2019/SOM1/CPLG/SEM/002

Economic Analysis of Horizontal Mergers: An Overview

Submitted by: United States

Seminar on Economic Analysis in Horizontal and Non-Horizontal Mergers
Santiago, Chile
28 February – 1 March 2019

Economic Analysis of Horizontal Mergers: An Overview

APEC 2019 – Chile
Economic analysis in Horizontal and Non-Horizontal Mergers Workshop

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* The views expressed are those of the author and do not necessarily represent those of the U.S. Federal Trade Commission or any individual Commissioner.

Horizontal Merger Guidelines
U.S. Department of Justice and the Federal Trade Commission

- Market Definition
  - Relevant Product Market
  - Relevant Geographic Market
- Market Concentration
- Competitive Effects
  - Unilateral Effects
  - Coordinated Effects
- Efficiencies
- Entry

- See: https://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf ("Merger Guidelines")

Three Main Types of Evidence

- Documents
- Quantitative Analysis
- Interviews and Testimony

Market Definition

- Purpose
  - identify the area(s) where the proposed transaction is likely to raise competitive concerns
  - facilitate the calculation of market shares and concentration

- Relevant market in which to analyze a transaction
  - Product Market
  - Geographic Market

Relevant Product Market

- Hypothetical Monopolist Test (“HMT”):

A candidate market is a properly defined relevant antitrust market if a **hypothetical monopolist** that is the only seller of the products in that market would likely impose at least a small but significant and non-transitory increase in price (“SSNIP”) on at least one product in the market.

(Merger Guidelines § 4. 1 .1)

Relevant Product Market (continued)

- ***The relevant market does not necessarily include all substitute products or even all close substitute products***
- Question: Do products *outside* the candidate market provide a constraint that is ***sufficient to prevent a SSNIP*** by a hypothetical monopolist of all of the products *within* the candidate market.
- If "No," then candidate market = a relevant antitrust market
- Examples:
  - Pretzels (or All Salty Snacks?)
  - Cruise ship vacations (or broader category of vacations?)
  - Office supply superstores (or all retailers selling office supplies?)
  - Premium ice cream (or all ice cream or all frozen desserts?)

Potential Sources of Evidence

- Company documents or marketing studies
- Demand Model estimation
- Substitution based on Natural experiments, examples:
  - a plant shut down temporarily (and unexpectedly), what did consumers buy instead?
  - Entry and exit of potential competitors
- Consumer surveys
  - Ideal question: "What would you do in response to an X% price increase in the product of concern?"

Example: Whole Foods/Wild Oats

- In 2007, the FTC filed for a preliminary injunction to block the proposed merger between Whole Foods and Wild Oats, two "premium natural organic stores."

- Key question: Would competition from other types of supermarkets (e.g., traditional supermarkets) be sufficient to constrain a price increase by a hypothetical monopolist that controlled all of the premium natural organic stores?

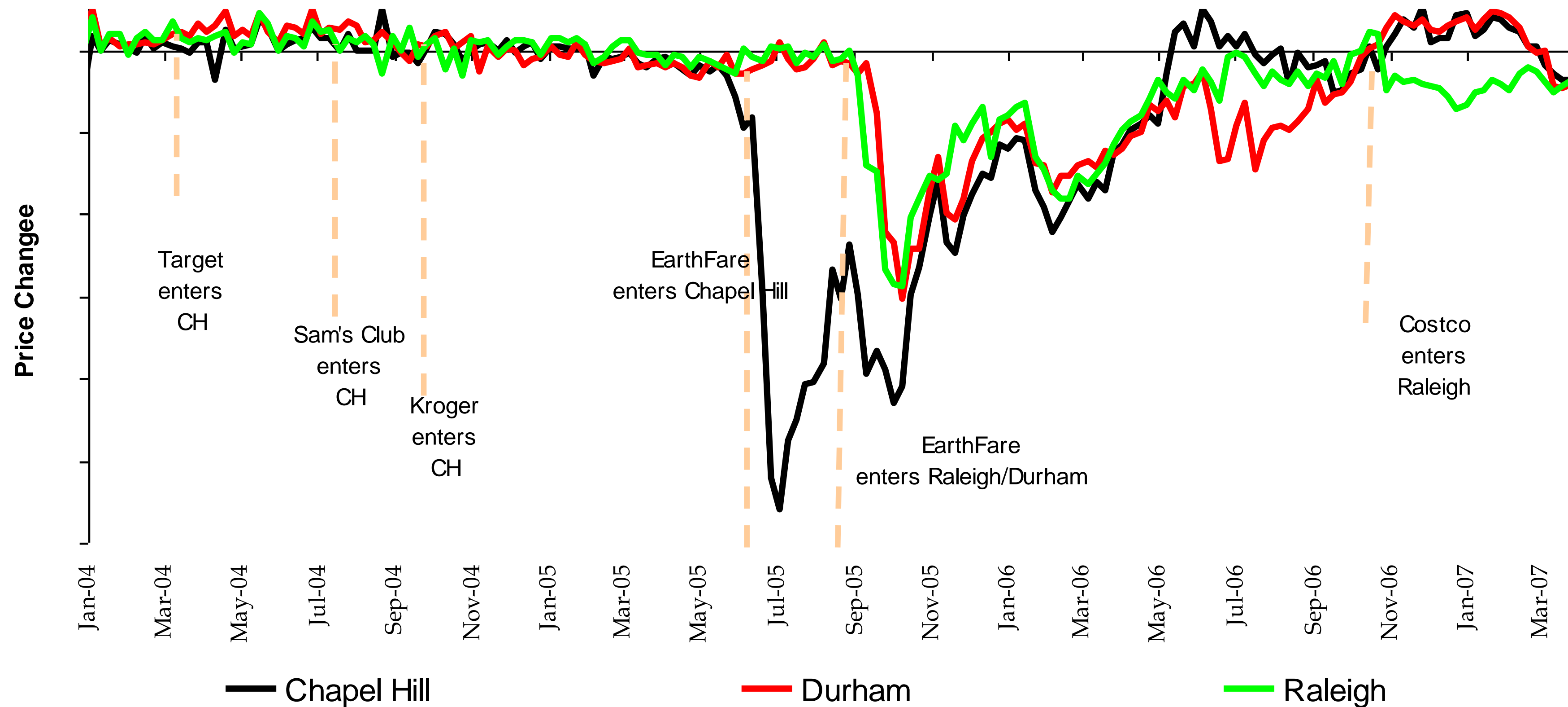
Examples of Documentary Evidence

- It's not just about food:
  - "Whole Foods would be 95% as successful...if they sold ZERO organic foods. Organic foods are not driving their success. Superior quality, superior service, superior perishable product, superior prepared foods, superior marketing, superior branding, and superior store experience are...organic foods clearly aren't the key to Whole Foods success....***[Third parties] selling more organic foods doesn't threaten the success of Whole Foods because organic foods aren't the primary cause of their success....Those people who think that organic foods are the key don't understand the business model.***" (Whole Foods CEO)

  - "While the term organic is quickly becoming a product attribute, ***what differentiates Wild Oats is that we're not just selling organic products, we're selling a lifestyle. Something people aspire to.***" (CFO of Wild Oats at stock analyst conference)

Product Market Analysis

Whole Foods' Response to Various Entrants



Relevant Geographic Market

- The Horizontal Merger Guidelines define a geographic market as:
  - *"The arena of competition affected by the merger may be geographically bounded if geography limits some customers' willingness or ability to substitute to some products, or some suppliers' willingness or ability to serve some customers."* (Merger Guidelines § 4. 2)
- Key question: Would consumers substitute to products outside of a of a candidate geographic market in response to a SSNIP?

Candidate Relevant Market

- Focus on the areas (in product or geographic space) where competition is likely to be eliminated by the proposed transaction
- Depends on the facts of the case
- A relevant market for the analysis of a merger between A and B may not be the same as the relevant market for a merger between A and C.

Potential Sources of Evidence

- Shipping costs, including fuel and time
- Customers' willingness to travel
  - Loyalty card information for supermarkets and other retail stores
  - Patient information for hospitals and other healthcare providers
- Actual substitution based on natural experiments
  - Past mergers
  - Past entry/exit
- Business decisions based on consumer substitution
  - Documentary evidence – "Closed our Lancaster store because party B opened a store within 2 miles"

Applying the Hypothetical Monopolist Test ("HMT")

- The HMT is closely related to unilateral competitive effects analysis.
  - The economic question for both analyses involves evaluating the incentives of a merged entity to raise price relative to the but-for-the-merger price.
  - For the market definition question, the merged entity is the hypothetical monopolist
- Data permitting, for example, could perform a merger simulation to estimate the profit-maximizing price increase for the merged entity as well as for the hypothetical monopolist

Market Shares

- Important for Antitrust Case Law
- Market shares can provide an initial indicator of relative sizes of different competitors in the market
- However, market shares must be interpreted with caution
  - Rely on market definition
  - Treat all firms “in” the market as if they are equally close
  - Treat all firms “out” of the market as if they don’t exist
  - Do not focus on marginal consumers

Concentration

- Herfindahl-Hirschman Index (“HHI”)
  - Sum of squares of individual firm market shares
  - Provides an initial screen
- Important in Antitrust Case Law
- Markets are generally classified as:
  - Unconcentrated if HHI< 1500,
  - Moderately Concentrated if 1500<HHI<2500
  - Concentrated if HHI>2500

“Mergers resulting in highly concentrated markets that involve an increase in the HHI of more than 200 points will be presumed to be likely to enhance market power. The presumption may be rebutted by persuasive evidence showing that the merger is unlikely to enhance market power.”

(Merger Guidelines § 5. 3)

Unilateral Effects in Differentiated Products Markets

- Key Question: how does a merger change the pricing incentives of firms?
- Profit-maximization balances the costs and benefits of a price increase:
  - Cost = lost sales to competing products
  - Benefit = additional profit earned on the sales that are retained

Unilateral Effects in Differentiated Products Markets

- Consider a merger of two firms producing competing products. How do pricing incentives change once these products are produced by the same firm?
  - An increase in the price of one product still leads to lost sales, but now some of those lost sales are recaptured by the merged firm because some of the sales are ***diverted*** to the merger partner.
  - Reduces the "cost" of a price increase
  - Incentive to increase price relative to the pre-merger price (absent entry, efficiencies or other mitigating factors)
  - The greater the value of the diverted sales, the greater the incentive to raise price post-merger

Upward Pricing Pressure

- “The value of sales diverted to a product is equal to the number of units diverted to that product multiplied by the margin between price and incremental cost on that product. In some cases, where sufficient information is available, the Agencies assess the value of diverted sales, which can serve as an indicator of the upward pricing pressure on the first product resulting from the merger.”

  (Merger Guidelines §6.1 (emphasis added))

Upward Pricing Pressure

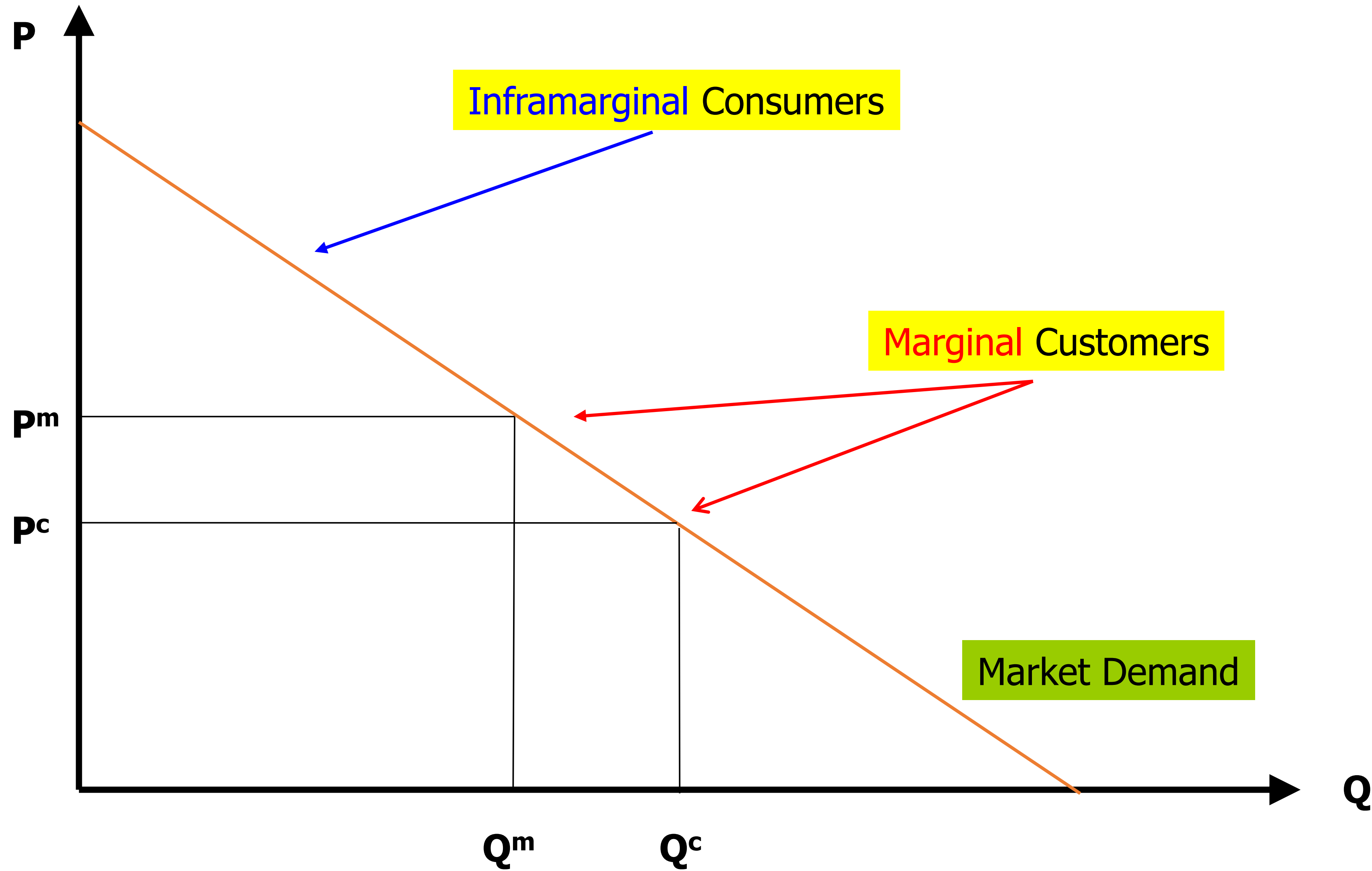
- Not dependent on market definition
- Focuses on the “first order” effects on the incentives of the merging firms
  - Ignores equilibrium responses by competing and merging firms
- Not a merger simulation
  - Does not directly produce predicted price effects
- Key ingredients
  - Pre-Merger margins
  - Diversion ratios

Diversion Ratio

- The diversion ratio measures the fraction of all marginal consumers currently purchasing product A that switch to product B in response to a price increase

  - Example: If in response to a price increase product A, sales fall by 150 units and rise by 30 for product B, then the diversion ratio is 30/150 = .2 or 20%

Marginal and Infra-marginal Consumers



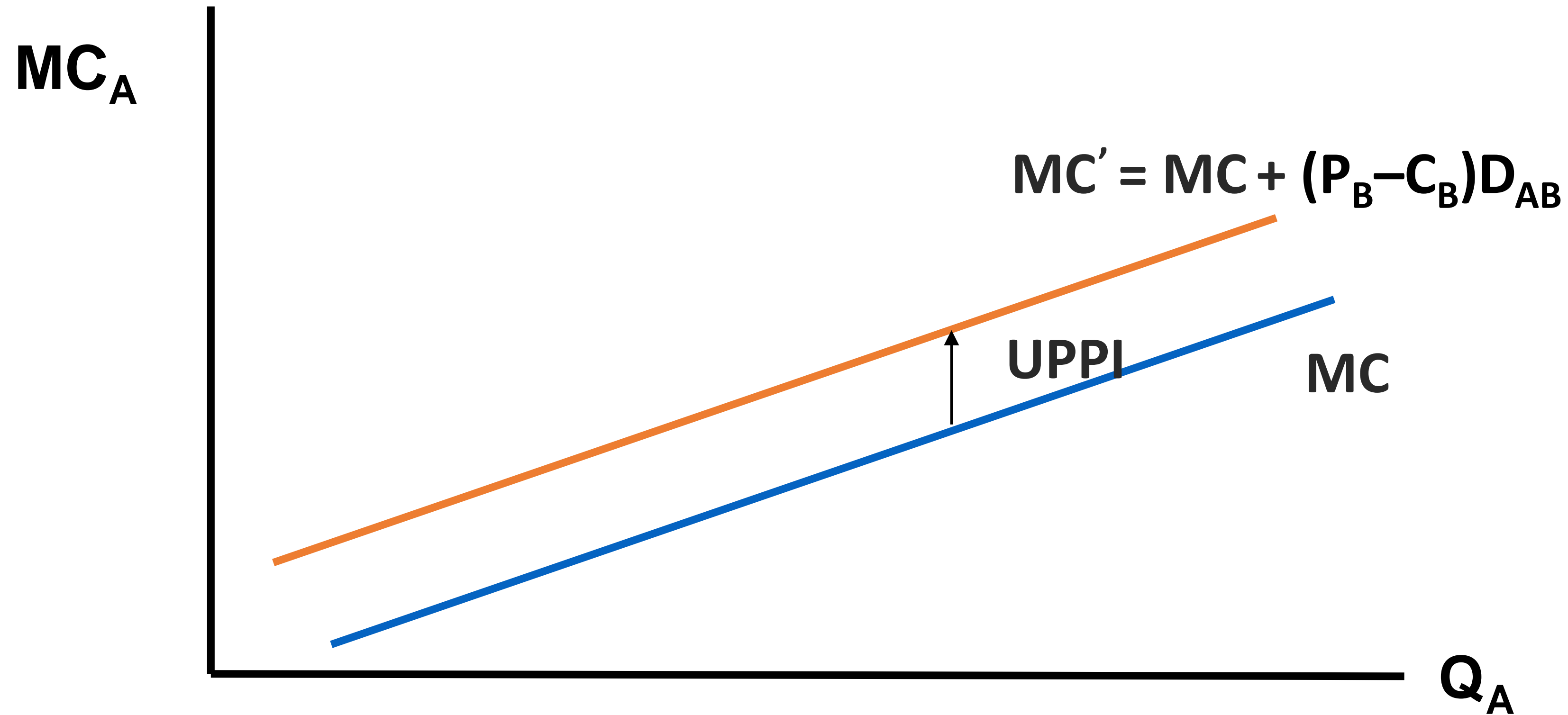
Upward Pricing Pressure

- Can think in terms of opportunity cost
- Merger combines firms A and B that competed pre-merger
- By competing aggressively (e.g., lowering price, improving quality) firm A would sell more
- This hurts firm B
- The merger *internalizes* the impact on firm B

Upward Pricing Pressure Index

- The impact on firm B is now an opportunity cost for firm A
  - Like an increase in Firm A's marginal cost.
  - It can also be seen as a "tax" on firm A's output
- Quantify opportunity cost: $(P_B – C_B)D_{AB}$
- This opportunity cost is the upward pricing pressure index (UPPI)
- Measures how much Firm A's "marginal costs" have increased as a result of the merger.

Graphical intuition



The vertical distance between MC and MC′ is the UPPI

Net Upward Pricing Pressure Index (NUPPI)

- Compare upward pricing pressure to marginal cost efficiencies

- Let *E* be a measure of marginal cost efficiencies.
  - Gain EC_A for each unit sold.

- Net Upward Pricing Pressure (NUPPI):
  - NUPPI > 0 if and only if $D_{AB}(P_B - C_B) > EC_A$

Net Upward Pricing Pressure Index

- The NUPPI formula is intuitive
  - The merger creates an incentive to increase price through a mechanism that is like a marginal cost or tax increase.
  - It may also create an incentive to decrease price through reductions in marginal cost.
  - By treating the effect of the lost competition as if it were a change in Firm A’s marginal cost, NUPPI allows it to be compared directly to the effect of the efficiencies, and to determine which effect is bigger.

Estimating Diversions: Examples

- Hospital Merger Investigations
  - obtain detailed patient-level data
  - estimate patient choice model
  - Predict the diversion if one of the parties' hospitals is not available
- Retail Merger Investigations
  - When possible, estimate effect of entry or exit of one party on the sales/margins/prices of the other party
- Consumer Products
  - Estimate demand using scanner data

Estimating Diversions

- Example: Advertising campaign
- Advertising campaigns at times can provide useful information about what products new users would otherwise use

- For example, when a shampoo is advertised, its sales increase even after the advertising campaign

- Sales of certain other shampoos decline

- But not all shampoos suffer an equivalent decline

Advertising campaign impact

Shampoo brand	Share before (%)	Share after (%)	Diversion ratio
Flowers and fruit	8	12	--
Fancy	12	11	0.25
Luxuriation	15	14	0.25
Smooth Silk	16	14	0.50
Quick	12	12	0
Ordinary	13	13	0
Bottom shelf	18	18	0
Kidz Shampoo	2	2	0
Miser shampoo	4	4	0
STOP Dandruff	8	8	0

Diversion Estimates

- Example from the Whole Foods/Wild Oats case
  - when contemplating the acquisition of Wild Oats, Whole Foods performed analyses to estimate the proportion of sales that would be diverted to Whole Foods stores if it closed nearby Wild Oats stores.
- Other supermarket or retail investigations
  - business documents estimating the impact of competitors opening new stores on their own stores located nearby

Whole Foods/Wild Oats Event Study

Methodology:

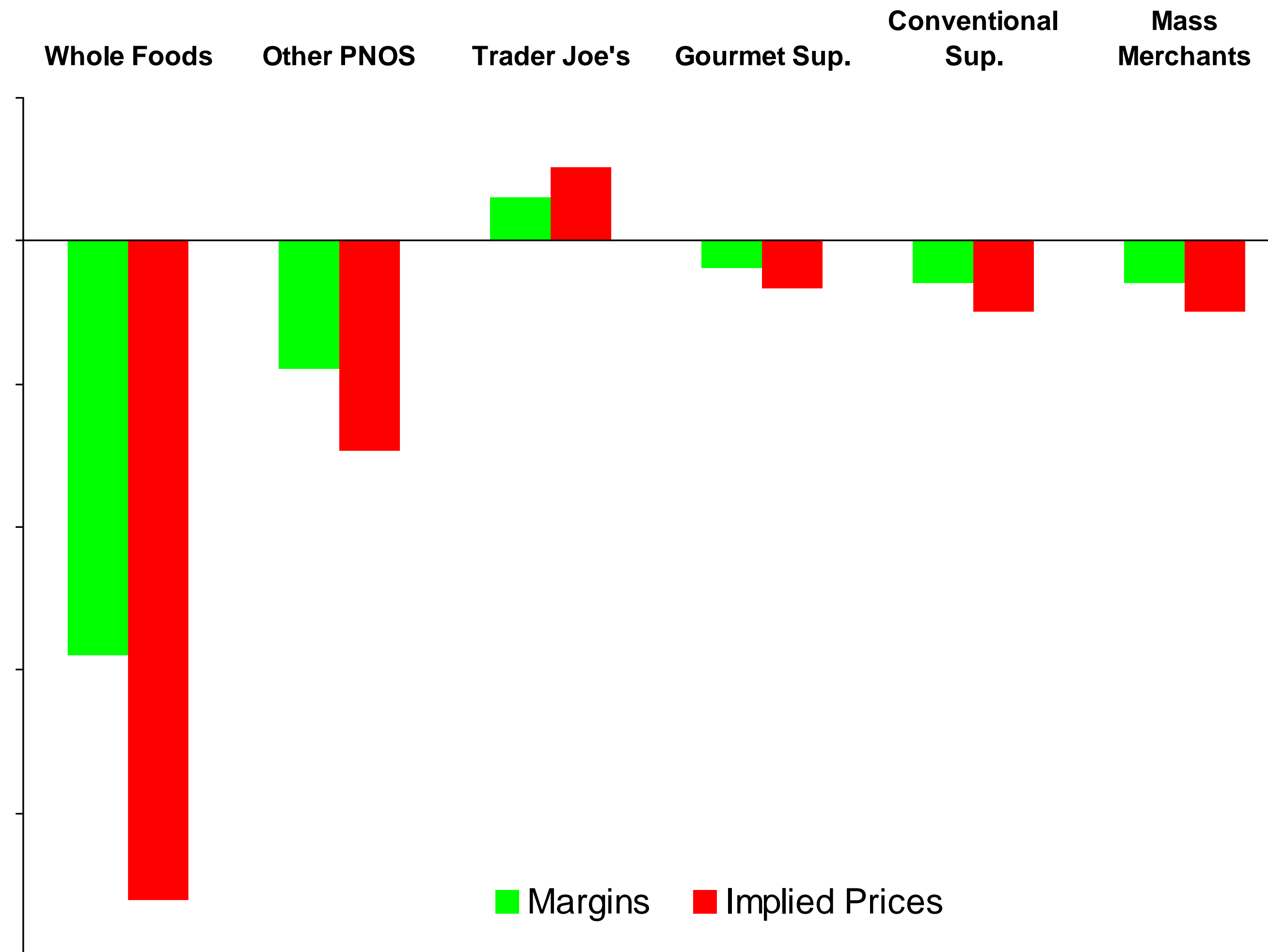
- "Event Studies" (i.e. natural experiments) mainly focused on entry events
- Impact on incumbent WF/WO stores of presence of other stores
- Panel data set

Panel Data Set:

- 875+ entry or exit events
- 100+ cities
- 3+ years
- Gross margins for each quarter in each department of each Wild Oats and Whole Foods store
- Weekly prices for every item in each Wild Oats and Whole Foods store

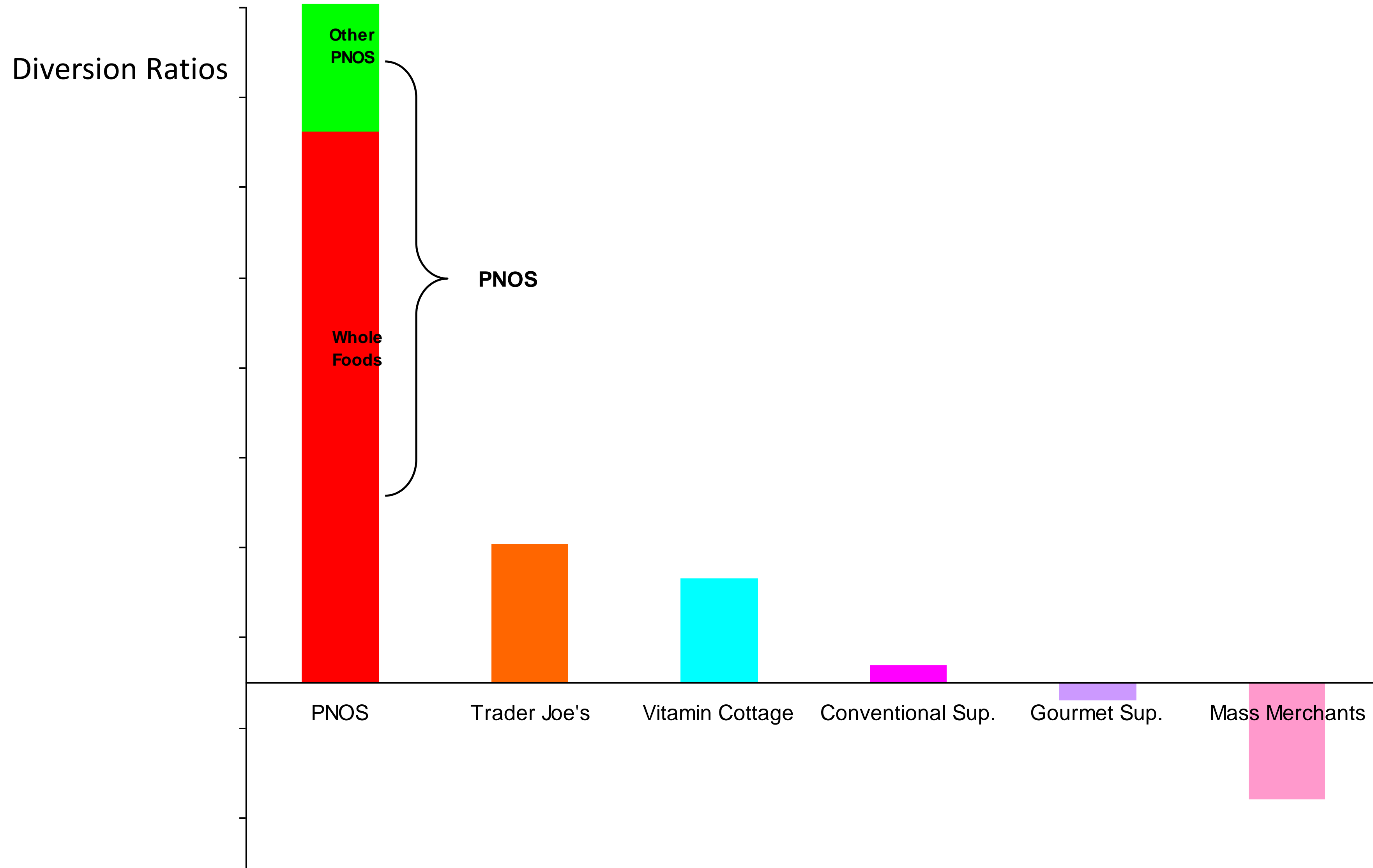
Product Market/Competitive Effects Analysis

Wild Oats' Response to Entry



Product Market Analysis

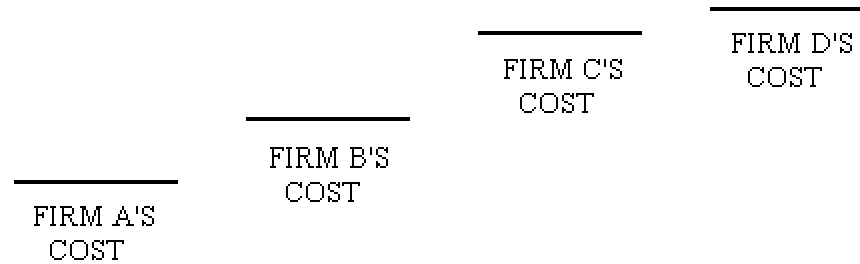
“Diversions Ratios”: Based on analysis of Wild Oats Revenues



Bidding Markets

- Pricing in such markets depends on the relative position of various bidders.
- Suppose a government asks for bids to build a new road.
- Suppose there are four bidders with the following costs.
- Suppose each bidder knows the other bidders’ costs with certainty.

FOUR BIDDERS WITH THE FOLLOWING COSTS



Bidding Markets

- Who wins the bid?
  - A
- What is the price?
  - Just below B’s cost
- What happens if A acquires B?
  - A can bid just below C’s cost: Price goes up.

Bidding Markets

- When will there be a problem?
  - A merger of two low-cost bidders may harm competition.
  - A merger between two high-cost bidders or between a high-cost and a low-cost bidder is unlikely to harm competition.

Empirical Analysis in Bidding Markets

- Goal: Identify whether competition between the merging parties influences the level of the winning bid.
- Frequency Analysis
    - How frequently do the merging parties face each other?
- Regression Analysis
    - Estimate prices paid (discounts offered) as a function of:
        - Bidder identities or numbers
        - Buyer characteristics
- Data availability: auctions vs. negotiations

Efficiencies Analysis

- Evaluate the parties' analysis to determine whether the claimed efficiencies
  - are likely to occur
  - are merger-specific
  - would result in marginal cost savings that would be passed on, at least in part, to consumers

Efficiencies Analysis

- In some cases, we are able to evaluate previous similar transactions
  - Example: acquisition of Saltzer physician group by St. Luke's Health System
  - St. Luke's argued that it had reduced the total cost of care for patients through its previous physician acquisitions.
  - The FTC's economic expert evaluated the total cost of care (including physician visits, inpatient stays, and outpatient procedures) for patients whose primary care physician had been acquired by St. Luke's.
  - No evidence that cost of care fell for these patients after the acquisition relative to patients whose primary care physician had not been acquired.

Entry Analysis

- Is Entry likely to be likely, timely and sufficient in magnitude to alleviate anticompetitive concerns?

- **Timeliness -** How soon could a potential entrant start selling the product?
- **Likelihood –** What are the chances that a firm would decide entry would be profitable enough to pursue?
- **Sufficiency –** Would the competitive impact of the entrant be significant enough to offset the anticompetitive impact of the merger?

Types of Entry

- When considering the likely impact of a merger in a given market, it is useful to think not only about the firms who currently compete in the market, but also the firms who will or could compete.
- If a firm is on the verge of entering the market, the competitive impact of the merger should be analyzed accounting for presence of this entrant.
- A more difficult consideration is whether an anticompetitive effect of the merger would cause entry by a firm with no current plan to enter.

Entry Analysis

- Potential Candidates for Entry
  - Firms who make similar products
  - Large customers of existing firms
  - Newly-created firms
  - Firms who sell the product in a separate geographic area

Barriers to Entry

- Barriers to entry are characteristics of the product or market that make entry take a long time, or prevent entry from being profitable. The term is generally not interpreted to only consider factors that would strictly prevent entry.
- Common examples of barriers to entry:
  - Government regulations (such as patents, permits, or licenses)
  - Economies of scale which would give incumbent firms a cost advantage
  - Exclusive contracts with sole suppliers of a necessary input.

Assessing Potential Entry

- **Consider the Experience of Recent Entrants**
  - Determine the number of recent entry attempts
  - Find out how they fared, and why they succeeded or failed
- **Talk to Potential Entrants to Determine Timeliness and Likeliness**
  - Companies located in other geographic areas
  - Companies that make closely related products
- **Interview Other Market Participants**
  - Competitors, retailers, suppliers, distributors, customers
  - Customers can be particularly useful for determining whether an entrant would be a significant enough competitor to offset an anticompetitive merger effect