endesa: significant vertical and horizontal effects



GDF/Suez: vertical and horizontal effects (Belgium)



Horizontal Effects

Implications of the Sector Inquiry and two recent case studies

Horizontal effects: Implications of the Sector Inquiry

- **The inquiry identifies the “usual” competition concerns from concentration in energy sector**
- **It reviews standard features which make energy markets prone to unilateral exercise of market power (especially in electricity)**
- **These include (for electricity)**
 - Highly inelastic demand
 - Lack of storability
 - Increasing variable costs
 - Plant-specific capacity constraints
 - Uniform spot prices (in most organised markets)
 - Limited cross-border transmission capacity

Two strategies to exercise market power

Economic Withholding

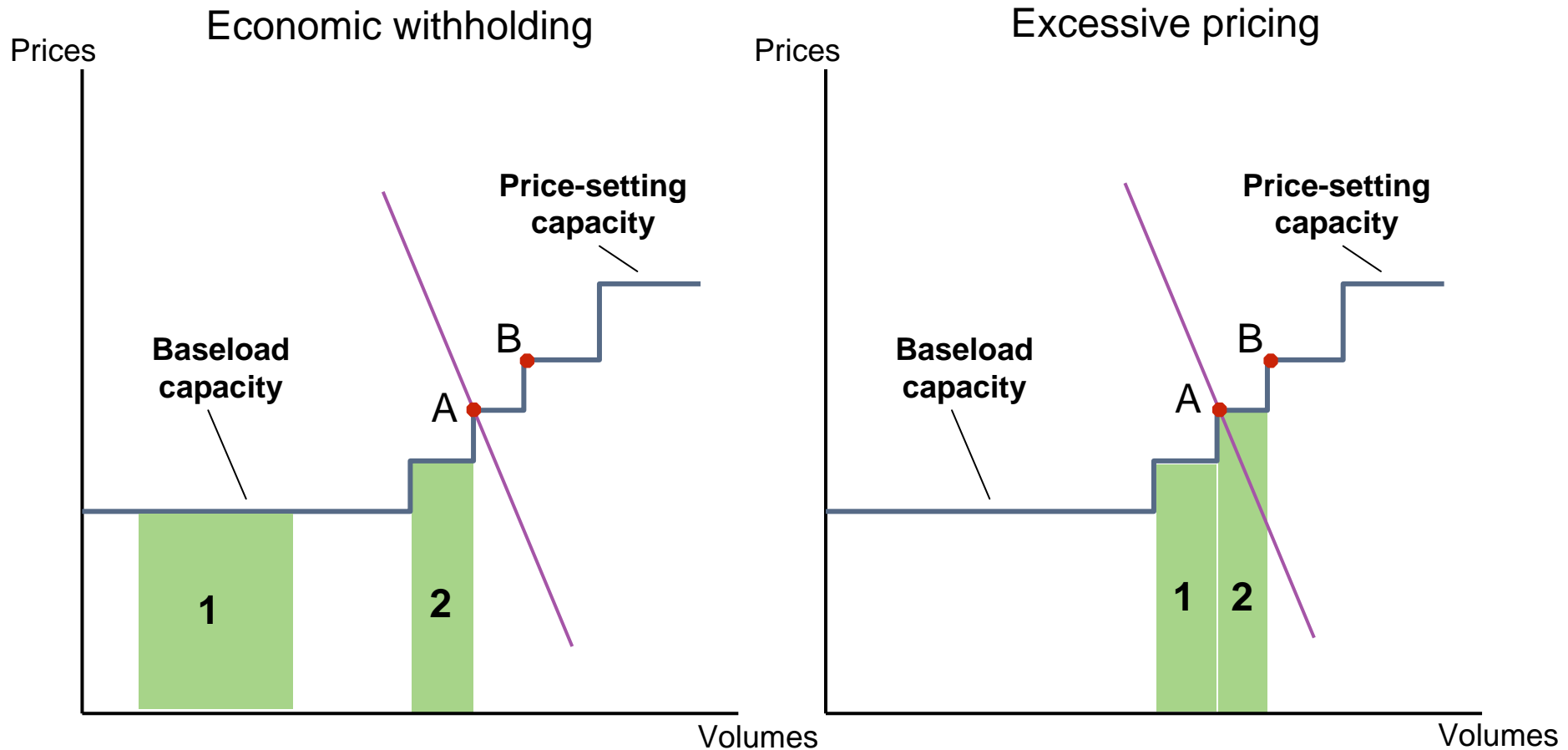
- Portfolio generators can withhold high-cost plants in order to drive prices up
- This can increase profits on “infra-marginal” (baseload) capacity
- The overall strategy is profitable if additional margins on baseload generation exceed lost margins on marginal generation
- Steepness of cost curve affects profitability

Excessive Pricing

- Generators with several price-setting plants can increase their bids in the market without sacrificing significant volumes
- Concentration “at the margin” is equivalent to facing a very inelastic residual demand (i.e. total demand net of the offers of other generators)
- The percentage of hours in which a generator sets the price can be used as an indicator for this concern
- Can lead to material price effects even at low market shares

...in practice these are two aspects of the same basic economic strategy: *profit-maximising conduct by generators with multiple plants*

Two strategies to exercise market power

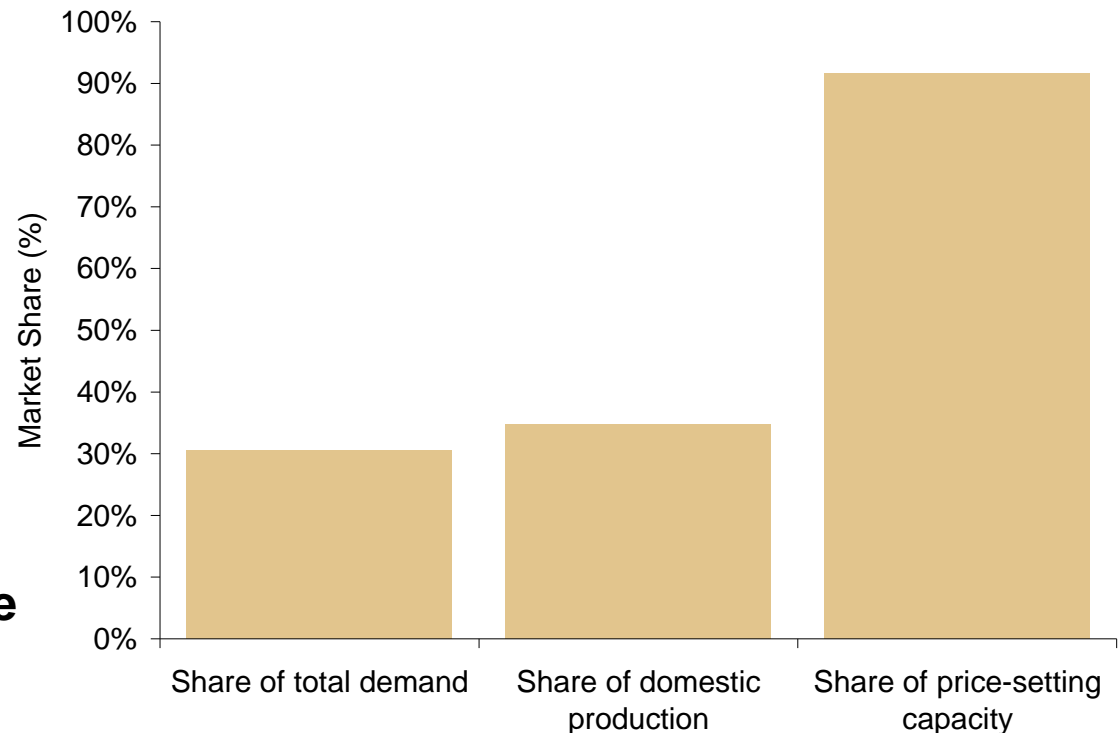


Capacity owned by merging parties
 A = competitive prices
B = prices with market power

Implications for merger assessment (1/2)

- **Mergers may lead to a loss of competition even with relatively low market shares**
- **Share of price-setting capacity is a more important indicator than share of total demand (example from Italy)**
- **Ultimately this can be seen as a market definition issue (e.g. is the “price-setting” section of the merit order a well-defined market?)**

ENEL's share of the Italian generation market (2006)

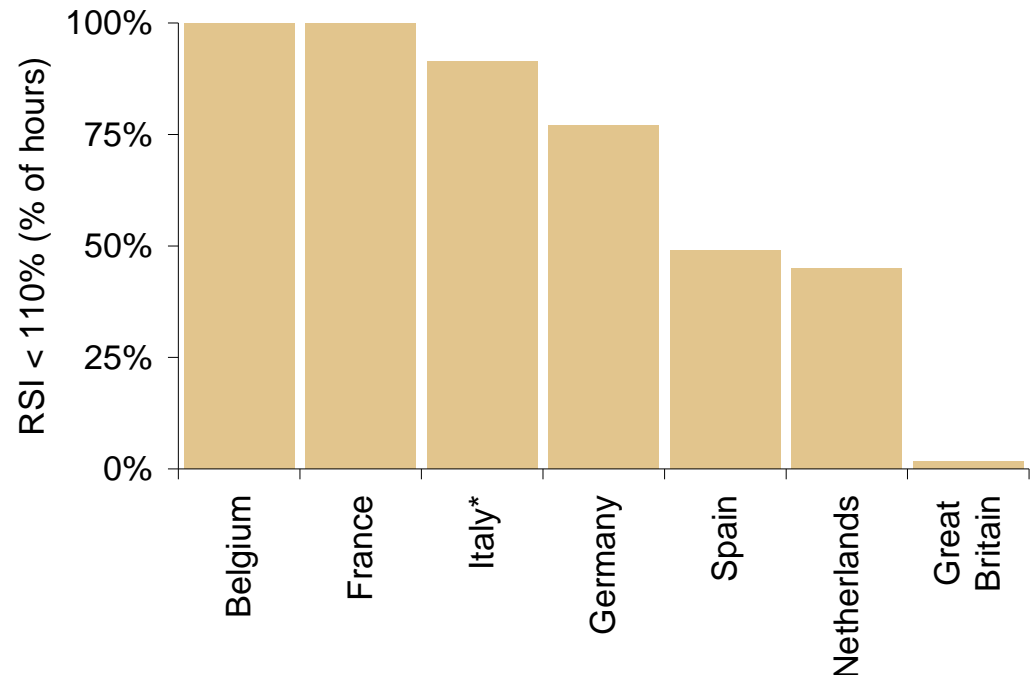


Source: AEEG and GME annual reports.

Implications for merger assessment (2/2)

- **Alternative indicators of market power such as “pivotality” measures are increasingly being employed**
 - *Pivotal Supply Indicator*: how often is a generator required to meet demand? (i.e. when is demand in excess of the capacity of all other generators?)
 - *Residual Supply Indicator*: how tight is the supply-demand balance net of a given generator’s capacity?
- **The link to merger control however as yet unclear and untested**
 - Should *any increase* in the PSI/RSI from a merger be seen as leading to a significant loss of competition?
 - PSI/RSI are not always a good indicator of actual ability and/or incentives to raise prices

Pivotality indicators in key European markets (2003-2005)



Source: European Commission, Sector Inquiry. Residual Supply Index calculations for most pivotal generator, excluding interconnectors.

* Italy figure is for 2006, based on PSI data in GME annual report (average of North and South indicators)

Case study 1: *Gas Natural/Endesa*

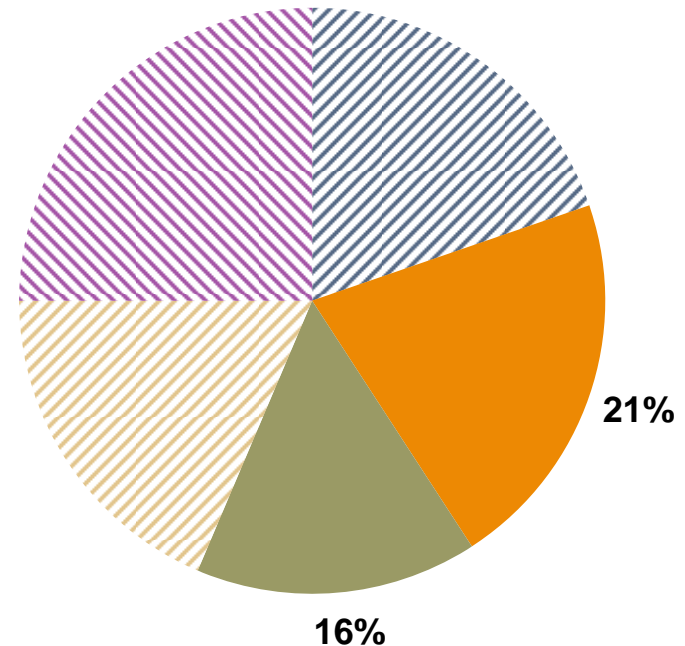
- **Static horizontal effects in generation market do not appear large**
 - Endesa: 40% of production (2004) but...
...Gas Natural only 2.5% of production (2004)
- **However, Endesa already pivotal pre-merger**
 - Full pivotality in 5% of hours in 2004 (Spanish Competition Tribunal)
 - Near pivotality (“low” RSI) in 40% of hours in 2003-05 (London Economics)
- **Gas Natural also a key entrant in the market**
 - Generation capacity projected to increase from < 2 GW to 4-5GW in near future
 - Capacity is all CCGT (potentially price-setting, especially at current fuel prices)
- **Remedy (Spanish Council of Ministers)**
 - Divest 4.3GW of generation capacity, well in excess of Gas Natural’s existing portfolio
 - 1.2GW of capacity to be price-setting (either CCGT or hydro)
 - Prevent double gas-electricity incumbency through retail divestments

Case study 2: *Essent/Nuon* (1/2)

- **Prospective merger of two of the three largest generators in the Netherlands**
- **NMa provided some analysis of the possible transaction in 2006 as part of a market consultation on energy mergers**
- **Parties actually notified the merger in 2007, but deal failed on commercial grounds (before completion of the competition investigation)**
- **The 2006 consultation raises interesting insights on horizontal unilateral effects**

Case study 2: *Essent/Nuon* (2/2)

- **Horizontal effects do not appear very significant at face value...**
 - Combined share well below 40%
 - Other parties (e.g. Electrabel and imports) can in principle constrain merging parties
- **however**
 - Capacity constraints (especially on imports) limit ability to respond to higher prices during peak hours
 - Data suggest a large increase in pivotality (from <10% of hours to 70%)
- **Merger simulation by Brattle indicates a significant price effect**
 - 7% price increase, equivalent to loss in consumer welfare of €500m
 - Divesting 50% of Nuon's capacity still results in 3% price increase (loss to consumers of over €200m)
- **Implications**
 - Type of divestments (price-setting vs. baseload plant) is key to avoid a loss of competition
 - Merger simulations should play an increasingly prominent role in complex horizontal assessments



▨ Electrabel ■ Essent ■ Nuon ▨ Imports ▨ Others

Source: NMa, 2006. Shares of capacity

Vertical Effects

Implications of recent mergers in light of the non-horizontal merger guidelines

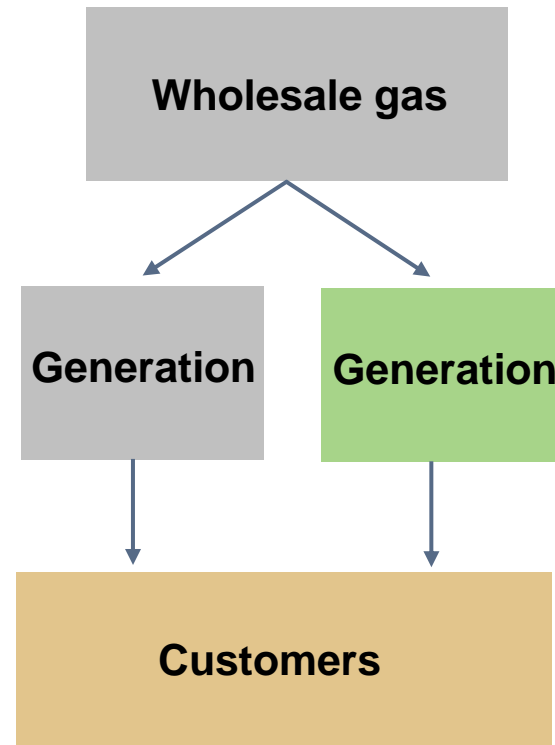
The non-horizontal merger guidelines (November 2007)

- The guidelines describe a 3-step procedure to analyse vertical effects

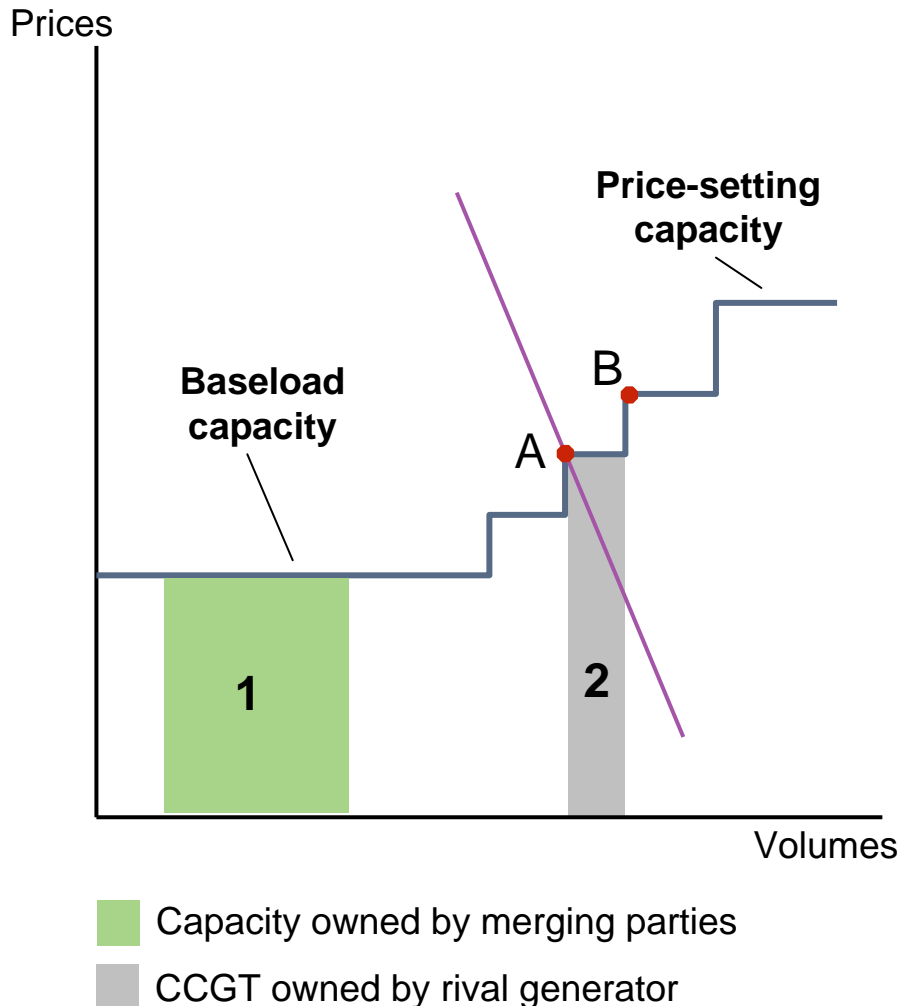
Step 1: Ability to foreclose

Step 2: Incentives to foreclose

Step 3: Final impact on customers

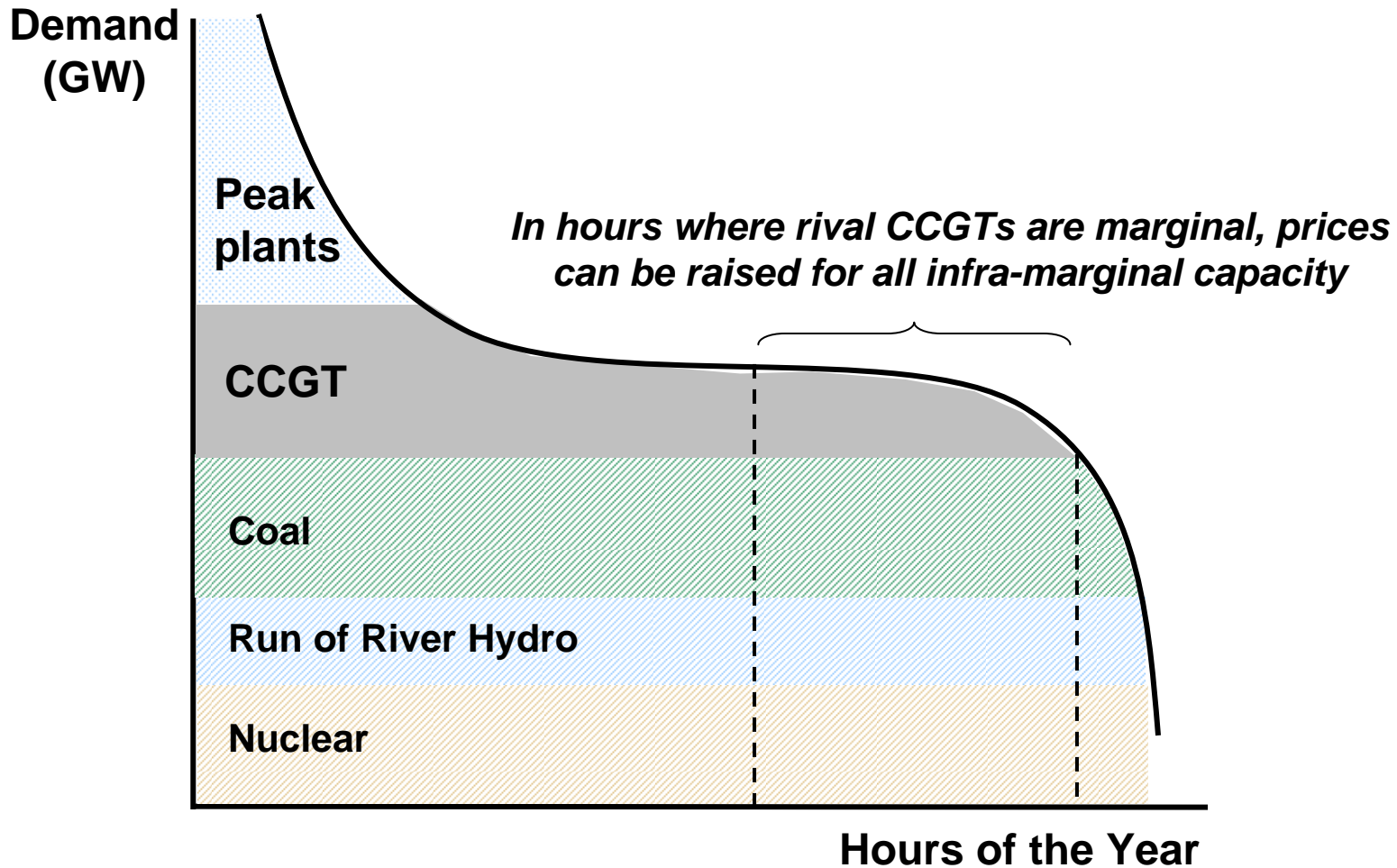


Incentives for input foreclosure in energy markets (1/2)



- **A strategy of raising rivals' costs by an integrated gas-electricity producer can be profitable if**
 - gas-fired plants are price-setting
 - the vertically integrated generator also has significant baseload capacity
- **The strategy is analytically equivalent to a horizontal withholding strategy**
 - Is the lost (upstream) margin on supply to the price-setting plant offset by the gain on baseload capacity?

Incentives for input foreclosure in energy markets (2/2)



Empirical conditions for anti-competitive foreclosure

- **The guidelines discuss a number of empirical conditions which can make foreclosure more likely**
- ***Ability***
 - Requires concentration in upstream market
 - Input needs to be important for downstream market
 - If upstream input is homogenous, other suppliers may also gain from foreclosure
- ***Incentives***
 - Diversion to downstream unit of the merged entity needs to be sufficiently high (homogenous products will tend to lead to higher diversion)
 - High base of sales which benefits from higher prices
- ***Overall impact***
 - Are foreclosed rivals important in the determination of final prices?
 - Are there significant double-marginalisation gains that are only achievable through the merger?
- ***Several of these conditions can be satisfied in concentrated energy markets***

Input foreclosure in recent energy cases (1/2)

- **Theories of harm based upon input foreclosure were articulated in recent major energy mergers**
- ***EDP/GDP***
 - This was a concern in relation to some of the gas requirements of one existing CCGT plant, and dynamically for new CCGT entrants (e.g. Endesa, Iberdrola)
- ***Gas Natural/Endesa***
 - Some existing and planned CCGTs potentially exposed to foreclosure
 - Gas Natural position in pipeline gas supplies arguably a reason for potential increase in wholesale gas costs (up to LNG levels?)
- ***GDF/Suez (Belgium)***
 - Parties' joint control of flexible gas gives them ability to raise the price of current and future rival CCGTs
 - SPE's CCGT exposed to strategy also because it loses JV partner with access to competitive gas
- ***EON/MOL***
 - Foreclosure theory articulated by the Commission in spite of very low market shares in generation (e.g. 3%) – lack of incentives to foreclose?

Input foreclosure in recent energy cases (2/2)

- **However, the framework indicated in the guidelines was not explicitly adopted in recent merger decisions**
 - Limited explicit discussion of *net* incentives to foreclose (e.g. extent of the potential loss of gas margins)
 - No discussion of possible efficiencies from gas-electricity integration
- **This was notably the case for EDP/GDP and Gas Natural/Endesa**
- **The only exception is the GDF/Suez decision where some of the elements of a foreclosure concern are expressly articulated by the European Commission**
 - Emphasises importance of flexible gas supplies for electricity generation
 - Explicitly draws the link between Electrabel's strong position in baseload electricity (nuclear) and incentives to raise rival costs
 - Stresses role of gas-fired plants as price-setting technology
- **Explicit adoption of guidelines is likely to make future assessment of vertical energy mergers more robust**

Remedies

Fixing horizontal and vertical effects

Outline of remedies in recent merger cases

	EDP/GDP*	Gas Natural/ Endesa**	GDF/Suez
Vertical Unbundling in Gas	Yes LNG and Storage	None	Yes Fluxys (partially)
Gas Release	Yes (limited)	Yes	Sale of Distrigaz
CCGT Divestment	Lease	Yes (1.2GW min)	Yes (SPE stake)
Other Generation Divestment	Limited	Yes	No
Retail Measures	Yes (gas networks)	Yes (clients and networks)	Yes (SPE stake)

* Last set of remedies offered by the parties

** Conditions imposed by Spanish Government

Some economic issues in remedy design

- **Addressing foreclosure concerns**

- Gas release programmes can in principle address the *ability* to raise rivals' costs, but detailed design issues crucial
 - Frequent auctions may allow merging parties to keep gas prices high post-merger, and foreclose entry in spite of gas release programme
 - Quantity and modalities of gas release need to be adjusted accordingly
- Generation divestments can address incentives to foreclose, and can play important complementary role
- Vertical unbundling may be warranted if the merger implies that prospects for gas competition are diminished through loss of actual/potential entry

- **Addressing horizontal effects**

- Generation divestments need to match the nature and likely future scale of the overlap
 - E.g. Gas Natural had initially offered only 3.1GW of coal/oil divestments, whilst final conditions increased this to 4.3GW (with at least 1.2GW of CCGT)
- Virtual divestments can work, depending on modality of auction design (e.g. frequency; size; and type of “virtual” plants that are offered to the market)

Conclusion

- **Mergers between incumbent energy companies can give rise to several competition concerns**
 - Some are more valid than others, depending on specific market circumstances
- **Some of the features of European gas and electricity markets can heighten these concerns**
 - The Commission appears particularly sensitive to these features, in the context of the recent Sector Inquiry
- **Merging parties and authorities will need to be prepared to negotiate extensive and complex remedies to address some of these issues**
 - The Commission has used merger control in the energy market to implement structural changes which have the potential to improve future competitive conditions
 - This is likely to continue in the foreseeable future

Dr Giulio Federico
CRA International
Barcelona / London
+34 93 228 7811
gfederico@crai.com



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