
Unit 9. H&R Block/TaxACT

Part 1. Market Definition

Merger Antitrust Law

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Topics

- Market definition generally
 - An essential element of the prima facie case
 - Market definition procedurally

- Product markets
 - *Brown Shoe* markets and submarkets
 - Hypothetical monopolist test
 - 1992 Horizontal Merger Guidelines
 - 2010 Horizontal Merger Guidelines
 - Some special cases

- Geographic markets
 - Judicial tests
 - 1992 Horizontal Merger Guidelines
 - 2010 Horizontal Merger Guidelines

- Critical loss analysis

Market Definition Generally

An essential element of the prima facie case

- Section 7 of the Clayton Act provides:

No person engaged in commerce or in any activity affecting commerce shall acquire, directly or indirectly, the whole or any part of the stock or other share capital and no person subject to the jurisdiction of the Federal Trade Commission shall acquire the whole or any part of the assets of another person engaged also in commerce or in any activity affecting commerce, where *in any line of commerce* or in any activity affecting commerce *in any section of the country*, the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly.¹

- Market definition as an element of the prima facie case

- The Supreme Court has interpreted this language to require as part of the plaintiff's prima facie case a showing of:
 1. the “line of commerce: (relevant product market), and
 2. the “section of the country” (relevant geographic market)
 3. in which the alleged anticompetitive effect is reasonably probable
- The courts have extended this requirement to merger antitrust cases under the Sherman and FTC Acts

¹ 15 U.S.C. § 18.

An essential element of the prima facie case

- Some good quotes for use in briefs:
 - “Determination of the relevant product and geographic markets is ‘a necessary predicate’ to deciding whether a merger contravenes the Clayton Act.”¹
 - “Determination of the relevant market is a necessary predicate to a finding of a violation of the Clayton Act because the threatened monopoly must be one which will substantially lessen competition ‘within the area of effective competition.’ Substantiality can be determined only in terms of the market affected.”²
 - “Statistics reflecting the shares of the market controlled by the industry leaders and the parties to the merger are, of course, the primary index of market power; but only a further examination of the particular market—its structure, history and probable future—can provide the appropriate setting for judging the probable anticompetitive effect of the merger.”²

¹ United States v. Marine Bancorporation, Inc., 418 U.S. 602, 618 (1974) (quoting United States v. E. I. Du Pont de Nemours & Co., 353 U.S. 586, 593 (1957)).

² United States v. E. I. Du Pont de Nemours & Co., 353 U.S. 586, 593 (1957) (footnote omitted).

³ Brown Shoe Co. v. United States, 370 U.S. 294, 322 n.28 (1962); *accord* United States v. General Dynamics Corp., 415 U.S. 486, 498 (1974).

Market definition procedurally

- Question of fact
 - The determination of the boundaries of the relevant market is a question of fact
- Burden of proof
 - The plaintiff bears the burden of proof on market definition
- Motion to dismiss: *Twombly* applies
 - The complaint must contain sufficient factual allegations to make the alleged market definition plausible under the market definitions standards in the case law
 - The plaintiff's failure to adequately plead market definition in a complaint will result in the complaint's dismissal
 - However, *Twombly* challenges are not always brought, especially where (which is usually the case) it is easy to replead the complaint and fix the deficiency

Market definition procedurally

■ Forward looking

- Since merger antitrust law is forward-looking—that is, it makes unlawful mergers and acquisitions that are likely to lessen competition substantially in the future as compared to what competitive conditions would have been absent the transaction—market definition equally must be forward-looking
- Product market definition, for example, should take into account new products that shortly will be released or old products that will soon be obsolete
- Likewise, geographic market definition should take into account the construction of new facilities, changing transportation modes or patterns, or new methods of purchasing or distribution.

■ Appeal

- As a finding of fact, district court ruling reviewed under the “clearly erroneous” rule
- FTC findings reviewed under the “substantial evidence” rule

Product Markets

Product markets generally

- What is a relevant product market?
 - A relevant product market defines the product boundaries within which competition meaningfully exists¹
 - Although discussed in terms of products, the product market concept equally applies to services or a mixed combination of a product with accompanying services

- Modern concept of relevant markets
 - Products in the relevant market should exert significant price pressure on one another
 - That is, an increase in price of one of the products in the market should cause customers to switch to other products in the market, and this loss of sales should result in the price increase being unprofitable.
 - Some definitions
 - *Inframarginal customers* continue to buy the product after the price increase
 - *Marginal customers* would buy the product at the original price but not at the increased price

- The showing of the relevant market(s) is an essential element of every Section 7 violation
 - The plaintiff must make a prima facie showing of a relevant market as part of its prima facie case and bears the ultimate burden of persuasion

¹ United States v. Continental Can Co., 378 U.S. 441, 449 (1964).

Two complementary tests in judicial analysis

1. The judicial approach

- ❑ The judicial approach to product market analysis takes its point of departure from the Supreme Court's decision in *Brown Shoe Co. v. United States*,¹ which identified a variety of factors to be considered but said very little about how to consider them
- ❑ The result was enormous confusion, bad analysis, bad decisions, and inconsistency in the courts

2. Merger Guidelines approach

- ❑ Much of the confusion in the courts, and essentially all of the doctrinal disarray in the Antitrust Division and the FTC, has been eliminated by the new market definition approach introduced in the 1982 DOJ Merger Guidelines and continued today (with some changes) in the 2010 DOJ/FTC Horizontal Merger Guidelines
- ❑ The Guidelines' approach seeks to identify markets as product and geographical groupings that are susceptible to the exercise of market power by a hypothetical monopolist
- ❑ In the courts, although the Guidelines' approach is not binding as a matter of law, the foundations of the Guidelines' hypothetical monopolist test has been adopted as conceptually appealing and practically workable

¹ *Brown Shoe Co. v. United States*, 370 U.S. 294 (1962).

The judicial approach: *Brown Shoe*

- *Brown Shoe* provides the starting point in judicial analysis for market definition:

The outer boundaries of a product market are determined by the **reasonable interchangeability of use** or the **cross-elasticity of demand** between the product itself and substitutes for it. However, within this broad market, well-defined **submarkets** may exist which, in themselves, constitute product markets for antitrust purposes. The boundaries of such a submarket may be determined by examining such practical indicia as industry or public recognition of the submarket as a separate economic entity, the product's peculiar characteristics and uses, unique production facilities, distinct customers, distinct prices, sensitivity to price changes, and specialized vendors. Because § 7 of the Clayton Act prohibits any merger which may substantially lessen competition "in *any* line of commerce" (emphasis supplied), it is necessary to examine the effects of a merger in each such economically significant submarket to determine if there is a reasonable probability that the merger will substantially lessen competition. If such a probability is found to exist, the merger is proscribed.¹

¹ *Brown Shoe Co. v. United States*, 370 U.S. 294, 325 (1962) (internal citations and footnotes omitted; emphasis added).

Brown Shoe “outer boundaries” test

■ *Brown Shoe*:

The outer boundaries of a product market are determined by the reasonable interchangeability of use or the cross-elasticity of demand between the product itself and substitutes for it.¹

- This remains the prevailing definition of a relevant product market in the case law
- Key indicia—
 - Reasonable interchangeability of use
 - [High] cross-elasticity of demand

■ General idea

- The idea is that the relevant product market should—
 - contain all products that exhibit a reasonable interchangeability of use and a high cross-elasticity of demand with one another, *and*
 - exclude all products that lack reasonable interchangeability of use and have a low cross-elasticity of demand with products in the relevant product market

■ Modern usage

- Reasonable interchangeability of use has largely come to mean high cross-elasticity of demand and is no longer a distinct “outer boundary” test

¹ *Brown Shoe Co. v. United States*, 370 U.S. 294, 325 (1962).

Brown Shoe “outer boundaries” test

■ The core concept

- Substitutes that are reasonably interchangeable and exhibit a high cross-elasticity with the products of the merging firms are central to market definition because these substitutes determine the extent to which customers of the merging firms can protect themselves against anticompetitive price increases, quality decreases, or declines in the rate of technological innovation or product improvement.
- If the combined firm attempts to act anticompetitively, either alone or in concert with others, it will only lose sales and, more importantly, profits. The availability of substitutes serves to discipline the combined firm to act competitively.
- The alternative products in the relevant market need not be the first choice of all customers; it is enough that a significant number of customers of the merging parties would turn to the other products in the market if the merged firm’s prices were to increase relative to the prices of these other products.
- In this sense, market definition, as properly conceived in the reasonable interchangeability of use and high cross-elasticity of demand criteria of *Brown Shoe*, seeks to identify substitutes for the products of the merging firms as a first step in ascertaining whether the disciplining effects of these substitutes are likely to be sufficient to maintain the competitive *status quo ex ante* in the wake of a merger or acquisition.

Brown Shoe “practical indicia” test

- Submarkets and “practical indicia” of relevant markets

However, within this broad market [defined by reasonable interchangeability of use and high cross-elasticity of demand], well-defined **submarkets** may exist which, in themselves, constitute product markets for antitrust purposes. The boundaries of such a submarket may be determined by examining such **practical indicia** as

[1] industry or public recognition of the submarket as a separate economic entity,

[2] the product’s peculiar characteristics and uses,

[3] unique production facilities,

[4] distinct customers,

[5] distinct prices,

[6] sensitivity to price changes, and

[7] specialized vendors.¹

¹ *Brown Shoe Co. v. United States*, 370 U.S. 294, 325 (1962).

Brown Shoe “practical indicia” test

- Submarkets and “practical indicia” of relevant markets
 - This list of “practical indicia” was not intended to be exhaustive
 - Some additional factors that courts typically consider—
 1. Relative prices of products in the provisional market
 - A Timex and a Rolex both tell time, but they are unlikely to exhibit a high cross-elasticity of demand with one another
 2. Different functional attributes that might appeal to different classes of buyers
 - Consider the functional difference between a Ferrari 812 (0-60 mph: 2.8 sec.; top speed: 211 mph) and a Nissan Versa (0-60 mph: 10.2 sec.; top speed: 115 mph)
 - Differences in functionality are often accompanied by differences in price (Ferrari 812 base price: \$340,712; Nissan Versa base price: \$15,625)
 3. Differences in reputation
 - Even without functional differences
- Problems with the *Brown Shoe* “practical indicia” test
 - The list provides some factors to consider, but does not say what weight they should be given or give any other analytical technique to apply them to determine the boundaries of submarkets
 - This created an enormous amount of confusion, bad analysis, and bad decisions

¹ *Brown Shoe Co. v. United States*, 370 U.S. 294, 325 (1962).

Brown Shoe submarkets: The modern view

- Submarkets (surprisingly) remain a valid concept in antitrust law
 - Courts still employ the concept, but with decreasing regularity
- But most courts view submarkets as no different than a relevant market
 - Under this view, the *Brown Shoe* “practical indicia” are simply circumstantial evidence probative of reasonable interchangeability of use and cross-elasticity of demand
 - “The requirements for establishing a relevant submarket are no different than those for establishing a relevant market.”¹
 - Courts routinely rely on the *Brown Shoe* factors to define the relevant product market in merger and other antitrust cases²
- Since 1982, the merger guidelines have rejected submarkets as distinct from markets

¹ *Flovac, Inc. v. Airvac, Inc.*, 817 F.3d 849, 855 (1st Cir. 2016); *accord* *PSKS, Inc. v. Leegin Creative Leather Prods., Inc.*, 615 F.3d 412, 418 (5th Cir. 2010); *Geneva Pharm. Tech. Corp. v. Barr Labs., Inc.*, 386 F.3d 485, 496 (2d Cir. 2004).

² See, e.g., *FTC v. Staples, Inc.*, 190 F. Supp. 3d 100, 126-27 (D.D.C. 2016); *United States v. H & R Block*, 833 F. Supp. 2d 36, 51-60 (D.D.C. 2011); *FTC v. CCC Holdings*, 605 F. Supp. 2d 26, 39-44 (D.D.C. 2009); *FTC v. Swedish Match*, 131 F. Supp. 2d 151, 159-64 (D.D.C. 2000); *FTC v. Cardinal Health, Inc.*, 12 F. Supp. 2d 34, 46-48 (D.D.C. 1998); *FTC v. Staples, Inc.*, 970 F. Supp. 1066, 1075-80 (D.D.C. 1997).

Supply-side substitutability

■ Introduction

- In a footnote, *Brown Shoe* suggested that “cross-elasticity of production facilities” may be an important factor in defining markets¹
 - But because the lower court made only limited findings on the feasibility of interchanging equipment in the production of different types of shoes, the Court did not explore it
- Supply-side substitutability can constrain prices by encouraging producers to shift into the production of a higher margin product and thereby compete the price of that product down
 - The usual exercise of market power is manifested in a reduction of output, which results in an increase in price.
 - However, when a price increase induces new firms to enter the market, aggregate supply increases over what it would have been otherwise, which in turn may mitigate, or eliminate, the original price increase.
 - Supply-side responses, therefore, can be as critical to the analysis of price-constraining forces as demand-side responses.
- Many courts have used supply-side substitutability as a factor in market definition
 - Since 1982, the Merger Guidelines have used only demand-side substitution to define markets
 - The Merger Guidelines account for supply-side substitutability when identifying firms and their market shares in the relevant market and *not* as part of market definition

¹ *Brown Shoe Co. v. United States*, 370 U.S. 294, 325 n.42 (1962).

Supply-side substitutability

- The Merger Guidelines approach¹
 - Market definition under the Merger Guidelines is determined solely by demand-side considerations
 - *Query*: How is the analysis conducted when two products that are not demand-side substitutes are made on the same production equipment (perhaps with some minor modifications or retooling) and firms rapidly switch their mix of production from one product to the other in response to small changes in relative prices?
 - For example, multiple grades of paper can and are made on paper-making machines. Customers may not regard the different grades of paper substitutable for one another, but paper mills continuously change their production mix among the different grades in response to changes in relative prices
 - Are all grades of paper made on the same machine in the same relevant product market? If not, how do the Merger Guidelines take into account the clear competitive effects created by this supply-side competition?
 - *Answer*
 - The Merger Guidelines do *not* include products that are not demand-side substitutes in the same relevant market even if the products exhibit a high degree of supply-side substitutability
 - Instead, the Merger Guidelines will consider the firm making the supply-side substitute a participant in the relevant market and will assign it a share based on the level of production the firm would make of the relevant product in the event of a SSNIP

¹ See 2010 DOJ/FTC Horizontal Merger Guidelines §§ 5.1-5.2.

Supply-side substitutability

- The Merger guidelines approach—Example¹
 - Pencil-making firms can make both No. 2 pencils (the common type) and No. 4 pencils (used by architects in architectural drawings) on the same machine by just changing the mixture of graphite that goes into pencil's lead core. Changing the production mix on a given machine involves relatively low switching costs. No. 2 and No. 4 pencils are not demand-side substitutes.
 - Ace Pencil and Benny Pencil, currently the only two manufacturers of No. 4 pencils, have announced their merger
 - Using the demand-side considerations of the Merger Guidelines, the relevant product market in which to analyze the merger is No. 4 pencils
 - The following chart gives the production levels of No. 2 and No 4 pencils:

	Current Production	
	No. 2	No. 4
Ace	3000	300
Benny	4000	200
Cavalier	7000	
Delta	6000	
Enterprise	3000	
Funny	5000	
Gabriel	5000	

¹ Thanks to Professor Salop for this example. I have modified it slightly.

Special case: Supply-side substitutability

■ The Merger guidelines approach—Example (con't)

□ Additional facts

- Enterprise has a 5-year contract to supply No. 2 pencils to the American Accountants Association) that will use all of its capacity.
- Each of the other three third-party manufacturers of No. 2 would each expand their production by 10%--all new production being No. 4 pencils--in the event of a 5% SSNIP in No. 4 pencils

□ Under the Merger Guidelines, who are the firms in the No. 4 pencil market and what are their respective market shares?

	Current Production		Post-SSNIP No. 4		
	No. 2	No. 4	Production	Shares	HHI
Ace	3000	300	300	10.71%	115
Benny	4000	200	200	7.14%	51
Cavalier	7000		700	25.00%	625
Delta	6000		600	21.43%	459
Enterprise	3000				
Funny	5000		500	17.86%	319
Gabriel	5000		500	17.86%	319
			2800	100.00%	1569
				Delta	153
				Post-HHI	1722

Notes: In the event of a 5% SSNIP in No. 4 pencils—

1. The merging firms are not assigned any additional production, since the MG anticipate that they would contract production of No. 4 pencils and not expand it.
2. Cavalier, Delta, Funny, and Gabriel would each shift 10% of their production of No. 2 pencils into the production of No. 4 pencils (facts in the hypothetical).
3. Enterprise would not shift production into No. 4 pencils, since all of its capacity is committed under contract to the production of No. 2 pencils for the next five years.

Special case: Supply-side substitutability

- The Merger guidelines approach—Example
 - So although current production indicates that the Ace/Benny merger is a merger to monopoly in the relevant market, under the Merger Guidelines supply-side considerations make the merger a 6-to-5 transaction in a moderately concentrated market with a relatively small delta. If we take the numbers as given, the deal is unlikely to create any antitrust problem.

Supply-side substitutability

- The judicial approach
 - The Merger Guidelines approach has not yet been fully adopted by the courts
 - Although the question has not arisen frequently, modern courts are split on whether to include supply-side substitutability as a factor in market definition
 - Some courts follow the Merger Guidelines approach
 - Or at least hold that defining the boundaries of relevant markets using demand-side considerations only and using supply-side to determine the participants in the market and their respective markets shares is an acceptable legal alternative¹
 - Other courts allow supply-side considerations to be taken into account when defining the boundaries of the relevant market²
 - *Brown Shoe* suggested that supply-side substitutability should be considered in defining a relevant market³

¹ See *United States v. Bazaarvoice, Inc.*, No. 13-CV-00133-WHO, 2014 WL 203966, at *31-*32, *37, *67 (N.D. Cal. Jan. 8, 2014).

² *IFTC v. Lab. Corp. of Am.*, No. SACV 10-1873 AG MLGX, 2011 WL 3100372, at *17 (C.D. Cal. Feb. 22, 2011) (“Courts place products in the same product market where there is either effective demand-side substitution or effective supply-side substitution.”).

³ See *Brown Shoe Co. v. United States*, 370 U.S. 294, 325 (1962) (including “unique production facilities” as a practical indicium of market definition).

Supply-side substitutability

- The judicial approach

- The economic criticism

- When courts take supply-side considerations into account in defining the boundaries of the market, they include 100% of the production of the supply-side substitute in the relevant market. This can lead to lead to seriously incorrect inferences.

- Example:

- Use the same pencil hypothetical, but make the current production levels of No. 2 and No. 4 pencils be somewhat less lopsided by reducing current production of No. 2 pencils

	Current Production		Merger Guidelines approach			Judicial full consideration		
	No. 2	No. 4	Post-SSNIP No. 4			Post-SSNIP No. 4		
			Production	Shares	HHI	Production	Shares	HHI
Ace	300	300	300	41.10%	1689	600	17.14%	294
Benny	400	200	200	27.40%	751	600	17.14%	294
Cavalier	700		70	9.59%	92	700	20.00%	400
Delta	600		60	8.22%	68	600	17.14%	294
Enterprise	300							
Funny	500		50	6.85%	47	500	14.29%	204
Gabriel	500		50	6.85%	47	500	14.29%	204
	3300	500	730	100.00%	2646	3500	100.00%	1690
				Delta	2252			588
				Post-HHI	4898			2278

- Here, the Merger Guidelines approach indicate that the merger is 2-to-1 with a fringe and the HHI statistics indicate that the merger is strongly presumptive anticompetitive. When the full production of No. 2 pencils are added to that of No. 4 pencils under the judicial approach, the merger is 6-to-5 and the HHIs do not suggest a serious competitive problem.

Supply-side substitutability

■ The judicial approach

□ The economic criticism (con't)

■ In practice, however, the problem unlikely to arise frequently

- First, in most cases supply-side substitutability is not a factor that arises, so courts usually do not have to deal with the issue
- Second, courts are increasingly sophisticated in the competitive analysis of mergers. Even if the production facilities of two products are identical and switching production between the two products is easy and can take place rapidly as a technical matter, the courts are likely to include the full production of the supply-side substitute in the relevant market only if the supply-side response to a SSNIP in the products of interest would “flood” the market and so defeat the profitability of the SSNIP.
 - This is what would have happened in the original pencil hypothetical. While original production of No. 4 pencils was 500 units, a 5% SSNIP would have precipitated a supply-side response of adding 2300 units—more than four times the original level of production.
 - On the other hand, in the second version of the hypothetical the supply-side response would have added only an additional 230 units. In this case, the court likely would have rejected the argument that the supply-side substitute should be included in the relevant market and instead examine whether entry of new firms or expansion of small incumbent firms already in the relevant market would be sufficient under an ease of entry/expansion/repositioning defense to prevent a postmerger price increase as part of the competitive effects analysis rather than market definition.

Supply-side substitutability

- Supply substitutability in practice
 - Production switching
 - Courts look to high cross-elasticity of supply between two products resulting from an easy switching in their manufacture as an indication that they should be included in the same relevant product market, even if customers do not regard them as substitutes and would never switch between them
 - The same production equipment, for example, with only a slight change in tooling, easily could be used to manufacture glass milk bottles and glass baby food jars, therefore supporting the inclusion of all glass food containers in the same relevant product market.
 - Barriers to switching
 - To the extent that supply-side substitutability is considered, it is important to examine not only the ease of switching production but also the ability to sell the resulting product
 - For some products, the lack of access to distribution channels, reputation, or post-sale service can be greater impediments to successful participation in the market than the need for sophisticated or capital-intensive production technology
 - Such a lack of access can significantly dampen cross-elasticity of supply even when it is technologically easy to switch existing production equipment to manufacture the product under scrutiny

Supply-side substitutability

- Supply substitutability in practice
 - Incentive to switch
 - In addition, for supply-side substitutability to be competitively meaningful, there must be an incentive for firms to switch their production mix in response to a price increase in the putative relevant market
 - If the manufacture and sale of products in the putative market are not profitable for firms outside the market that have the requisite production technology (taking into account any additional costs associated with distribution and sale even at the higher SSNIP-increased price), then those firms will not change their production mix in response to a price increase and should not be included in the market

Hypothetical monopolist test

■ The original idea

- The purpose of market definition is to identify competitive restraints on the creation or exercise of market power to the detriment of customers
- The relevant market should be—
 1. the smallest group of products containing the products of interest (say, the products of the merging firms in a horizontal merger)
 2. in which a hypothetical monopolist of those products would raise prices profitably over the current level
 3. by at least “small but significant nontransitory” amount
- Observations
 - Introduced in the 1982 DOJ Merger Guidelines
 - “SSNIP” = “Small but significant nontransitory increase in price”
 - Under the Merger Guidelines, a SSNIP is usually taken to be a price increase of 5% for at least one year
 - “Candidate market” = the market being tested to see if it is a relevant market

Hypothetical monopolist test (1982)

■ Propositions:

1. If a hypothetical monopolist would not have market power with respect to a group of products to be able to profitably raise prices for those products, then a fortiori a merger of firms producing products within that group could not produce in an anticompetitive price increase
2. If a hypothetical monopolist would not raise prices by a SSNIP because it would be unprofitable, then products outside the candidate relevant market must be exerting competitive price pressure and the candidate market needs to be expanded to include the next closest substitutes (and the test run again)
3. Find the smallest group of products for which a hypothetical monopolist would have market power to raise prices and then assess whether a merger of two firms producing products within this group would likely result in an anticompetitive price increase

Hypothetical monopolist test

- “Hypothetical monopolist” paradigm for market definition

- A little arithmetic

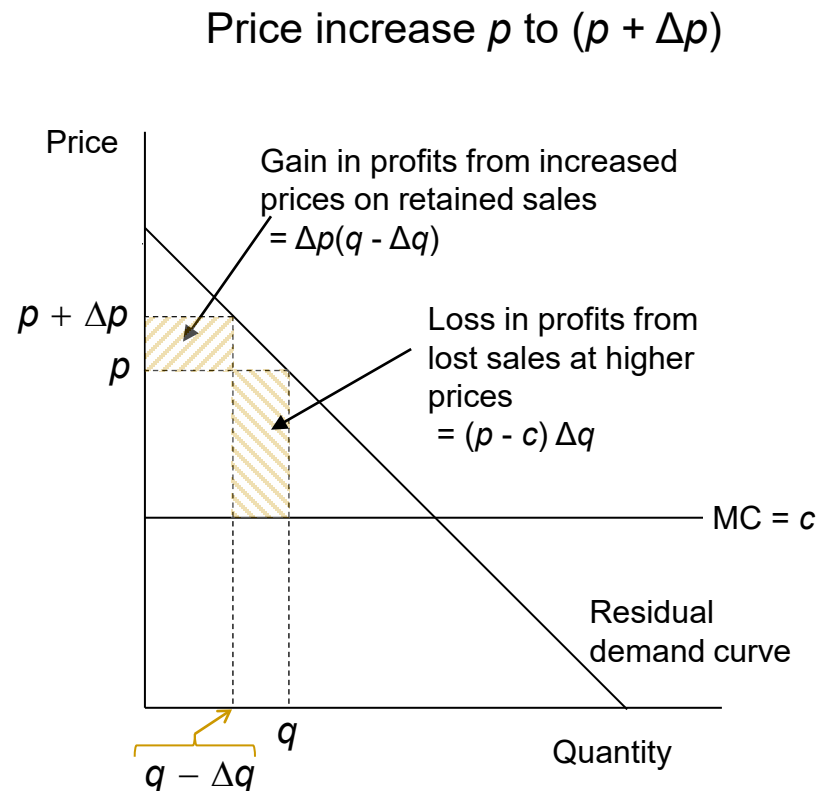
- A price increase of Δp —which will result in a quantity decrease of Δq —is profitable if the firm’s profits after the price increase are greater than the firm’s profits before the price increase:

$$(p + \Delta p - c)(q - \Delta q) > (p - c)q$$

- Rearranging, this implies

$$\Delta p(q - \Delta q) > (p - c)\Delta q$$

that is, the gain in profits on the sales that are not lost is greater than the loss of margin on the lost sales



Hypothetical monopolist test

- Example—Uniform price increase on all products in candidate market

Consider blue cars (a homogeneous product) as a candidate market. Say blue cars are priced at \$20,000 per car, cost \$17,000 per car to produce, and sell 50,000 cars per year. If the price is increased by 5% on all blue cars, blue cars will only sell 45,000 cars per year. Are blue cars a relevant market under the hypothetical monopolist test for a 5% SSNIP?

Data			Profit on retained sales		
Unit sales (q1)	50,000	From problem	Retained sales	45,000	
Price (p1)	\$20,000	From problem	Revenues	\$945,000,000	p1 times q1
Unit cost (c)	\$17,000	From problem	Costs	\$765,000,000	c times q1
\$Margin (\$m)	\$3,000	Calculated	Gross profits	\$180,000,000	Difference
Retained sales (q2)			Loss of margin on lost sales		
Retained sales (q2)	45,000	From problem	Lost sales	-50,000	Δq
Lost sales (Δq)	5,000	Calculated	\$Margin	\$3,000	\$m
%SSNIP	5%	From problem	Gross loss	-\$150,000,000	\$m times Δq
\$SSNIP	\$21,000	Calculated			
			Net profits	\$30,000,000	

Net profits are positive, so blue cars are a relevant market under the hypothetical monopolist test

- This is a “brute force” implementation of a uniform SSNIP test
- For a more detailed explication of a brute force SSNIP test, see the example in the Unit 8 class notes

1992 Merger Guidelines

■ Methodology

[T]he Agency will begin with each product (narrowly defined) produced or sold by each merging firm and ask what would happen if a hypothetical monopolist of that product imposed at least a "small but significant and nontransitory" increase in price, but the terms of sale of all other products remained constant. If, in response to the price increase, the reduction in sales of the product would be large enough that a hypothetical monopolist would not find it profitable to impose such an increase in price, then the Agency will add to the product group the product that is the next-best substitute for the merging firm's product.

...

The price increase question is then asked for a hypothetical monopolist controlling the expanded product group. In performing successive iterations of the price increase test, the hypothetical monopolist will be assumed to pursue maximum profits in deciding whether to raise the prices of any or all of the additional products under its control. This process will continue until a group of products is identified such that a hypothetical monopolist over that group of products would profitably impose at least a "small but significant and nontransitory" increase, including the price of a product of one of the merging firms. The Agency generally will consider the relevant product market to be the smallest group of products that satisfies this test.¹

¹ 1992 Horizontal Merger Guidelines § 1.11.

1992 Merger Guidelines

■ Methodology

□ Algorithm

1. Start with the product of a merging firm as the starting candidate market.
2. Ask whether a hypothetical monopolist of the candidate market could profitably increase price by a SSNIP. If so, then that candidate market is a relevant market. If not, go to Step 2.
3. Expand the market to include the next closest substitute to the products in the prior candidate market and repeat Step 2.

¹ 1992 Horizontal Merger Guidelines § 1.11.

1992 Merger Guidelines

■ Methodology (con't)

□ Definitions

- Any group of products being tested is called a *provisional* or *candidate* product market
- The first group of products that satisfies the hypothetical monopolist test is the relevant product market (under the “smallest market” principle)¹

□ Prices

- In the ordinary course, the agencies will use premerger prices
- If premerger circumstances are strongly suggestive of coordinated interaction, the agency will use prices more reflective of the competitive price
- If changes in the prevailing prices can be predicted with reasonable reliability, the agency may use likely future prices (assuming no merger)

□ SSNIP

- A "small but significant and nontransitory" increase in price (SSNIP) is usually 5%
- There is no explanation of when a SSNIP smaller or larger than 5% is appropriate
 - NB: The larger the SSNIP, the less likely the SSNIP will be profitable, so larger SSNIPs can be viewed as conservative

¹ We will see that this requirement was eliminated in the 2010 merger guidelines.

1992 Merger Guidelines

■ Some questions

1. Should test be whether the SSNIP was profitable for the hypothetical monopolist (the *profitability* or *breakeven test*) or should the hypothetical monopolist's profit-maximizing price be equal to or greater than the SSNIP (the profit-maximization test)?
 - The practice under the 1982 and 1992 Merger Guidelines in the agency and in the courts was to use the profitability test
 - After the 2010 Merger Guidelines were released, some economists began to emphasize the profitability test as the proper one in economic analysis as well as the one indicated by the language of the Guidelines
 - The practice, particularly in the courts, continued with the profitability test
2. Uniform or selective SSNIP
 - Should the hypothetical monopolist increase the prices of all products in the relevant market by the same percentage SSNIP or should the monopolist be allowed to selectively increase the prices of one or more products in the relevant market?
 - The 1982 Merger Guidelines required a uniform SSNIP
 - The 1992 Merger Guidelines allowed a selective SSNIP; the practice was to use a selective SSNIP when the product in question was already selectively priced
 - The 2010 Merger Guidelines allowed a selective SSNIP; the practice is to use a selective SSNIP when the product in question was already or could be selectively priced

¹ 1992 Horizontal Merger Guidelines § 1.11.

Profitable v. profit-maximizing

■ The Merger Guidelines

□ The difference

■ 1982 Guidelines:

“In general, the Department seeks to identify a group of products such that a hypothetical firm that was the only present and future seller of those products *could* raise price profitably.”¹

- The 1982 Guidelines ask whether it *could* be profitable for a hypothetical monopolist to raise prices by a SSNIP
- That is, whether it would be profitable to do so, not whether it would be profit maximizing

■ 1992 Guidelines:

A market is defined as a product or group of products and a geographic area in which it is produced or sold such that a hypothetical profit-maximizing firm, not subject to price regulation, that was the only present and future producer or seller of those products in that area likely *would* impose at least a “small but significant and nontransitory” increase in price, assuming the terms of sale of all other products are held constant.²

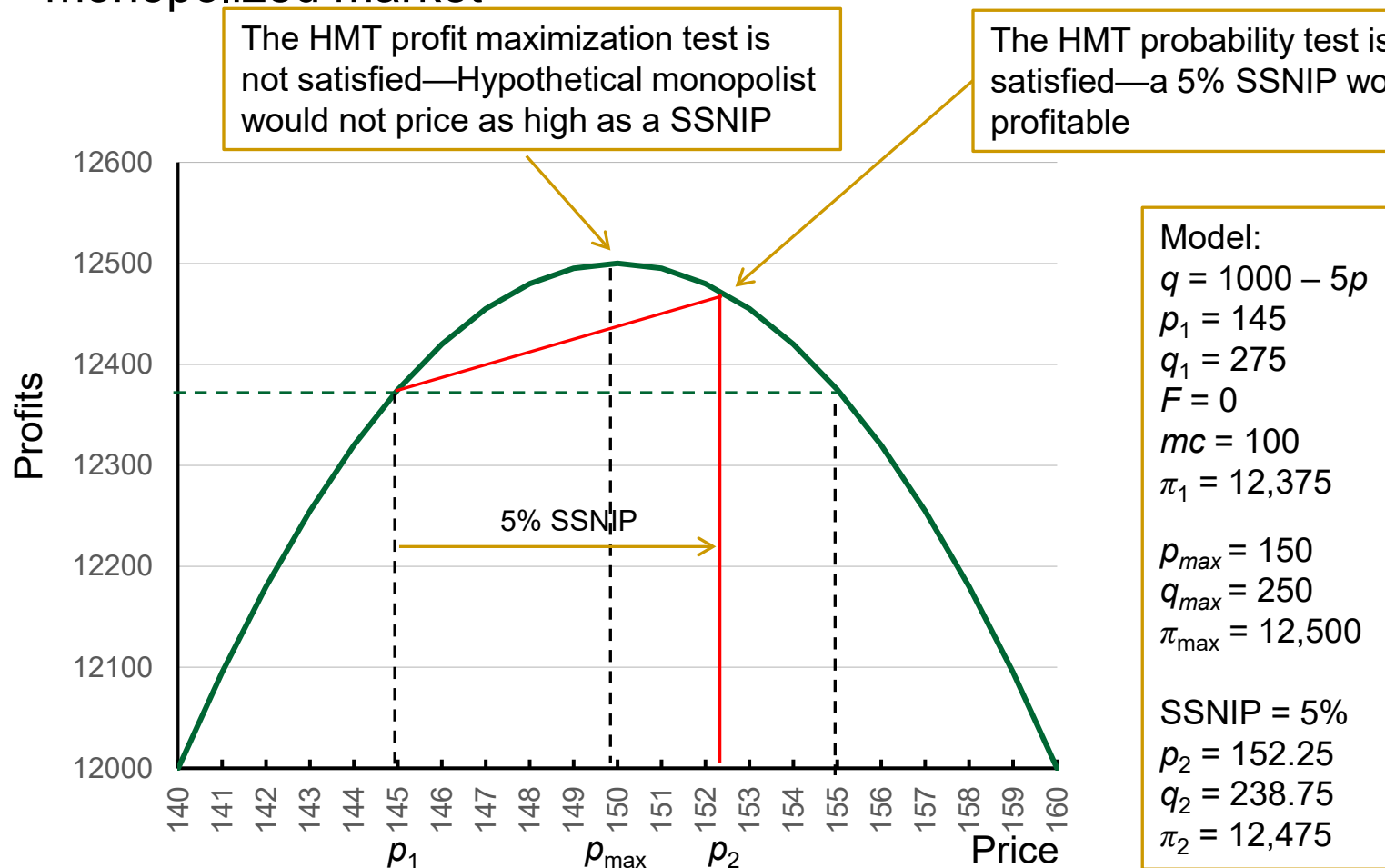
- The 1992 Guidelines ask whether it *would* be profit-maximizing for a hypothetical monopolist to raise prices by a SSNIP
- In other words, is the monopoly price higher by at least a SSNIP to the current price?

¹ U.S. Dep’t of Justice, Merger Guidelines § II(A) (rev. 1982) (emphasis added).

² U.S. Dep’t of Justice & Fed. Trade Comm’n, Horizontal Merger Guidelines § 1.0 (rev. 1992) (emphasis added).

Profitable v. profit-maximizing

- Example: HMT profitability and profit maximization tests in a close to monopolized market



Profitable v. profit-maximizing

■ Adoption by the courts

- As the courts were adopting the hypothetical monopolist test in the 1980s and early 1990s, the 1982 guidelines were in effect
- Moreover, notwithstanding that change in verb from “could” to “would” in the 1992 Merger Guidelines, the agencies did not change from a profitability test to a profit-maximization test either in their investigations or in their briefs in court
 - The profitability test is sometimes called the *breakeven test*
- As a result, the agencies urged the courts to adopt, and the courts did adopt in fact, the probability version of the hypothetical monopolist test
- Given this precedent, the profitability test remains the judicial test in most courts notwithstanding the change in the Guidelines (which was continued in the 2010 revision)¹

¹ See, e.g., *FTC v. Tronox Ltd.*, 332 F. Supp. 3d 187, 204 (D.D.C. 2018); *FTC v. Wilh. Wilhelmsen Holding ASA*, 341 F. Supp. 3d 27, 57 (D.D.C. 2018); *United States v. Aetna Inc.*, 240 F. Supp. 3d 1, 20 (D.D.C. 2017); *FTC v. Advocate Health Care*, No. 15 C 11473, 2016 WL 3387163, at *4 (N.D. Ill. June 20, 2016), *rev'd on other grounds and remanded*, 841 F.3d 460 (7th Cir. 2016); *United States v. Bazaarvoice, Inc.*, No. 13-CV-00133-WHO, 2014 WL 203966, at *30 (N.D. Cal. Jan. 8, 2014); *FTC v. Arch Coal, Inc.*, 329 F. Supp. 2d 109, 120 n.7 (D.D.C. 2004); *FTC v. Swedish Match*, 131 F. Supp. 2d 151, 160 (D.D.C. 2000). Other courts employ language supporting both tests, but the default appears to be the profitability test. See, e.g., *Olin Corp. v. FTC*, 986 F.2d 1295, 1299 (9th Cir. 1993); *United States v. H & R Block, Inc.*, 833 F. Supp. 2d 36, 52 (D.D.C. 2011). Some courts do cite the profit-maximization test, but it does not appear from the opinion that the result would have been any different under a profitability test. See, e.g., *FTC v. Sanford Health*, No. 1:17-CV-133, 2017 WL 10810016, at *10 (D.N.D. Dec. 15, 2017), *aff'd*, 926 F.3d 959 (8th Cir. 2019); *United States v. Sungard Data Sys., Inc.*, 172 F. Supp. 2d 172, 192 (D.D.C. 2001).

1992 Merger Guidelines

- Profitable v. profit-maximizing
 - Effect in practice
 - The change was largely ignored in practice, with the emphasis remaining on whether it would be profitable, not profit-maximizing, for the hypothetical monopolist to raise prices by a SSNIP
 - Moreover, since the current price would be close to the monopoly price only in the presumably rare situation where the market is operating close to a perfect monopoly, in most cases the profitability test and the profit-maximization test will reach the same result with respect to a candidate market
 - Query: Were the 2010 Guidelines correct in adopting the profit-maximization test?
 - Won't it reject markets close to being monopolized and increase the probability of a *Cellophane* fallacy?

1992 Merger Guidelines

■ The *Cellophane* fallacy

- **Rule:** A monopolist will not price in the inelastic portion of the demand curve
 - **Implication 1:** A monopolist will increase its price until other goods become sufficiently substitutable to make a further price increase unprofitable
 - **Implication 2:** At the profit-maximizing price, a monopolist will not be able to profitably increase its price, much less increase its price by a SSNIP
 - **Implication 3:** Using prevailing prices, the hypothetical monopolist test will reject a perfectly or close to perfectly monopolized market as a relevant market
- **The *Cellophane* case¹**
 - In 1947, the DOJ sued DuPont for monopolizing cellophane, a flexible wrapping material duPont had developed, through anticompetitively restrictive patent practices
 - The Court evaluated the relevant market using duPont's prevailing prices for cellophane
 - At these prices, other wrapping materials—including aluminum foil and Saran wrap—exhibited significant cross-elasticity with cellophane
 - **Conclusion:** In the proper relevant market of all flexible wrapping paper, cellophane's relatively small market share negated the DOJ's monopolization claim
- **Implications for the hypothetical monopolist test**
 - The profit-maximization version of the hypothetical monopolist test is more susceptible to the *Cellophane* fallacy than the profitability version, since it is more likely to reject close to monopolized markets

¹ United States v. E.I. du Pont de Nemours & Co., 351 U.S. 377 (1956) ("Cellophane").

1992 Merger Guidelines

- The *Cellophane* fallacy—Important note
 - The *Cellophane* fallacy is primarily important in monopolization cases, not merger antitrust cases
 - In monopolization cases, it is important to exclude products from the market that are substitutes only because the defendant is charging a monopoly or near-monopoly price in order to show that the defendant has a market share indicative of monopoly power
 - In merger antitrust cases, however, the question is whether the merger will enable the combined firm to increase prices above the level they would have been going forward in the absence of the merger
 - We will see later in this unit that a “monopolist” within the meaning of Sherman Act § 2 charging a monopoly price in a market characterized by the *Cellophane* fallacy may still increase its price further if it combines with a firm that is a close enough substitute at the monopoly price

1992 Merger Guidelines

- Assessing buyer reactions to a SSNIP
 - Factors identified in the 1992 guidelines to consider in assessing buyer reactions to a SSNIP:¹
 - Evidence that buyers have shifted or have considered shifting purchases between products in response to relative changes in price or other competitive variables
 - Often includes testimony from knowledgeable representatives from buyers (as in *Sanford Health*)
 - Economic or econometric evidence introduced by an economics expert
 - Evidence that sellers base business decisions on the prospect of buyer substitution between products in response to relative changes in price or other competitive variables
 - The influence of downstream competition faced by buyers in their output markets
 - This is sometimes called “derived demand”
 - The timing and costs of switching products
 - These factors are nonexclusive: Any evidence probative of buyer switching reactions may be considered

¹ 1992 Horizontal Merger Guidelines § 1.11.

1992 Merger Guidelines

- Assessing buyer reactions to a SSNIP
 - “Where the rubber meets the road”—Customer testimony
 - In practice, actual evidence of switching behavior in response to changes in relative prices is rarely available
 - In the absence of actual switching evidence, the agencies usually ask customers what they would do in the event of a SSNIP and then use the response in assessing buyer reactions
 - This is true only when the buyers are somewhat sophisticated
 - Usually intermediate product buyers (i.e., business firms that are buying products or services as an input into the production of another product)
 - The agencies do not survey average consumers in retail products mergers
 - Instead, use econometric analysis of point-of-sale scanner data for consumer products to estimate cross-elasticities for use in the hypothetical monopolist test
 - Customer interview responses have proven notoriously unreliable for three reasons:
 1. Even sophisticated customers often do not know what they would actually do if faced with a SSNIP
 - Still, often will give the agency an answer just to make them go away
 2. Customers that understand the merger antitrust game may give an answer that is designed to achieve a strategic objective (such as stopping the merger or forcing a significant divestiture)
 3. Prices are determined at the margin; hence only the responses of marginal customers should count. But there is no way for the agencies to distinguish between marginal and inframarginal customers in interviews and therefore are likely to credit all responses equally.
 - This leads to a significant bias in favor of narrower markets

1992 Merger Guidelines

- Significant head-to-head bidding competition
 - “Where the rubber meets the road”—Significant head-to-head bidding competition
 - Where firms in the provisional market (especially the merging firms) engage in significant bidding competition with each other, that competition would be eliminated by a hypothetical monopolist—along with any price decreases that resulted from the bidding competition
 - Sophisticated customers can become very expert at “playing firms off of one another” in bidding competitions in order to minimize price
 - Evidence of significant head-to-head bidding competition is probative of competitive effects as well as market definition
 - Where the merging firms compete with each other frequently, especially in the so-called “best and final” round, and customers say (with supporting reasons) that no other supplier could replace this competition after the merger, the merger will almost certainly be challenged

2010 Merger Guidelines

- Adopts the 1992 Merger Guidelines methodology with three very significant changes
 1. Relegates market definition to one of several tools useful in merger antitrust analysis
 - May not be necessary or even helpful in all cases
 - Was the point of departure for all merger antitrust analysis under the 1992 guidelines
 2. *One-product SSNIP tests*. Expands the ability of the hypothetical monopolist to price discriminate in raising prices of products in the candidate market:

Specifically, the test requires that a hypothetical profit-maximizing firm, not subject to price regulation, that was the only present and future seller of those products (“hypothetical monopolist”) likely would impose at least a small but significant and non-transitory increase in price (“SSNIP”) *on at least one product in the market, including at least one product sold by one of the merging firms.*¹

- Only differentiated product markets are susceptible to price discrimination among products within the market
 - Product attributes
 - Channels of distribution
- The market for homogeneous products admits only a single price for all products

¹ U.S. Dep’t of Justice & Fed. Trade Comm’n, Horizontal Merger Guidelines § 4.1.1 (rev. 2010) (emphasis added).

2010 Merger Guidelines

- Adopts the 1992 Merger Guidelines methodology with three very significant changes
 - 3. *No smallest market requirement.* Abandons the “smallest market” principle and unique relevant markets
 - The 1992 guidelines considered the relevant product market to be the smallest group of products that satisfied the hypothetical monopolist test
 - The 2010 guidelines accept as a relevant product market any group of products that satisfies the hypothetical monopolist test
 - This permits “cherry-picking” of products to include in the relevant product market
 - Also makes it difficult for defendants to argue in court that prosecuting agency misspecified the relevant product market
 - Coupled with the one-product SSNIP test, this means that any product grouping that contains a relevant product market is itself a relevant product market
 - *Idea:* Apply the SSNIP to those products that made the smaller product grouping a relevant market and hold the prices of all other products constant
 - The simple way to express this principle is that any *superset* of a relevant market is a relevant market
 - Many courts still cite the smallest market principle
 - The precedent developed under the 1982 guidelines and continues to be cited¹

¹ See, e.g., *FTC v. RAG-Stiftung*, 436 F. Supp. 3d 278, 292 (D.D.C. 2020); *FTC v. Tronox Ltd.*, 332 F. Supp. 3d 201 (D.D.C. 2018); *United States v. Aetna Inc.*, 240 F. Supp. 3d 1, 40 (D.D.C. 2017); *FTC v. Sysco Corp.*, 113 F. Supp. 3d 1, 26 (D.D.C. 2015).

2010 Merger Guidelines

- Examples of “cherry-picking” under the 2010 guidelines¹
 - Motorcycles and cars

Example 4: Firms A and B, sellers of two leading brands of motorcycles, propose to merge. If Brand A motorcycle prices were to rise, some buyers would substitute to Brand B, and some others would substitute to cars. However, motorcycle buyers see Brand B motorcycles as much more similar to Brand A motorcycles than are cars. Far more cars are sold than motorcycles. Evaluating shares in a market that includes cars would greatly underestimate the competitive significance of Brand B motorcycles in constraining Brand A’s prices and greatly overestimate the significance of cars.

Example 7: In Example 4, including cars in the market will lead to misleadingly small market shares for motorcycle producers. Unless motorcycles fail the hypothetical monopolist test, the Agencies would not include cars in the market in analyzing this motorcycle merger.

- Exclusion of closer substitutes

Example 5: 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. Therefore, Products A and B satisfy the hypothetical monopolist test using a five percent SSNIP, and indeed for any SSNIP size up to ten percent. This is true even though two-thirds of the sales lost by one product when it raises its price are diverted to products outside the relevant market.

¹ For examples, see 2010 Merger Guidelines § 4.1.1.

Product markets: Special cases

- Cluster markets
 - Courts sometime define markets around collections of products that are almost always offered for a sale at a single location
 - The products in cluster markets can vary widely and typically exhibit little if any cross-elasticity of demand
 - *Examples:* Commercial banking services, supermarkets, office supply stores, department stores, sporting equipment, acute care inpatient hospital services, retail pharmacies
 - Courts have found a relevant product to be a subset of products within a retail store
 - Sale and distribution of consumable office supplies to large business-to-business customers¹
 - Cluster of prescription drugs that are typically sold in brick-and-mortar retail pharmacies²

¹ FTC v. Staples, Inc., 190 F. Supp. 3d 100, 117, 123-26 (D.D.C. 2016).

² See Sharif Pharmacy, Inc. v. Prime Therapeutics, LLC, 950 F.3d 911, 918 (7th Cir. 2020)

Product markets: Special cases

■ Cluster markets

□ Two types of cluster markets

1. Products that share similar shares and demand characteristics

- Not well defined in the case law
- Accepted “for analytical convenience” when market shares are likely to be the same across products¹
- Typically, analytic similarity is simply asserted rather than analyzed by courts

2. Product groups that exhibit economies of scope

- WDC: The best justification for combining diverse products and services into a single relevant product market is where there exist substantial economies of scope in purchasing, so that sellers tend to offer for sale at a single location the entire collection of products and customers tend to select sellers more on the basis of their aggregate offerings and less on the offerings of single products (think grocery stores or hospitals)²
- If customers are attracted by the totality of the products offered at the seller’s location, then sellers have some flexibility in setting the prices of individual products without being constrained by competition from partial line or single product sellers, provided that the sellers remain competitive within their product offering as a whole
- In a properly defined cluster market, specialty dealers that offer a limited selection of products should only be able to operate in narrow niches and should not be able to compete successfully for a large fraction of the total sales of their particular products

¹ See, e.g., *FTC v. Staples, Inc.*, 190 F. Supp. 3d 100, 117 (D.D.C. 2016).

² See *FTC v. Advocate Health Care Network*, 841 F.3d 460, 467 (7th Cir. 2016) (“But products can also be ‘clustered’ together if the ‘cluster’ is itself an object of consumer demand.”) (citation and internal quotation marks omitted); *accord Sharif Pharmacy, Inc. v. Prime Therapeutics, LLC*, 950 F.3d 911, 918 (7th Cir. 2020).

Product markets: Special cases

- Cluster markets
 - Separable demand or supply conditions
 - A cluster market would not be appropriate if customers would respond to a price increase of a single product within the cluster by shifting some or all of their purchases to partial line or single product sellers
 - Example
 - In *Staples/Office Depot*, the district court sustained an FTC cluster market that included all general office supplies except toner, ink, and BOSS (“beyond office supplies”) products¹
 - The court found that the excluded products were subject to significantly different competitive conditions than the other products in the alleged cluster market and hence properly excluded

¹ See *FTC v. Staples, Inc.*, 190 F. Supp. 3d 100, 122-26 (D.D.C. 2016).

Product markets: Special cases

- Price discrimination/“targeted customer” markets
 - Ordinarily, the SSNIP is applied uniformly to all products in the provisional market
 - However, if the market is or can be subject to price discrimination, the agency may apply a discriminatory price increase on sales to—
 - particular products in a differentiated products market, or
 - particular targeted buyers
 - Introduced in the 1992 Merger Guidelines

Example: Consider a merger of two string bean producers. Assume that a hypothetical monopolist could not profitably raise prices because of diversion to carrots, so that carrots must be included in the provisional market. Assume further that spinach is a close substitute for carrots but not as close a substitute for string beans, and that a hypothetical monopolist could not profitably implement a SSNIP to both string beans and carrots.

Under the usual pre-1992 approach, spinach would be added to the provisional market. But under the new approach of the 1992 guidelines, if the hypothetical monopolist finds it maximally profitably to raise string bean prices by a SSNIP but carrots by something less than the same SSNIP (to avoid diversion to spinach), string beans and carrots would be a relevant market.¹

- Implications
 - Price discrimination can narrow a market considerably
 - In some years, the FTC aggressively used price discrimination to narrow markets even when there was no historical occurrences of price discrimination

¹ Janusz A. Ordover & Robert D. Willig, *Economics and the 1992 Merger Guidelines: A Brief Survey*, 8 Rev. Indus. Org. 139, 140-41 (1993).

Product markets: Special cases

- Price discrimination/“targeted customer” markets
 - Modern courts have adopted this approach to market definition¹
 - *Example:* United States v. H & R Block, Inc.:

An analytical method often used by courts to define a relevant market is to ask hypothetically whether it would be profitable to have a monopoly over a given set of substitutable products. If so, those products may constitute a relevant market. This approach—sometimes called the “hypothetical monopolist test”—is endorsed by the Horizontal Merger Guidelines issued by the DOJ and Federal Trade Commission. In the merger context, this inquiry boils down to whether “a hypothetical profit-maximizing firm, not subject to price regulation, that was the only present and future seller of those products . . . likely would impose at least a small but significant and non-transitory increase in price (“SSNIP”) *on at least one product in the market, including at least one product sold by one of the merging firms.*” The “small but significant and non-transitory increase in price,” or SSNIP, is typically assumed to be five percent or more.¹

- For other cases noting, apparently with approval, the Merger Guidelines “one product” approach to market definition, see—
 - FTC v. Wilh. Wilhelmsen Holding AS, No. 18-cv-00414-TSC, 2018 WL 4705816, at *7 (D.D.C. Oct. 1, 2018)
 - United States v. Anthem, Inc., 236 F. Supp. 3d 171, 198 (D.D.C. 2017)
 - United States v. Aetna Inc., 240 F. Supp. 3d 1, 20 (D.D.C. 2017)
 - FTC v. Staples, Inc., 190 F. Supp. 3d 100, 121 (D.D.C. 2016)
 - FTC v. Sysco Corp., 113 F. Supp. 3d 1, 33 (D.D.C. 2015)
 - *In re Live Concert Antitrust Litig.*, 863 F. Supp. 2d 966, 987 (C.D. Cal. 2012)

¹ 833 F. Supp. 2d 36, 51-52 (D.D.C. 2011) (internal citations omitted; emphasis added).

Product markets: Special cases

- Price discrimination/”targeted customer” markets
 - Modern examples
 - Large business customers in the Staples/Office Depot merger¹
 - Large B2B customers solicit multiyear contracts through “requests for proposals” (RFPs), which permits customized (and often nonlinear) pricing terms not available to retail customers
 - The volume of large B2B customers allows them to purchase office supplies at about one-half of the price paid by the average retail customer
 - Customers requiring nationwide service in Sysco/US Foods merger²
 - Nationwide distribution network important to these customers
 - Require national contracts and use RFPs to solicit bids
 - Require a single technology platform to interface with distributor
 - Require nationwide product consistency (especially in private label)
 - Sysco and US Foods each have broad distribution networks and a dedicated sales sole to handle national accounts
 - Cooperatives of geographically dispersed regional distributors formed to compete for these customers

¹ FTC v. Staples, Inc., 190 F. Supp. 3d 100 (D.D.C. May 17, 2016)

² FTC v. Sysco Corp., 113 F. Supp. 3d 1 (D.D.C. 2015).

Product markets: Special cases

- Bidding markets
 - The idea
 - In some markets, large supply contracts are let out for bid
 - For example, when General Motors is developing a new car, it has to arrange for a supply of the parts necessary to manufacture the car. Many times, these parts are custom designed and not interchangeable with the parts for existing models. General Motors will issue a “request for proposal” (RFP) asking potential suppliers to bid to supply a particular part. General Motors will ultimately awarded the agreement contract to one or perhaps two bidders.
 - Where the contracts are large and extend over multiple years, the bidding can be intense and involve multiple bidders
 - Only one bidder, however, will ultimately obtain the contract and that bidder will supply 100% of the contract
 - Giving the winning bidder a 100% share and the other bidders a zero share gives an inaccurate picture of the competition for the contract
 - The solution
 - In these situations where each bidder has a realistic chance of winning the bid, each of the n bidders is assigned a share in the bidding market of $1/n$
 - Example
 - Say off-shore oil drilling leases are a relevant market. The federal government bids out these leases and ten firms regularly bid for them. Five firms currently operate drilling operations on the leases they have won. Regardless of their market shares (say, based on oil production or oil reserves), all ten regular bidding firms would be deemed to be participants in the in the market and each would be assigned a share of 10%.

Product markets: Special cases

- Research and development markets
 - There have been occasional efforts by the enforcement agencies to define markets around the R&D activities of firms
 - The leading effort is *United States v. General Motors Corp.*, where the DOJ alleged, among other things, that the proposed acquisition by ZF Friedrichshafen AG of the Allison Transmission Division of General Motors Corporation would violate Section 7 because it would eliminate actual and potential competition worldwide “in the market for technological innovation in the design, development, and production” of medium and heavy automatic transmissions for commercial and military vehicles. The DOJ alleged that this technological competition “has resulted in improved products, new products, lower costs of manufacture, and lower prices to consumers.”¹
 - The concept is both unnecessary and legally unsound
 - More sensible to define markets around the products that the R&D seeks to create or improve
 - A decrease in innovation competition would result in a decrease in the rate of technological innovation or improvement in the underlying product, which is a cognizable anticompetitive harm
 - Since Section 7 is forward looking, true even if the products do not yet exist (e.g., two pharmaceutical companies racing against each other to develop a vaccine for Ebola)
 - If companies are not selling their R&D services, then in what sense is this a “line of commerce” for Section 7 purposes?

¹ Complaint, *United States v. General Motors Corp.*, Civ. Action No. 93-530 (D. Del. filed Nov. 11, 1993) (withdrawn upon voluntary termination of transaction).

Product markets: Special cases

■ Single manufacturer products

- The idea is that the product of a single manufacturer is by itself a relevant product market
 - Rarely arises in merger antitrust cases
 - But arises frequently in other areas of antitrust
 - *Possible example*: Kodak replacement parts for high-speed Kodak printers
- Practice
 - No rule that single manufacturer product markets cannot exist¹
 - Usual rules for defining markets apply
 - But courts are reluctant to find manufacturer product markets absent compelling evidence
 - The problem is that the manufacturer will always have monopoly power in a single manufacturer product market, which removes a major hurdle in proving antitrust liability. The courts are concerned that this might result in significant overinclusiveness errors in the finding of liability.

¹ Eastman Kodak Co. v. Image Tech. Servs., Inc., 504 U.S. 451 (1992).

Geographic Markets

Geographical markets generally

■ Definition

- For each relevant product market, there is one or more associated relevant geographic markets
- A single firm may operate in a number of different geographic markets
 - E.g., a dialysis firm operating in a retail dialysis product market can operate in multiple distinct geographic markets
- Relation to the sales area of the merging parties
 - The relevant geographic market is not necessarily, and indeed frequently is not, congruent with the sales area of one or both of the merging parties
 - The boundaries of the relevant geographic market turn not on where customers have gone to purchase the relevant product, but rather where they practically could go to protect themselves in the event the merger or acquisition was in fact anticompetitive

Relevant geographic markets

- Judicial tests: *Philadelphia National Bank*
 - Defined the relevant geographic market to be “the area of effective competition . . . in which the seller operates, and to which the purchaser can practically turn for supplies.”¹
 - The Court also observed that an element of “fuzziness would seem inherent in any attempt to delineate the relevant geographic market” and that the market need not be defined by “metes and bounds as a surveyor would lay off a plot of ground.”²
 - Can be applied separately from the test for relevant product market definition
- Merger Guidelines test
 - Hypothetical monopolist test
 - Applied simultaneously to the candidate product market and the associated candidate geographic market
 - That is, you cannot apply the HMT to a product market without knowing also delineating the area in which the products may be obtained

¹ United States v. Philadelphia Nat'l Bank, 374 U.S. 321, 359 (1963) (emphasis removed) (quoting Tampa Elec. Co. v. Nashville Coal Co., 365 U.S. 320, 327 (1961) (Sherman Act § 2).

² *Id.* at 360 n.37; see United States v. Connecticut Nat'l Bank, 418 U.S. 656, 669 (1974) (geographic markets “need not—indeed cannot—be defined with scientific precision”).

Judicial tests

■ Other articulations

- “This approach evaluates the geographic aspect of the elasticity of a specified market—that is, how far consumers will go to obtain the product or its substitute in response to a given price increase and how likely it is that a price increase for the product in a particular location will induce outside suppliers to enter that market and increase supply-side competition in that location.”¹
- “The relevant geographic market for antitrust purposes is some geographic area in which a firm can increase its price without 1) large numbers of its customers quickly turning to alternative supply sources outside the area; or 2) producers outside the area quickly flooding the area with substitute products.”²
- The relevant geographic market “must include the sellers or producers who have the . . . ability to deprive each other of significant levels of business.”³
- “[I]f customers would defeat the attempted price increase by buying from outside the region, it is not a relevant market; the test should be rerun using a larger candidate region.”⁴

¹ Heerwagen v. Clear Channel Commc'ns, 435 F.3d 219, 227 (2d Cir. 2006).

² *Id.* (quoting Herbert Hovenkamp, Federal Antitrust Policy: The Law of Competition and its Practice § 3.6, at 113 (2d ed. 1999)).

³ Rebel Oil Co. v. Atlantic Richfield Co., 51 F.3d 1421, 1434 (9th Cir. 1995) (internal quotation marks and citation omitted); *accord* FTC v. Advocate Health Care Network, 841 F.3d 460, 468 (7th Cir. 2016).

⁴ Saint Alphonsus Medical Center-Nampa Inc. v. St. Luke's Health System, Ltd., 778 F.3d 775, 784 (9th Cir. 2015); *accord* *Advocate*, 841 F.3d at 468.

Judicial tests

■ General rules

- Proponents cannot rely on political boundaries (such as towns, counties, or states) to establish the boundaries of a relevant geographic market without providing evidence of the competitive forces within these boundaries
- Actual sales and shipment patterns are most often used by courts to determine the dimensions of the geographic market
- In many cases, the geographic boundaries of the relevant market are well understood and are often the subject of stipulations by the parties
- Nice summary
 - “The relevant geographic market for goods sold nationwide is often the entire United States, though it need not be if purchasers cannot practicably turn to areas outside their own area for supply of the relevant product. In certain service industries, the geographic market may be confined by the fact that it can be impractical for consumers to travel great distances to procure particular services. For example, historically, the geographic market for banking services is localized due to the local nature of the demand for such services. Start-up or transportation costs may prohibit new entrants from readily competing within an area even in response to increased prices. Accordingly, courts have held that the market for certain entertainment services—such as, for example, tickets to movie theater showings—is local or regional.”¹

¹ Heerwagen v. Clear Channel Commc'ns, 435 F.3d 219, 228 (2d Cir. 2006) (internal citations omitted).

1992 Merger Guidelines

■ Methodology

- Uses the hypothetical monopolist test to define relevant geographic markets:

In defining the geographic market or markets affected by a merger, the Agency will begin with the location of each merging firm (or each plant of a multiplant firm) and ask what would happen if a hypothetical monopolist of the relevant product at that point imposed at least a "small but significant and nontransitory" increase in price, but the terms of sale at all other locations remained constant. If, in response to the price increase, the reduction in sales of the product at that location would be large enough that a hypothetical monopolist producing or selling the relevant product at the merging firm's location would not find it profitable to impose such an increase in price, then the Agency will add the location from which production is the next-best substitute for production at the merging firm's location.

...

The price increase question is then asked for a hypothetical monopolist controlling the expanded group of locations. In performing successive iterations of the price increase test, the hypothetical monopolist will be assumed to pursue maximum profits in deciding whether to raise the price at any or all of the additional locations under its control. This process will continue until a group of locations is identified such that a hypothetical monopolist over that group of locations would profitably impose at least a "small but significant and nontransitory" increase, including the price charged at a location of one of the merging firms.¹

¹ 1992 Horizontal Merger Guidelines § 1.21. Note that this assumes that the products in the market have been identified.

1992 Merger Guidelines

- Methodology (con't)
 - Analogy to product market definition
 - The merger guidelines define geographic markets using the same hypothetical monopolist test and elasticity concepts as are used in product market definition
 - As in the case of product substitution, some geographic substitution may be expected in the event of any small price increase
 - Provisional geographic markets, prices, SSNIPs, and price discrimination markets are treated analogously to their treatment in product market definition
 - Factors identified in the 1992 guidelines to consider in assessing buyer reactions to a SSNIP:¹
 - Evidence that buyers have shifted or have considered shifting purchases between different geographic locations in response to relative changes in price or other competitive variables
 - Evidence that sellers base business decisions on the prospect of buyer substitution between geographic locations in response to relative changes in price or other competitive variables
 - The influence of downstream competition faced by buyer in their output markets
 - The timing and costs of switching suppliers
 - These factors are nonexclusive: Any evidence probative of buyer switching reactions may be considered

¹ 1992 Horizontal Merger Guidelines § 1.21.

1992 Merger Guidelines

- Methodology (con't)
 - Geographic markets are often stipulated by the parties
 - In many mergers, there is no serious dispute over geographic market definition
 - Many geographic markets are national or even worldwide
 - Notable exceptions where geographic market definition can be highly contentious:
 - Products sold in retail stores and purchased by end-user consumers
 - So that consumers have to travel to the retail stores
 - Broadly defined to include, for example, grocery stores, department stores, banks, hospitals, dialysis clinics
 - Intermediate products with high transportation costs relative to their prices
 - So that it is costly to ship products to customers (e.g., glass beer bottles shipped to breweries)

¹ 1992 Horizontal Merger Guidelines § 1.21.

2010 Merger Guidelines

- Adopts the 1992 Merger Guidelines methodology with some very significant changes
 - As with product markets
 - Relegates geographic market definition to one of several tools useful to merger antitrust analysis and which may not be necessary in all cases
 - Abandons the “smallest market” principle and unique relevant markets
 - Two cases
 - Geographic market definition has been problematic in antitrust cases
 - The principal reason is that the law attempted to define relevant geographic markets using the same approach in two entirely distinct situations:
 1. where the merging firms operate in fixed locations to which customers travel to make their purchases, and
 2. where the merging firms operate central production facilities and ship their products to the customers
 - The 2010 Guidelines properly draw the distinction

2010 Merger Guidelines

- Geographic markets based on the locations of suppliers
 - Generally
 - Here, customers travel to the supplier's location, so the relevant question is to which supplier locations is the customer willing to travel in the event that a hypothetical monopolist of the locations in the provisional market raises price
 - This is typically the case, for example, in consumer retail markets, such as grocery stores, department stores, consumer banks, office supply stores, and hospitals
 - In other words, how much farther would a customer be willing to travel to avoid a SSNIP?
 - Guidelines test
 - The relevant geographic market is then the region encompassing the *seller locations* from which sales are made where a hypothetical monopolist controlling these facilities could raise prices profitably at a SSNIP from at least one or more of these facilities, including at least one location of one of the merging firms
 - Notably, when the geographic market is defined based on supplier locations, sales made by suppliers located in the geographic market are counted, regardless of the location of the customer making the purchase
 - As a result, some customers who buy from firms in the relevant market may themselves be located outside the boundaries of the geographic market
 - When relevant geographic markets are defined by the locations of the suppliers, a single firm may operate in a number of different geographic markets, even for a single product

2010 Merger Guidelines

- Geographic markets based on the locations of suppliers (con't)
 - Guidelines considerations (not exhaustive)¹
 - How customers have shifted purchases in the past between different geographic locations in response to relative changes in price or other terms and conditions
 - The cost and difficulty of transporting the product (or the cost and difficulty of a customer traveling to a seller's location), in relation to its price
 - Whether suppliers need a presence near customers to provide service or support
 - Evidence on whether sellers base business decisions on the prospect of customers switching between geographic locations in response to relative changes in price or other competitive variables
 - The costs and delays of switching from suppliers in the candidate geographic market to suppliers outside the candidate geographic market
 - The influence of downstream competition faced by customers in their output markets

¹ 2010 DOJ/FTC Horizontal Merger Guidelines § 4.2.1.

2010 Merger Guidelines

- Geographic markets based on the locations of customers
 - Generally
 - Here, suppliers ship to the customer's location, so the relevant question is which suppliers are willing to compete for a customer at a given location in the event that a hypothetical monopolist of the suppliers in the provisional market raises price
 - The idea is that an increase in a local price increases the margin earned by a supplier, and a more distant supplier can use the additional margin to offset its shipping costs (that is, how much farther would a supplier be willing to ship in the event if prices increased)
 - The relevant geographic market is then the region encompassing the *customer locations* to which sales are made where a hypothetical monopolist supplying that region could raise prices profitably at a SSNIP
 - This usually entails a straightforward calculation of the additional shipping distance that could be funded by a SSNIP (keeping in mind that the loading and unloading costs are already covered)

Geographic markets in practice

- Stipulated by parties
 - In many cases, the geographic boundaries of the relevant market are well understood and are often the subject of stipulations by the parties

- National markets
 - Where manufacturers produce products at a single location, but ship and sell nationally at no competitive disadvantage, the relevant geographic market is usually found to be national

- Regional markets
 - Generally
 - Where a firm and its rivals sell their product only in a limited geographic area and their customers have no ready access to an outside source of supply, the general rule is to define the geographic market as that particular area and to include only sales made within the market

Geographic markets in practice

- Notable exceptions where geographic market definition can be highly contentious:
 - Products sold in retail stores and purchased by end-user consumers
 - So that consumers have to travel to the retail stores
 - Broadly defined to include, for example, grocery stores, department stores, banks, hospitals, dialysis clinics
 - Intermediate products with high transportation costs relative to their prices
 - So that it is costly to ship products to customers (e.g., glass beer bottles shipped to breweries)
 - Products that involve network competition
 - So that while products are shipped locally, buyers with geographically dispersed facilities want to purchase from one company regionally or nationally and so want sellers to have multiple facilities to serve them

Geographic markets in practice

■ Local markets

- Where sellers sell to customers only locally, the relevant geographic market is usually found to be local
- Consumer retail markets
 - Local geographic markets are especially common in consumer retail and similar markets, such as supermarkets, drug stores, department stores, and inpatient and outpatient medical services, since consumers typically are unwilling to travel outside of the local area to make purchases even in the wake of a small price increase
- Local market boundaries
 - Local retail markets are often defined in terms of metropolitan statistical areas (MSAs) or county, city, or town boundaries
 - Depending on the circumstances, local markets may be very confined, such as individual airports for airline passengers seeking rental cars¹
 - If a merging party, in the regular course of business, has prepared maps identifying the trade area for a given store and the store's competitors, the enforcement agencies are likely to give significant weight to those maps in determining the relevant geographic market

¹ Complaint ¶ 5, *In re Hertz Global Holdings, Inc.*, No. C-4376 (F.T.C. Nov. 15, 2012).

Geographic markets in practice

- Markets with transportation costs
 - When the shipments and sales patterns are not conclusive, or when one of the parties argues for a market boundary apparently contrary to what these patterns suggest, courts will consider transportation costs in relation to the price of the product
 - Low transportation costs relative to the product price suggest broader geographic markets
 - Higher transportation costs relative to price indicate narrower markets¹

- Other considerations
 - Other factors recognized by the courts as probative on the question of geographic market definition include—
 - Lack of parallel movements in price
 - Governmental barriers to trade (such as tariffs or quotas)
 - Common area-wide price advertising,
 - Customer preferences for dealing locally
 - Perception of local competitors of the extent of competition provided by distant firms
 - Industry recognition.

¹ See, e.g., *FTC v. Procter & Gamble Co.*, 386 U.S. 568, 571 (1967); *In re Weyerhaeuser Co.*, 106 F.T.C. 172, 1985 WL 668940 (1985) (east coast and west coast separate markets for corrugating medium; price differential did not cover transportation costs across continent).

Geographic markets in practice

- Markets with network competition
 - Generally
 - Even when services are local, however, when firms compete for customers by providing retail networks and customers contract for regional coverage, the relevant geographic market will be regional
 - For example, in mergers of pharmacy benefit managers (PBMs)—essentially intermediaries between insurance companies and prescription pharmacies—the FTC has defined the relevant geographic market as the area in which chain stores compete for PBM and other third-party payor contracts¹
 - When national customers insist on identical terms from their suppliers in different parts of the country, a national or large regional relevant market may be appropriate even though no single supplier services the entire area

¹ See, e.g., Complaint ¶ 7, *In re CVS Corp.*, No. C-3762, at ¶ 7 (filed May 29, 1997) (defining the relevant geographic markets as the state of Virginia and the Binghamton, New York MSA where the relevant product market was the retail sale of pharmacy services to third-party payors such as insurance carriers and health maintenance organizations).

Geographic markets in practice

- Downstream indirect customer substitution
 - An example
 - Consider the store location by itself to be a provisional geographic market for the wholesale sale of groceries to grocery stores
 - If a hypothetical monopolist controlled all of the wholesale grocery sales into the local grocery store location, under what conditions would this be, or not be, a relevant geographic market? If the hypothetical monopolist raises its prices to the neighborhood grocery store, the grocery store most likely will raise its prices to its retail customers. If some of these retail customers switch to other grocery stores, the grocery store will suffer a reduction in unit retail sales, which in turn will translate into a reduction in the hypothetical monopolist's wholesale sales
 - The profitability of the hypothetical monopolist's price increase will then depend on whether its profit gain on the increase in its margin on the sales that it continues to make is greater than the gross margin loss on the sales that it will lose as a result of the price increase
 - While this is the usual formula for determining the profitability of a hypothetical monopolist's price increase, the analysis is likely to turn on the switching behavior of the downstream indirect retail customers rather than on the switching of the hypothetical monopolist's direct wholesale customers
 - If the grocery store's retail customers do not have good alternatives—say because the next nearest grocery store is 30 miles away—the price increase will be profitable
 - If there is another grocery store across the street that offers a close retail substitute, then the price increase will not be profitable

Geographic markets in practice

- Implausible markets

- Even without a rigorous analysis, courts have rejected market definitions where common sense indicates that they are implausible
- Examples of “implausible” markets
 - Market defined by a five-block radius around a retail pharmacy store:

Sharif’s assertion that the five-block radius around its location is a relevant market is not plausible. The antitrust statutes require a “pragmatic” and “factual” approach to defining the geographic market. The market must “correspond to the commercial realities of the industry.” Where geographic convenience is important to consumers, retail markets can be small, but not this small. It defies belief to suggest that a hypothetical monopolist retail pharmacy could raise its drug prices substantially without losing customers to competitors outside that tiny area.¹

¹ Sharif Pharmacy, Inc. v. Prime Therapeutics, LLC, 950 F.3d 911, 917 (7th Cir. 2020) (internal citations omitted).

Critical Loss Analysis

Critical loss

■ The basic idea

- Consider a price increase Δp in the product of a single-product hypothetical monopolist and an accompanying loss of sales Δq when the demand curve is downward sloping
 - When loss of sales is sufficiently small, then the gross gain in profits from higher prices on retained sales will be greater than gross loss in profits from lost sales and the price increase will be profitable
 - When the loss of sales is sufficiently large, the gross gain in profits from higher prices on retained sales will be smaller than gross loss in profits from lost sales and the price increase will be unprofitable
- **Definition:** The loss of sales Δq_{cl} at the tipping point when the gross gain in profits just equals the gross loss is called the *critical loss (CL)* or *unit critical loss*
 - Percentage critical loss (%CL) is the percentage $\Delta q^*/q$, where q is the premerger level of sales
 - NB:
 - A decrease in sales *greater* than Δq^* will mean a *loss* in profits compared to the starting quantity q
 - A decrease in sales *less* than Δq^* will mean a *gain* in profits compared to the starting quantity q
- Dependencies
 - Critical loss (CL) is a function of the starting quantity q , the price p , the price change Δp , and the gross dollar margin ($p - mc$)

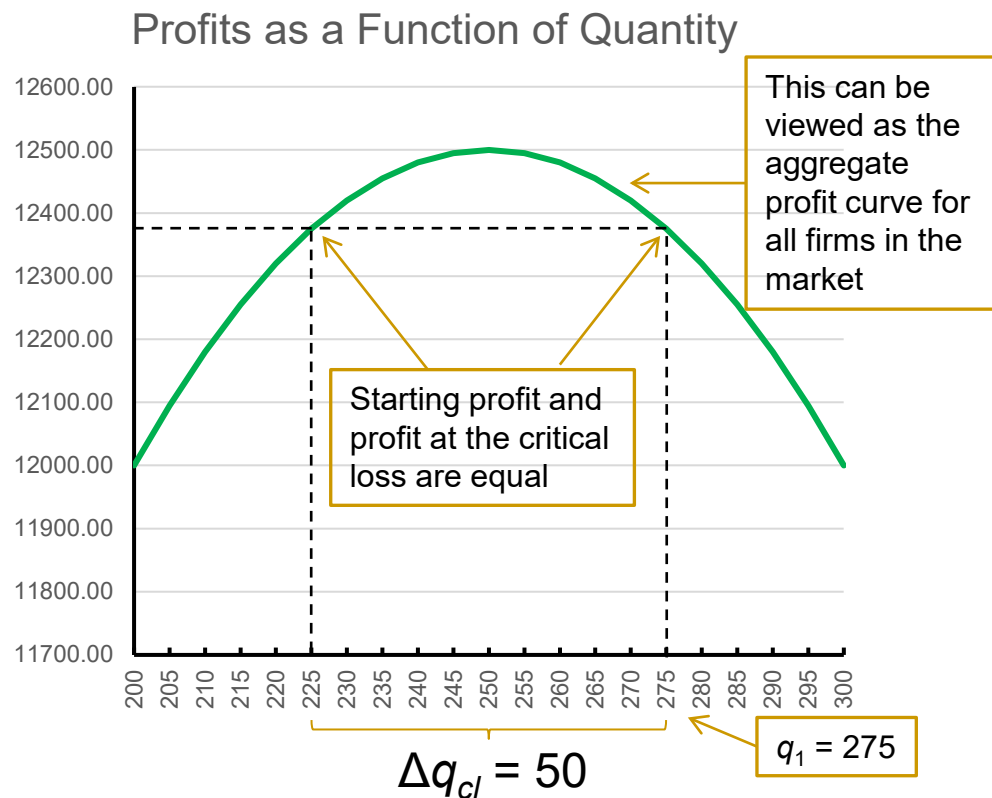
Critical loss

■ The basic idea

- The *critical loss* Δq_{cl} for a given SSNIP is the maximum number of units the firm can lose and still have the SSNIP be profitable
 - Can be expressed either in units or percentage

■ Example

- Say for a firm (or a hypothetical monopolist)
 - $p_1 = 145$
 - $q_1 = 275$
 - $f = 0$
 - $mc = 100$ (constant)
 - $\pi_1 = 12,375$
- If the firm reduces its output to 225, it makes the same profits
- Then $\Delta q_{cl} = 275 - 225 = 50$



← Quantity decreases as price increases. Price increases are profitable until quantity falls below 225, so the critical loss is 50

Critical loss

■ Formulas for critical loss

- We can express the critical loss Δq_{cl} for a given Δp in two algebraically equivalent ways:¹

1. As an equality of total profits after and before the price increase:

$$(p + \Delta p - c)(q - \Delta q_{cl}) = (p - c)q$$

Breakeven condition with constant marginal costs

2. As an equality of the gross gain in profits on retained sales and the gross loss in profits from lost sales:

The diagram shows the equation $\Delta p(q - \Delta q_{cl}) = (p - c)\Delta q_{cl}$. The left side is labeled "Gain on retained sales" and the right side is labeled "Loss of margin on lost sales". Brackets under each side of the equation are connected by curved arrows pointing towards each other, indicating that the two sides are equal.

Note: Critical loss is a function of the starting point q as well as p , Δp , and c

1. Solving for Δq_{cl} provides a formula for the *critical loss in units*:

1. Unit critical unit loss formula:

$$(CL =) \Delta q_{cl} = \frac{q\Delta p}{(p + \Delta p) - c}$$

In a HMT, Δp is the \$SSNIP

¹ This assumes constant marginal costs.

Critical loss

- Formulas for critical loss

2. Divide Equation 1 by q to obtain *percentage critical loss*:

$$\begin{aligned} (\%CL) \frac{\Delta q_{cl}}{q} &= \frac{\Delta p}{(p + \Delta p) - c} = \frac{\frac{\Delta p}{p}}{\frac{\Delta p}{p} + \frac{p - c}{p}} \\ &= \frac{\delta}{\delta + m} \end{aligned}$$

2. Percentage critical loss formula:

where

δ is the percentage price increase: $\delta = \frac{\Delta p}{p}$

In a HMT, δ is the %SSNIP

m is the percentage gross margin: $m = \frac{p - c}{p}$

Critical loss

■ Formulas for critical loss

3. We can also define the *critical elasticity* ε_{cl} as the maximum elasticity that will profitably support a price increase of δ :

Definition of own-elasticity:
$$|\varepsilon_{cl}| = \frac{\frac{\Delta q_{cl}}{q}}{\frac{\Delta p}{p}} = \frac{\Delta q_{cl}}{q} \frac{1}{\delta} \Rightarrow \frac{\Delta q_{cl}}{q} = \delta |\varepsilon_{cl}|$$

NB: By convention, Δq_{cl} is a *positive* number. To make the signs work, we have to use the absolute value of the elasticity. *Always watch for the sign of Δq in any equation.*

Percentage critical loss formula:
$$\frac{\Delta q_{cl}}{q} = \frac{\delta}{\delta + m} \Rightarrow \delta |\varepsilon_{cl}| \cong \frac{\delta}{\delta + m},$$

Cancelling the δ s:
$$|\varepsilon_{cl}| \cong \frac{1}{\delta + m}$$

3. Critical elasticity formula

- Accordingly, when the actual own-elasticity of demand ε is less than the critical elasticity ε_{cl} (i.e., ε is more inelastic than ε_{cl} or equivalently $|\varepsilon| < |\varepsilon_{cl}|$), then for a small enough %SSNIP the price increase will be profitable

- We can express this as:

$$|\varepsilon| < \frac{1}{\delta + m}.$$

Critical loss and market definition

■ The basic idea

- Recall that under the hypothetical monopolist test, a candidate market is a relevant market if a hypothetical monopolist could profitably raise prices in the candidate market by a SSNIP (profitability test)
 - So for any candidate market with current aggregate output q and price p and a SSNIP Δp , then if the change in output Δq is less than the critical loss Δq_{cl} a hypothetical monopolist could profitably raise price by the SSNIP and the candidate market is a relevant market
- Algorithm
 1. Start with a product of the merging firm
 - Or a product of the merging firm together with other closely related products (as in H&R Block/TaxACT)
 2. Assume a hypothetical monopolist over the group of products—the “candidate market”—and raise price by a SSNIP
 3. Compare actual loss Δq to critical loss Δq^* ,
 - If the actual loss $\Delta q < \Delta q^*$, then a hypothetical monopolist could profitably raise prices by the SSNIP and the product grouping is a relevant market
 - Whether the SSNIP is profitable will be determined by the candidate market’s *own-elasticity of demand*
 - If the actual loss $\Delta q \geq \Delta q^*$, then a hypothetical monopolist could not profitably raise prices the product grouping is not a relevant market → add to the product group another product with a high cross-elasticity of demand/diversion ratio and repeat Steps 2 and 3.

Critical loss and market definition: Example 1

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. When the price for both products is increased by \$5, each firm loses 100 units to outside the market. Do A and B constitute a relevant market under the 2010 Guidelines?

Given actual loss, so think unit critical loss

Critical loss and market definition: Example 1

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. When the price for both products is increased by \$5, each firm loses 100 units to outside the market. Do A and B constitute a relevant market under the 2010 Guidelines?

Given actual loss, so think unit critical loss

Parameters			"Brute force" profit calculations		Critical loss	
Price	p	100	Gain = (Q+ΔQ)Δp			$\Delta q^* = \frac{q\Delta p}{(p + \Delta p) - c}$
Cost	c	60	Q + ΔQ	2200		
Gross margin	m	40	Δp	5		
Market output	Q	2400	Gain	11000		
SSNIP	Δp	5	Loss = mΔQ			
Customer loss	ΔQ	-200	ΔQ	-200	qΔp	12000
			m	40	(p+Δp)-c	45
			Loss	-8000	CL	266.6667
			Net	3000		

From the breakeven condition (see earlier slide)

Actual loss (200) is less than the critical loss (266.67), so A and B are a relevant market

Brute force profit calculations confirmation: Since the gain exceeds the loss, a hypothetical monopolist of A and B could profitably raise price by 5% and so A and B are a relevant market

Critical loss and market definition: Example 4

Assume that there is an identical gas station every mile on a straight road. Each gas station charges \$3.25 per gallon, has an incremental cost of \$2.50, and sells 1000 gallons. When the price at a station is increased by 5% (holding the price at all other gas stations constant), the station loses customers who in the aggregate buy 400 gallons. No customer will travel more than one mile, however, to avoid a 5% price increase. For a given station A and assuming a SSNIP of 5%, what is the relevant market?

Critical loss and market definition: Example 4

- Example 4: Gas stations on a road
 - Step 0: Make sure you understand the switching behavior!

Critical loss and market definition

- Estimating actual loss (Δq)

- We can estimate the percentage critical loss if we know the aggregate own-elasticity of demand for the candidate market when:
 - Premerger pricing satisfies the Lerner Condition ($\varepsilon = 1/m$), and
 - All demand functions are linear in price in the vicinity of the premerger equilibrium point
- First-order approximation of the percentage actual loss:

“ \equiv ” means a definition

“ \approx ” means approximately

$$\frac{\frac{\Delta q}{q}}{\frac{\Delta p}{p}} \equiv \varepsilon \Rightarrow \frac{\Delta q}{q} \approx \frac{\Delta p}{p} \varepsilon = \delta\varepsilon,$$

where ε is the residual own-elasticity of demand for the candidate market (i.e., of the hypothetical monopolist)

that is, the percentage actual loss is approximately equal to the percentage price change times the own-elasticity of demand

- First-order approximation of the actual loss:

$$\frac{\Delta q}{q} \approx \delta\varepsilon \Rightarrow \Delta q = q\delta\varepsilon.$$

4. Percentage actual loss formula

Critical loss

■ Summary of formulas

- *Unit critical unit loss:*

$$(CL =) \Delta q_{cl} = \frac{q \Delta p}{(p + \Delta p) - c}$$

- *Percentage critical loss:*

$$(\%CL =) \frac{\Delta q_{cl}}{q} = \frac{\delta}{\delta + m}$$

where δ is the percentage price increase: $\delta = \frac{\Delta p}{p}$

m is the percentage gross margin: $m = \frac{p - c}{p}$

- *Critical elasticity:*

$$|\varepsilon_{cl}| \cong \frac{1}{\delta + m}$$

where ε is the own-elasticity of demand of the monopolist (i.e., the aggregate demand curve)

- *Percentage actual loss:*

$$\frac{\Delta q}{q} \cong \delta \varepsilon$$

Critical loss: Differentiated margins

- Multiple margins in differentiated markets
 - In the critical loss formulas in the earlier slides, the percentage margins in the candidate markets were all assumed to be equal
 - In many differentiated candidate markets, however, the percentage margins will differ among products
 - There are two modifications of the formulas to handle multiple margins
 1. Revenue share-weighted margins
 - Replace m in the above formulas with the revenue share-weighted average margin of the products in the candidate market
 - This essentially assumes that unit losses by the hypothetical monopolist as a result of a uniform SSNIP are proportional to revenue shares within the candidate market
 2. The maximum margin as a sufficient condition
 - Replace m in the above formulas with the maximum margin of the products in the candidate market
 - A *sufficient* condition for the candidate market to be a relevant market is if the actual loss by the hypothetical monopolist is less than the critical loss using the maximum margin
 - This essentially assumes the worst case: that all unit losses by the hypothetical monopolist as a result of a uniform SSNIP all come from the product with the highest margin and hence yields the maximum profit loss
 - May use the test if data for a revenue-share-weighted margin is not available
 - This is a sufficient condition only: failure to satisfy the test does not mean that the candidate market is not a relevant market, since if some losses come from lower margin products the true critical loss is lower than the critical loss calculated using the maximum margin

Critical loss: Differentiated margins

1. Revenue share-weighted average margins (standard approach)

- Replace m in the above formulas with the *revenue share-weighted average margin* of the products in the candidate market
- Example:

The differentiated candidate market contains three products with different margins given in the table below. For a 5% SSNIP, the hypothetical monopolist would lose 8% of its sales. Is the candidate market a relevant market?

- The data:

Product	Revenue	
	share	Margin
A	0.5	0.4
B	0.3	0.7
C	0.2	0.3

- Calculate the revenue share-weighted average margin:

$$m_{ave} = (0.5)(0.4) + (0.3)(0.7) + (0.2)(0.3) = 0.47$$

- Calculate the percentage critical loss:

$$(\%CL) = \frac{\Delta q_{cl}}{q} = \frac{\delta}{\delta + m_{ave}} = \frac{0.05}{0.05 + 0.47} = 9.62\%$$

- Since the actual percentage loss (8%) is less than the percentage critical loss calculated using revenue share-weighted margins, the candidate market is a relevant market

Critical loss: Differentiated margins

2. Maximum margin approach (sufficient condition)

- Replace m in the above formulas with the maximum margin of any of the products in the candidate market
- Example:

The differentiated candidate market contains three products with different margins given in the table below. For a 5% SSNIP, the hypothetical monopolist would lose 8% of its sales. Is the candidate market a relevant market?

- The data:

	Revenue	
Product	share	Margin
A	0.5	0.4
B	0.3	0.7
C	0.2	0.3

- Identify the maximum margin: $m_{max} = 0.7$
- Calculate the percentage critical loss:

$$(\%CL =) \frac{\Delta q_{cl}}{q} = \frac{\delta}{\delta + m_{max}} = \frac{0.05}{0.05 + 0.7} = 6.67\%$$

- Since the actual percentage loss (8%) is greater than the critical loss calculated using the maximum margin, the candidate market fails this test
- BUT this does not mean that the candidate market is not a relevant market, since it assumes the worst possible losses for the hypothetical monopolist. Using a revenue share-weighted margin (prior slide), we saw that the candidate market is a relevant market

Critical loss and market definition

OPTIONAL

■ Profit-maximization

- As noted earlier, the guidelines ask whether the hypothetical monopolist for the candidate market profit-maximizing price increase would be above a SSNIP
- The monopolist's profit-maximizing critical elasticity ε^{pm} —that is, the elasticity at which the hypothetical monopolist's profit-maximizing price increase will be at least as great as the SSNIP δ —is given by:

$$|\varepsilon^{pm}| = \frac{1}{2\delta + m}$$

- With a little algebra, we can rearrange the above equation to solve for δ :

$$\delta^{pm} = \frac{-m|\varepsilon| + 1}{2|\varepsilon|}$$

- This equation gives the profit-maximizing percentage price change δ^{pm} for a given group of product with an elasticity ε
- It is helpful to remember what is going on here. A profit-maximizing monopolist prices so that the Lerner equation is satisfied ($\varepsilon = 1/m$). Competition within the product grouping, however, may decrease the margin m , so that the Lerner equation is no longer satisfied. The profit-maximizing δ^{pm} gives the percentage price change that the monopolist would implement if it gained control of the product grouping. (Note that when $\varepsilon = 1/m$, $\delta^{pm} = 0$, as it should be.)

One-Product SSNIPs and Aggregate Diversion Analysis

Aggregate diversion analysis

■ Basic idea

- 1982 Merger Guidelines
 - Required that all products in the provisional market be increased by the same percentage SSNIP
- 1992 Merger Guidelines
 - Allowed price discrimination in the SSNIP, at least where the premerger market exhibited some price discrimination (and sometimes when the postmerger market arguably would exhibit price discrimination even if the premerger market did not)
- 2010 Merger Guidelines
 - After the 2010 Merger Guidelines, some economists—including agency economists in court proceeding—used price discriminating SSNIPs in any differentiated products markets
 - A *one-product SSNIP* creates the most narrow relevant markets, since internalizes the maximum amount of diversion
 - The “aggregate diversion ratio” method can determine whether a candidate market satisfies the hypothetical monopolist test under a one-product SSNIP
 - Some economists have used the aggregate diversion ratio method when imposing a uniform price increase across all products in the candidate market, but this requires some restrictive conditions
 - Examples: DOJ’s economist in H&R Block/TaxACT
FTC’s economist in Sysco/US Foods
DOJ’s economist in Aetna/Cigna

Diversion ratios

- Definition (when Firm A raises in price and Firm B holds its price constant):

$$D_{A \rightarrow B} \equiv D_{AB} = \frac{\Delta q_B}{\Delta q_A} \Big|_{\text{for some } \Delta p_A}$$

Remember, “ \equiv ” means a definition

where Firm A increases prices by Δp_A and loses total sales of Δq_A , of which Δq_B go to Firm B

- *Keep in mind:* The definition of diversion ratios is motivated by Firm A’s price increasing
- Relation to cross-elasticities

- Formally:

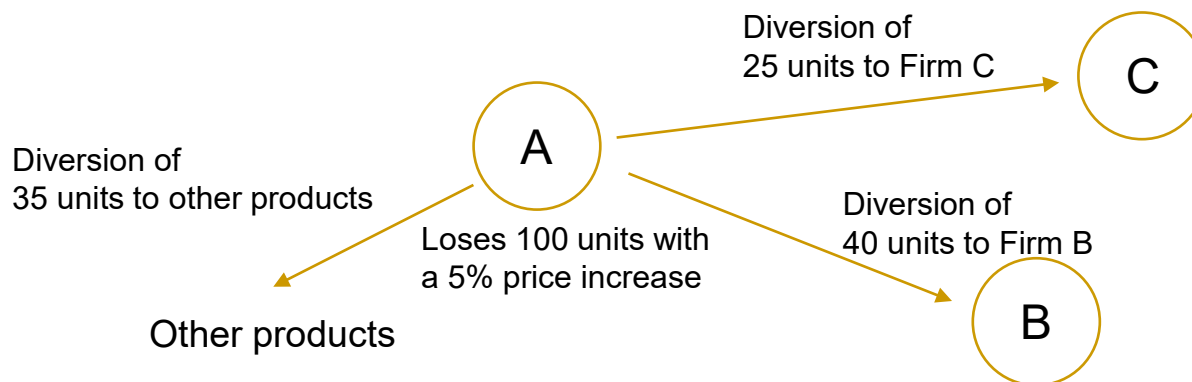
$$D_{BA} = \frac{\Delta q_B}{\Delta q_A} = \left(\frac{\frac{\Delta q_B}{q_B}}{\frac{\Delta q_A}{q_A}} \right) \left(\frac{q_B}{q_A} \right) = \left(\frac{\frac{\Delta q_B}{q_B}}{\frac{\Delta p_A}{p_A}} \right) \left(\frac{\frac{p_A}{\Delta q_A}}{\frac{q_B}{q_A}} \right) \left(\frac{q_B}{q_A} \right) = \left(\frac{\varepsilon_{BA}}{\varepsilon_{AA}} \right) \left(\frac{q_B}{q_A} \right)$$

- Informally, diversion ratios are considered to be another indicator of substitutability, with higher diversion ratios indicating greater substitutability

Diversion ratios

■ Example

- Firm A raises its price by 5% and loses 100 units (all other firms hold their price constant)
 - 40 units divert to Firm B
 - 25 units divert to Firm C
 - 35 units divert to other products



- Then:

$$D_{A \rightarrow B} = \frac{40}{100} = 0.40 \text{ or } 40\%$$

$$D_{A \rightarrow C} = \frac{25}{100} = 0.25 \text{ or } 25\%$$

Since $D_{A \rightarrow B} > D_{A \rightarrow C}$,
B is generally regarded
as a closer substitute to
A than C

Diversion ratios

- How are diversion ratios estimated?
 1. Data collected during the regular course of business (including win-loss data)
 2. Indications in the company documents
 3. Consumer surveys
 - But very sensitive to survey design and customer ability to accurately predict product choice in the presence of a price increase
 4. Switching shares as proxies
 - Where switching behavior is not limited to reactions to changes in relative price
 - *Example*: H&R Block/TaxACT (where the court accepted a diversion the analysis based on IRS switching data only as corroborating other evidence)
 5. Demand system estimation/econometrics
 - Econometric estimation of all own- and cross-elasticities of all interacting firms
 - Very demanding data requirements—Usually possible only in retail deals where point-of-purchase scanner data is available

Diversion ratios

■ How are diversion ratios estimated?

6. Market shares as proxies: Relative market share method

- Very popular method
- Assumes that customers divert in proportion to the market shares of the competitor firms (after adjusting for any out-of-market diversion)
 - So that the largest competitors (by market share) get the highest diversions
- When all diversion is to products within the candidate market:

$$D_{A \rightarrow B} = \frac{s_B}{1 - s_A},$$

where s_A and s_B are the market shares of firms A and B, respectively

■ Example: Candidate market—

- Firm A 40%
 - Firm B 30%
 - Firm C 24%
 - Firm D 6%
- } 60% points to be allocated to three firms pro rata by their market shares
- No diversion outside the candidate market

Then:

$$D_{A \rightarrow B} = \frac{0.30}{1 - 0.40} = 50.0\%$$

$$D_{A \rightarrow C} = \frac{0.24}{1 - 0.40} = 40.0\%$$

$$D_{A \rightarrow D} = \frac{0.06}{1 - 0.40} = 10.0\%$$

← Adds to 100%, to account for 100% of the diverted sales

Diversion ratios

■ How are diversion ratios estimated?

6. Market shares as proxies: Relative market share method (con't)

- When there is some diversion to products outside the candidate market:

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

where $\frac{\Delta q_{outside}}{\Delta q_A}$ is the percentage of Firm A's lost sales that are diverted to firms outside of the market

■ Example: Candidate market—

- Firm A 50%
 - Firm B 25%
 - Firm C 15%
 - Firm D 10%
- } Shares in the candidate market (= 100%)
- Outside diversion: 15%

→ 85% points to be allocated to the firms in the candidate market

Then:

$$D_{A \rightarrow B} = (1 - 0.15) \frac{0.25}{1 - 0.50} = 42.5\%$$

$$D_{A \rightarrow C} = (1 - 0.15) \frac{0.15}{1 - 0.50} = 25.5\%$$

$$D_{A \rightarrow D} = (1 - 0.15) \frac{0.10}{1 - 0.50} = 17.0\%$$

$$D_{A \rightarrow O} = 15\%$$

Total 85%
With outside diversion: 100%

Diversion ratios in *H&R Block*

- Warren-Boulton's derivation of diversion ratios in H&R Block/TaxACT

- Used market shares to estimate diversion ratios

- Recall

- $s_{HRB} = 15.6\%$

- $s_{TaxACT} = 12.8\%$

- So

$$D_{HRB \rightarrow TaxACT} = \frac{12.8\%}{1 - 15.6\%} = 15.2\%$$

$$D_{TaxACT \rightarrow HRB} = \frac{15.6\%}{1 - 12.8\%} = 17.9\%$$

- Interestingly, the court reported these diversion ratios as 14% and 12%

- Warren-Boulton probably had some diversion to an outside option that was not given by the court

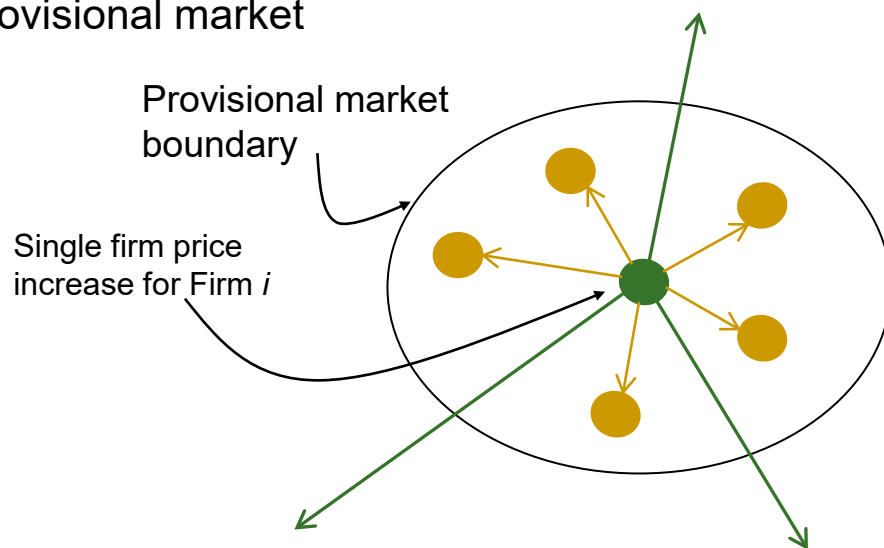
- An outside option (assisted and manual) of 17% for HRB gives $D_{HRB \rightarrow TaxACT} = 14\%$

- An outside option (assisted and manual) of 10% for TaxAct gives $D_{TaxACT \rightarrow HRB} = 12\%$

Recapture ratio/“Aggregate diversion ratio”

■ Definition: Recapture ratio/Aggregate diversion ratio

- The percentage R_i of total sales lost by a product in the wake of a SSNIP applied only to product i that is captured by the aggregate of the other products inside the provisional market



The aggregate diversion ratio is more descriptively call the *recapture ratio* or the *recapture rate*

- Internal diversion (R_i)
- External diversion ($1 - R_i$) (which is actual loss L_i)

□ Observation

- 100% of the total loss of sales by firm i is equal to the recapture percentage R_i that is retained by firms in the provisional market plus the loss of sales L_i to all firms outside the market (that is, $R_i + L_i = 100\%$ for all firms in the market)

The one-product SSNIP test

- The 2010 Merger Guidelines and the one-product SSNIP

The hypothetical monopolist test requires that a product market contain enough substitute products so that it could be subject to post-merger exercise of market power significantly exceeding that existing absent the merger. Specifically, the test requires that a hypothetical profit-maximizing firm, not subject to price regulation, that was the only present and future seller of those products (“hypothetical monopolist”) likely would impose at least a small but significant and non-transitory increase in price (“SSNIP”) on **at least one product in the market, including at least one product sold by one of the merging firms**. For the purpose of analyzing this issue, the terms of sale of products outside the candidate market are held constant.¹

- This creates the *one-product SSNIP test*:

A provisional market is a relevant market if a hypothetical monopolist could profitably increase the price of one of the merging firm’s products by a SSNIP holding the prices of all other product constant

- NB: Just because one product in the candidate market fails the one-product SSNIP test does not preclude another product from passing it

¹ U.S. Dep’t of Justice & Fed. Trade Comm’n, Horizontal Merger Guidelines § 4.1.1 (rev. 2010) (emphasis added).

The one-product SSNIP test

- Aggregate diversion ratios and the one-product SSNIP test
 - *Proposition:* A one-product SSNIP δ for product i is profitable to the hypothetical monopolist if and only if:

$$R_i > \frac{\delta p_i}{m p},$$

where p_i is the price of the product subject to the SSNIP and p and m are the average price and average margin, respectively, of all of the *other* products in the candidate market.

- *Corollary:* When prices in the candidate market are equal, then the above condition reduces to:

$$R_i > \frac{\delta}{m}$$

The one-product SSNIP test

- Aggregate diversion ratios and the one-product SSNIP test
 - A caution
 - In a well-known paper, Katz and Shapiro derived a different condition:

$$R_i > \frac{\delta}{\delta + m} = \%CL,$$

This condition is incorrect!

where the prevailing prices for all products are equal.¹

- The problem is that their proof assumed that the recaptured sales would be sold at the higher price, when under the assumption of a one-product SSNIP the recaptured sales would be sold at the original prices charged by the other firms in the market
 - I note this only because this incorrect condition is still in circulation

¹ See Michael Katz & Carl Shapiro, *Critical Loss: Let's Tell the Whole Story*, Antitrust, Spring 2003, at 53 & n.25.

Recapture analysis for single-product SSNIP

■ “Brute force” method for single product price increase—Example 1

□ Example 1: Gourmet pizzas

- Assume that for a for a single product price increase of 5%, the hypothetical monopolist would retain 70 out of every 100 customers. Of the 30 lost customers, 24 would divert to another gourmet pizza and 6 would go to a standard pizza. Assume that the price of gourmet pizzas is \$3.00 and that the dollar margin is \$1.50 per pie for all producers.
- *Query:* Under the single-product 5% SSNIP test, are gourmet pizzas a relevant product market?

Data	}	Out of every	100	Price	\$3.00
		units sold:		Margin	\$1.50
		Units retained	70	SSNIP (%)	5.00%
		Total units lost	30	SSNIP (\$)	\$0.150
		Units recaptured	24		
Analysis	}	Units lost to outside	6	Units retained times \$SSNIP	
		Gain on retained	\$10.50	Total units lost times margin	
		Loss	-\$45.00	Recaptured units times margin	
		Gain on recapture	<u>\$36.00</u>		
		Net gain	\$1.50		

Relation to critical loss: When the dollar margins on the recapture sales are the same as the lost sales, those recaptured sales wash out the associated loss. Hence, you can look only at the sales not recaptured within the market (i.e., those that go to the “outside option”) and do a critical loss analysis.

In this example, the actual loss from the candidate market is 6%. The critical loss is $0.05 / (0.05 + 0.5)$ or 9%. Since the actual loss is less than the critical loss, the product grouping is a relevant market

- Since the 5% price increase results in a net profit gain, gourmet pizzas are a relevant market

Recapture analysis for single-product SSNIP

- “Brute force” method for single product price increase—Example 2
 - We can use the brute force method for a single product price when *dollar margins* differ among products within the candidate market
 - A “brute force” calculation is almost always the best way to analyze the profitability of a single-product SSNIP when dollar margins differ in the candidate market
 - Example 2

Gourmet pizza--Single product price increase

(brute force method--different margins for candidate market of three firms)

Out of every 100 units sold by Firm G1 (the firm experiencing the price increase):

	For Firm G1:	For Firm G2:	For Firm G3:			
Data	Total units retained	70				
	Total unit diverted	30	Total units recaptured			
	G1 price	\$3.00	10	Total units recaptured		
	G1 margin	\$1.50	G2 margin	\$1.75	G2 margin	\$1.35
	SSNIP (%)	5.00%				
	SSNIP (\$)	\$0.15				
Analysis	Gain on retained units	\$10.50	Gain on recaptured units	\$17.50	Gain on recaptured units	\$18.90
	Loss on diverted units	-\$45.00				
	Total gross gain to HM	\$46.90	= \$10.50 + \$17.50 + \$18.90			
	Total gross loss to HM	-\$45.00				
	NET GAIN	\$1.90				

Since the net gain to the hypothetical monopolist is positive, the candidate market is a relevant market

“Aggregate diversion ratio” test

■ Extension to a uniform SSNIP

- The recapture ratio may be extended to create a test for presuming a hypothetical monopolist could profitably impose a uniform SSNIP in a candidate market
- *Presumption*: The “aggregate diversion ratio” test

If the smallest individual recapture rate R_i in the candidate market is greater than the critical recapture rate R_c , then the hypothetical monopolist can presumably profitably impose a uniform SSNIP on all products and the candidate market is presumably a relevant market

■ Two important points

- The aggregate diversion ratio test only creates a *rebuttable presumption*
 - This is because the conditions required to make this formally correct are demanding and unlikely to be satisfied in practice
 - However, idea is that the intuitions behind the test make it a worthy presumption and shift the burden of production the defendants to rebut it (see the next slide)
 - Courts, however, appear to treat the test more conclusively
- Failure to satisfy the test does not mean that the candidate market is not a relevant market
 - The aggregate diversion ratio test provides only a *sufficient* condition, not a necessary one

“Aggregate diversion ratio” test

- The intuition
 - As the creators of the test explain:

With these standard working assumptions, one can easily extend our previous analysis to ask about the profitability of imposing a SSNIP uniformly on all of the products in the candidate relevant market. The trick is to perform this exercise by raising the price of one product after another *in sequence* until the prices of all products in the candidate market have been raised. We have already shown that raising the price of one product, Product #1, is profitable for the hypothetical monopolist if the aggregate diversion ratio for that product exceeds the critical loss. After the price of Product #1 has been raised, the same logic applies to Product #2, then Product #3, and so on until the prices of all products in the candidate market have been raised. So long as the aggregate diversion ratio for each product in the sequence does not go down sharply when the price of another product is raised by a small amount, the test we described above will apply to every product in the candidate relevant market. Therefore, even under this version of the SSNIP test, there is a presumption that a set of products forms a relevant market if the aggregate diversion ratio for each product, as estimated at prevailing prices, exceeds the critical loss.¹

¹ Michael Katz & Carl Shapiro, *Critical Loss: Let's Tell the Whole Story*, Antitrust, Spring 2003, at 54 (footnote omitted).

Aggregate diversion/recapture analysis

- Summary: Aggregate diversion ratio test

- Recall that the critical recapture rate R_{cl} is:

$$R_{cl} = \frac{\delta}{\delta + m}.$$

- The rule:

If the smallest individual recapture rate R_i in the candidate market is greater than the critical recapture rate R_{cl} , then the hypothetical monopolist can presumably profitably impose a uniform SSNIP on all products and the candidate market is presumably a relevant market

- Multiple margins in differentiated candidate markets

- If percentage margins differ in the candidate market, then use the revenue share-weighted percentage margin as m in calculating R_{cl}
- Alternatively, if information is not available to calculate the revenue share-weighted percentage margin, then you can use the *smallest* margin to create another sufficiency test
 - The smallest margin in the candidate market will create the largest critical recapture ratio
 - Again, this is only a sufficient condition, not a necessary one
 - The revenue-share weighted percentage margin approach will produce lower critical recapture ratios than the smallest margin approach

Aggregate diversion/recapture analysis

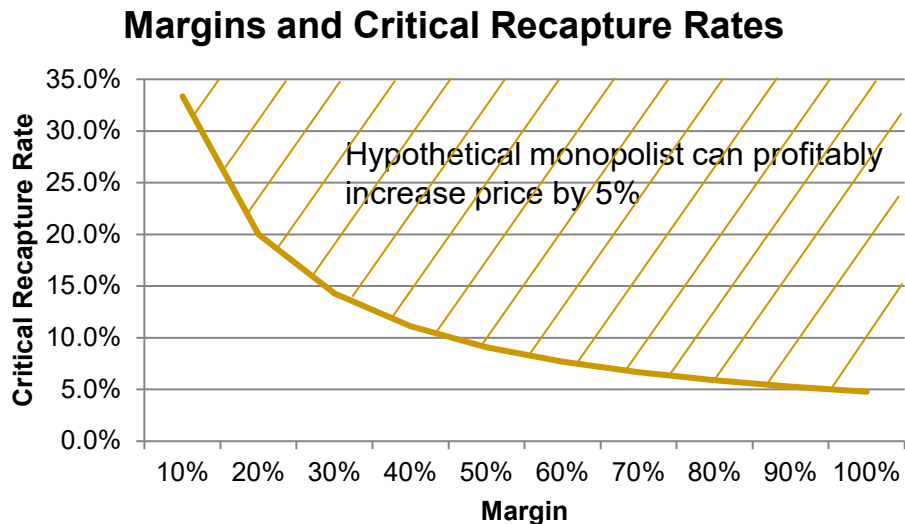
■ Critical recapture rates and margins

- The critical recapture rate R_{cl} is:

$$R_{cl} = \frac{\delta}{\delta + m}.$$

- For a fixed SSNIP of 5% (0.05), we can graph the relationship between the critical recapture rate and the margin:

Margin	R_{cl}
10%	33.3%
20%	20.0%
30%	14.3%
40%	11.1%
50%	9.1%
60%	7.7%
70%	6.7%
80%	5.9%
90%	5.3%
100%	4.8%



Aggregate diversion/recapture analysis

■ Example: Aggregate diversion ratio test

□ Example

- Consider a differentiated three-product candidate market
 - Each product has a margin of 35%
 - Assume a uniform SSNIP of 5% across all products
- Then:

Conditions satisfied:

1. Differentiated market
2. Equal percentage margins
3. Uniform SSNIP applied to all products

$$R_{cl} = \frac{\delta}{\delta + m} = \frac{0.05}{0.05 + 0.35} = 0.125 \text{ or } 12.5\%$$

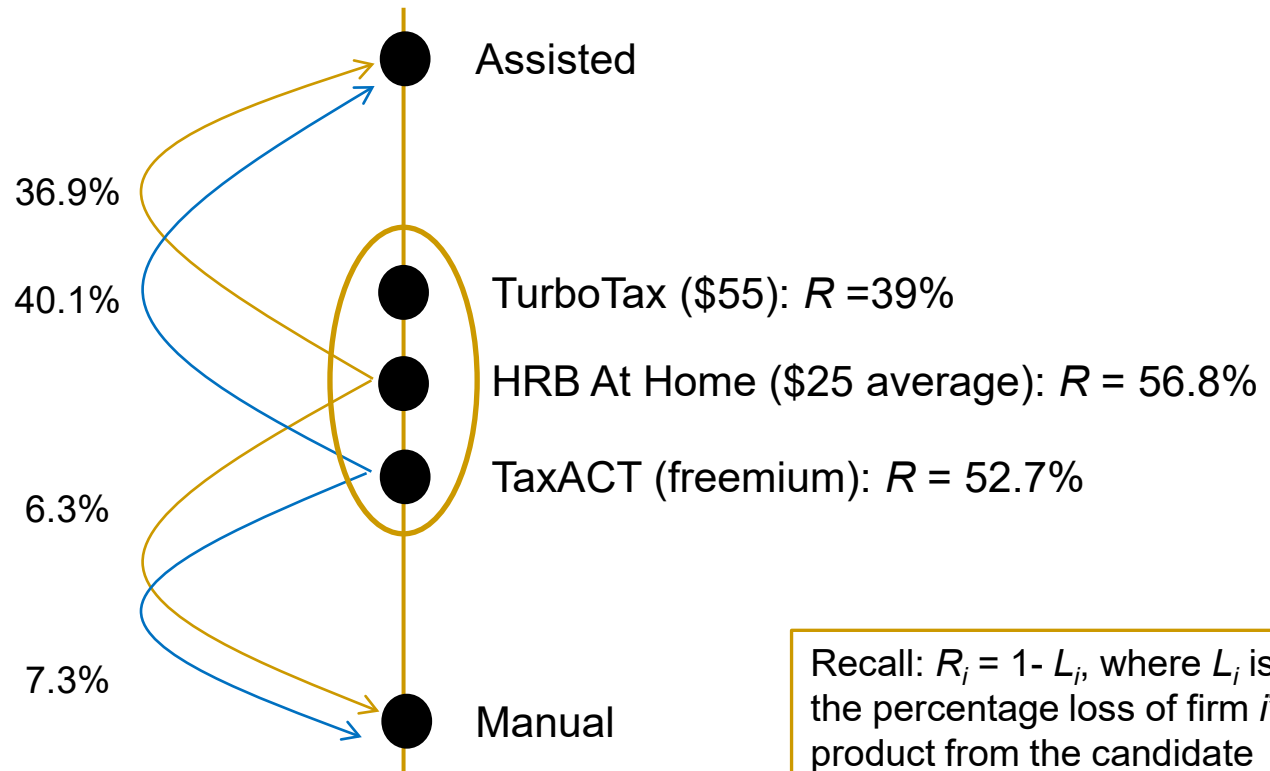
- Suppose that the SSNIP generates the following actual recapture rates:

Product	q	Δq	Recapture	
			Units	Rate (R_i)
A	300	90	20	22.22%
B	400	125	40	32.00%
C	500	200	35	17.50%

- *Result:* Since the smallest R_i (17.5%) is greater than R_{cl} (12.5%), a hypothetical monopolist can profitably sustain a 5% uniform price and so the three products are a relevant market

Aggregate diversion/recapture analysis

- Warren-Bolton analysis in H&R Block/TaxACT



“Aggregate diversion ratio”

■ Warren-Bolton analysis in H&R Block/TaxACT

1. Question: Is DDIY a relevant market under a uniform SSNIP test?
2. *Critical aggregate diversion ratio* (R_{cl}): Use percentage critical loss formula
 - Starting point: Start with DDIY products (HRB, TaxACT, and TurboTax)
 - SSNIP (δ): 10%
 - Gross margin (m): 50% on each product

$$R_{cl} = \frac{\delta}{\delta + m} = \frac{10\%}{10\% + 50\%} = 16.7\%$$

3. *Actual loss*: Determine aggregate diversion ratios (recapture rates R_i) for each product

- *Test*: If each $R_i \geq R_{cl}$, then product grouping is a market
- Using IRS switching data as a proxy for R , Warren-Bolton found:
 - HRB: $R_{HRB} = 57\%$
 - TaxACT: $R_{TaxACT} = 53\%$
 - TurboTax: $R_{TurboTax} = 39\%$

4. Conclusion (Warren-Boulton)

- Since each $R_i > R_{cl}$, a hypothetical monopolist of the DDIY product could profitably raise price by a uniform SSNIP and therefore DDIY was a relevant product market (although the court did not appear to treat this as a presumption)