MERGER ANTITRUST LAW

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Georgetown University Law Center
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CLASS 13 WRITTEN ASSIGNMENT—INSTRUCTOR'S ANSWER

Instructions

Submit by email by 3:30 pm on Tuesday, October 8
Send to wdc30@georgetown.edu
Subject line: Merger Antitrust Law: Assignment for Class 13

Assignment 1: Calls for answers to questions (not in a memo form)

1. Consider again digital-do-it-yourself (DDIY) tax products, this time with some different (fictitious) data. Do H&R Block and TaxACT by themselves constitute a relevant product market under the 2023 Merger Guidelines for a 5 percent SSNIP? Do TurboTax, H&R Block, and TaxACT constitute a relevant product market for the same SSNIP? If the DOJ wants to challenge the merger, what market definition should it allege (all things considered) and why?

Here is the data the investigation revealed:

Prevailing conditions

	TT	H&R	TaxAct	
Price	55	25	11	
%Margin	50%	40%	20%	
Marginal cost	27.5	15	8.8	(constant marginal costs)
Quantity	1,131	624	855	
%SSNIP	5%	5%	5%	
%Actual loss	-10.00%	-12.50%	-25.00%	

Diversion ratios (for single-product SSNIPs)

From:	To : TT	H&R	TaxACT	Total Recapture
TT	x	30.0%	9.0%	39.0%
H&R Block	30.0%	x	26.8%	56.8%
TaxAct	25.0%	27.7%	x	52.7%

INSTRUCTOR'S ANSWER TO ASSIGNMENT 1

1. Consider again digital-do-it-yourself (DDIY) tax products, this time with some different (made up) data. Do H&R Block and TaxACT by themselves constitute a relevant product market under the 2023 Merger Guidelines for a 5 percent SSNIP? Do TurboTax, H&R Block, and TaxACT constitute a relevant product market for the same SSNIP? If the DOJ wants to challenge the merger, what market definition should it allege (all things considered) and why?

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Answer

The market in this problem contains differentiated products with different prices and different margins. This situation calls for a one-product SSNIP test.

Part A. Calls for an evaluation of H&R Block plus TaxACT as a relevant market. Since this is a two-product candidate market, we can use the following one-product SSNIP formula:

$$R_i > R_{cl}^i = \frac{\delta p_i}{\$m_{RAve}} \quad \left(= \frac{\$\text{SSNIP}_i}{\$m_{RAve}} \right),$$

where R_i is the actual recapture ratio for product i and R_{cl}^i is the critical one-product SSNIP recapture ratio. A hypothetical monopolist could profitably increase the price of product i by a SSNIP if $R_i > R_{cl}^i$ for one of the merging firms. What makes the use of this formula easy in the two-product case is that $\$m_{RAve} = \$m_j$, where product j is the other product in the candidate market.

$\$m_{H\&R}$ = %margin times price = (0.4)(25) = 10
$\$m_{TaxACT}$ = %margin times price = (0.2)(11) = 2.2

So

$$R_{cl}^{H\&R} = \frac{\delta p_{H\&R}}{\$m_{TaxACT}} = \frac{(0.05)(25)}{2.2} = 0.568 = 56.8\%$$

$$R_{cl}^{TaxACT} = \frac{\delta p_{TaxACT}}{\$m_{H\&R}} = \frac{(0.05)(11)}{10} = 0.055 = 5.5\%$$

From the tables, the recapture ratio RH&R is simply the diversion ratio to TaxACT or 26.8%. Since the actual recapture ratio is less than the critical recapture ratio of 56.8%, a one-product SSNIP test on H&R block fails.

The recapture ratio RTaxACT is simply the diversion ratio to H&R Block or 27.7%. Since the actual recapture ratio is greater than the critical recapture ratio of 5.5%, a hypothetical monopolist could profitably increase the price of TaxACT by 5%.

Since only one product needs to satisfy the one-product SSNIP test for the candidate market to be a relevant market, H&R Block plus TaxACT is a relevant market under the Merger Guidelines.

Alternative: We could have done this by brute force:

Candidate market: H&R Block + TaxACT

One-product SSNIP: Brute force

	SSNIP Product		
	H&R Block	TaxACT	
Gain from inframarginal sales			
q1	624	855	DATA FROM PROBLEM
$\Delta q1$	-78	-213.64	Marginal sales = %Actual loss times q1
q2 = q1 - Δq1	546	641	Inframarginal sales
%SSNIP	5%	5%	DATA FROM PROBLEM
$SSNIP	1.25	0.55	%SSNIP times p1
Gain	682.5	352.5	$SSNIP times q2
Loss from marginal sales			
Δq1	-78	-213.64	Already calculated
%margin	40%	20%	DATA FROM PROBLEM
$margin	10	2.2	%margin times p1
Loss	-780	-470	$margin times $\Delta q1$
Net gain on SSNIP product	-97.5	-117.5	Gain on inframarginal sales minus loss on marginal sales
Profit on recaptured sales			
To TaxACT			
Diversion ratio	26.8%		DATA FROM PROBLEM
Δq_{TaxACT}	20.90		Recaptured unit sales = Diversion ratio times $\Delta q1$
%margin (TaxACT)	20%		DATA FROM PROBLEM
$margin (TaxACT)	2.2		%margin times p_{TaxACT}
Gain on TaxACT	45.99		$margin times recaptured unit sales
Profit on recaptured sales			
To H&R Block			
Diversion ratio		27.7%	DATA FROM PROBLEM
$\Delta q_{H\&R\ Block}$		59.18	Recaptured unit sales = Diversion ratio times $\Delta q1$
%margin (H&R)		40.0%	DATA FROM PROBLEM
$margin (H&R)		10	%margin times $p_{H\&R\ Block}$
Gain on H&R Block		591.77	$margin times recaptured unit sales
NET GAIN WITH RECAPTURE	-51.51	474.27	Net gain on SSNIP product + gain on recaptured sales
One-product SSNIP test:	FAILS	PASSES	

This brute force accounting method makes clear what is going on here. Take H&R Block, for example. Pre-SSNIP, H&R Block was maximizing its profits as a stand-alone firm. With the SSNIP, its profits necessarily decrease. That is, the additional profit gain on its inframarginal sales (682.5) is less than its profit loss on its marginal sales (-780) for a net profit loss for H&R Block (-97.5). The hypothetical monopolist question is whether the profits from the sales recaptured by TaxACT (45.99) are sufficient to outweigh H&R Block's net loss and make the SSNI profitable for the hypothetical monopolist. The answer is no, so the one-product SSNIP test for H&R Block fails.

Conversely, when the SSNIP is imposed on TaxACT, its profits again necessarily decrease. The additional profit gain on its inframarginal sales (352.5) is less than its profit loss on its marginal sales (-470) for a net profit loss for TaxACT (-117.5). This time, however, the profits recaptured by H&R Block (591.77) are sufficient to outweigh TaxACT's net loss. So TaxACT passes the one-product SSNIP test and the two-product candidate market qualifies as a relevant market under the Merger Guidelines.

Part B. Calls for an evaluation of H&R Block plus TaxACT plus TurboTax as a relevant market.

The simple answer to this question is to recall that if one group of products satisfies the HMT with selective pricing, then any superset of products (that is, any larger product grouping containing the original group) also satisfies the HMT with selective pricing. Here, H&R Block plus TaxACT is a relevant market under a one-product SSNIP test for TaxACT. *A fortiori*, the three-product market will also satisfy the one-product SSNIP test for TaxACT since the recapture of profits by H&R Block alone is sufficient to offset the loss in TaxACT even if there is no recapture of profits by TurboTax.

Alternative 1. We could also have used brute force to calculate the gains from the increase in margin on the inframarginal sales, the loss from the marginal sales, and the profits recapture by each of the other two products in the candidate market.

Candidate market: H&R Block + TaxACT + TurboTax

One-product SSNIP: Brute force

	SSNIP Product			
	H&R Block	TaxACT	TurboTax	
Gain from inframarginal sales				
q1	624	855	1,131	DATA FROM PROBLEM
Δ_{q1}	-78	-213.64	-113.09	Marginal sales = %Actual loss times q1
q2 = q1 - Δq1	546	641	1,018	Inframarginal sales
%SSNIP	5%	5%	5%	DATA FROM PROBLEM
$SSNIP	1.25	0.55	2.75	%SSNIP times p1
Gain	682.5	352.5	2799	$SSNIP times q2
Loss from marginal sales				
Δq1	-78.00	-213.64	-113.09	Already calculated
%margin	40%	20%	50%	DATA FROM PROBLEM
$margin	10.00	2.20	27.50	%margin times p1
Loss	-780.00	-470.00	-3,110.00	$margin times Δ_{q1}
Net gain on SSNIP product	-97.50	-117.50	-311.00	Gain on inframarginal sales minus loss on marginal sales
Profit on recaptured sales				
To TaxACT				
Diversion ratio	26.8%	x	9.0%	DATA FROM PROBLEM
Δq_{TaxACT}	20.90	x	10.18	Recaptured unit sales = Diversion ratio times Δ_{q1}
%margin (TaxACT)	20%	x	20%	DATA FROM PROBLEM
$margin (TaxACT)	2.20	x	2.20	%margin times p_{TaxACT}
Gain on TaxACT	45.99	x	22.39	$margin times recaptured unit sales
Profit on recaptured sales	x			
To H&R Block	x			
Diversion ratio	x	27.7%	30.0%	DATA FROM PROBLEM
Δq_{TaxACT}	x	59.18	33.93	Recaptured unit sales = Diversion ratio times Δ_{q1}
%margin (H&R)	x	40%	40%	DATA FROM PROBLEM
$margin (H&R)	x	10	10	%margin times $p_{H\&R\ Block}$
Gain on H&R Block	x	591.77	339.27	$margin times recaptured unit sales
Profit on recaptured sales			x	
To TurboTax			x	
Diversion ratio	30.0%	25.0%	x	DATA FROM PROBLEM
$\Delta q_{TurboTax}$	-23.40	-53.41	x	Recaptured unit sales = Diversion ratio times Δ_{q1}
%margin (TurboTax)	50%	50%	x	DATA FROM PROBLEM
$margin (TurboTax)	27.50	27.50	x	%margin times $p_{TurboTax}$
Gain on TurboTax	643.50	1,468.75	x	$margin times recaptured unit sales
Total gain on recapture	689.49	2,060.52	361.66	
NET GAIN WITH RECAPTURE	591.99	1,943.02	50.66	
One-product SSNIP test	PASSES	PASSES		

Recall that a one-product SSNIP must contain at least one product of the merging firms. Hence, there was no need to perform a one-product SSNIP test for TurboTax. I included that calculation just to provide another illustration of the brute force technique.

Alternative 2. I find brute force to be both more intuitive and easier to check than using a formula. However, we could use the general one-product SSNIP formula for calculating critical one-product recapture ratios:

$$R_{cl}^{i} = \frac{\delta p_i}{\$m_{RAve}} \left(= \frac{\$\text{SSNIP}_i}{\$m_{RAve}} \right).$$

The key to applying this formula is to remember that the average margin for the recaptured products (m_Rave) is the *recapture share-weighted* average. Do this in four steps:

1. Calculate the number of units recaptured by each of the "other" products *j* when a SSNIP is imposed on product *i* by multiplying the units lost by product *i* times the diversion ratio from product *i* to *j*.
2. Calculate the percentage of the total recapture units for each of the "other" products in the candidate market.
3. Then, for each "other" product *j*, multiply its recapture percentage by product j's dollar margin to get product *j*'s dollar margin contribution to the average.
4. The recapture share-weighted margin average for the "other" products is the sum of these dollar margin contributions.

	SSNIP imposed (Product *i*)			
	H&R Block	TaxACT	TurboTax	
Price	25	11	55	From problem
$margin	10	2.2	27.5	%margin times p1
Loss (units)	-78.00	-213.64	-113.09	Actual loss times q1
1. #Recapture (units) by product *j*				
TurboTax	23.40	53.41	x	Diversion ratio times actual loss of H&R Block
H&R Block	x	59.18	33.93	Diversion ratio times actual loss of TaxACT
TaxACT	20.90	x	10.18	Diversion ratio times actual loss of TurboTax
Total	44.30	112.59	44.11	Summing to give total units recaptured
2. %Recapture by product *j*				
TurboTax	52.82%	47.44%	x	Recaptured units (TuboTax) divided total recaptured units
H&R Block	x	52.56%	76.92%	Recaptured units (H&R Block) divided total recaptured units
TaxACT	47.18%	x	23.08%	Recaptured units (TaxACT) divided total recaptured units
Check	100.00%	100.00%	100.00%	
3. $margin contribution from product *j*				
TurboTax	14.52	13.05	x	%Recapture times $margin (both for TurboTax)
H&R Block	x	1.16	7.69	%Recapture times $margin (both for H&R Block)
TaxACT	1.04	x	0.51	%Recapture times $margin (both for TaxACT)
4. m_RAve	15.56	14.20	8.20	Sum of $margin contributions
$SSNIP$_1$	1.25	0.55	2.75	%SSNIP times p1
$SSNIP1/ m_RAve	8.03%	3.87%	33.54%	Calculated
R_1	56.8%	52.7%	39.0%	From problem
R_1 > $SSNIP1/$MRAve				
	YES	YES	YES	

Again, the calculation for TurboTax is included only for illustration of the arithmetic. Since it is not a product of one of the merging firms, the one-product SSNIP test would not apply to it.

Assignment 2. Calls for a memorandum to a law firm partner.

Sonny Rollins, a litigation partner in the firm, is preparing for his first antitrust case. He has been reading the district court's opinion in *FTC v. IQVIA Holdings Inc.*, No. 23 CIV. 06188 (ER), 2024 WL 81232 (SDNY Jan. 8, 2024). In its complaint for a Section 13(b) preliminary injunction, the FTC alleged that IQVIA's proposed acquisition of DeepIntent would likely substantially lessen competition in the worldwide market for programmatic advertising to health care professionals (HCPs).

Programmatic advertising is an automated way of presenting targeted advertising, in the form of website-based ads, to a specific cohort—in this instance, doctors, nurses, and other health practitioners. The FTC's alleged market included three primary products—DeepIntent, Lasso (IQVIA's product), and PulsePoint (a third-party competitor's product)—along with some much smaller competitors. While the merging parties agreed that the geographic market was worldwide, they argued that the product market should be expanded to include other forms of advertising, such as social media and digital advertising on medical websites such as WebMD.

In addition to the *Brown Shoe* factors, the district found support for the FTC's alleged market in a "critical loss analysis" performed by Dr. Kostis Hatzitaskos, the FTC's economic expert. Mr. Rollins is not familiar with critical loss analysis and has questions about the court's following explanation:

> [C]ritical loss analysis asks how many customers the hypothetical monopolist would have to lose to alternatives outside the market for the price increase to be unprofitable. [*S*]*ee also FTC v. Swedish Match*, 131 F. Supp. 2d 151, 160 (DDC 2000) (describing critical loss as "the largest amount of sales that a monopolist can lose before a price increase becomes unprofitable"). Dr. Hatzitaskos estimated that a 5% price increase for DeepIntent would result in a critical loss of 10.6%, meaning that the hypothetical monopolist would need to regain 10.6% of the customers switching away from DeepIntent. He also estimated that a 10% price increase for DeepIntent would result in a critical loss of 21.2%. For both calculations, he relied on a margin estimate of 47.3% for DeepIntent.
>
> Dr. Hatzitaskos then compared the critical loss figures to an estimate of the aggregate diversion ratio. "The aggregate diversion ratio for any given product represents the proportion of lost sales that are recaptured by all other firms in the proposed market as the result of a price increase." *H&R Block*, 833 F. Supp. 2d at 63. These sales remain within the proposed market and thus are not lost to the hypothetical monopolist. If the aggregate diversion ratio to products within the proposed market exceeds the critical loss threshold, then a price increase would be profitable for the hypothetical monopolist. *H&R Block*, 833 F. Supp. 2d at 63.;
>
> Here, Dr. Hatzitaskos used 79.4% as an estimate of the aggregate diversion ratio. That figure was based on his analysis of actual customer choices, which relied on DeepIntent's internal "win/loss data" and campaign data from Lasso and PulsePoint. He found that 79.4% of customers who considered but did not choose DeepIntent ended up choosing Lasso or PulsePoint. Dr. Hatzitaskos characterized this figure as a conservative estimate of the aggregate diversion ratio because the hypothetical monopolist would control all providers of HCP programmatic advertising in the candidate market rather than just those three firms.

> To reiterate, the ultimate test is whether the aggregate diversion ratio is higher than the critical loss; if it is, then the candidate market passes the HMT. [*S*]*ee also H&R Block*, 833 F. Supp. 2d at 63. The aggregate diversion ratio was 79.4%, while the critical loss was either 10.6% (based on a 5% price increase) or 21.2% (based on a 10% price increase). In both cases, then, the aggregate diversion ratio exceeded the critical loss by a wide margin and thus the HMT was satisfied.

IQVIA, 2024 WL 81232, at *26-27 (record citations omitted).

Mr. Rollins would like you to prepare a memorandum explaining this passage. He asks you to be sure to address the following questions: What is a "hypothetical monopolist" and what is its role in defining markets? What is "critical loss analysis" and why is it relevant to defining markets in antitrust cases? Why is Dr. Hatzitaskos using a 5% and 10% price increase? What is "critical loss" and how did Dr. Hatzitaskos derive his critical loss numbers? What is the 47.3% "margin estimate" for DeepIntent, how did Dr. Hatzitaskos use it in the analysis, and where did Dr. Hatzitaskos get the number? What is an "aggregate diversion ratio" and why did Dr. Hatzitaskos use 79.4% as the estimate of the aggregate diversion ratio for DeepIntent? What is the significance of the finding that the aggregate diversion ratio was greater than the critical loss? Finally, are there any hidden assumptions in Dr. Hatzitaskos' analysis that may limit its generality?[1]

[1] Dr. Mark Israel, the defendants' economic expert (who we shall see in other cases later in the course), challenged the Hatzitaskos critical loss analysis. *See IQVIA*, 2024 WL 81232, at *27-28. You may prepare your memorandum without examining Israel's criticisms, but take a look at them if you like and take them into account if you wish.

INSTRUCTOR'S ANSWER TO ASSIGNMENT 2

PRIVILEGED AND CONFIDENTIAL
~~ATTORNEY-CLIENT COMMUNICATION~~
ATTORNEY OPINION WORK PRODUCT[1]

ABLE & BAKER LLP

INSTRUCTOR'S ANSWER

TO: Sonny Rollins
FROM: Dale Collins

The Hypothetical Monopolist Test in *IQVIA*[2]

You have asked me to analyze the court's use of the hypothetical monopolist test (HMT) based on the testimony of Dr. Kostis Hatzitaskos, the FTC's economic expert in the case.

In its complaint for a Section 13(b) preliminary injunction, the FTC alleged that IQVIA's proposed acquisition of DeepIntent would likely substantially lessen competition in the worldwide market for programmatic advertising to health care professionals (HCPs) in violation of Section 7 of the Clayton Act. Programmatic advertising is an automated way of presenting targeted advertising, in the form of website-based ads, to a specific cohort—in this instance, doctors, nurses, and other health practitioners. The FTC's alleged market included three primary products—DeepIntent, Lasso (IQVIA's product), and PulsePoint (a third-party competitor's product)—along with some much smaller competitors. While the merging parties agreed that the geographic market was worldwide, they argued that the product market should be expanded to

[1] **Note to students**: This memorandum addresses a pure theory of law, does not contain any client confidences and therefore is not protected by the attorney-client privilege even if shared with the client. Since Mr. Rollins is working on a merger that may ultimately be challenged in court, the memorandum is arguably prepared "in anticipation of litigation." Since it contains an attorney's analysis of the case law and agency practice, it is attorney opinion work product. Opinion work product is the mental impressions, conclusions, opinions, or legal theories of an attorney. *See* United States v. Adlman, 134 F.3d 1194, 1195 (2d Cir. 1998) (*Adlman II*) (holding that "a document created because of anticipated litigation, which tends to reveal mental impressions, conclusions, opinions or theories concerning the litigation, does not lose work-product protection merely because it is intended to assist in the making of a business decision influenced by the likely outcome of the anticipated litigation"). Attorney opinion work product is almost never subject to discovery. *See* Hickman v. Taylor, 329 U.S. 495, 510 (1947) ("Not even the most liberal of discovery theories can justify unwarranted inquiries into the files and mental impressions of an attorney."); Upjohn Co. v. United States, 449 U.S. 383, 401-02 (1981) ("As Rule 26 and Hickman make clear, such work product cannot be disclosed simply on a showing of substantial need . . . [A]far stronger showing of necessity and unavailability by other means would be required than is needed to justify ordinary work product."); Chaudhry v. Gallerizzo, 174 F.3d 394, 403 (4th Cir.1999) (finding that appellant failed to present the "very rare and extraordinary situation justifying disclosure of opinion work product"); Fed. R. Civ. P. 26(b)(3)(B) ("If the court orders discovery of those materials [prepard in anticipation of litigation], it must protect against disclosure of the mental impressions, conclusions, opinions, or legal theories of a party's attorney or other representative concerning the litigation.").

[2] FTC v. IQVIA Holdings Inc., 710 F. Supp. 3d 329 (S.D.N.Y. 2024).

include other forms of advertising, such as social media and digital advertising on medical websites such as WebMD.

Hypothetical monopolist test. In addition to the *Brown Shoe* factors, the district court found support for the FTC's alleged market in a "critical loss analysis" performed by Dr. Kostis Hatzitaskos, the FTC's economic expert. Critical loss is a particular implementation of the hypothetical monopolist test. The HMT was introduced by the Merger Guidelines in 1982 and has been adopted in one form or another by the courts. The following passage from the 2010 Merger Guidelines, which the *IQVIA* court quoted, explains the test:

> 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*.[3]

The idea is that if a hypothetical monopolist controlling all products in a candidate market could not profitably increase the price by a small but significant amount, then the candidate market does not include all of the substitute products that effectively constrain prices. In this case, the market definition needs to be expanded to include additional substitute products until the hypothetical monopolist can profitably increase price. This is important because a properly defined market reflects the boundaries within which market power can be exercised. Once the market is properly defined, the analysis can turn to whether the merger is likely to create or facilitate the exercise of market power in that market.

The commonly used SSNIP is 5% of the prevailing price. Although the 2023 Merger Guidelines have superseded the 2010 Merger Guidelines, the HMT general principles remain the same.[4]

Critical loss test. One implementation of the HMT is a "critical loss" test for a uniform SSNIP for all products in the candidate market. This test is typically used in markets with homogeneous products, which only support a single price for all products. This single-price characteristic requires the SSNIP to be applied to all products in the candidate market.

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[3] U.S. Dep't of Justice & Fed. Trade Comm'n, Horizontal Merger Guidelines § 4.1.1 (rev. Aug. 19, 2010) (emphasis added), *quoted in IQVIA*, 710 F. Supp. 3d at 368-69.

[4] *See* U.S. Dep't of Justice & Fed. Trade Comm'n, Merger Guidelines § 4.3.A. The 2023 Merger Guidelines appear to make two changes in the HMT: (1) they expand the test to include a worsening of terms of trade (SSNIPT) and not just an increase in price (SSNIP), and (2) they permit the hypothetical monopolist to make selective price increases to any product in the candidate market and do not require a price increase to be made in a product of one of the merging firms. *See id*. The case law precedent has frequently cited the HMT formulation in the 2010 guidelines. *See, e.g.*, *IQVIA*, 710 F. Supp. 3d at 368-69; FTC v. RAG-Stiftung, 436 F. Supp. 3d 278, 293 (D.D.C. 2020); FTC v. Wilh. Wilhelmsen Holding ASA, 341 F. Supp. 3d 27, 47 (D.D.C. 2018); United States v. Anthem, Inc., 236 F. Supp. 3d 171, 198 (D.D.C.), *aff'd*, 855 F.3d 345 (D.C. Cir. 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, 122 (D.D.C. 2016); FTC v. Sysco Corp., 113 F. Supp. 3d 1, 33 (D.D.C. 2015); United States v. H & R Block, Inc., 833 F. Supp. 2d 36, 52 (D.D.C. 2011). It remains to be seen whether and to what extent the changes made by the 2023 guidelines will be adopted by the courts.

Critical loss analysis determines the profitability of a price increase in a candidate market by comparing two factors:

(1) the incremental profit gained on units that the hypothetical monopolist continues to sell at the higher price (the *inframarginal sales*) and

(2) the incremental profit lost from units no longer sold due to the price increase (the *marginal sales*).

As the magnitude of the price increase grows, retained inframarginal sales and the associated incremental profits decrease while lost marginal sales and the associated incremental profit loss increase. Consequently, at sufficiently small price increases, the incremental profit gain on the inframarginal sales will outweigh the incremental profit loss on the marginal sales, making the price increase profitable. Conversely, at sufficiently large price increases, the incremental profit gain on the lower number of inframarginal sales will be less than the incremental profit loss on the larger number of marginal sales, making the price increase unprofitable.

The critical loss for a uniform SSNIP in a candidate market is the largest number of marginal sales the hypothetical monopolist can lose before the price increase turns unprofitable. If the actual loss of marginal sales for a given SSNIP is less than the critical loss for that SSNIP, then SSNIP is profitable and the candidate market satisfies the HMT. If the actual loss of marginal sales for a given SSNIP is greater than the critical loss for that SSNIP, then the SSNIP is unprofitable and the candidate market fails the HMT.

Formulas exist to calculate the critical loss for a given SSNIP. For example, for a candidate market with a uniform SSNIP δ and a uniform margin of m, the percentage critical loss %CL is:

$$\%CL = \frac{\delta}{\delta + m}$$

For example, the percentage critical loss for a product grouping with a uniform SSNIP (δ) of 5% and a uniform margin (m) of 30% is:

$$\%CL = \frac{\delta}{\delta + m} = \frac{5\%}{5\% + 30\%} = 14.3\%$$

In this example, if the actual loss is 8%, the candidate market satisfies the HMT. If the actual loss is 35%, the candidate market fails the HMT. Note that the higher the actual loss, the less likely the candidate market will satisfy the HMT.

Aggregate diversion ratio test. Another implementation of the HMT is an "aggregate diversion ratio" or "recapture" test for a selective SSNIP that applies to some but not all of the products in the candidate market. Typically, only one product is subject to a SSNIP. This test is used in markets with differentiated products, where each product has its own price. The aggregate diversion ration test determines the profitability of a price increase in a candidate market by comparing three factors:

(1) the incremental profit gained on those units subject to the SSNIP that the hypothetical monopolist continues to sell at the higher price (the *inframarginal sales*),

(2) the incremental profit lost from those units subject to the SSNIP no longer sold due to the price increase (the *marginal sales*) and

(3) the incremental profit gained by the recapture of the lost marginal units that divert to products in the candidate market not subject to the SSNIP.

The aggregate diversion ratio test, like the critical loss test, determines whether a price increase is profitable and, hence satisfies the HMT, by summing the incremental profits and losses resulting from the SSNIP. Here, however, there are two sources of incremental profit gain—one from the retained inframarginal sales of the product subject to the SSNIP and the other from the recapture of some portion of the lost marginal sales of the product subject to the SSNIP by other products in the candidate market not subject to the SSNIP. Notably, this extra source of incremental profit gain from recaptured marginal sales tends to make relevant markets under the aggregate diversion ratio test smaller than markets under a uniform critical loss test.

This test aligns with the new theory of unilateral effects introduced in the 1992 Horizontal Merger Guidelines. The theory posits that an increase in the price of only one product of a merging firm, resulting from the merger and without any offsetting procompetitive benefits, constitutes an anticompetitive effect under Section 7. The aggregate diversion ratio test provided a method for defining relevant markets consistent with this new theory.

Formulas exist to calculate the critical aggregate diversion ratio or recapture rate for a given SSNIP applied to a single product within the candidate market. For example, for a candidate market with a SSNIP δ applied only to product 1 and a uniform margin of m, the percentage critical percentage aggregate diversion ratio critical loss $\%R_{Critical}$ is:

$$R^{1}_{Critical} = \frac{\delta p_1}{\$m_{RAve}} \quad \left(= \frac{\$\text{SSNIP}_1}{\$m_{RAve}} \right),$$

where $\$m_{RAve}$ is the recapture share-weighted average of the products in the candidate market not subject to the SSNIP and may recapture lost marginal sales from the product subject to the SSNIP. When all products in the candidate market have the same prices p and margin m, the test simplifies to:

$$R_{Critical} = \frac{\delta}{m}.$$

For example, the critical aggregate diversion ratio for a candidate market with a selective SSNIP (δ) of 5% applied only to product 1 and a uniform margin (m) of 35% is:

$$R_{Critical} = \frac{\delta}{m} = \frac{5\%}{25\%} = 20\%.$$

In this example, if the actual recapture rate is 40%—that is, if 40% of the loss marginal sales of product 1 are recaptured by other firms in the candidate market—the candidate market satisfies the HMT. If the actual recapture rate is only 14%, the candidate market fails the HMT.

Application in IQVIA. The FTC's alleged relevant market of the worldwide market for programmatic advertising to health care professionals (HCPs) contains differentiated products, and so a one-product SSNIP aggregate diversion ratio test is an appropriate HMT method for identifying a relevant market. Although the opinion lacks detail on precisely what Dr. Hatzitaskos did and why he did it, we can reverse engineer his methods from the data cited by the court. Dr. Hatzitaskos used SSNIPs of 5% and 10% and found DeepIntent's percentage

margin to be 47.3%. If Dr. Hatzitaskos assumed that the prices and the percentage margin were the same, he could use the simplified critical aggregate diversion ratio formula:

$$R_{Critical(5\%)} = \frac{\delta}{m} = \frac{5\%}{47.3\%} = 10.6\%$$

$$R_{Critical(10\%)} = \frac{\delta}{m} = \frac{10\%}{47.3\%} = 21.1\%.$$

Dr. Hatzitaskos found the critical aggregate diversion ratios to be 10.6% and 21.2%, which are essentially identical to what we found using the simplified formula. So, we can be reasonably confident that Dr. Hatzitaskos posited that the prices and percentage margins for all products in the alleged relevant market were the same, although the opinion did not note this fact or examine the evidence in the record to support it.

Dr. Hatzitaskos then compared these critical aggregate diversion ratios to the actual aggregate diversion ratio. He estimated the actual diversion ratio using DeepIntent's "win/loss" data, which showed that 79.4% of customers who considered but did not choose DeepIntent purchased Lasso or PulsePoint instead. Although "win/loss" data record losses for any reason and not just because of small changes in relative price (as technically required for a diversion ratio), courts have accepted estimates of actual diversion ratios from win/loss data when this data is the best available. Courts, however, may discount the weight they give to the results of the resulting aggregate diversion ratio test because diversion ratios from win/loss data may overestimate the extent of recapture by other products in the alleged relevant market, and this overestimation can erroneously make the relevant market appear smaller than a more accurate test would reveal.[5] In this case, however, it appears that the court found that the estimated actual aggregate ratio significantly exceeded the critical aggregate diversion ratios, making discounting unnecessary.

Please let me know if you have any questions or would like to discuss this matter further.

[5] On the other hand, win/loss data can also overestimate the amount of diversion outside of the relevant market, making the market appear larger than a more accurate test would reveal. Since the test using win/loss data to estimate aggregate diversion ratios may be either underinclusive or overinclusive in the dimensions of the relevant market, I suspect that in a closer case the court would discount the weight of an aggregate diversion ratio test using win/loss data against the proponet of the test, whether the plaintiff or the defendants.