



# **Bidding studies in merger control: insights from recent EC experience**

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Disclaimer: the views expressed are those of the speakers only and cannot be regarded as stating an official position of the European Commission.

# Part I: Overview and Theory

# Bidding markets in recent EC mergers

- Many mergers at EC level involve markets with formal or informal tender procedures (*bidding markets*)
- Recent examples include:
  - *Baxter / Gambro* (2013): medical equipment
  - *UPS/TNT and Fedex/TNT* (2013 & 2016): express parcel delivery
  - *Zimmer / Biomet* (2015) : medical devices
  - *GE / Alstom* (2015): gas turbines
  - *Siemens / Dresser Rand* (2015): turbines & compressors
  - *Staples / Office Depot* (2016): office stationary
  - *Halliburton / Baker Hughes* (2016): oil equipment services
  - *Ball/Rexam* (2016): cans
  - *Plastic Omnium/Faurecia* (2016): car equipment (e.g. bumpers)
  - *Siemens/Gamesa* (2017): wind parks

# **Outline of key theoretical issues**

- 1. Definition and implications of a "bidding market"**
- 2. What is the most appropriate auction framework (and does it matter)?**
- 3. Implications of individualised pricing**

# 1. What is a "bidding market"?

- There are some essential features of bidding markets
  - Buyers purchase via formal or informal tender process (possibly involving formal RFQs, shortlisting, multiple rounds of bids)
  - Pricing by suppliers is individualised (price discrimination with no arbitrage)
- But the following does not necessarily hold
  - Market shares or concentration do not matter
  - Only #1 and #2 bidder matter for price-formation
  - "Two bidders are enough"
  - Competition is "winner-takes-all" hence leading to strong incentives to bid competitively
- Klemperer survey (2005)
  - A bidding market may have several features of an "ordinary" market (e.g. high product differentiation; barriers to entry; capacity constraints; high margins)

## 2. Which auction framework to apply?

### Sealed-bid Auction

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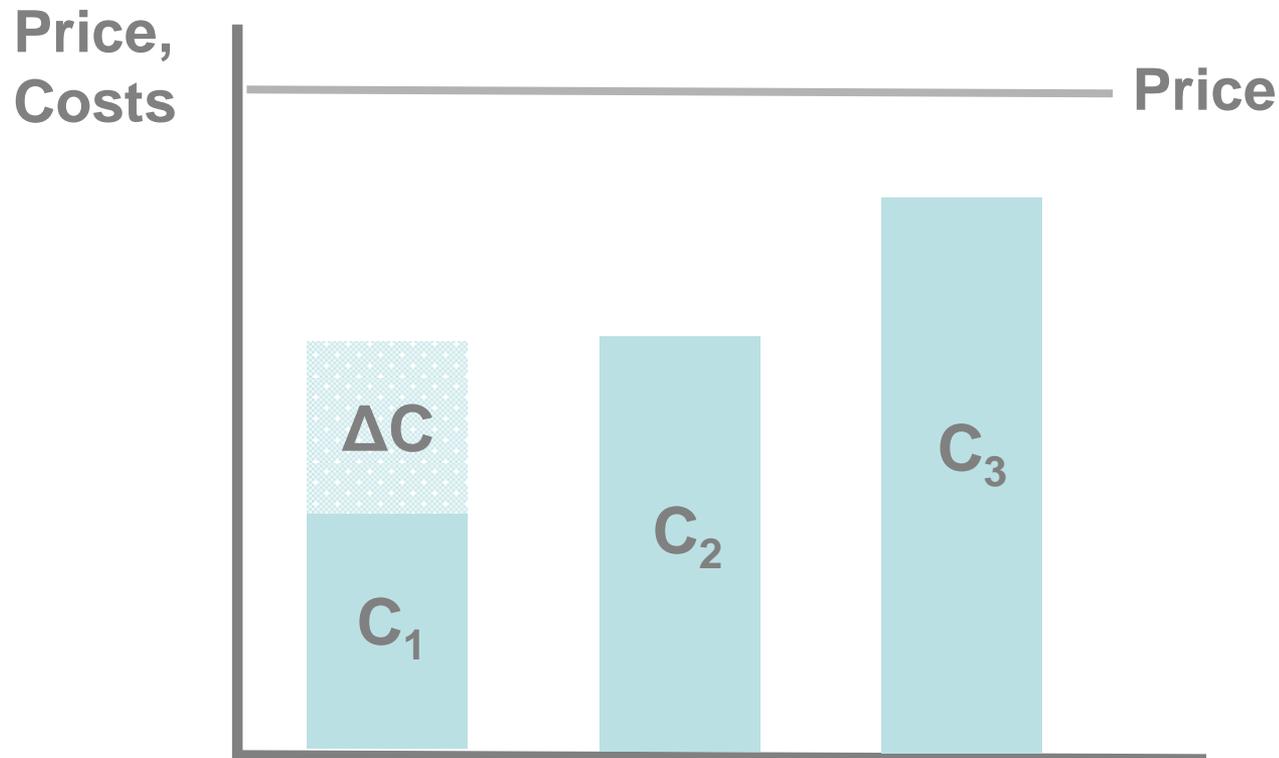
- Winner of tender is typically paid its bid (*first-price auction*)
- Offers to customers are private
- Bidders face incentives to mark-up their bids if there uncertainty on competing bidders (e.g. presence, costs, quality)
- Optimal bid based on standard trade-off between (expected) quantity and profit
- Outcomes resemble ordinary markets with differentiated goods

### Descending-price Auction

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- Also known as *open outcry* auctions
- Winning price (largely) determined by runner-up bidder
- Outcome is *as if* winner is paid the bid of the second ranked bidder (*second-price auction*)
- Margins of losing bidders very low
- Suitable framework if bidders have accurate information on characteristics of competing offers (cost and value to customer)

# Bidding in DA: case with cost asymmetries



## Assumptions

$$C_3 > C_2 > C_1;$$
$$\Delta C = C_2 - C_1$$

## Outcome

$$P_1 = C_2$$
$$M_1 = \Delta C$$

# Nature of price effects from merger

## Sealed-bid Auction

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- Price effects based on traditional analysis for differentiated pricing (e.g. “UPP”)
- If Firms A1 and A2 merge, price increase by A1 will be a function of
  - **Margin** of A2
  - **Probability diversion ratio** (i.e. fraction of reduction of A1's probability of winning that is captured by A2)
- Resulting price increase well below level of margins
- All bids with positive diversion are affected

## Descending Auction

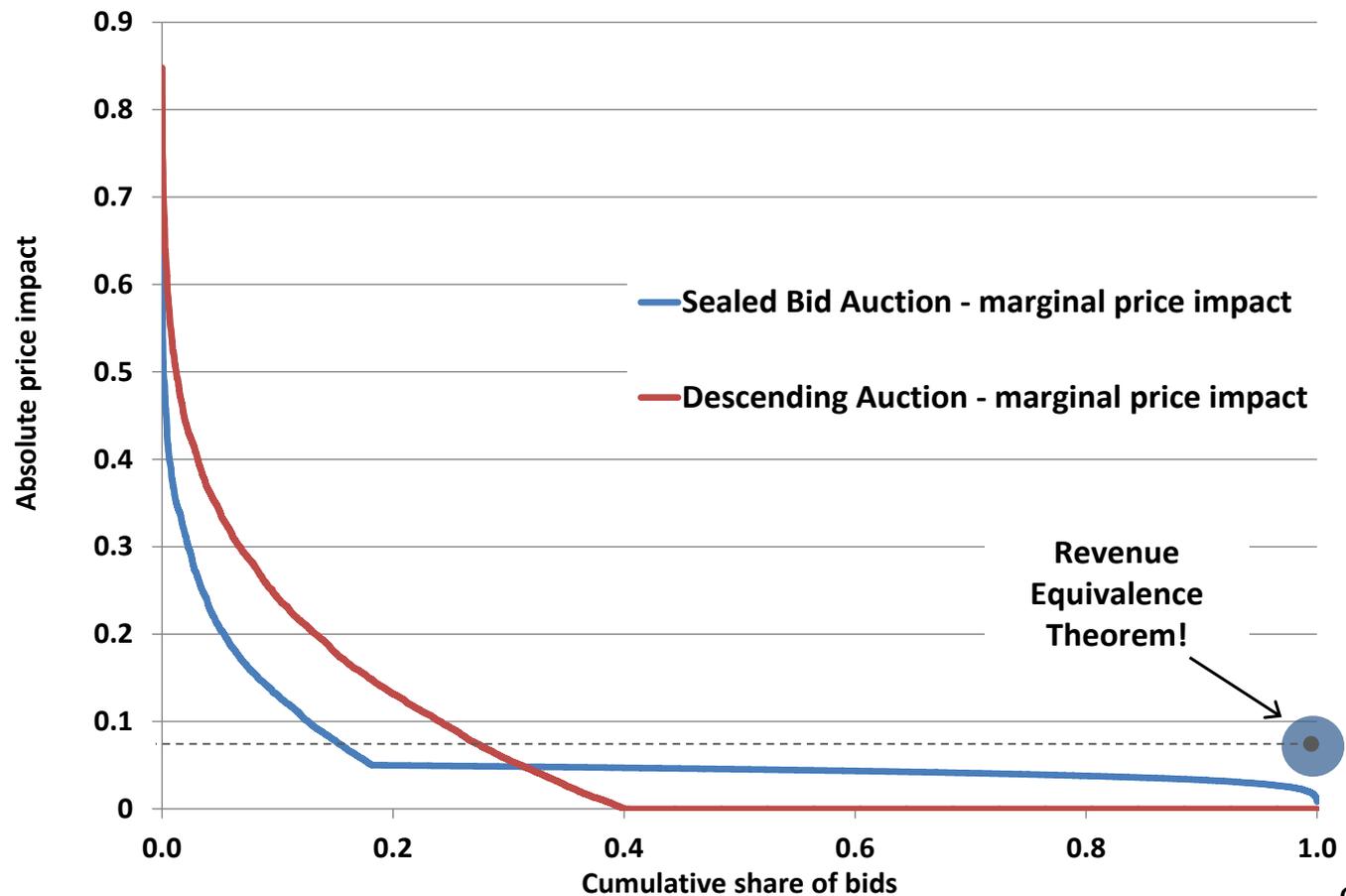
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- Price effect determined by difference in surplus ( $V-C$ ) between Bidder #2 and Bidder #3
- Can proxy this effect by looking at average margins made by Bidder 2 in *other tenders* where Bidder 2 wins and Bidder 3 is the runner-up (given that **winning margin = difference in surplus**)
- Relationship between winning margins and price effect depends on underlying distribution of surplus across bidders
- Only bids where merging parties are #1 and #2 affected (unless a product is discontinued)

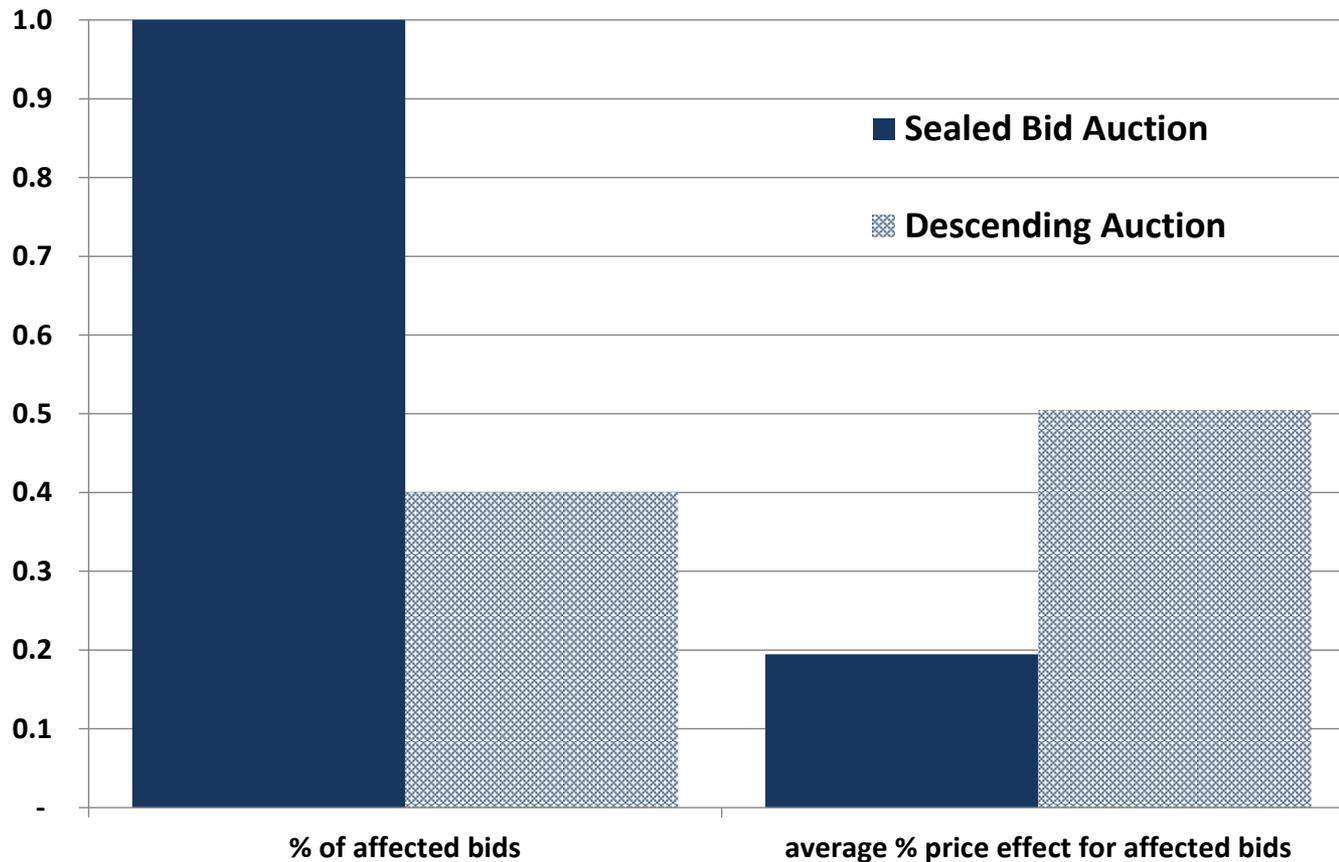
# A simple Montecarlo simulation (1)

## Parameters

- Simulation of 10,000 auctions
- Costs uniformly distributed between 0 and 1.
- Number of bidders goes from 5 to 4 ("merger")



## A simple Montecarlo simulation (2)



# Implications for merger assessment

- **Cannot *mix & match* predictions from the two frameworks**
  - Assume relative moderate price effects (as in SBA), but also that only a few bids (where parties are #1 and #2) are affected (as in DA)!
- Useful to have clarity on which framework is appropriate, to guide empirical analysis
  - how decisive is runner-up data?
  - how useful is participation/shortlist analysis?
- Qualitative evidence on tenders (e.g. on information available to bidders), and margin data (e.g. losing margins) helpful to inform choice of framework
  - *GE/Alstom*: runner-up data proved to be subjective/unreliable; level of losing margins not consistent with DA
- It may be possible to assess unilateral effects under both frameworks
  - Robustness check carried out in *GE/Alstom*

## 4. Targeted customers

- One common feature of bidding markets is that pricing is highly individualised ("targeted customers")
- Unilateral effects may be targeted on a subset of customers with similar competitive conditions
  - Bidders need to be able to condition their bidding behaviour on observable characteristics (e.g. size of buyer (*Staples/Office Depot*); location of buyer (*GE/Alstom*))
- Implications
  - Appropriate definition of the market may be relatively narrow
  - Empirical analysis needs to look at relevant sample of bids
  - Supply side substitution and/or entry by other bidders?
  - Remedy design?

# Part II: Overview of empirical analyses

# Empirical analyses in recent EC mergers

- Outline:
  - Data collection (type of data and data sources)
  - Quantitative techniques
- Illustration of techniques with recent cases:
  - *Plastic Omnium/Faurecia* (2016): car equipment (e.g. bumpers)
  - *Staples / Office Depot* (2016): office stationary
  - *GE / Alstom* (2015): gas turbines
  - *Baxter / Gambro* (2013): medical equipment

# Data collection: type of data

- Evidence from bidding events can in principle allow for the construction of a very rich dataset
  - Data on presence of bidders at different stages of the tender (e.g. budgetary / firm offer / shortlisting / runner-up)
  - Detailed evidence on product characteristics by tender
  - Evidence on buyer characteristics by tender (e.g. geography, size)
  - Evolution of bids over the course of the tender
  - Expected costs of providing the product for each tender
  - Expected margins if tender is awarded
- Constructing a high-quality dataset can be time-consuming, and partially depends on how data is recorded by parties
  - The more sophisticated the data analysis, the better the underlying data needs to be!

# Data collection: some examples

Customers/Tenders characteristics	Possible data sources
<p><b>Big customers/few number of tenders per year</b> (ex: power plants in GE/Alstom, car manufacturers in Plastic Omnium/Faurecia)</p>	<ul style="list-style-type: none"> <li>○ Parties: Interviews with sales people</li> <li>○ Parties/EC: CRM system (price proposed, cost, expected margins)</li> <li>○ Parties/EC: generally good internal documents on the competitive landscape/information structure for each tender</li> <li>○ EC: also possible to collect information directly with customers (e.g. Plastic Omnium/Faurecia)</li> </ul>
<p><b>Fragmented customers/many tenders per year</b> (e.g. hospitals, schools, universities, for office supply in Staples/Office Depot)</p>	<ul style="list-style-type: none"> <li>○ Parties: Interviews with sales people</li> <li>○ Parties/EC: Internal documents on each tender generally more difficult to collect, CRM systems not always used internally</li> <li>○ Parties: sometimes use of surveys on a representative sample of customers (factual questions on suppliers participation and characteristics of tenders)</li> <li>○ EC: may be possible to collect tender information with e-questionnaires (important to have good contact details for customers)</li> </ul>

# Participation analysis

- If tender participation is costly, selective, and indicative of product fit, then evidence on participation is informative on closeness across bidders
- How often are the merging parties participating against each other in tenders? (extension to shortlist data, if available)
- Examples of closeness between Parties:
  - *GE/Alstom*: several tenders with only 3 participants, Alstom is the second bidder that GE met the most often, behind Siemens, but significantly above MHPS and Ansaldo
  - *Staples/Office Depot*: the Parties and Lyreco were the main participants in tenders for international contracts
- Example of geographic market definition (local markets): *PO/Faurecia*
  - Supply-side (focus on production facilities): the vast majority of bumpers manufactured by the Parties are delivered within a short distance
  - Demand-side (focus on customers): collection of tender data for each customer (suppliers invited, submission of a binding offer, shortlisted bidders, winners)
    - Results: suppliers invited are within a certain geographical radius (even more so for the bidders that submit a firm offer, shortlisted bidders, and winners)

# Win/Loss analysis

- When one firm participate in tenders, how often does it lose to the other merging party?
- Examples :
  - *GE/Alstom* : Parties often lost to each other (in both directions)
  - Similar findings in *Staples/Office Depot* for tenders for international contracts
  - *Baxter/Gambro* (market for haemodialysis): most tenders lost by Gambro were won by Fresenius, and Baxter won only very few tenders lost by Gambro

# Probit analysis

- Does participation by one party affect the probability of the other winning (controlling for other factors that may also affect the probability of winning)?

- GE/Alstom: an initial look at the data suggests that it does

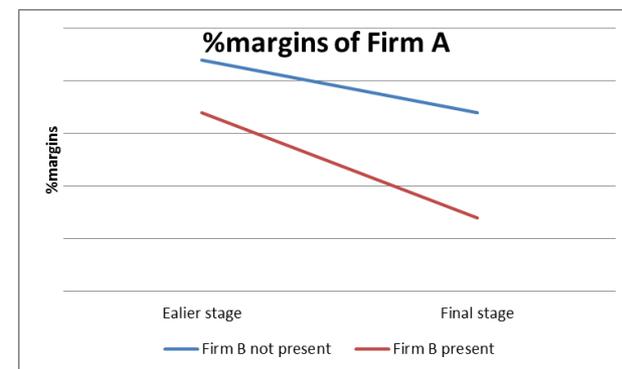
## Initial variation in the data (win rate of GE)

Tenders where Alstom does not participate	[X]%	$X > Y$
Tenders where Alstom participates	[Y]%	

- Question: other factors different from Alstom's participation may also affect GE's win rate  $\Rightarrow$  necessary to perform an econometric probit analysis to take into account these other factors
  - Data requirement: presence of other competitors (Siemens, MHPS, Ansaldo), cost for GE to provide the product to customers (control for scope/quality), other tender characteristics
  - GE/Alstom: the econometric probit analysis showed that Alstom's presence is significantly associated with a lower probability of winning a tender by GE

# Margin analysis

- Does participation by one party affect the (expected) margin of the other merging party (controlling for other factors that may also affect the expected margins)?
  - Similar methodology and data requirements as in the probit analysis (also used in GE/Alstom)
- Also possible to look at the margins at the different stages of the bidding process
- Used in *GE/Instrumentarium* (and GE/Alstom)
  - Example from *GE/Inst.* (France):
    - Average discount offered when Inst. is participating= [35-45]%
    - Average discount when Inst. is not participating: [25-35]%
    - Bigger discounts when Inst. is participating
    - Regression analysis: [5-10]% effect on discount when Inst. is present



# Analysis under a descending auction

## **Identification of tenders where the Parties were winner and runner-up:**

- These are the tenders affected by the merger in that framework
- GE/Alstom:
  - Uncertainty in runner-up data provided by the Parties (and level of losing margins not consistent with a descending auction)
  - Reconstruction of missing runner-up data by EC (information collected from internal documents of the Parties, competitors and customers information also collected)

## **Measure of price effects:**

- Principle: for the tenders where the Parties and #1 and #2, the price effect is determined by the difference (in cost/surplus) between Bidder 2 and Bidder 3
- Proxy: look at average margins made by Bidder 2 in other tenders where Bidder 2 wins and Bidder 3 is the runner-up

**Importance of product discontinuation:** anti-competitive effects spread to all tenders where the discontinued product could have expected to be the winner or the runner-up, independently of the ranking of the other merging party

# Empirical tools for unilateral effects in tenders

Analysis	Questions that can be addressed
Participation	<ul style="list-style-type: none"> <li>○ Is (firm) participation indicative of product fit and of closeness?</li> <li>○ How often do the parties meet?</li> <li>○ How concentrated are tenders where the parties meet?</li> <li>○ <i>Cases: GE/Alstom, Staples/Office Depot</i></li> <li>○ Note for <i>PO/Faurecia</i>: useful for geographic market definition (local market)</li> </ul>
Win / loss	<ul style="list-style-type: none"> <li>○ How often do the Parties lose to each other?</li> <li>○ Do the Parties have a significant impact on the probability of each other being awarded a tender?</li> <li>○ <i>Cases: GE/Alstom, Staples/Office Depot</i></li> </ul>
Probit	<ul style="list-style-type: none"> <li>○ Does participation by one party affect the probability of the other winning, in econometric analysis (controlling for other factors)?</li> <li>○ <i>Case: GE/Alstom</i></li> </ul>
Margins	<ul style="list-style-type: none"> <li>○ Are margins affected by participation by the other party (controlling for other factors)?</li> <li>○ Is the evolution of margin at different stages of the bidding process affected?</li> <li>○ What is the level of gross margins?</li> <li>○ <i>Case: GE/Alstom</i></li> </ul>
Winner/runner-up	<ul style="list-style-type: none"> <li>○ Relevant mainly for descending auction</li> <li>○ Number of tenders when the merging parties are winner and runner-up</li> <li>○ Price effect measured by looking at average margins made by Bidder 2 in other tenders where Bidder 2 wins and Bidder 3 is the runner-up</li> <li>○ <i>Case: sensitivity analysis in GE/Alstom</i></li> </ul>

# Reading

For further background on *GE/Alstom* case, see A. Claici, D. Coublucq, G. Federico, M. Motta and L. Sauri, "Recent Developments at DG Competition: 2015/2016", *Review of Industrial Organization*, 49, 2016.

Annex 1 of *GE/Alstom* (public version of Decision and annexes available soon)