Classes 14-15 slides

Unit 9: H&R Block/TaxACT

Part 2. Anticompetitive Effect in Horizontal Mergers

a. *PNB* presumption
b. Coordinated effects
c. The elimination of a "maverick"
d. Unilateral effects

Merger Antitrust Law

Georgetown University Law Center

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H&R
BLOCK®


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Part 2 of the Prima Facie Case: The *PNB* Presumption

Introduction

- Likely competitive effect
  - Having established the dimensions of the relevant market in which to assess the merger, the next step was to assess the merger's likely competitive effect in this market
- *Baker Hughes*
  - Recognizes that a prima facie showing of the requisite anticompetitive effect may made be made through the *Philadelphia National Bank* presumption
- The *PNB* presumption

> Specifically, we think that a merger which **produces a firm controlling an undue percentage share of the relevant market**, and **results in a significant increase in the concentration of firms** in that market is so inherently likely to lessen competition substantially that it must be enjoined in the absence of evidence clearly showing that the merger is not likely to have such anticompetitive effects."[1]

[1] United States v. Philadelphia National Bank, 374 U.S. 321, 363 (1963).

The *PNB* presumption

- Court uses the Merger Guidelines thresholds as triggers for the *PNB* presumption

	Premerger Shares	HHI Contribution	
Intuit	62.2%	3869	The square of the firm's market share
HRB	15.6%	243	
TaxACT	12.8%	164	
Others (6)	9.4%	15	Residual share (9.4%) divided by 6 firms and added six times
	100.0%	4291	The sum of the squared shares of all of the firms in the market
Combined share	28.4%		
Premerger HHI		4291	
Delta (Δ)		400	2 × HRB share × TaxACT share
Postmerger HHI		4691	Sum of the premerger HHI + Δ

"Violates" the 2010 Guidelines:
Postmerger HHI exceeds 2500 and delta exceeds 200

Note: Court appears to have assumed that six equal-sized firms are in the "other" category

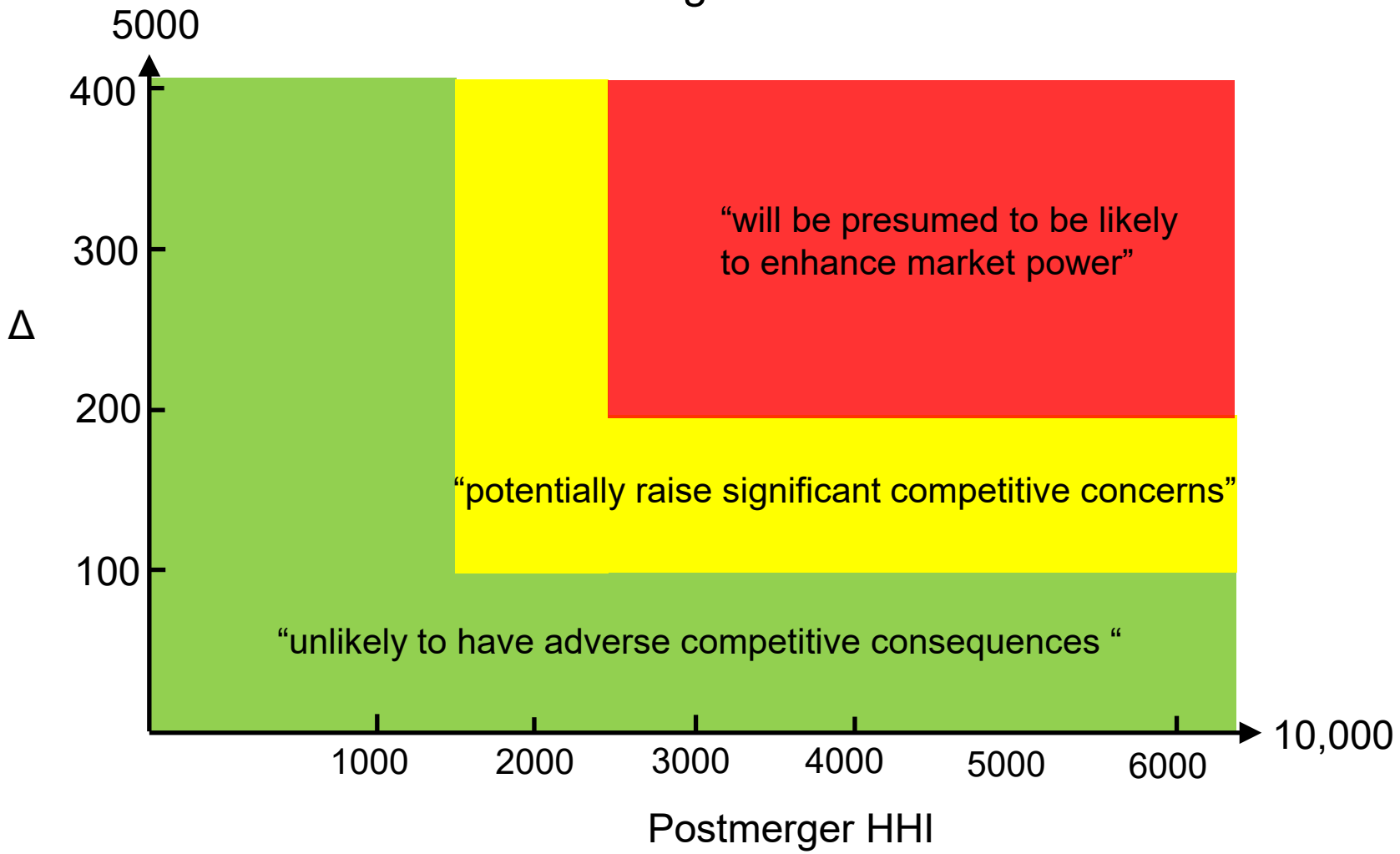
The *PNB* presumption

- The 1982 Merger Guidelines
  - Provided new market share thresholds to be used by the DOJ based on:
    - The change in the HHI (the "delta") resulting from the merger, and
    - The postmerger HHI
- The 2010 Merger Guidelines: Current thresholds

Postmerger HHI	ΔHHI	Guidelines
< 1500	< 100	"unlikely to have adverse competitive consequences and ordinarily require no further analysis"
	--	"unlikely to have adverse competitive consequences and ordinarily require no further analysis"
Between 1500 and 2500	≥ 100	"potentially raise significant competitive concerns and often warrant scrutiny"
> 2500	100-200	"potentially raise significant competitive concerns and often warrant scrutiny"
	≥ 200	"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."

The *PNB* presumption

- The current thresholds: 2010 Merger Guidelines



Market participants[1]

- The idea
  - Under the Merger Guidelines, only demand-side substitutability counts in market definition
  - BUT who participates in the market—and their associated market shares—does take supply-side substitutability into account

Note: Historical precedent allows courts to take supply-side substitutability into account when defining markets

[1] *See* 2010 Merger Guidelines § 5.1.

Market participants

- Four types of market participants
  1. All firms that currently earn revenues in the relevant market
  2. Vertically integrated firms to the extent that they would divert production from captive use to merchant sales in response to a SSNIP
  3. Firms not currently earning revenues in the relevant market but have committed to entering the market in the near future
  4. Firms that are not current producers in a relevant market but would very likely provide a rapid supply response to a SSNIP
     - The 2010 Merger Guidelines limit these "rapid entrants" to those firms whose entry do not require significant sunk costs
       - The 1992 Guidelines called these firms "uncommitted entrants"[1]
     - *Example*:

       > Farm A grows tomatoes halfway between Cities X and Y. Currently, it ships its tomatoes to City X because prices there are two percent higher. Previously it has varied the destination of its shipments in response to small price variations. Farm A would likely be a rapid entrant participant in a market for tomatoes in City Y.[2]

     - NB: Entry that would take place more slowly in response to adverse competitive effects, or that requires firms to incur significant sunk costs, is considered in the entry defense analysis, not as market participation

[1] *See* 1992 Merger Guidelines § 1.32.

[2] 2010 Merger Guidelines § 5.1 (example 16).

Market share attribution[1]

1. Current sellers
   - Normally based on recent historical level of sales
     - Homogeneous products are usually measured in units
       - Reflects Cournot competition, where production levels are the firm's control variable
     - Differentiated products are usually measured in revenues
       - Reflects Bertrand competition, where price is the firm's control variable
   - Adjustments
     - The Merger Guidelines envision adjustments to historical measures based on changed conditions when these adjustments can be reliably made
       - *Example*:
         - Firm A, which operates close to full capacity, has just developed a new technology, which will enable it to increase production by 20%.
         - For HHI analysis, increase Firm A's production by 20% and recalculate the market shares of all firms in the relevant market
       - *Example*:
         - One of Firm B's plants was recently destroyed by a fire, which will reduce the firm's production levels in the future
         - For the HHI analysis, reduce Firm B's production by the amount produced by the destroyed plant (and not shifted to another of B's plants with excess capacity) and recalculate the market shares of all firms in the relevant market

[1] *See* 2010 Merger Guidelines § 5.2.

Market share attribution[1]

2. Nonsellers
   - The competitive significance of nonsellers depends on the extent to which they would rapidly enter the relevant market in response to a SSNIP
   - Consequently, their market share attribution is the quantity they would likely sell in the relevant market in response to a SSNIP
     - The 1992 Merger Guidelines are explicit on this[1]
     - The 2010 Merger Guidelines are silent on the mechanism to attribute market shares
   - Example
     - If Firm X currently produces 1 million units of an input and consumes 100% of this production internally, but would divert 20% of its production to merchant sales in the event of a 5% SSNIP, then the integrated firm is a participant in the relevant market and would be credited with 200,000 units in the relevant market (even though the firm in fact makes no sales in the relevant market).

Current Producers		
	Units	Share
Firm A	600	37.5%
Firm B	450	28.1%
Firm C	400	25.0%
Firm D	150	9.4%
	1600	100.0%

MG Participants		
	Units	Share
Firm A	600	33.3%
Firm B	450	25.0%
Firm C	400	22.2%
Firm D	150	8.3%
Firm X	200	11.1%
	1800	100.0%

[1] 1992 Merger Guidelines § 1.41.

Defendants' Rebuttal Arguments

Defendants' rebuttal arguments

- *Baker Hughes*

> The basic outline of a section 7 horizontal acquisition case is familiar. [1] By showing that a transaction will lead to undue concentration in the market for a particular product in a particular geographic area, the government establishes a presumption that the transaction will substantially lessen competition. **[2] The burden of producing evidence to rebut this presumption then shifts to the defendant.** [3] If the defendant successfully rebuts the presumption, the burden of producing additional evidence of anticompetitive effect shifts to the government, and merges with the ultimate burden of persuasion, which remains with the government at all times.[1]

  - In Step 2 of *Baker Hughes* three-step burden shifting, the defendant bears the burden of production to rebut the plaintiff's prima facie case
    - The burden of production requires the defendant to adduce sufficient evidence to put the prima facie case in issue and create a question of fact for the trier of fact
    - The quantum of evidence required depends on the strength of the plaintiff's prima facie case: "The more compelling the prima facie case, the more evidence the defendant must present to rebut it successfully."[2]

[1] United States v. Baker Hughes Inc., 908 F.2d 981, 982-83 (D.C. Cir. 1990) (footnote and internal citations omitted).
[2] *Id.* at 991.

Typical structure of a formal merger analysis

- Step 1: The prima facie case
  - Relevant market
    - *Brown Shoe* "outer boundaries" and "practical indicia" tests for product markets
    - "Commercial realities" test for geographic market
    - Merger Guidelines hypothetical monopolist test
  - *PNB* presumption
    - Market participants and market shares
    - Application of the *PNB* presumption
  - Other evidence of anticompetitive effect
    - Unilateral effects
    - Coordinated effects
    - Elimination of a maverick
- Step 2: Defendants' rebuttal
  - Challenges to prima facie case (no upward pressing pressure)[1]
  - Traditional defenses (offsetting downward pricing pressure)
    - Entry/expansion/repositioning
    - Efficiencies
    - Countervailing buyer power ("power buyers")
    - Failing company/division
- Step 3: Balancing

H&R Block

[1] Often addressed in Step 1.

Defendants' rebuttal arguments

- Note on opinion's structure:
  - H&R Block/TaxACT court concluded its analysis of the DOJ's prima facie case with nothing more than the *PNB* presumption
  - It did not go on as does the 2010 DOJ/FTC Horizontal Merger Guidelines and look at other evidence the DOJ presented to bolster the *PNB* presumption
  - Rather:
    - It flipped the express theory and supporting evidence of anticompetitive harm into the second stage of the *Baker Hughes* burden-shifting paradigm, and
    - Placed the burden on the defendants of going forward with evidence showing that the coordinated effects and unilateral theories of anticompetitive harm do *not* apply in the case
  - Still, the burden on the defendants was one only of production; the burden of persuasion remained on the plaintiffs in Step 3
  - Subsequent opinions have placed the analysis of coordinated and unilateral effects after the *PNB* presumption in the section analyzing the DOJ's prima facie case (i.e., in the first stage of *Baker Hughes*)

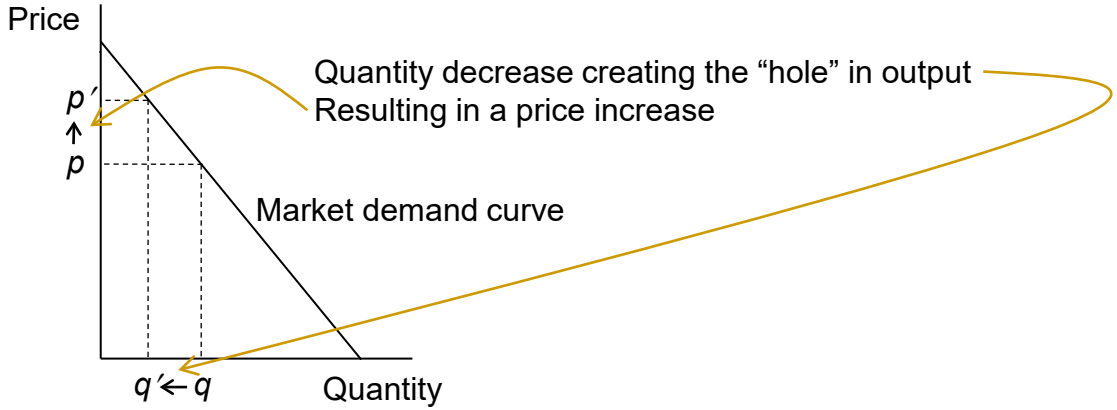
Defendants' rebuttal arguments

- Four arguments
  1. The likelihood of expansion by existing DDIY firms besides Intuit, HRB, and TaxACT will offset any anticompetitive effects
  2. The relevant market is not susceptible to coordination and the merger will not increase the probability of effective coordinated interaction
  3. The merger will not result in anticompetitive unilateral effects
  4. The efficiencies resulting from the merger will offset any anticompetitive effects

Defendants' Rebuttal Arguments
Part 1. Entry/Expansion/Repositioning

Entry/Expansion/Repositioning

- The story
  - General idea
    - Think of a merger's anticompetitive effect being achieved by a reduction in market output



    - The defense depends on showing that the "hole" in the output will be filled by—
      1. New firms entering the market and adding new output
      2. Incumbent firms expanding their output over premerger levels, or
      3. Incumbent firms extending or repositioning their production in product or geographic space to replace output loses resulting from unilateral effects

Entry/Expansion/Repositioning

- The story
  - Proof of likely actual postmerger entry/expansion/repositioning is not necessary to make out the defense
  - The mere *threat* of entry/expansion/repositioning may be enough to deter incumbent firms from acting less competitively for fear of inducing new competition
    - Illustration
      - Say that there are four firms in the market of equal size (each selling 100 units = 25% shares)
      - Two firms merge: Proforma market share = 50%
      - Combined firm decreases output by 40 units to raise prices (anticompetitive effect)
      - A new firm quickly enters selling 40 units (fills the “hole”)
      - Market returns to premerger prices
      - Merged firm post-entry market share = 40%
      - → Merged firm has lost 10% points of share with no gain in price
      - → If the merged firm could anticipate this entry, it would not have reduced output in the first instance

Entry/Expansion/Repositioning

- The Merger Guidelines: The formalities
  - 1982 and 1992: Depended largely on actual entry having a significant impact within two years of the merger
    - This allowed for a short-run anticompetitive effect
  - 2010: Requires entry to “deter or counteract” any anticompetitive effects “so the merger will not substantially harm customers”
    - Does not allow any grace period

Entry/Expansion/Repositioning

- Guidelines requirements—Entry must be:[1]
  - Timely

> [E]ntry must be rapid enough to make unprofitable overall the actions causing those effects and thus leading to entry, even though those actions would be profitable until entry takes effect.

  - Likely

> Entry is likely if it would be profitable, accounting for the assets, capabilities, and capital needed and the risks involved, including the need for the entrant to incur costs that would not be recovered if the entrant later exits.

  - Sufficient

> Entry by a single firm that will replicate at least the scale and strength of one of the merging firms is sufficient. Entry by one or more firms operating at a smaller scale may be sufficient if such firms are not at a significant competitive disadvantage.

- Courts have adopted these requirements

[1] References to entry in this section also include expansion and repositioning.

Entry/Expansion/Repositioning

- Defendants' argument
  - 18 companies offering DDIY products
  - Argued that the two largest— TaxHawk and TaxSlayer—were poised to replicate the scale and strength of TaxACT

Entry/Expansion/Repositioning

- TaxHawk—
  - Had infrastructure to expand by 5-7 times current size
  - BUT had been in business for 10 years and never grew beyond 3.2%
  - Functionally more limited than the Big Three
    - Does not service all federal tax forms
    - Excludes two states' forms in their entirety
    - Does not service major cities with income taxes (e.g., NYC)
  - Co-founder testified that it would take another decade for the TaxHawk to support all forms
    - Reason: "Lifestyle" company—don't like to work too hard
    - Court: Compare with TaxACT—very entrepreneurial and impressive rate of growth
      - Citing to Dunn's testimony
  - Run to "deliver a sufficient income stream to sustain its owners' comfortable lifestyle, without requiring maximal effort on their part."

Entry/Expansion/Repositioning

- TaxSlayer—
  - Established in 2003
  - Family business
  - Relies heavily on sponsorship of sporting events (e.g., the Gator Bowl and NASCAR races)
  - 2.7 market share
  - No meaningful growth in market share (had 2.5 share in 2006)

Entry/Expansion/Repositioning

- DOJ evidence: Significant barriers to entry and expansion
  - Successful entry/expansion beyond a few percentage points of markets share requires a brand name reputation
    - Customers need trust in their tax service provider
    - Costly to build needed reputation
      - HRB testimony: takes millions of dollars and lots of time to develop a brand
      - Big Three (really Big Two) spend over $100 million/year in advertising to build and maintain their brands
      - Dwarf expenditures by smaller companies
    - TaxACT CIM identifies reputation as a barrier to entry
    - TaxHawk and TaxSlayer lack the reputation and the incentive and funds to build one
  - High new customer acquisition costs
    - Market has matured considerably and there is not the “low hanging fruit” of manual customers who are natural customers of DDIY products
    - Instead, TaxHawk or TaxSlayer would have to acquire customers from Intuit or HRB
    - Very high customer acquisition costs → entrenched market shares → low growth for other firms
  - High switching costs
    - Data cannot be imported across products of different companies
- Court: Defense rejected

Entry/Expansion/Repositioning

- Concluding comments
  - Almost impossible to make out the defense in an agency investigation
    - The agency starts by insisting that the potential entrants be identified by name
    - It then calls them and asks: “Would you enter this market if prices increased by 5% to 10%?”
    - The company almost always answers “no”
      - Can be a kneejerk reaction
      - Can be a “go away staff” reaction
      - Can be an informed “no”
  - Some business realities
    - As a general rule of business behavior, firms do not enter existing markets just for margin
    - They almost always require some nonprice competitive advantage against incumbent firms to cause them to entry
    - The problem is that entry can too easily precipitate a price war and destroy the pre-entry margin that made entry attractive in the first instance

Defendants' Rebuttal Arguments
Part 2A. Coordinated Effects

Introduction

- Definition
  - Coordinated effects (or coordinated interaction) is a theory of anticompetitive harm that depends on the merger making oligopolistic interdependence more effective:

> Merger law "rests upon the theory that, where rivals are few, firms will be able to coordinate their behavior, either by overt collusion or implicit understanding in order to restrict output and achieve profits above competitive levels."[1]

  - *Terminology*: May use "accommodate" rather than "cooperate"

- What can firms do if the merged firm seeks to increase price?
  1. "Do nothing"—Just continue doing what they were doing
  2. Compete more aggressively/expand production/maybe even lower price to gain market share
  3. "Accommodate" the price increase
     - Need not match it

[1] FTC v. CCC Holdings Inc., 605 F. Supp. 2d 26, 60 (D.D.C. 2009); *accord* United States v. H&R Block, Inc., 833 F. Supp. 2d 36, 77 (D.D.C. 2011).

Merger Guidelines history

- 1982 Guidelines
  - Accepted an unspecified theory of oligopoly as the underpinning of the *PNB* presumption
  - Did not require more for a prima facie case
- 1992 Guidelines
  - *Problem*: There exist highly competitive markets with only a few firms (e.g., Coke and Pepsi)
  - *Solution*: Require proof that the "Stigler conditions" for (tacit) coordination were satisfied in the relevant market: Market conditions must be—
    1. Conducive to firms (tacitly) reaching terms of coordination that are individually profitable to the firms involved
    2. Conducive to firms detecting deviations from the tacit terms of coordination
    3. Conducive to firms punishing deviations from the tacit terms of coordination

Merger Guidelines history

- 2010 Merger Guidelines
  - The 2010 Merger Guidelines sought to revitalize the coordinated effects theory
  - *Solution*: Eliminate the language of the Stigler conditions and focus more generally and less prescriptively on—
    1. The premerger *susceptibility* of coordinated interaction, and
    2. The *effectiveness* of the merger in increasing the probability of effective coordinated interaction among some or all of the firms in the market
       - Requires a causal relationship between the merger and the increased probability or effectiveness of coordination
  - Relation to the Stigler conditions
    - The 2010 susceptibility requirement subsumed the structural market, information, and incentive compatibility considerations inherent in the first two Stigler conditions
    - The Stigler punishment element disappeared altogether as a factor in the analysis and was replaced by the effectiveness condition
    - The effectiveness only required a showing of an increased likelihood of successful coordination interaction, not proof that coordination interaction would in fact occur postmerger

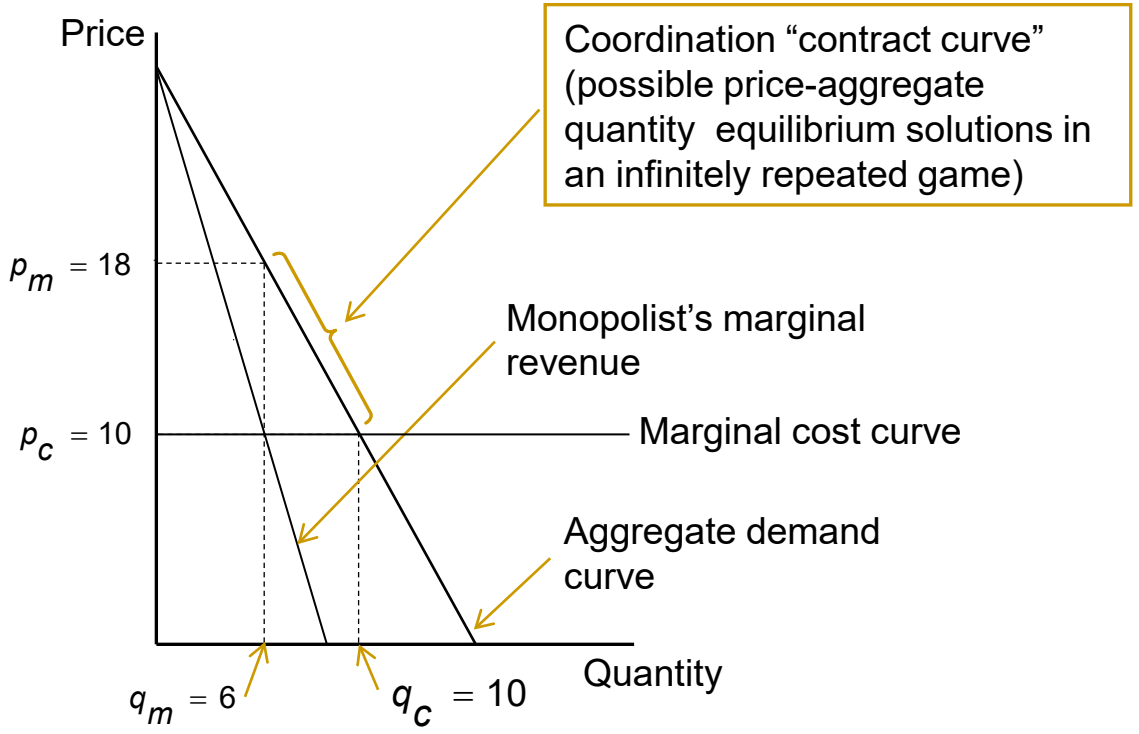
Let's look at the susceptibility and effectiveness requirements under the 2010 Merger Guidelines

Susceptibility

- Oligopolistic coordination is impeded by three problems:
  1. Selection problem
     - Will the firms be able to “agree’ to the price or other terms on which they will tacitly coordinate?
  2. Internal stability problem
     - Will the (short-run) incentive to pursue a more competitively aggressive strategy, which all profit-maximizing firms have, undermine an any tacit coordination?
  3. External interference problem
     - Apart from the firms in the market, will other entities disrupt any tacit coordination?
       - Firms outside of the market that enter or threaten to enter the market
       - Buyers with the negotiating power to induce defections and disrupt the terms of coordination

1. Susceptibility: Selection problem

- The idea
  - There are an infinite number of possible price-quantity points on the demand curve on which the firms could tacitly "select" to achieve
  - Ineffectiveness or instability occurs if they cannot coordinate on the same point

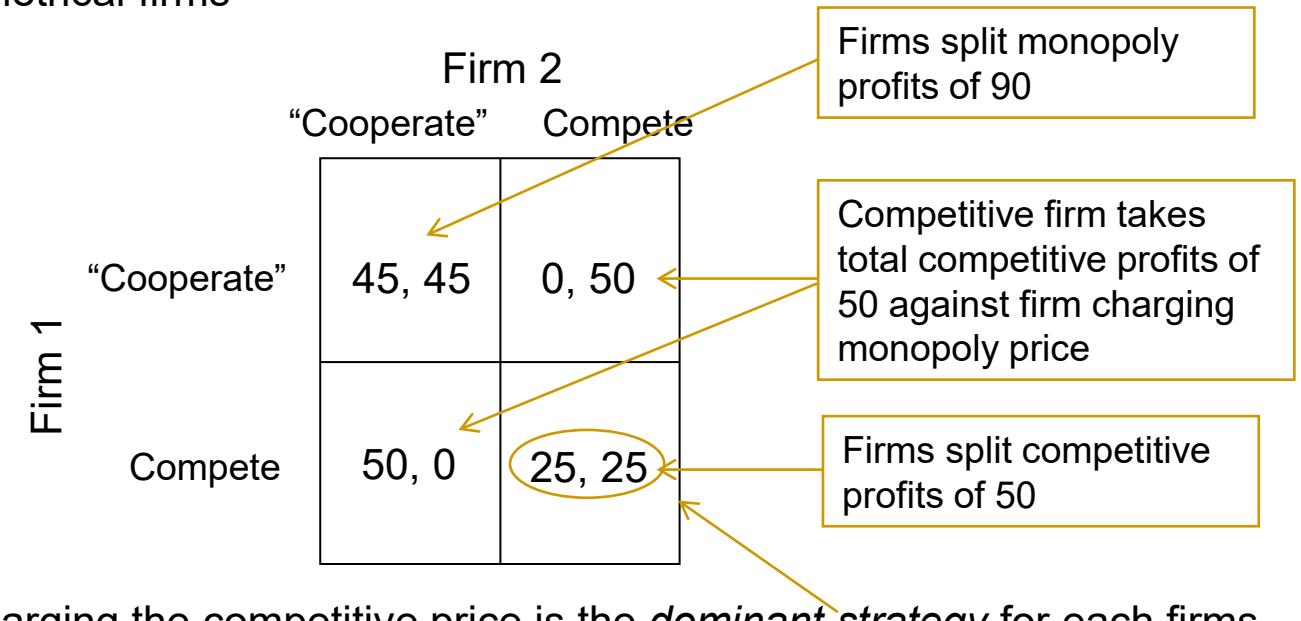


1. Susceptibility: Selection problem

- Factors to consider (not exhaustive)
  a. The ability of the firms to signal one another about their individually preferred outcomes
  b. The degree of firm and product heterogeneity
     - Significant heterogeneity may make reaching terms of coordination difficult due to different desired outcomes dictated by the individual conditions of each firm
     - Conversely, the more homogeneous the putatively cooperating firms, the more likely their incentives will align and enable them to reach agreement
     - Attributes to consider—
       - Product characteristics
       - Prices
       - Margins
       - Capacities
       - Excess capacity
       - Degree of vertical integration
  c. Prior actual or attempted collusion or coordination: Indicates that firms in the market—
     - Believe that coordination is possible
     - Are willing to attempt to coordinate

1. Susceptibility: Internal stability

- Incentive compatibility problem
  - Inherent in oligopolistic coordination since each profit-maximizing firm has a incentive to compete more aggressively and steal market share rather than to cooperate
- *Illustration*: Duopoly "prisoner's dilemma" in single period game
  - Two symmetrical firms



Key result: Charging the competitive price is the *dominant strategy* for each firms, regardless of what strategy the other firm chooses. But mutual monopoly strategies earn each firm higher profits.

1. Susceptibility: Internal stability

- Two questions
  a. What is the probability that at least one firm in the market will defect?
  b. For any given firm, what factors influence its individual probability of defection?

1. Susceptibility: Internal stability

a. Probability of at least one defection

- *Key factor*: The number of competitors
  - The more competitors, the more likely one or more firms will defect given any individual firm's probability of defection
- Heuristic illustration
  - Say (quite unrealistically) that the probability of defection is *p* for each firm and independent of what the others do. Then the probability of at least one defection—
    - Increases with *p*
    - Increases with the number of firms *n*
- More generally
  - The probability that at least *m* firms defect increases with—
    - Increases with *p*
    - Increases with the number of firms *n*

Probability of at Least One Defection

Number of firms *n* \ Individual defection probability *p*	10.0%	20.0%	30.0%
2	19.0%	36.0%	51.0%
3	27.1%	48.8%	65.7%
4	34.4%	59.0%	76.0%
5	41.0%	67.2%	83.2%
6	46.9%	73.8%	88.2%
7	52.2%	79.0%	91.8%
8	57.0%	83.2%	94.2%
9	61.3%	86.6%	96.0%
10	65.1%	89.3%	97.2%

1. Susceptibility: Internal stability

b. Factors affecting an individual firm's incentive (probability) to defect (not exhaustive)

1. The expected rewards of defection
   - The larger the expected reward relative to cooperation, the higher the probability of defection
   - The expected reward is a function of the size of the reward and the probability of obtaining it
2. The size of the reward relative to the market (for a given probability of detection)
   - The larger the size of the reward relative to the size of the market, the larger the probability of defection
     - *Example*: As the number of sales opportunities become smaller, the probability of defection increases
       - Large, "lumpy" sales or long-term contracts can make defection more profitable
     - *Example*: As individual sales become smaller relative to the market, the probability of defection decreases
   - Differences among firms in the market may affect the size of their expected reward
     - *Example*: Firms with large excess capacity can increase their production to service more demand at more competitive (defection) prices
     - *Example*: Firms operating at capacity have no incentive to defect

1. Susceptibility: Internal stability

b. Factors affecting an individual firm's incentive to defect (not exhaustive)

3. The probability of detection (for a given size of reward)
   - The greater the probability of detection, the lower the probability of defection
     - That is, the defecting firm will not be able to make as many sales before other companies respond
   - Factors
     - The availability of key market information necessary to detect defections
       - E.g., market conditions, market prices, market volumes, transactions (seller, buyer, prices)
       - Lack of information may make defections from coordination harder to detect and therefore punish
     - Volatility of the market/predictability of demand
       - Volatility/unpredictability makes defections harder to detect
4. Lags in detection
   - Significant lags makes cheating more profitable (can successfully cheat for a longer period of time)
   - Factors
     - Same as for probability of detection
5. Prior actual or attempted collusion or coordination/willingness to coordinate
   - Indicates that firms in the market believe that coordination is possible
   - Premerger industry efforts to coordinate—whether or not successful—is highly probative

1. Susceptibility: External interference

c. Threat of "external" interference that may undermine coordinated interaction within a relevant market

1. Mechanisms of external interference
   i. Producers outside of the market that enter the market
   ii. Customers that switch to products outside of the market
   iii. Customers with sufficient bargaining power to disrupt coordinated interaction
2. External factors to consider (not exhaustive)
   - That is, factors external to the collusive group that may undermine the collusive group's stability
   - These factors affect the elasticity of demand for the collusive group

   i. Ability and willingness of customers to switch to suppliers outside of the collusive group
   ii. Ease with which new competitors may enter
   iii. Ease with which incumbent competitors outside the collusive group may efficiently expand production
   iv. Capacity utilization outside the collusive group
      - Low capacity utilization allows outside firms to significantly increase their production levels to service demand diverting from the collusive group

   v. Existence of disruptive "power buyers"

2. Merger effectiveness

- Rule
  - It is not enough that premerger the market is conducive to coordinated interaction—the merger *must reasonably increase the probability* that the market will be materially *more* conducive to coordinated interaction postmerger
- Implications
  - This means that the merger must materially improve the incentives or ability of a "sufficient group" of firms in the market to—
    1. Solve the section problem
    2. Solve the incentive incompatibility problem, *or*
    3. Resist external interference
  - A "sufficient group" of firms means a subset of firms that, if coordinating, would create, enhance or facilitate the exercise of market power in the relevant market
    - The set of all firms in the market is a sufficient group (by the hypothetical monopolist test)
    - But a smaller subset may also be sufficient depending on the characteristics of the market
      - Think about a market that can be modeled as a "dominant firm" with a competitive fringe
      - But where the "dominant firm" is the tacitly coordinating sufficient group
    - Recognizes the potential for coordinated effects even if all firms in the market are not tacitly coordinating

2. Merger effectiveness

- Some factors to consider when thinking about merger effectiveness
  1. Mitigating the selection problem
     - \+ The merger reduces firm or product heterogeneity in the market and better aligns the incentives of the various firms tacitly to achieve coordinated interaction
  2. Mitigating the incentive incompatibility problem
     - \+ The merger reduces the number of independent competitors in a way that materially increases the probability of detection, thereby increasing the probability of effective coordination
       - The magnitude of the HHI delta may be of probative significance here
     - \+ The acquisition of a disruptive "maverick" (considered as a separate theory below)
     - – Decrease in excess capacity inside the collusive group
     - – The merger results in significant efficiencies in the combined firm that increase the rewards of defection, thereby decreasing the probability of effective coordination
     - – The merger results in vertical integration that could improve the merged firm's ability to cheat without detection, thereby increasing the probability of defection
  3. Mitigating the external interference problem
     - \+ The merger eliminates a likely potential entrant, thereby increasing the probability of effective coordination
     - \+ The merger increases the barriers to entry/expansion/repositioning

Key:
\+ The merger increases the probability of effective coordinated interaction postmerger
– The merger decreases the probability of effective coordinated interaction postmerger

Coordinated effects in *H&R Block*

- Coordinated effects in H&R Block
  - Court:

> Since the government has established its prima facie case, the burden is on the defendants to produce evidence of "structural market barriers to collusion" specific to this industry that would defeat the "ordinary presumption of collusion" that attaches to a merger in a highly concentrated market.[1]

    - This is consistent with a strict reading of *Baker Hughes* only if the plaintiffs have established a prima facie case of coordinated effects
    - Almost all modern courts in their opinions treat coordinated effects as part of the discussion of the plaintiffs' prima facie case
      - *Baker Hughes* is unique in its approach

[1] United States v. H & R Block, Inc., 833 F. Supp. 2d 36, 77 (D.D.C. 2011) (quoting FTC v. H.J. Heinz Co., 246 F.3d 708, 725 (D.C. Cir. 2001)).

Coordinated effects in *H&R Block*

- Merging parties' arguments
  1. Intuit has no incentive to compete any less vigorously postmerger
  2. In particular, Intuit has no incentive to reduce competitiveness of its free product, since free products are a principal driver of paid new customers to Intuit
  3. Therefore, HRB must compete vigorously postmerger or else lose customers to Intuit

Coordinated effects in *H&R Block*

- Evidence: Susceptibility
  1. Historical coordination
     - After TaxACT introduced its free offering, Intuit proposed that firms lobby the IRS to impose limits on their free offerings (HRB and others joined, but not TaxACT)
     - *Court*: "Highly persuasive historical act of cooperation"
     - *WDC*: Shows that evidence does not have to be of historical illegal coordination
  2. Other factors
     - Market is transparent (consumer offerings; available on Internet)
     - Can see price as well as attributes
     - Product differentiation not that relevant
     - Companies can observe and coordinate on attributes of "free" products
     - Transactions are small, numerous, and spread among a mass of consumers
     - Consumers have low bargaining power
     - Barriers to switching due to "stickiness" of DDIY products (learning curve)

Coordinated effects in *H&R Block*

- Evidence: Effect of merger
  1. Intuit engaged in "war games" designed to anticipate and defuse new competitive threats that might emerge from HRB postmerger
  2. BUT Intuit's documents also indicated that it anticipated that the combined firm would likely "pull some of its punches" if Intuit is willing to go along and not compete aggressively against it
     - Anticipates that combined firm will "not escalate fee war"
     - NB: This could have been just a random observation by an Intuit employee and not Intuit's considered strategy
  3. AND past cooperation as to lobbying the IRS for eligibility restrictions for free tax products probative of postmerger merger cooperation to further restrict eligibility
  4. AND merger would result in the elimination of a "particularly aggressive competitor" (TaxACT) in a highly concentrated market

Coordinated effects in *H&R Block*

- Court
  - Acknowledges that Intuit and merged company will have strong incentives to compete for customers
  - BUT coordination does not have to be on all dimensions of competition
    - One aspect is enough
      - For example, lower the quality of "free" products, causing marginal customers to switch to paid software → making them worse off
    - Here, DOJ alleges "coordination would likely take the form of mutual recognition that neither firm has an interest in an overall "race to free" in which high-quality tax preparation software is provided for free or very low prices." (p. 77)
    - That is, not eliminate free products (useful as marketing devices)
    - Rather, reduce their quality in order to drive more customers into paid products
  - Conclusion:
    - Defendants failed to rebut presumption that anticompetitive coordinated effects would result from the merger
    - To the contrary, the preponderance of the evidence indicates that coordinated effects likely would result

The practice today

- Last choice as a theory
  - Even after the 2010 revisions to the Merger Guidelines, coordinated effects is the last choice as a independent theory of competitive harm in horizontal merger investigations
  - Given the narrow market definitions usually found under the hypothetical monopolist test:
    - In problematic mergers, the merging firms tend to have high market shares and be close competitors with one another
    - Typically yields an easily understood unilateral effects theory
  - *Result*: Coordinated effects is rarely used in investigations or litigations as the primary theory of anticompetitive harm
    - Usually more of an add-on theory in the complaint
    - Or when the agency is forced into it (*CCC/Mitchell*)

The practice today

- When coordinated effects is used in litigation
  - A common approach is for the plaintiffs to invoke the *PNB* presumption and then make the argument that
    - The high concentration and other characteristics of the relevant market make it susceptible to coordinated interaction, *and*
    - the reduction in the number of competitors and increase in concentration resulting from the merger is sufficient to increase the probability of coordinated interaction
      - This is essentially a return to the structure-conduct-performance argument
  - In some cases, however, the evidence may be more substantial
    - The agencies, for example, are looking more closely at significant reductions in excess capacity, especially in heavy industries where capacity expansions are costly and time-consuming, as making the market more conducive to coordinated interaction
      - NB: Consolidations of plants to reduce excess capacity is usually one of the common efficiencies cited by the parties in support of a deal

Anticompetitive Effects
Part 2B. Mavericks

Mavericks

- General idea
  - A “maverick” is a competitor that disrupts coordinated interaction among the other, more accommodating competitors that would occur in the absence of the maverick
  - When an accommodating competitor acquires a maverick, the maverick’s disruptive conduct is suppressed and the market performs less competitively to the harm of consumers
  - As a result, the acquisition of a maverick by an accommodating competitor is a special case of coordination interaction
    - Typically used to challenge deals where the target has a sufficiently small market share that the transaction would not otherwise raise major concerns

Why are "mavericks" mavericks?

1. The most likely reason is idiosyncratic: The particular management of the firm simply believes in being disruptive
   - This may be the case when the management—
     - Refuses to pursue a more industry price-accommodating strategy[1]
     - Pursues a long-run strategy of disruptive new product development or new marketing innovations[2]
   - *Query*: Should a merger be prohibited simply because the current management—perhaps even just the current CEO—believes in being disruptive?

[1] *See, e.g.*, Complaint, United States v. Anheuser-Busch InBev SA/NV, No. 1:13-cv-00127 (D.D.C. filed Jan. 31, 2013) (settled by consent decree).
[2] *See, e.g.*, Complaint, United States v. AT&T Inc., No. 1:11-cv-1560 (D.D.C. filed Aug. 31, 2011) (challenging AT&T's pending acquisition of T-Mobile; complaint voluntarily dismissed when transaction was terminated).

Why are "mavericks" mavericks?

2. Another possible reason is that something inherent in the firm's structure that makes it in the profit-maximizing interest of the firm to be disruptive regardless of the predilections of its management
   - This may be the case if the firm is a small but materially lower-cost producer than the larger, more established firms. In this case, the firm may wish to take advantage of its lower-cost structure to discount prices and gain market share.[1]
   - More generally, smaller firms may have more of an incentive to be a maverick than larger firms, since they have—
     - proportionally less incumbent business at stake in the event that a maverick strategy does not work, *and*
     - proportionally more to gain in market share in the event that the strategy works

[1] *See, e.g.*, United States v. H&R Block, Inc., 833 F. Supp. 2d 36 (D.D.C. 2011) (noting government argument that TaxACT was a "maverick" because, among other things, it was a low-cost competitor that pursued an aggressive pricing policy).

Why are "mavericks" mavericks?

- Should it matter in antitrust law why "mavericks" are mavericks?
  - *Query*: While it makes sense to pay special attention to the acquisition of a "structural" maverick—that is, a firm that has been and is likely to continue to be disruptive of coordinated interaction in the absent of the acquisition—does it also make sense to give the same attention to an "idiosyncratic" maverick, whose behavior is likely to change with a change in management?

Identifying mavericks

- Difficulty
  - Mavericks have that Potter Stewart "I know it when I see it" quality[1]
  - In *H&R Block/TaxACT*, the district court observed:

> The government has not set out a clear standard, based on functional or economic considerations, to distinguish a maverick from any other aggressive competitor [2]

  - But maybe that is the point:
    - Perhaps a maverick is best defined as a firm that aggressive pursues a competitive strategy rather than an accommodating one and thereby disrupts coordination
    - Under this definition, the plaintiffs would have to show that—whatever the source of its "maverickness"—the firm would remain a maverick for some material period of time if the merger did not occur

[1] *See* Jacobellis v. Ohio, 378 U.S. 184, 197 (1964) (Stewart, J., concurring) (describe his threshold test for obscenity).
[2] United States v. H & R Block, Inc., 833 F. Supp. 2d 36, 79-80 (D.D.C. 2011).

Mavericks in *H&R Block*

- Plaintiff's argument:
  - TaxACT is a "maverick" that has disrupted tacit coordination that otherwise would have occurred in the DDIY market
    - Freemium business model
    - Bucked prevailing pricing norms by introducing free-for-all offer, which others matched
    - Remains the only competitor with significant market share that relies on free and low-cost high-quality products
    - TaxACT CEO appears dedicated to freemium strategy
      - NB: Note role of idiosyncratic management preferences
    - Had the effect in pushing industry toward lower pricing, even when the two major players were not anxious to follow
  - The merger will eliminate TaxACT as a disruptive force, which high result in a higher level of coordinated interaction in the relevant market postmerger

Mavericks in *H&R Block*

- Court:
  - DOJ failed to provide clear standards for identifying a maverick
  - But key question remains:

> *"Does TaxACT consistently play a role within the competitive structure of this market that constrains prices?"*

  - Conclusion 1: TaxACT play a special role in keeping the market competitive

> The Court finds that TaxACT's competition does play a special role in this market that constrains prices. Not only did TaxACT buck prevailing pricing norms by introducing the free-for-all offer, which others later matched, it has remained the only competitor with significant market share to embrace a business strategy that relies primarily on offering high-quality, full-featured products for free with associated products at low prices.[1]

[1] United States v. H & R Block, Inc., 833 F. Supp. 2d 36, 80 (D.D.C. 2011).

Mavericks in *H&R Block*

- Court
  - Conclusion 2: The incentives of the merged firm to be disruptive will differ from those of TaxACT premerger

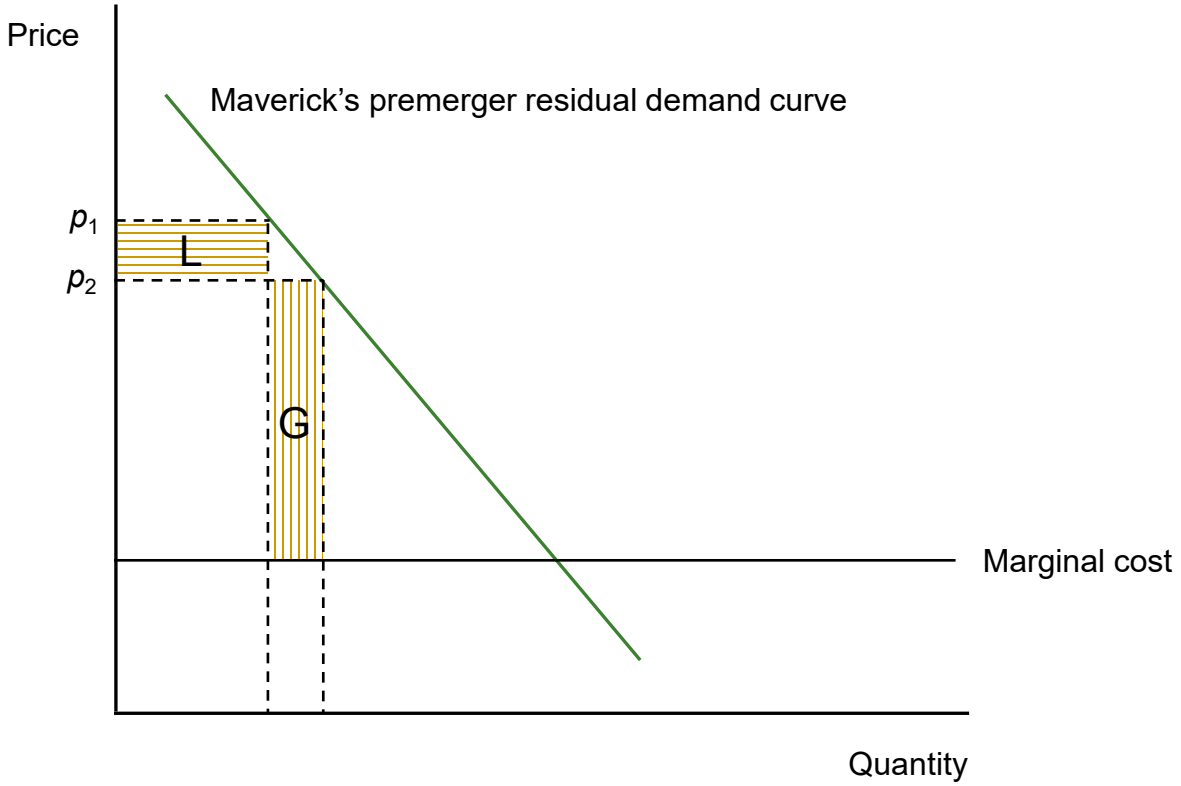
> [T]he pricing incentives of the merged firm will differ from those of TaxACT pre-merger because the merged firm's opportunity cost for offering free or very low-priced products will increase as compared to TaxACT now. In other words, the merged firm will have a greater incentive to migrate customers into its higher-priced offerings—for example, by limiting the breadth of features available in the free or low-priced offerings or only offering innovative new features in the higher-priced products.[1]

This change in incentives is illustrated on the next two slides

[1] United States v. H & R Block, Inc., 833 F. Supp. 2d 36, 80 (D.D.C. 2011) (record citation omitted).

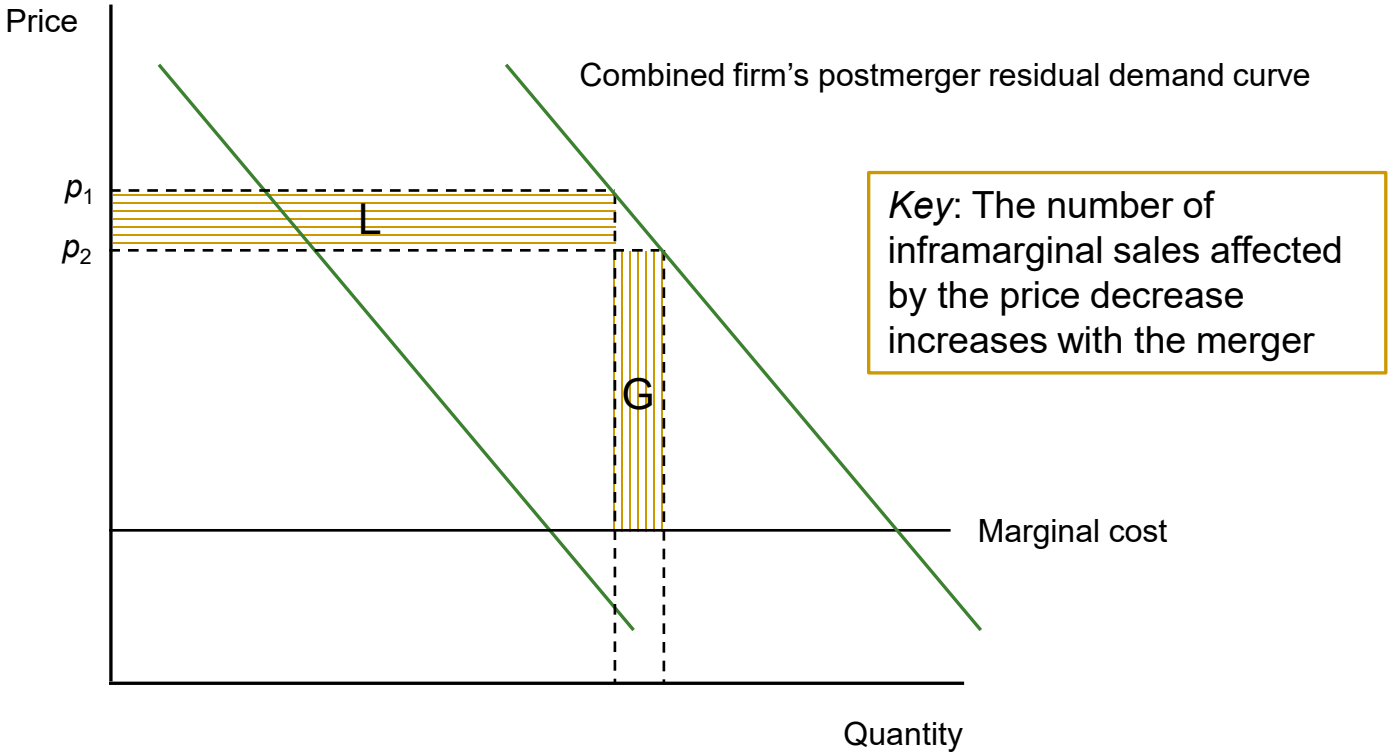
Mavericks–Postmerger incentives

- Premerger incentives to act aggressively
  - As illustrated in the diagram below, the “maverick” standing alone has an increase to lower price because the profit gains outweigh the losses



Mavericks–Postmerger incentives

- Postmerger disincentives to act aggressively
  - Postmerger, the combined firm has a greater sales volume and hence incurs greater losses than the maverick for a given price decrease
  - In the case illustrated in the diagram below, the combined firm does not have an incentive to lower price



Mavericks

- Bottom line: Requirements of a "maverick" theory
  - As *H&R Block/TaxACT* suggests, the following requirements should be imposed on a theory of anticompetitive harm based on eliminating a maverick:
    1. The market is conducive to a materially higher degree of coordinated interaction than it exhibits premerger;
    2. The disruptive conduct of the merger target is a material contributor to the inability of the market to achieve this higher degree of coordinated interaction;
    3. The acquisition of the merger target is likely to result in the discontinuance of the disruptive conduct; *and*

       NB: Sometimes the target management will become the management of the combined company, which raises the question of whether the disruptive activity will be discontinued.
    4. The discontinuance of the merger target's disruptive activity is likely to result in a materially higher degree of coordinated interaction in the market to the harm of consumers
       - This requires that the target be unique or especially effective in its disruptive conduct

Mavericks

- One final note
  - Although in most applications of the theory the target is the maverick, in some cases the buyer may be the maverick
  - The incentives argument is harder for the plaintiff in this situation, since the disruptive buyer's management will run the combined company
    - But they still face an incentive to be less of a maverick because of the effect on a larger number of inframarginal sales.

Anticompetitive Effects
Part 3. Unilateral Effects

Unilateral effects

- Definition
  - Unilateral effects is a theory of anticompetitive harm that goes to the elimination of significant "local" competition between the merging firms, so that the merged firm can raise prices independently of how other incumbent firms react

> A merger is likely to have unilateral anticompetitive effect if the acquiring firm will have the incentive to raise prices or reduce quality after the acquisition, independent of competitive responses from other firms.[1]

  - The idea is that can increase prices to an identifiable subset of customers in the market even *without* any accommodating conduct from the nonmerging firms in the market, and that this price increase is a cognizable anticompetitive effect under Section 7
    - In other words, an anticompetitive effect results if the merging firm increases the price of one of its products as a result of the merger even if no other firm in the market increases its price
    - The concept of unilateral effects as a theory of merger anticompetitive harm was introduced in the 1992 DOJ/FTC Horizontal Merger Guidelines
    - The theory has been accepted as valid under Section 7 by the courts

[1] United States v. H&R Block, Inc., 833 F. Supp. 2d 36, 81 (D.D.C. 2011).

Unilateral effects

- Example: Upward-price increasing unilateral effect in horizontal mergers

Pre-Price Increase

	p	*c*	*$m*	*q*	Profits
Firm A	300	100	200	100	20000
Firm B	350	90	260	120	31200

Post-Price Increase

Firm A increases prices by:	30
Firm A marginal (lost) sales:	-15
Diversion: A to B	60%

Unit sales Firm A loses to Firm B: 9

	p	*c*	*$m*	*q*	Profits	Profit change
Firm A	330	100	230	85	19550	-450
Firm B	350	90	260	129	33540	2340

When A is independent, the price increase is unprofitable

When A and B merge, the price increase is jointly profitable

Unilateral effects

- What is going on here
  - Premerger, what happens to firm B is irrelevant to firm A
  - Postmerger, the combined firm recaptures through firm B some of the diverted marginal sales from firm A
    - This upsets the premerger marginal revenue = marginal cost first order condition, since the recapture by firm B increases A's marginal revenue
      - When all incremental gains and losses are booked to firm A
    - To reequilibrate the FOC, firm A must increase price and decrease output

Unilateral effects

- A bit more formally: The profit-maximizing economics of firm A when A *increases* price
  - Allocating all incremental gains and losses to firm A
  - Premerger

Marginal revenue			=	Marginal cost
(–)		(+)		(–)
Loss in revenues from the loss on the marginal unit	+	Gain in revenues on the higher margin on the inframarginal sales	=	Reduction in the marginal cost of production

  - Note that the signs are the *opposite* of what we usually see (think $-mr = -mc$)
  - This is because firm A is increasing price and so *decreasing* sales
    - So, for example, there is revenue *loss* on the lost marginal sale ($-p$)
  - Postmerger

Marginal revenue			+	Recapture	=	Marginal cost
(–)		(+)		(+)		(–)
Loss in revenues from the loss on the marginal unit	+	Gain in revenues on the higher margin on the inframarginal sales	+	$D_{AB}m_B$	=	Reduction in the marginal cost of production

  - So $-mr$ + recapture > $-mc$ at premerger price and quantity. Multiplying by -1 yields mr - recapture < mc, so A must reduce quantity and increase price to maximize profits

Unilateral effects

- Another example (this time when A *increases* production)
  - Say for firm A:
    - Inverse demand: $p = 300 - q$
    - Fixed costs: $f = 0$
    - Marginal costs: $mc = 20$
    - Marginal revenue: $mr = 300 - 2q$

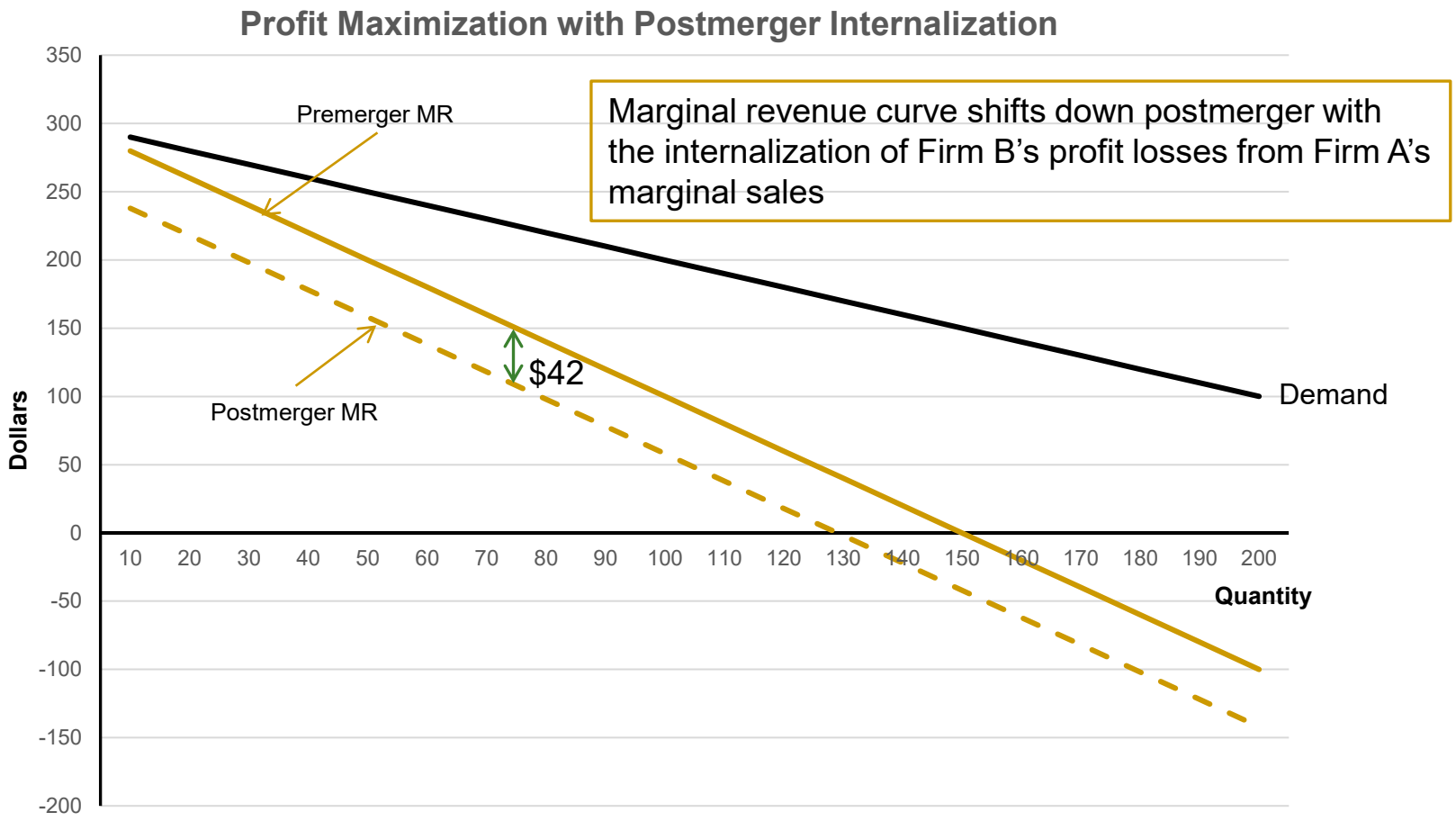
FOC: $mr = mc$
$300 - 2q = 20$
So: $q^* = 140$
$p^* = 160$

  - Say when firm A increases its production by 1 unit (and lowers its price by \$1), 0.3 units that firm B would have sold now divert to Firm A ($D_{BA} = 0.3$)
  - If firm B's margin is also 140 at the initial price level, then firm A's change in production causes firm B to lose \$42 ($\Delta\pi_B = D_{BA} \times \$m_B = = (0.3)(140) = \$42$).
    - That is, Firm A's conduct creates a *negative externality* for Firm B
  - When A and B are independent firms, firm A does not care about firm B's loss
  - But when firm A acquires firm B, firm A must take into account firm B's losses in firm A's marginal revenue:

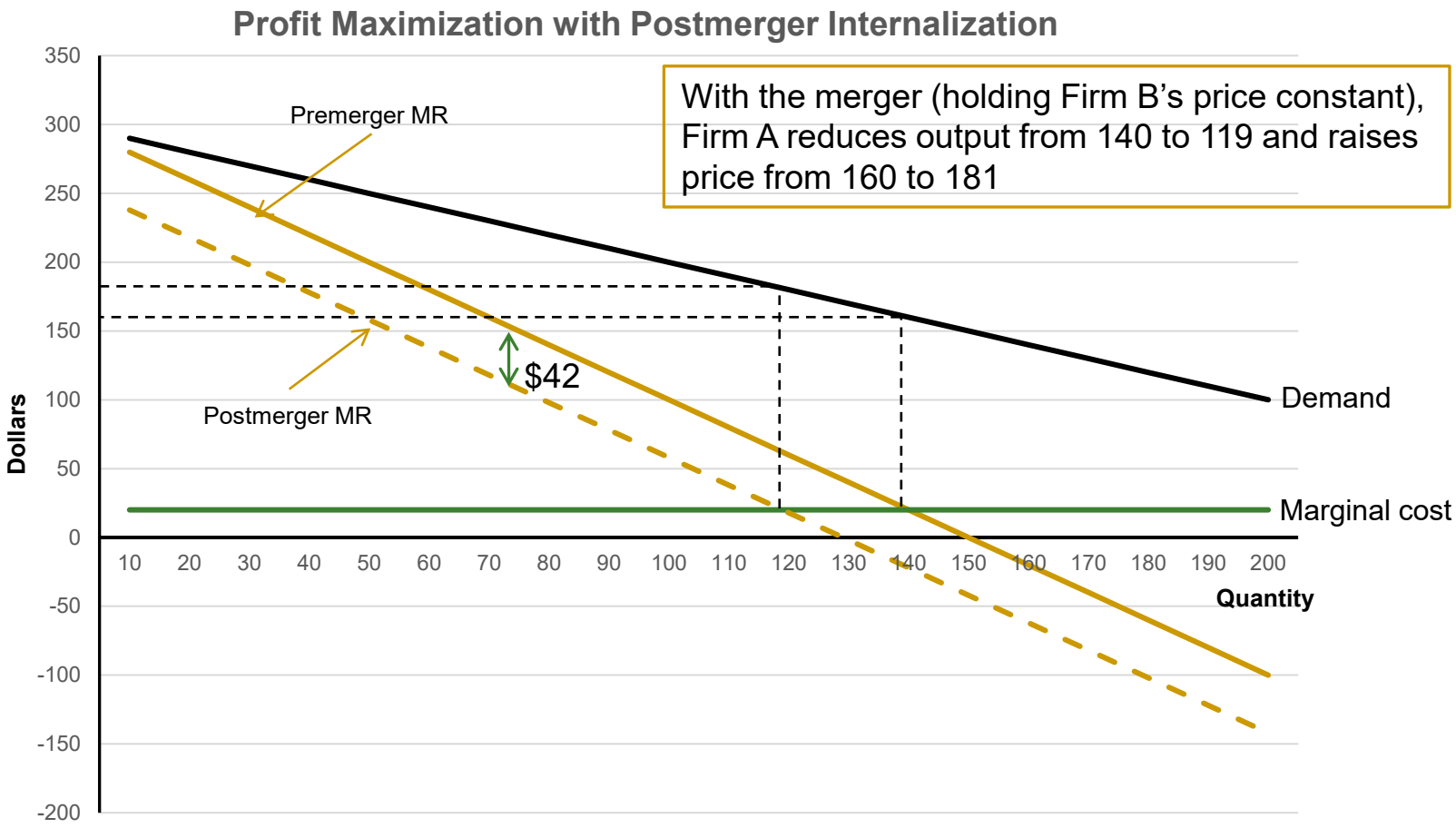
$$mr_A^{postmerger} = mr_A^{premerger} - D_{BA}\$m_B$$
$$= 300 - 2q - 42$$

This shifts firm A's marginal revenue curve down and makes firm A's marginal revenue less than its marginal cost at premerger prices. *Firm A must decrease output and increase price to reequilibrate marginal revenue and marginal cost:* $q_{post} = 119$; $p_{post} = 181$

Unilateral effects



Unilateral effects



Unilateral effects

- Offsetting marginal cost efficiencies
  - *Query*: What marginal cost reduction would be necessary to offset a one-product unilateral effect?
    - No marginal cost efficiencies:

$$mr_A^{postmerger} = mr_A^{premerger} - D_{BA}\$m_B = mc_A$$

    - Say the marginal cost efficiencies reduce marginal costs by *e* percent. Then:

$$mr_A^{postmerger} = mr_A^{premerger} - D_{BA}\$m_B = (1-e)mc_A$$

      - Rearranging and cancelling equal terms:

$$mr_A^{postmerger} = mr_A^{premerger} - D_{BA}\$m_B = mc_A - e \times mc_A$$

    - So to restore the first order condition at original prices and output:

$$D_{BA}\$m_B = e \times mc_A$$

      that is, the downward pricing pressure from the marginal cost reduction must offset the upward pricing pressure

Unilateral effects

- Why unilateral effects can be important (example)
  - Nestlé-Dreyer's in the super-premium segment of an all ice cream market

All Ice Cream[1]
(supermarket sales in 2002)

	Sales	Share	HHI
Store brands (10)	$997.2	23.0%	53
Dreyer's	$795.4	18.4%	339
Breyer's	$686.8	15.9%	253
Blue Bell	$253.4	5.8%	34
Ben & Jerry's	$199.8	4.6%	21
Nestlé	$192.7	4.4%	19
Wells Diary	$136.9	3.2%	10
Armour Swift	$106.7	2.5%	6
Turkey Hill	$105.2	2.4%	6
Marigold Foods	$88.2	2.0%	4
Others (10)	$769.1	17.8%	32
	$4,331.4	100.0%	776
Combined share		22.8%	
Premerger HHI			776
Delta			162
Post-merger			938

HHIs fall within a Merger Guidelines' "safe harbor"

But unilateral effects indicates that the merger may be a problem if the cross-elasticities between Dreyer's and Nestlé's are:

1. High between the merging parties
2. Low with everyone else

Key: Unilateral effects create upward pricing pressure regardless of the market definition or the HHIs

[1] Sherri Day, *Nestlé and Dreyer's to Merge in $2.4 Billion Deal, Creating Top U.S. Ice Cream Seller*, N.Y. Times, June 18, 2002

Unilateral effects

- But the DOJ avoided the use of unilateral effects by narrowly defining the market super-premium ice cream

All Ice Cream (1)
(supermarket sales in 2002)

	Sales	Share	HHI
Store brands (10)	$997.2	23.0%	53
Dreyer's	$795.4	18.4%	339
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	$4,331.4	100.0%	776
Combined share		22.8%	
Premerger HHI			776
Delta			162
Post-merger			938

Super-Premium Ice Cream (2)
(all channels)

	Sales	Share	HHI
Ben & Jerry's	$254.40	42.4%	1797.76
Nestlé	$219.00	36.5%	1332.25
Dreyer's	$114.60	19.1%	364.81
Others	$12.00	2.0%	4
	$600.00	100.0%	3498.82
Combined share		55.6%	
Premerger HHI			3,501
Delta			1,396
Postmerger HHI			4,897

Violates Guidelines

[1] Sherri Day, *Nestlé and Dreyer's to Merge in $2.4 Billion Deal, Creating Top U.S. Ice Cream Seller*, N.Y. Times, June 18, 2002.
[2] Complaint, *In re* Nestlé Holdings, Inc., 136 F.T.C. 791 (2003) (settled by consent decree).

Unilateral effects and market definition

- If there is a significant unilateral effect price effect from a merger, the hypothetical monopolist test will—
  - define narrow markets around the merging parties, *and thereby*
  - create corresponding high market shares and HHIs
- *Consequence*: When unilateral effects are present—
  1. The relevant markets will be smaller, and
  2. The *PNB* presumption will be stronger (higher HHIs)

Unilateral effects: Requirements

- General requirements of the theory
  1. There must be two products differentiated in prices (premerger or postmerger)
  2. The products of the merging parties must be close substitutes for one another
  3. The products of (most) other firms must be sufficiently more distant substitutes to permit the merged firm to profitably increase price for at least one of its products
  4. Entry, expansion or repositioning into the products of the merging firms must be sufficiently difficult so as not to defeat the profitability of the merging firm increasing its prices postmerger
- Specific Guidelines requirements
  - 1992: Merging companies—
    1. had to be each other's closest competitors, and
    2. the combined firm had to have a market share of at least 35%

    Problem: Some cabining was necessary, since otherwise the unilateral effects theory applies too broadly to any merger where the combining firms have positive cross-elasticity with one another and a positive margin and the market exhibits barriers to entry and repositioning
  - 2010: Eliminated both the closest substitute and 35% share requirements

Unilateral effects in *H&R Block*

- Court:
  - Reframed unilateral effects in terms of a negative defense in rebuttal to the *PNB* presumption, so that the merging parties had the burden of production
  - Findings with respect to market definition make out a prima facie showing of unilateral effects:
    1. H&R Block and TaxACT products were differentiated in price
    2. H&R Block and TaxACT products were close substitutes to each other
       - Although not each other's closest substitutes
    3. Product of (most) other products were distant substitutes
       - But Intuit was a close—indeed, the closet—substitute to both H&R Block and TaxACT
    4. High barriers to entry, expansion, and repositioning was difficult

Unilateral effects in *H&R Block*

- Defendants' rebuttal
  1. Pledge to maintain TaxACT's current prices (more of a fix)
     - *Defendants*: Would maintain current prices for three years
       - Argument: no price changes → no diversion → no anticompetitive unilateral effect
     - *Court*: Not a defense even assuming truthfulness
       - Can create diversion in other ways
         - Could manipulate other variables (e.g., reduce functionality of free products) to make paid, more functional products more attractive)
         - Could market free products less aggressively and more selectively
  2. Two-brand strategy
     - *Defendants*: Will maintain both brands—HRB (high end) and TaxACT (low-end)
     - *Court*: Subject to anticompetitive manipulation in the attributes of products
  3. Combined firm's market share too low
     - *Defendants*: Combined share is only 28.4%
       - Below the 35% required in some cases and the 1992 Guidelines
     - *Court*: There is no market share threshold for unilateral effects
       - Consistent with the 2010 Guidelines
  4. Merging parties not each other closest substitutes
     - *Defendants*: Intuit is the closest DDIY substitute to both HRB and TaxACT
       - As required by some courts and the 1992 Merger Guidelines
     - *Court*: Not required to be each other's closest substitute (consistent with the 2010 MG)

Merger simulation in *H&R Block*

- *Court*: Merger simulation also shows likely unilateral price increase
  - Warren-Boulton did a merger simulation showing a likely substantial unilateral price increases in all three DDIY products following the merger
  - Predicted price increases postmerger—
    - TaxACT 83%
    - HRB 37%
    - TurboTax 11%

This results from an accommodating price increase within the Bertrand model

The quantification of a price effect resulting from a merger is called a merger simulation

Unilateral effects and quantitative analysis

- Unilateral effect can quantitatively predicts price effects
  - Unilateral effects (as we will see) can quantitatively predict unilateral price increases with relatively simple models
    - Coordinated effects makes qualitative predictions but unilateral effects permits quantitative predictions
  - Observations
    - Quantitative analysis gives the agency economists something to do
    - There is a view that quantitative analysis is more “scientific” and more reliable—and hence more compelling—than qualitative predictions
    - Therefore, the side that the quantitative results favor will want to present them to the trier of fact
    - This forces the other side to do its own quantitative analysis as a counter
    - There is an entirely separate question whether any of the quantitative predictions are any good—there are very few retrospective studies assessing the reliability of unilateral effects quantitative analysis

Merger simulation

- Merger simulation: General idea
  1. A model is specified for the market
     - Observable parameters in the model might include:
       - The number of firms
       - Their respective market shares
       - Their respective production capacities
       - Their respective margins
  2. Parameters for this model that are not directly observable are estimated, so that the model generates the observed premerger market equilibrium variables of interest (e.g., prices, margins, aggregate output)
     - Depending on the sophistication of the model, nonobservable parameters might include:
       - Demand parameters (e.g., a cross-elasticity matrix of all own-and cross-elasticities within the market)
       - Premerger cost parameters
  3. The model, using the observable and estimated parameters, is applied to postmerger structure to simulate (predict) the postmerger market equilibrium

Merger simulation

- Problems with merger simulation
  - Only as good as the model, the data, and the parameter estimates that go into the simulation
  - Small changes in the model specification or the parameter estimation methods can result in big changes to the predicted postmerger price increases
  - Often predict “hard to believe” price increases
  - Very few studies testing the accuracy of postmerger simulation with the use of actual postmerger data
    - That is, few studies examine how close or how far the simulated results are from what actually happened

Merger simulation in *H&R Block*

- Warren-Boulton model: Used a very simple model—
  - Diversion ratios between HRB and TaxACT
  - Price-cost margins of the two products
  - A Bertrand pricing model
- The opinion did not give the details of the Bertrand pricing model
- But we will look at—
  - Diversion ratios
  - A “gross upward pricing pressure index” (GUPPI) simulation model

Diversion ratios: A refresher[1]

- Definition (when Firm A raises price):

$$D_{A\to B} \equiv D_{AB} = \frac{\Delta q_B}{\Delta q_A}$$

where firm A loses total sales of Δq_A, of which Δq_B go to firm B

- How are diversion ratios estimated?
  - Data collected during the regular course of business
  - Indications in the company documents
  - Consumer surveys
  - Demand system estimation/econometrics
  - Market shares as proxies (the "relative market share" method)
    - Assumes that customers divert in proportion to the market shares of the competitor firms:

$$D_{A\to B} = \left(1 - \frac{\Delta q_{outside}}{\Delta q_A}\right)\frac{s_B}{1 - s_A},$$

where s_A and s_B are the markets shares of firms A and B, respectively, in the market, and $\frac{\Delta q_{outside}}{\Delta q_A}$ is the percentage of Firm A's lost sales that are diverted to firms outside of the candidate market

[1] Diversion ratios were introduced in our discussion of market definition.

Diversion ratios: Homework problem 1

- Consider the following shares for fresh orange juice:

	Orange Juice Production (million gal.)	Share
Tropicana	291.4	45.0%
Coca-Cola	136.0	21.0%
Fresh OJ	136.0	21.0%
OJ Natural	46.0	7.1%
Others (6)	38.2	5.9%
	647.6	100.0%

  - Assume that all diversion occurs within orange juice (that is, there is no switching to a nonorange juice option) and switching within orange juice is gallon for gallon. Using the relative market share method, what are the diversion ratios from Coca-Cola to each of the other orange juice products?

Diversion ratios: Homework problem 1

Orange Juice

	Production (million gal.)	Share
Tropicana	291.4	45.0%
Coca-Cola	136.0	21.0%
Fresh OJ	136.0	21.0%
OJ Natural	46.0	7.1%
Others (6)	38.2	5.9%
	647.6	100.0%

General formula:

$$D_{A\to B} = \left(1 - \frac{\Delta q_{outside}}{\Delta q_A}\right)\frac{s_B}{1-s_A}$$

Here, $\frac{\Delta q_{outside}}{\Delta q_{Coca-Cola}} = 0\%$

$$D_{CocaCola\to Tropicana} = \frac{45\%_B}{1-21\%} = 57.0\%$$

$$D_{CocaCola\to FreshOJ} = \frac{21\%}{1-21\%} = 26.6\%$$

$$D_{CocaCola\to OJNatural} = \frac{7.1\%}{1-21\%} = 9.0\%$$

$$D_{CocaCola\to Others} = \frac{5.9\%}{1-21\%} = 7.5\%$$ collectively

Allocates 100% of the diverted sales. No sales go to the outside option.

Diversion ratios: Homework problem 2

- Consider the following shares for fresh orange juice:

	Orange Juice Production (million gal.)	Share
Tropicana	291.4	45.0%
Coca-Cola	136.0	21.0%
Fresh OJ	136.0	21.0%
OJ Natural	46.0	7.1%
Others (6)	38.2	5.9%
	647.6	100.0%

  - Same as Problem 1 except that 10% of Coca-Cola's lost sales are diverted to the outside option

Diversion ratios: Homework problem 2

Orange Juice

	Production (million gal.)	Share
Tropicana	291.4	45.0%
Coca-Cola	136.0	21.0%
Fresh OJ	136.0	21.0%
OJ Natural	46.0	7.1%
Others (6)	38.2	5.9%
	647.6	100.0%

General formula:

$$D_{A\to B} = \left(1 - \frac{\Delta q_{outside}}{\Delta q_A}\right)\frac{s_B}{1-s_A}$$

Here, $\frac{\Delta q_{outside}}{\Delta q_{Coca-Cola}} = 10\%$

$$D_{CocaCola\to Tropicana} = (1-10\%)\left(\frac{45\%_B}{1-21\%}\right) = 51.3\%$$

$$D_{CocaCola\to FreshOJ} = (1-10\%)\left(\frac{21\%}{1-21\%}\right) = 23.9\%$$

$$D_{CocaCola\to OJNatural} = (1-10\%)\left(\frac{7.1\%}{1-21\%}\right) = 8.1\%$$

$$D_{CocaCola\to Others} = (1-10\%)\left(\frac{5.9\%}{1-21\%}\right) = 6.7\%$$

collectively

Allocates 90% of the diverted sales. The remaining 10% goes to the outside option.

GUPPIs

- Gross Upward Pricing Pressure Index (GUPPI)
  - Definition (unmotivated):

$$GUPPI_A \equiv \frac{\text{value of profits from sales diverted to product B}}{\text{value of all sales lost by product A}} = \frac{\Delta q_B \left(p_B - c_B\right)}{\Delta q_A p_A}$$

  - Let $m_B = \frac{p_B - c_B}{p_B}$ the percentage gross margin of product B and D_{AB} be the diversion ratio between product A and product B.

    Then multiplying by p_B/p_B:

$$GUPPI_A == \frac{\Delta q_B}{\Delta q_A} \frac{\left(p_B - c_B\right)}{p_B} \frac{p_B}{p_A} = D_{AB} m_B \frac{p_B}{p_A},$$

    which is the usual form of the expression for a GUPPI
  - Section 6.1 of the 2010 DOJ/FTC Horizontal Merger Guidelines implicitly creates of measure of this type

GUPPIs

- Merger simulation with GUPPIs (in a very special case)
  - Assumptions
    - Linear residual demand curves
    - Equal diversion ratios ($D_{12} = D_{21} = D$)
    - Equal marginal costs, equal prices, and equal market shares
  - In a Bertrand competition model, the GUPPI gives the profit-maximizing price increase postmerger under the unilateral effects theory
    1. The profit-maximizing price increase for product 1 leaving the price of product 2 at its premerger level:

$$\frac{\Delta p_1^*}{p_1} = \frac{GUPPI}{(1-D)} = \frac{Dm}{(1-D)}$$

    2. The profit-maximizing price increase for both product 1 and product 2 when raising the price of both products:

$$\frac{\Delta p_1^*}{p_1} = \frac{\Delta p_2^*}{p_2} = \frac{GUPPI}{2(1-D)} = \frac{Dm}{2(1-D)}$$

Why look at so special a case?
Because the Merger Guidelines uses this model in Example 5!

GUPPIs

- Merger simulation with GUPPIs in the Merger Guidelines
  - Example 5 of the 2010 DOJ/FTC Horizontal Merger Guidelines

> Products A and B are being tested as a candidate market. Each sells for $100, has an incremental cost of $60, and sells 1200 units. For every dollar increase in the price of Product A, for any given price of Product B, Product A loses twenty units of sales to products outside the candidate market and ten units of sales to Product B, and likewise for Product B. Under these conditions, economic analysis shows that a hypothetical profit-maximizing monopolist controlling Products A and B would raise both of their prices by ten percent, to $110.

- How do the Guidelines predict that the profit-maximizing price will increase by $10?
  - Summary of parameters

$$p = \$100 \qquad c = \$60$$

$$D = \frac{10}{10+20} = 1/3 \qquad m = \frac{p-c}{p} = \frac{100-60}{100} = 0.4$$

  - The market exhibits linear demand and complete symmetry, so we can use the simple GUPPI model:

$$\frac{\Delta p_1^*}{p_1} = \frac{\Delta p_2^*}{p_2} = \frac{Dm}{2(1-D)} = \frac{(1/3)(0.4)}{2(1-1/3)} = 0.10 \quad \text{or } 10\%$$

So price will increase from $100 to $110

GUPPIs: Homework problem 3

Products A and B are being tested as a candidate market. Each is priced at $140 per unit, has an incremental cost of $110, and sells 2000 units. For every dollar increase in the price of Product A, for any given price of Product B, Product A loses 40 units of sales to products outside the candidate market and 10 units of sales to Product B, and likewise for Product B. Under these conditions, what price would a hypothetical monopolist of Products A and B charge if (a) it had to increase prices of both products by the same amount, and (b) if it increased the price of only one product? (c) Are Products A and B a relevant market?

- Summary of parameters (linear demand and complete symmetry):

$$p = \$140 \qquad c = \$110$$

$$D = \frac{10}{10+40} = 0.2 \qquad m = \frac{p-c}{p} = \frac{140-110}{140} = 0.21$$

- Two product price increase:

$$\frac{\Delta p_A^*}{p_A} = \frac{\Delta p_B^*}{p_B} = \frac{Dm}{2(1-D)} = \frac{(0.2)(0.21)}{2(1-0.2)} = 2.7\%$$

$$\text{New price} = (1+0.27)(140) = 143.75$$

- One-product price increase

$$\frac{\Delta p_A^*}{p_A} = \frac{Dm}{(1-D)} = \frac{(0.2)(0.21)}{(1-0.2)} = 5.4\%$$

$$\text{New price} = (1+0.54)(140) = 147.50$$

NB: These are *profit-maximizing price increases*, so they provide a necessary test for a profit-maximizing HMT but only a sufficiency test for a profitability HMT.

A and B are a relevant product market under a 5% one-product SSNIP test

GUPPIs

- Merger simulation with GUPPIs
  - The model so far is very restrictive with all of its symmetry conditions
  - Loosening these conditions makes things complicated very quickly
    - For example, when residual demand for both firms is linear but diversion ratios and margins differ, the optimal price increase formula becomes:

$$\frac{\Delta p_A^*}{p_A} = \frac{\left(D_{B\to A}\left(D_{B\to A} + D_{A\to B}\right)\right)m_A + 2D_{A\to B}m_B}{4 - \left(D_{B\to A} + D_{A\to B}\right)^2}$$

You should just see this to understand how quickly the formula becomes with a relaxation of the restrictions. You will not be required to know or use the formula.