Boots-Unichem

Merger Analysis in Locally Segmented Retail Markets

Roman Inderst
University of Frankfurt
& London School of Economics

Plan of Talk

- Horizontal (unilateral) effects analysis in geographically segmented markets
  - Market analysis on national or local level?
  - Measures of local market power?
- Vertical effects arising from retailers' control over access to local markets
  - Extent of buyer power? Implications?

Horizontal Analysis: National vs. Local

- National market shares uninformative with segmented and heterogeneous markets.
- But to what extent is a pure local analysis informative if there is no perfect “flexing” (in PQRS)?
- Suppose:
  - Local market with merger from N=2 to N=1.
  - Predicted local price increase 100%, but observed flexing 5%.
  - Does this invalidate the underlying approach?

NO!

Local Analysis under Non-Flexing

- Without flexing, uniform price level determined by conditions in all markets:
  - Firm A maximizes $$(p_A - c_A)\sum_{n \in N_A} D_n(p_A, p_-)$$
  - This yields with w_n=D_n/D the FOC $$\frac{p_A - c_A}{p_A} = \frac{1}{\sum_{n \in N_A}\left[\varepsilon_n w_n\right]}$$

Local Analysis under Non-Flexing

- With heterogeneous markets, both pre- and post-merger local FOCs will sometimes be "slack".
  - Formally
$$\frac{p_A - c_A}{p_A} < \frac{1}{\varepsilon_n}$$
  - Do not take this as prediction of a price increase in a particular local market,
  - but as a measure for how much *overall* constraint is relaxed!

Local Analysis under Non-Flexing

- Should then not 5 reductions from "4 to 3" have more weight than 1 from "3 to 2"?
- Ignores second key aspect of "significance": Error?
- In sum: Even in the absence of flexing, conducting locally a "standard analysis"
  - correctly identifies relaxation of constraint
  - and places right emphasis on "significance".

Measuring Local Market Power

- Two issues of particular interest:
  - The (additional) use of market share information.
  - The use of diversion ratios.
- Diversion ratios from survey evidence
- Not without criticism:
  - E.g., that average consumer is not marginal consumer.
  - In addition, also “inframarginal” consumers impose constraints due to multi-unit purchases.

The Use of Diversion Ratios

- A and B merge. Take (normalized) linear demand

$$q_B = a_B - p_B + d_{AB} p_A + d_{BC} p_C .$$

- Holding price of C constant, predicted % price increase

$$\Delta p = m \frac{d}{2(1-d)} .$$

The Use of Diversion Ratios

- First guess or “consistency check” with (adjusted) market shares d=1/(N-1)?
- Problem:
  - “Total diversion ratio” is smaller than one.
  - Precise formula: Strictly lower

$$d = \frac{\gamma}{1+\gamma(N-2)}.$$

The Use of Diversion Ratios

- Consider also “total diversion ratio” in market.
- If δ_{AB}+δ_{AC}=1 observed, then “error”

$$\frac{\delta_{AB}}{d_{AB}} = \frac{1+\gamma_{BC}^2}{\gamma_{AB}+\gamma_{AC}} > 1.$$

The Use of Diversion Ratios

- Example 1: Margin of error?
  - $N=5$, $c=0.5$, $\alpha=1$, $\gamma=0.4$
  - Generates $m=17\%$ and own-price elasticity of 0.73.
  - If *model* was right, predicted price increase would be 11%.
  - Setting d equal to observed $\delta=1/4$ yields 17%.

The Use of Diversion Ratios

- Example 2: Consistency check
  - N=5, d=24%, m=20%. Predicts increase of 3.1%.
  - Back out γ=0.86.
  - Only consistent with own-price elasticity of 1.1

$$\frac{p-c}{p} = 20\%,$$

$$p = \alpha - q[1+\gamma(N-1)],$$

$$p = \frac{\alpha(1-\gamma) + c[1+\gamma(N-2)]}{2+\gamma(N-3)}.$$

The Use of Diversion Ratios

- Flexible alternative under "full coverage" ($d_{AB}+d_{AC}=1$).
- Group consumers wrt "1st/2nd best choice": M_{nm}.
- Each "submarket" modelled a la Hotelling.
- Diversion ratios depend on M_{nm} *and* location of "critical types" x_{nm}.

Market Shares (and Diversion Ratios)

- (A,B) merge, C potentially larger (lower "marg. costs").
- Observation 1: Diversion ratio can be >1/2.
- Approach 1: Take symmetric formula with right m,d.
- Approach 2: Take into account asymmetries (reflected in market shares).
- Finding: Approach 1 overstates merger impact.

Vertical Analysis

- Controlling access to local markets
  - Extent of buyer power?
  - Competitive harm arising from buyer power?
- Extent of buyer power?
  - Inderst/Mazzarotto 2006
  - Empirical work on drugs (e.g., Ellison/Snyder 2002)

Consequences of the Exercise of BP

- Suppliers: Market structure, variety, R&D etc.
  - Concerns.
  - But these are often (theoretically) not well founded.
- Other retailers: “Waterbed effect”
  - No concerns?

Waterbed Effect

- Common criticism: No “logical foundation”.
- But:
  - Suppose A gets additional discount. Partially passed on.
  - Reduces share and volume of B.
  - *If* discounts are related to size, then B’s purchase price up.
- Elaborations:
  1. A gets discount based on past growth (acquisitions / organic).
  2. Amplification via adjustment of upstream/wholesale markets.

Waterbed Effect

- Consumer harm?
- In the "simplest possible" model that generates size-related discounts, this is the case if

$$m_I \frac{2-m_I}{1+m_I} < \frac{1}{3t} w_I .$$

  - with t from Hotelling model,
  - w_I the wholesale price of an independent retailer
  - and m_I the local market share of an independent retailer.

Key Points

1. Absence of (full) flexing does not invalidate local competitive analysis!
   - "Overall" constraint. "Statistical" significance per market.
2. Diversion ratios and market shares
   - "Aggregate diversion ratio".
   - Suitable models that allow joint use of diversion ratios and market shares.
3. Waterbed effect
   - Issue is not logical consistency, but sign of overall impact!

Boots-Unichem

Merger Analysis in Locally Segmented Retail Markets

Roman Inderst
University of Frankfurt
& London School of Economics