Mergers: unilateral effects

Kate Collyer
Deputy Chief Economist

1

Aim for the session

- To provide a practical understanding of the main concepts we use in the economics of unilateral effects
- To illustrate these concepts with relevant cases from UK/EU merger control
- Case studies

2

Outline

- **The substantive merger test in EU/UK law**
- **The counterfactual**
- **Differentiated vs non-differentiated markets**
- **Methodologies for estimating likely merger effects**
- **Assessing merger efficiencies**

3

The substantive merger test in EU/UK law

- **EU substantive test**
  - Significant Impediment to Effective Competition
- **UK substantive test**
  - P1 v P2 legal standard
  - *Substantial* lessening of competition (Global v CC, 2013)
- **Countervailing factors: Entry, buyer power and rivalry enhancing efficiencies**
- **Relevant customer benefits**

4

The starting point...

5

The counterfactual

- **A tool for our competitive assessment**
- **When might the counterfactual depart from the pre-merger situation?**
  - Exiting firm
  - Loss of a potential entrant
  - Competing bids and parallel transactions

6

Failing firm

- **Three limbs:**
  - Would the firm have exited?
  - Would there have been an alternative purchaser/no less anti-competitive acquisition?
  - What would have happened to the assets (EU) or sales (UK) of the exiting firm?
- **All three conditions must be satisfied for a failing firm defence**
- **Evidence from accounting info, internal documents, third parties**

7

Failing firm

- **Recent cases:**
  - Optimax/Ultralase (2013) CC
  - Nynas/Shell (2013) EC
  - Aegean/Olympic airlines (2013) EC
  - Alliance/IBA (2014) CC

8

CMA
Competition & Markets Authority

Next step: predicting the future...

9

CMA
Competition & Markets Authority

Introduction: basic approach

- **Understand how the market operates**
  - How do consumers behave? What are their preferences?
  - Are products homogeneous or differentiated?
  - How do firms compete?
  - Understand the price formation mechanism
  - Are firms operating upstream or downstream?
  - Are there important capacity constraints?
  - What does the cost structure look like?

10

CMA
Competition & Markets Authority

Homogeneous products

CMA
Competition & Markets Authority

Homogeneous products

- **Standardized products and no brands, focus on the supply side**
  - Unilateral effects only if the merged firm can significantly reduce the available supply and thereby drive up the market price if capacity is fairly tight and demand is not very elastic
- **Analyse costs and benefits of closing a plant**
  - Market definition tools often useful

Cases

- **Pork pies: Pork Farms/Kerry Foods**
  - CC's analysis focused on capacity and barriers to entry/expansion

- **Industrial chocolate: ADM/Cargill**
  - Commission's analysis focused on using transaction data to identify the relevant geographic market, current and future capacity and barriers to entry

- **Beverage cans: Ball/Rexam**
  - Commission's analysis focused on customer-centric catchment areas for geographic market definition and analysis of capacity shares and barriers to entry

13

Differentiated products

TESCO · Sainsbury's · MORRISONS · ASDA
Waitrose · Iceland · YOUR M&S · farmfoods
NETTO · Somerfield · BUDGENS

14

CMA
Competition & Markets Authority

Differentiated products

- **Focus on differentiated Bertrand**
  - Different approach for quantity competition
- **Focus on price competition, but there may be non-price competition (QRS)**
  - Retail mergers (Sports Direct/JJB Sports, HMV/Ottokars, supermarket mergers)
  - Strategic responses to rivals (Carl Zeiss Jena/Bio-Rad)
  - Focus may be ok to the extent that other aspects of competition are more intense when there is more price competition.

15

CMA
Competition & Markets Authority

Markets without posted prices

- **Bargaining**
- **Bidding markets**
- **Need to adapt our approach**

16

Cases

- **General Electric/Alstom**
  - Commission analysed bidding data to assess the intensity of competition and potential for unilateral effects.

- **Electrolux/GE (home appliances)**
  - DoJ analysed the effect of the merger on two channels. For the contract channel they looked at market shares and quote data.
- **Diebold/Wincor**
  - CMA analysed bidding data and looked at evidence on the credibility and competitive strength of the suppliers.

17

Innovation

- **Halliburton/Baker Hughes (DoJ)**
  - Merger between 2 of the “big 3” oilfield services businesses.
  - DoJ concerned that the reduction in competition could have resulted in adverse effects on future prices, service quality and possibly also on the quality and variety of innovation.
  - Parties argued the combined entity would have greater scale and scope to innovate.
- **Dow/Dupont (DG Comp)**
  - Parties active in the discovery, development, manufacture and distribution of new pesticides.
  - DG Comp was concerned that the merger would reduce incentives to innovate because new products would compete against the products of the merger party (ie cannibalisation).
  - Parties argued that the merger would the merger would increase innovation because it would increase the benefits that the firm can realise from its efforts (appropriability).

18

CMA
Competition & Markets Authority

Framework for the competitive assessment

- **Identify overlaps**
  - products and geographic markets
- **Rule out non-problematic markets**
  - informed by evidence on closeness of competition
- **Analysis of potentially problematic markets**
- **Analysis of efficiencies**
- **Analysis of barriers to entry/expansion**

CMA
Competition & Markets Authority

CLOSENESS OF COMPETITION

Evidence on closeness of competition

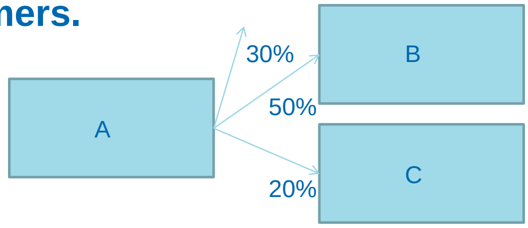
- Customer and competitor views
- Functional substitutability
- Internal competitor lists
- Market shares
- Surveys
- Summary measure: diversion ratio
- Price concentration analysis
- Entry and exit analysis
- Demand estimation/merger simulation

Market shares and HHIs

- Concentration captures number of consumers
  - Herfindahl-Hirschman Index (0 – 10,000)
  - Changes matter
- Need to consider
  - Extent of differentiation (binary fallacy)
  - Movements over time
  - Market definition
  - Level of variable profit margins

Diversion ratios

- If the price of product A goes up, what products do consumers divert to? (What is consumers' second choice?
- If there is a large diversion ratio, the overlap is large and firms fight head-to-head to win consumers.



23

Estimating diversion ratios

- Survey evidence.
- Sales data.
- Switching data.
- Win-loss data.

24

Surveys

- **Customer surveys can provide insights into preferences.**
- **Diversion question:**
  - What would you do if the price increased by 5-10%?
  - What would you do if this product/store were not available?
- **Need to think carefully about:**
  - Sample selection.
  - Question order and risk of biases.

PPIs – the basic idea

- **Pre merger if firm A raises price it loses some profit from switchers**
- **Post merger if firm A raises price it recaptures a proportion of this profit from the switchers that go to the other merging firm B**
- **This gives an incentive to raise price – "upwards pricing pressure" (measured by PPI)**
- **PPI can be measured by the margin multiplied by the diversion ratio – the value of sales 'internalised' by the merger**
- **PPI is similar conceptually to a marginal cost shock**

Pass-through

- How far prices actually rise depends on how much of the 'cost shock' is passed through to final prices
- This depends on the nature of demand and competition
- In principle pass through could be measured empirically - more typically it is assumed or not considered explicitly

PPI – incentive to raise prices

- Once the firms merge Firm A needs to take account when pricing that each additional sale it makes has an opportunity cost (an externality)
- This opportunity cost is the probability that Firm B would have made the sale instead multiplied by the profit it would have made on the sale (the margin)

$$\bar{t}_A \equiv \frac{d\pi_B}{dX_A}$$

$$\bar{t}_A \equiv \frac{d\pi_B}{dX_B} \cdot \frac{|dX_B|}{|dX_A|}$$

$$\Rightarrow \bar{t}_A = (\bar{P}_B - \bar{C}_B) \cdot D_{AB}$$

Pass-through - theory

The pass-through of a cost shock to price depends on the nature of demand and competition

How demand elasticity changes as prices increase (curvature of demand)

- As Firm A price increases do proportionally more customers decide to switch away?
- Linear vs. isoelastic demand?

How diversion between the merging firms changes as price increase

- As the prices of both firms increase do consumers preferences remain the same?

Feedback between the pricing decisions of the two firms

- When Firm A raises its price, switchers will increase demand for Firm B's products causing it to raise its price too
- When Firm A raises its price its margin will increase. This increases the opportunity cost to Firm B of selling additional units / increases its incentive to raise price ('margin feedback')

Feedback from the pricing responses of competing products

- Will other firms raising prices create additional pricing pressure?

PPIs – the different concepts

- **GUPPI**
  - **Very simple**
  - **Measures the key element of interest**
  - **More easily applied in mergers between firms with multiple brands in the same market**
- **IPR**
  - **Intuitive – provides an estimate for the price rise**
  - **But at the cost of requiring info/assumptions on demand/pass-through**
  - **The precision of results can be misleading**
- **UPP**
  - **Allows analysis of the efficiencies that would be required to outweigh the upward pricing pressure**
  - **Simple to calculate, but hard to think through links with the SLC test**

PPIs

- **Generalised Upward Pricing Pressure Indicator (GUPPI)**

  = Margin (m_2) x Diversion Ratio (d_{12})

  (assuming roughly equal prices)
- **Illustrative Price Increase (IPR)**
  - With linear demand = md/(2(1-d))
  - With iso-elastic demand = md/(1-m-d)
- **Upwards Pricing Pressure**
  - UPP>0 if md/(1-m) > e

31

Example: Asda/Netto

1. **Identify overlaps. Rule out non-problematic areas.**
2. **(a) Estimate (symmetric) IPRs:**
   - Estimate expenditure-weighted DRs using consumer surveys at all remaining Netto stores.
   - Estimate (symmetric) IPR by combining with variable profit margins.
   - Rule out non-problematic areas.
2. **(b) Estimate revised IPR for each remaining local area.**
   - Survey Asda stores to get diversion ratio.
   - Combine with diversion ratios from Netto to Asda.
   - And with short-run variable profit margins for Asda and Netto.
   - And with pre-merger relative prices of the merger parties.

32

Example: Ladbrokes/Coral

1. **Identify overlaps. Rule out non-problematic areas.**
2. **(a) Estimate (symmetric) IPRs:**
   - Estimate expenditure-weighted DRs using consumer surveys at all remaining Netto stores.
   - Estimate (symmetric) IPR by combining with variable profit margins.
   - Rule out non-problematic areas.
2. **(b) Estimate revised IPR for each remaining local area.**
   - Survey Asda stores to get diversion ratio.
   - Combine with diversion ratios from Netto to Asda.
   - And with short-run variable profit margins for Asda and Netto.
   - And with pre-merger relative prices of the merger parties.

33

Price concentration analysis

- **Based on the structure-conduct-performance paradigm.**
- **log $P_{it} = \beta_0 + \beta_1 * MS_{it} + \beta_m * X_{it} + \varepsilon_{i?}$**
- **$100 * \beta 1$ captures the percentage change in price when one more fascia is present in the area, all else equal.**
- **Need to control for any other supply-side and demand-side factors that may also affect prices.**
- **Endogeneity: use IVs or fixed effects model.**

34

CMA
Competition & Markets Authority

Example: Rank/Gala

35

CMA
Competition & Markets Authority

Margin-concentration analysis in Rank/Gala

- **Method**
  - Fixed effects model of the relationship between casino variable profit margin, salaries and cost of promotions and number of competitors.
- **Results**
  - Increased local competition reduces casinos' margins.
  - No evidence of effect on salaries.
  - Evidence of an impact of local competition on promotion.
  - The number of competitors within 30 minutes reduces admissions and turnover.

36

Merger simulation

- **Predict equilibrium prices and quantities in the post-merger market structure.**
- **Data: prices, volumes for all major brands, costs.**
- **Step 1: estimate demand**
  - Different functional forms of demand: linear, log-linear, (nested) logit, AIDS.
  - Estimate own- and cross-price elasticities.
- **Step 2: calibrate demand**
  - Specify parameters such that calculated elasticities give the prices and market shares actually observed.

37

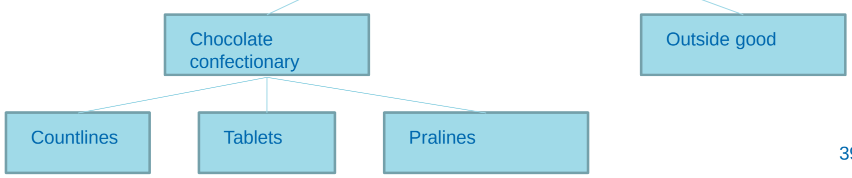
Merger simulation

- **Step 3: the supply side**
  - Usually Bertrand (it allows us to infer marginal costs)
- **Step 4: simulate the effect of the merger**
  - Adjust market shares to the post-merger situation
- **Extensions:**
  - Efficiency gains
  - Reactions of competitors
  - Entry or exit

38

Example: Kraft/Cadbury

- Primary overlap in supply of chocolate.
- Estimate a nested logit model.
- Assume Bertrand competition.
- Calibrate marginal costs for range of demand parameters.
- Test upper bound of the simulated price increase.



Example: AG Barr/Britvic

- Primary overlap in soft drinks.
- AIDS model to estimate diversion ratios.
- Estimate margins on goods to which consumers divert.
- Make assumptions about consumer demand.
- Infer the theoretically optimal price increase based on simplified representation of competition and outputs of the model.

ASSESSMENT OF EFFICIENCIES

41

Theory

- **Many types of efficiency gains:**
  - Rationalisation through reallocation of production
  - Economies of scale or scope
  - Investment
  - Sharing of know-how
  - R&D and innovation
  - Purchasing power
- **Some will be passed onto consumers, others will translate into larger profits.**

42

Practice

- **Will efficiencies enhance rivalry?**
  - Efficiencies must be timely, likely and sufficient; and
  - Efficiencies must be merger-specific.
- **Authorities more likely to take account of cost savings that reduce marginal costs.**
- **Recent case: Tradebe/Sita (CC, 2014)**

Example: Electrolux/GE

- UPP estimates:

Table 1 UPP estimates from Whinston's (2015) trial exhibits

	Ranges (%)	Cooktops (%)	Wall ovens (%)
For all customers			
Electrolux UPP	16	47	33
GE UPP	15	13	17
For contract channel customers			
Electrolux UPP	25	54	34
GE UPP	15	13	12

- Claimed variable cost savings: 3.25%
- The reduction in marginal costs that would be required to offset the likely unilateral incentive to raise prices would be much bigger than the claimed marginal cost savings.

CASE STUDY

45

Background

- Merger between two chains of laser eye surgery.
- Parties argue that one of the firms is on the verge of bankruptcy.

➢ As the competition authority, what evidence do you look for?

46

Evidence on counterfactual

- Deteriorating cash flow and need for an injection of funding.
- Additional funding not forthcoming, financial failure imminent.
- But, another buyer was interested in purchasing the business.

➢ Does not meet the criteria for a failing firm.

47

Competitive assessment

- The parties tell you that consumers are highly price sensitive and that the market is competitive.

➢ What evidence do you gather to assess the nature of competition?

➢ What evidence do you gather to assess closeness of competition?

48

Evidence on the nature of competition

- Consumers choose between the stores in their local area and are not willing to travel far.
- Prices are posted.
- Firms compete on location, price and quality of care.

➢ Spatial differentiation, with competition (mainly) on price.

Evidence on closeness of competition

- There are three main retail chains. All three overlap in all major UK cities.
- Firms 2 and 3 are the merger parties.
- Market shares:
  - Firm 1: 40%, Firm: 2 20%, Firm 3: 20%
- Internal documents suggest the three firms are one another's closest competitors.
- Rationale: close stores in overlapping area to save costs.

CMA
Competition & Markets Authority

Quantitative evidence

- **Survey of consumers gives direct evidence of diversion ratios:**
  - Firm 2 to firm 3: 65%
  - Firm 2 to firm 1: 15%

  - Firm 3 to firm 2: 55%
  - Firm 3 to firm 1: 20%

51

CMA
Competition & Markets Authority

Price concentration analysis

	Effect on price increase (Firm 2)	Effect on price increase (Firm 3)
Entry of one additional competitor with 45 minutes drivetime	- 8%***	-2%*
Entry of one additional competitor with 60minutes drivetime	-4%**	-1%*

52

What decision should the competition authority take?

Key take away

- **Critical first step in any merger is to understand the nature of competition**
  - Price formation
  - Capacity constraints
  - Differentiation (including extent of quality/vertical differentiation)
- **Need to keep checking that our approach to assessing the evidence fits the facts of the industry**

Cases:

- http://webarchive.nationalarchives.gov.uk/20140402142426/http://www.oft.gov.uk/OFTwork/mergers/decisions/2010/Asda
- http://webarchive.nationalarchives.gov.uk/20140402141250/http://www.competition-commission.org.uk/our-work/directory-of-all-inquiries/rank-gala
- http://webarchive.nationalarchives.gov.uk/20140402141250/http://www.competition-commission.org.uk/assets/competitioncommission/docs/2013/optimax-ultralase/final_report.pdf
- http://ec.europa.eu/competition/mergers/cases/decisions/m5644_20100106_20212_en.pdf

55

Cases (continued):

- http://webarchive.nationalarchives.gov.uk/20140402141250/http://www.competition-commission.org.uk/our-work/directory-of-all-inquiries/ag-barr-britvic
- http://europa.eu/rapid/press-release_IP-13-167_en.htm
- https://www.gov.uk/cma-cases/pork-farms-caspian-limited-kerry-foods-limited#final-report
- https://www.gov.uk/cma-cases/poundland-99p-stores-merger-inquiry#final-report
- http://webarchive.nationalarchives.gov.uk/20140402141250/http://www.competition-commission.org.uk/our-work/directory-of-all-inquiries/sportsdirect-jjb-sports
- https://assets.publishing.service.gov.uk/media/58ca7d7140f0b67ec80001e2/diebold-wincor-final-report.pdf

56

Articles:

- The economics of unilateral effects (Ivaldi, Jullien, Rey, Seabright, Tirole)
- Competition policy, theory and practice (Motta)
- Quantitative techniques for competition and antitrust analysis (Davies and Garces)
- Choosing among tools for assessing unilateral merger effects (Werden and Froeb)
- Antitrust evaluation of horizontal mergers: an economic alternative to market definition (Farrell and Shapiro)
- A robust test for consumer welfare enhancing mergers among sellers of differentiated products (Werden)
- Diversion ahead! Approximating diversion ratios for retail chain mergers (Walters)

57

Other useful information:

- Submissions of technical analysis: http://webarchive.nationalarchives.gov.uk/20140402141250/http://www.competition-commission.org.uk/assets/competitioncommission/docs/pdf/non-inquiry/rep_pub/corporate_documents/corporate_policies/best_practice.pdf
- Consumer survey evidence: http://webarchive.nationalarchives.gov.uk/20140402141250/http://www.competition-commission.org.uk/assets/competitioncommission/docs/pdf/non-inquiry/rep_pub/consultations/past/pdf/good_practice_guide.pdf
- Commentary on retail mergers:
- https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/284394/oft1305-ccV1a.pdf

58