The Role of Economists and Economic Evidence in Merger Analysis

How economics can help you investigate and review mergers regimes

MWG Teleseminar, December 19, 2013
Investigative Techniques Handbook for Merger Review

• Chapter 1: Investigation Tools Overview

• Chapter 2: Planning a Merger Investigation

• Chapter 3: Developing Reliable Evidence

• Chapter 4: The Role of Economists and Economic Evidence (updated in April 2013!)

• Chapter 5: A Private Sector Perspective
Chapter 4: The Role of Economists and Economic Evidence

Highlights:

1. The role of economist/economics in planning merger investigation

2. The economist’s toolbox: qualitative evidence and quantitative methods
   - Price correlation and time-series analysis
   - Diversion ratios
   - Upward Price Pressures
   - Natural events/shock analysis
   - Demand estimation

3. Requirements for a solid quantitative analysis

4. Glossary, further resources & case studies
Using economics in the early stages of an economic investigation
ICN MWG Economic Analysis in Merger Webinar

Rivalry in merger analyses –
Cases from Brazil

December 19th, 2013
Importance of rivalry in antitrust assessment

Brazilian cases: BRF and Via Varejo

- Economic issues to complement the ICN MWG updated Chapter 4 on The Role of Economists and Economic Evidence in Merger Analysis (Sections 3.1, 3.4.1, and 3.4.2)
Understanding the economics of the market

The initial goal is to identify the state of competition → it helps to assess the competitive effects that are attributable to the merger

- **Type of parties’ products that compete with each other**
  - Homogeneous → capacity constraints and price are important
  - Differentiated → degree of substitutability is very relevant, and price may be less important than other product’s features. Market share is an imperfect indicator regarding competitive position of the merging parties

- **How are the products sold?**
  - Listed prices
  - Negotiations
  - Bidding processes

- Are there barriers to entry and expansion?
- Are imports relevant?
- Are there any merger-specific efficiencies?
- Liquid effect must be non-negative: even in the presence of harmful effects on competition, there may be some countervailing efficiencies
- **Is remaining rivalry strong enough?**
Potential theories of harm:

- Unilateral Effects: merging firms may find it profitable to alter their behavior independently of what their competitors do

- Coordinated Effects: a merger may diminish competition by enabling or encouraging post-merger coordinated interaction among firms
  - Tacit collusion has been more discussed in partial ownership cases

Different economic analyses should be considered

- Quantitative and qualitative evidence should be complementary and consistent

- Detailed analysis and sophisticated methods should be applied once main antitrust issues have been identified

- Formal economic models are important, but must be based on “real world” features: beware of oversimplified hypothesis

When there are too many markets affected, an objective threshold could be created to easily clear the less problematic cases

- Time and resources can be saved to be applied in the most complex issues, that present potential harm
The role of rivalry

Rivalry: different dimensions beyond price

- **Product differentiation and brand fidelity**
- **Innovation**
  - Dynamic markets: competitors and products can be replaced
- **Capacity**
  - Is there idle capacity?
  - How easy is it to expand capacity?
- **Locational differentiation**
  - How well-located are competitors
- **Mix of products**
  - One-stop-shop business models
- **Price policy and payment conditions**
  - Discount Policy (volume, e.g.)
  - Competitors can provide credit
- **Distribution channels**
- **Vertical integration**
- **Existence of a maverick firm**

Even in oligopoly markets, remaining rivalry can be strong enough to discipline the market in price and other dimensions
Via Varejo case: rivalry in different dimensions

Via Varejo = Casas Bahia + Ponto Frio/GPA (2009)
Largest retail company in Brazil

- Relevant markets under analysis:
  - Retail market for durable goods at the municipal level → significative competitive concerns
  - Online market for durable goods at the national level → no competitive concerns

- Competitive variables:
  - Distribution channels: online and offline
  - Distribution centers and logistics
  - Store location
  - Brand: marketing
  - Mix of products
  - Economies of scale
  - Payment conditions: credit

- Rivalry conditions mitigated higher concentration concerns
  - Online sector intensifies competition also in offline segment
  - Intense negotiation with big suppliers: tight retail margins
  - Intense price competition
  - Competition at national level impacts local competitive dynamics

Thresholds:
- Via Varejo market share < 40%
- Preceding similar case (Máquina de Vendas): 2 competitors with market share > 20%
Perdigão and Sadia merger forming Brasil Foods (2009)

Two main food producers and longtime industry rivals in Brazil

- Significant competitive concerns in 15 markets, such as: ham, sausage, mortadella, frozen pizza, hamburger, margarine and lasagna
  - Concentrations ranging from 30% to impressive 90%

- Competitive variables:
  - Firms were downstream and upstream vertically integrated
  - Economies of scale and scope
  - Portfolio power
  - Brand fidelity: Sadia and Perdigão are leader brands
  - Distribution network
  - Remaining rivalry: no idle capacity
  - Price is also important

BRF merger was approved with remedies: assets enough to create a new “deputy leader”, restoring competitive environment
Final remarks

In many cases, remedies are designed to favor new competitors or intensify existent rivalry

Too many specificities must be considered, analysis should be case by case and focused on main antitrust issues

“All happy families are alike; each unhappy family is unhappy in its own way.”

(Leo Tolstoy's Anna Karenina opening, 1878)
Types of economic evidence in merger review
MERGER ANALYSIS: Levels of Evidence

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ICN Handbook Guidance

- ICN Investigative Techniques Handbook discusses types of economic evidence:
  - Qualitative evidence on market definition, competitive effects, efficiencies, and entry
  - Quantitative techniques for analyzing same issues
    • Simpler quantitative techniques
    • Advanced techniques

But how should a competition agency choose which type to use?
Guidance in Handbook

- Handbook offers two principles:
  - “As a general rule, less complex analyses should be undertaken first”
  - “Depending on the quality of the data and the expected balance between benefits and costs, ... simpler analyses may be complemented with more sophisticated techniques”
Levels of Evidence

• This suggests an ordered rank of types or levels of evidence

• For any issue, three broad levels of evidence
  – Level 1: Direct qualitative evidence
  – Level 2: Analysis of critical variables
  – Level 3: Econometric modeling

• To illustrate, consider market definition
Level 1: Direct Evidence

Types of Direct Evidence
- Pricing interactions
- Company documents
- Customer interviews
- Price correlation analysis
- Product characteristics
Level 2: Critical Variables

- Types of Critical Variables
  - Critical loss calculation
  - Diversion analysis
  - Demand elasticity and cross-elasticity
  - UPP
Level 3: Econometrics

- **Types of Econometric Modeling**
  - Reduced form estimation
  - Structural models of price/quantity/quality equilibrium
  - Merger simulation
Why “Levels”?  

- These can be ranked or ordered by:

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<th>Least</th>
<th>Moderate</th>
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<td><strong>Costly to use</strong></td>
<td>L1</td>
<td>L2</td>
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<td><strong>Strength of Proof</strong></td>
<td>L1</td>
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<td><strong>Audience</strong></td>
<td>L3</td>
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- Implies that benefits in terms of “proof” rise directly with costs

- But audience for higher level likely to be smaller
Example: Staples-Office Depot Merger


- Key question was market definition:
  - Did “office supply superstores” (OSS) by themselves constitute an antitrust market?
  - Only 3 such stores, but many retailers of same goods

- Two types of evidence developed
  - One “demonstrated,” the other “proved,” the result
  - Together, much more effective than either separately
Level 1 Evidence

• Level 1 demonstration took form of “natural experiment”
  – Identified local markets where one OSS faced either or both competitors
  – Compared prices on same items with and without these competitors
• Federal Trade Commission had company price data
  – Also had public advertisements of prices
Direct Price Comparison
Level 3 Evidence

- Econometric modeling analyzed pricing by Staples
  - Key empirical question was which specific competitors mattered in setting price: other OSS, non-OSS sellers?
  - Estimated pricing model on available data:
    \[ Price_1 = a + b \ OSS_2 + c \ OSS_3 + d \ NON-OSS_1 + e \ NON-OSS_2 \]

- Results showed statistically significant coefficients only on \( OSS_2 \) and \( OSS_3 \)
  - OSS affected each others’ prices, but not other sellers

- Implication was that OSSs by themselves were an antitrust market
Conclusions for Merger Analysis

• Type of analysis to be pursued is important decision
  ▪ Start with simple and less costly techniques
  ▪ Advance to others where necessary and feasible

• Audience and purpose matter:
  ▪ For internal agency purposes, all techniques can be undertaken, even simultaneously

• For external review and decision purposes:
  ▪ Adopt the approach that is most relevant and most likely convincing to a particular audience
  ▪ Use multiple levels of evidence that support each other
Further Information

- On natural experiments:

- On Staples:

- On econometrics in Staples:
  Ashenfelter, “Econometric Analysis in Staples,” in *The Antitrust Source*

- On Staples and on similar Whole Foods-Wild Oats merger:
  ICN Handbook, p. 69
Empirical analysis in practice
CARRYING OUT SIMPLE EMPIRICAL ANALYSIS IN PRACTICE: NATURAL EXPERIMENTS IN LEON’S/ THE BRICK

Nicholas Janota
Canadian Competition Bureau

ICN MWG Economic Analysis in Merger Review Webinar
19 December 2013

Disclaimer: The views expressed herein are my own, and do not necessarily reflect those of the Competition Bureau.
CASE STUDY: LEON’S/THE BRICK

• Two close competitors in the retailing of home furnishings (i.e. furniture, mattresses, appliances, electronics)

• At the time of the merger, Leon’s operated 74 retail stores across Canada and The Brick operated 231 stores

• Two types of natural experiment analyses carried out: cross section and entry/exit
CASE STUDY: LEON’S/THE BRICK

1) Cross Section Analysis

- The Brick

Area A vs. Area B

- Leon's
  - The Brick

2) Entry/Exit Analysis

- The Brick

Before vs. After

- Leon's
  - The Brick
POINT 1: IT MAY BE POSSIBLE TO ANSWER MULTIPLE EMPIRICAL QUESTIONS WITH A SINGLE STUDY (Section 4.2)

1) What is the degree of rivalry between Leon’s and The Brick?
2) What is the relevant geographic market for the retailing of furniture and mattresses?
3) What other competitors have an effect on Leon’s and The Brick?
POINT 1: IT MAY BE POSSIBLE TO ANSWER MULTIPLE EMPIRICAL QUESTIONS WITH A SINGLE STUDY (Section 4.2)
POINT 2: SIMPLE ANALYSES MAY YIELD POWERFUL INSIGHTS (Section 4.3)

- Plotting prices over time is a useful analytical exercise

More insightful (below)...

...vs. less insightful (above)
POINT 3: IT IS WORTHWHILE INVESTING TIME AND RESOURCES TO UNDERSTAND RELEVANT DATA SOURCES (Section 4.4)

• A robust and insightful natural experiment analysis often depends on the analyst’s ability to control for other factors that may be impacting demand and supply
  
  • Advantages to building a database on those factors early in a review (e.g. competitor database)

• A deep understanding of available demographic data can be leveraged across multiple investigations
POINT 4: ROBUSTNESS CHECKS ARE VALUABLE (Section 4.5)

- Important for verifying sensitivity of study results
- Can also be used to take a deeper dive into the data
- Questions addressed on Leon’s and The Brick through robustness checking:

1. Do different banners compete differently (i.e. premium banners vs. discount banners)?
2. Do competitive dynamics vary between urban and rural markets?
3. Do competitive dynamics vary among different product categories?
CONCLUSION AND QUESTIONS
Quantitative techniques and qualitative evidence in market definition
ICN Merger Working Group
Quantitative techniques and qualitative evidence in market definition

December 19, 2013
Sébastien Mitraille
Autorité de la concurrence – Deputy chief economist
Roadmap

● Introduction
  • Mergers between grocery store chains (Casino/Monoprix)
  • Mergers between brick producers (Bouyer-Leroux/Imerys)

● Specific issues to define relevant markets with local competition
  • Catchment areas / intensity of competition with heterogeneous suppliers
  • Product market definition within local markets

● Supporting qualitative evidence with quantitative analysis
  • Casino/Monoprix
  • Bouyer-Leroux/Imerys

● Conclusion & References
Introduction

- Two recent phase II investigations with intense implication of Chief economist team
  - 13-DCC-90 Casino/Monoprix RETAILERS
  - 13-DCC-101 Bouyer-Leroux/Imerys BRICK MAKERS
- Geographical dimension crucial to both, interacting with product market

- RETAILERS: grocery stores within big cities, in particular Paris
  - Local market power with heterogenous suppliers,
  - Distinction between Paris, Paris suburbs and big cities in other regions
  - Merger implied going from joint control of Monoprix (target) to single control by a major french retailer (Casino, buyer)
  - Issue: local market definition and competitive analysis within local markets taking into account product heterogeneity and the right change of profit when measuring potential change in prices (GUPPI – see ICN MWG Ch 4: 3.4.3.8 and glossary p. 58)

- BRICK MAKERS: Subjective preferences of consumers which potentially differ locally
  - Catchment areas defined around (few) production facilities (all next to clay quarries)
  - Outer walls bricks used in western France compete possibly with cement blocks
  - Inner walls bricks used in French Brittany compete possibly with dry walls
  - Issue: price differentials and economic shocks had to be isolated to confirm local product preferences reported in other evidence (e.g. customers surveys / industry studies)
Some background information on cases

- RETAILERS: merged entity market shares in 2012
  - In some areas in Paris (in red), joint market shares exceeded 80%
  - Few joint market shares <50% (in light pink)
  - Careful: administrative area is potentially misleading, but still informative

- BRICKS: merger yellow + red
  - Overlaps: Bretagne/Pays de la Loire (inner walls), Aquitaine (outer walls)

Market Shares of Casino + Monoprix in PARIS (Source: Opinion 12-A-01, summary sheet 4)

Location of brick factories in France (Source: Decision 13-DCC-101)
Some specific issues to define relevant markets with local competition

- **Catchment areas** (see new mergers guidelines of July 10, 2013)
  - **Catchment area**: area of a given radius centered on a production facility / distribution store
    - Radius depends on the type of facility and the geographic area considered
  - Drive time to retail store *increasing with store size* (20 minutes drive outside Paris, 10 minutes drive in big cities or Paris suburbs)
  - Distance to retail store *increasing with store size* (300 m to convenience store, or 500 m to supermarket inside Paris)
  - Distance to quarry/production facility (defined by parties and surveys)

- **Product/retailer heterogeneity** taken into account
  - « Hypermarkets » (supermarkets of more than 2500 m²) potentially compete with smaller outlets, depending on local area, but reverse is not true (asymmetric competition)
  - Product market potentially changes with localisation, depending on reported local preferences (from customers surveys/industry studies)
Supporting qualitative evidence with quantitative analysis

- Quantitative analysis to be integrated to other evidence
  - Local competition to convenience stores inside Paris by « hypermarkets » in near suburbs measured by different methods:
    - converged to a single measure of market shares in area where this happened
  - Taking into account the change from joint ownership (50% control of Monoprix by Casino) to single control by Casino in GUPPI:
    - Monoprix was not taking into account effect of its decisions on Casino profit before the merger, according to qualitative evidence: GUPPI
    - But accepted that Casino was: GUPPI/2
- Logit estimation (see ICN MWG Ch 4, 3.4.4.2) to disentangle price from subjective preference effect in local markets
  - Comparison « everything else equal » once model correctly estimated
    - purchase of bricks against outside good more likely in some regions than in others, once prices are equalized
  - Confronting to other evidence: inner walls bricks declining share every year
Further description of GUPPI and Logit estimation used

- **GUPPI**
  - Measuring incentives to increase price $P_1$ post-merger, given the fact that product 2 gets a part of the units lost by product 1 proportional to diversion
    - Formula (see *ICN MWG Ch 4 glossary p. 58*) $D_{12} M_2 P_2 / P_1$
    - $M_2$ is the price-cost margin (as a % of price $P_2$), $D_{12}$ diversion ratio, $P_2$ and $P_1$ the price index
  - **Data requirements:** margins, price ratios, diversion ratio (in Casino / Monoprix, Logit estimation done by the parties)

- **LOGIT**
  - Logit equation estimated integrating a regional fixed effect
    - Log market shares regressed against regional fixed effects, year fixed effects and prices (prices instrumented by average prices in other area of same region year)
    - How likely are bricks chosen against outside goods at average price?
  - **Data requirements:** prices and quantities (average prices approximated by turnover/quantity on a infra-regional basis, 5 years of monthly obs.)
Conclusion: practical implications for the review process

- Existing material very useful to review both cases in due time
  - For RETAILERS, existing material on local markets
    - Avis distribution alimentaire à Paris in 2012
  - For BRICKS, existing material on subjective preferences
    - Avis briques en Alsace in 1999

- Quantitative analysis still to be performed on short notice
  - Position of quantitative evidence with respect to other evidence
  - Retailers:
    - Reconciling consumers surveys with estimation results
  - Bricks:
    - Strongly declining consumption of bricks for inner walls (substitute: dry walls) indicating local preferences disappear
    - Strong position of merged entity in Aquitaine confirmed
References

• ICN Investigative Techniques Handbook for Merger Review
  • Chapter 4, « The Role of Economists and Economic Evidence in Merger Analysis »

• Autorité de la concurrence opinions:
  – Avis 12-A-01 of Jan. 11, 2012 (concentration on retail market in Paris)
  – Avis 99-A-09 of June 1, 1999 (merger examined by ministre de l’économie)

• Autorité de la concurrence decisions:
  – 13-DCC-90 of July 11, 2013, Casino/Monoprix