MERGER ANTITRUST LAW

CLASS 20 WRITTEN ASSIGNMENT

Instructions

Submit by email by 3:30 pm on Tuesday, November 8
Send to dale.collins@shearman.com
Subject line: Merger Antitrust Law: Assignment for Class 20

Assignment

Write up your approach to the problem, then do the hypothetical monopolist test. Do NOT spend more than 30 minutes on this assignment. If you do not compete it, give me what you have at the end of 30 minutes. I am more interested in the approach than in the arithmetic.

Ace and CorelDraw, two computer illustrations applications, have agreed to merge. There are a large number of drawing programs with differing degrees of functionality and different prices. Sophisticated programs, such as Adobe Illustrator, are used largely by professional graphics artists for complicated illustrations and cost at least $500 per seat.[1] Intermediate programs, such as Ace, CorelDRAW, and Sketch, span and wide range of functionality and price. Finally, many programs have a much lower degree of functionality and are available for free. The following chart gives for each of the programs their price, the number of users or seats, and revenues:

	Price	Seats	Revenues
Illustrator	500	500	250,000
Freehand	325	230	74,750
Ace	225	600	135,000
CorelDRAW	129	525	67,725
Sketch	99	474	46,926
Designer	50	2500	125,000
Inkscape	0	2400	0
Gravit	0	2000	0

Each paid program has a percentage margin of 60%.

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[1]   Seat licenses are a common way to price professional programs. A "seat" is a computer in the company, so if the company wants 50 computers with the program, it has to buy 50 "seat" licenses. Any number of people in the company can use a computer with the licensed program.

The following table gives the actual percentage loss in units for a SSNIP of 5% to the program in question and the unit diversion ratios to the other products. The prices of all other programs are held constant.

	%Loss	%Unit Diversions							
	SSNIP	Illustrator	Freehand	Ace	CorelDRAW	Sketch	Designer	Inkscape	Gravit
Illustrator	9%	—	40%	40%	10%	10%			
Freehand	8%	20%	—	60%	10%	10%			
Ace	12%		40%	—	40%	20%			
CorelDRAW	40%			30%	—	50%	20%		
Sketch	30%			10%	50%	—	40%		
Designer	30%				10%	40%	—	30%	20%
Inkscape	50%					20%	60%	—	20%
Gravit	50%					0%	40%	60%	—

So if the price of the Ace program is increased by 5%, it would lose 12% of its unit sales. Of the lost sales, 40% will go to Freehand, 40% to CorelDRAW, and 20% to Sketch.

If two programs are contained in the same candidate market and the price of all products in the candidate market are increased by the same SSNIP, there will be no diversion between the two products. The diversion to products outside of the candidate market, however, will remain the same. So, for example, if Illustrator and Freehand are the only two products in candidate market, there will be no diversion from Illustrator to Freehand but diversion will still occur from Illustrator to Ace, CorelDRAW, and Sketch. The %loss of Illustrator unit sales will decrease from 9% to 5.4 percent ($=9\% \times (1-40\%)$) given that there will no longer be any diversion to Freehand. The percentage diversions to Ace, CorelDRAW, and Sketch will remain proportional. The new diversion ratio to CorelDRAW, for example, will be 16.7% ($= 10\%/(1-40\%)$). If Illustrator, Freehand, and Ace were the candidate market, then there would be no diversion from Illustrator to either Freehand or Ace, and the total %loss of Illustrator sales would be 1.8% ($= 9\% \times (1-40\% - 40\%)$). The adjusted diversion ratio from Illustrator to CorelDRAW would be 50% ($= 10\%/(1 - 40\% - 40\%)$).

The relevant geographic market for these programs is national. What is the relevant product market under the Merger Guidelines for the purpose of analyzing the Ace/CorelDRAW?

INSTRUCTOR'S ANSWER

This is a "back to basics" problem: Can a hypothetical monopolist profitably raise price by a SSNIP?

Step 1. Identify the initial candidate market

The products here do not group as naturally they did in H&R Block/TaxACT. I think that this looks more like the more continuous differentiated case of the gasoline stations along a road example in the Market Definition class notes. Unless there is a clear natural grouping, I would start where the Merger Guidelines start: with the products of the two merging parties. This approach is also consistent with developing a market under the "smallest market" principle.

Step 2. Can a hypothetical monopolist profitably raise prices in an Ace-CorelDRAW candidate market by a SSNIP?

The first thing to do here is to see if any of the formulae we have developed fit the facts of the hypothetical. Nothing leaped out at me, so I used the "brute force" method of Example 1 in the class notes.

Parameters:

SSNIP	5.00%
%Margin	60.00%

"Brute force" spreadsheet for an Ace-CorelDRAW candidate market:[2]

	"Retained" %Diversion Ratio	OOM %Diversion Ratio	Original %loss	New OOM %Loss	Δp	%Retained	Gain Retained Seats	Gain	%Loss	Loss Lost Seats	Margin	Loss	Net
Ace	40%	60%	12%	7.20%	11.25	92.80%	557	6264	7.20%	-43.2	60.00%	-5832	432
CorelDRAW	30%	70%	40%	28.00%	6.45	72.00%	378	2438	28.00%	-147	60.00%	-11378	-8940
													-8508

Where "retained diversion ratio" is simply the sum of the diversion ratios in the second chart of the hypothetical to other products in the candidate market. So, for example, Ace has a diversion ratio of 40% to CorelDRAW when the price of the Ace program alone is increased by a SSNIP. Since there is no diversion from Ace to CorelDRAW when the prices of both products are raised by the SSNIP, that diversion ratio becomes zero while all other diversions remain proportionally the same.

The "OOM %Diversion Ratio" is 1 minus the retained diversion ratio, that is, the percentage of the original one-product SSNIP diversion that goes to products outside of the candidate market being tested ("out of market products). The "Original %Loss" is the percentage loss from the product in question to all products from a one-product SSNIP. The "New OOM %Loss" is the percentage of sales that the product now losses in response to a SSNIP uniformaly applied to all products in the candidate market. For example, since the total diversion from Ace to products outside of the candidate market is 60%, then 60% of the original 12% loss from the one-product SSNIP, or 7.20%, is the loss of Ace sales to products outside the two-product candidate market.

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[2] I have rounded the entries in the spreadsheets to the nearest whole number, so there may be rounding error. If you see a mistake in the numbers (which is possible, if not likely), please let me know and I will circulate a new corrected answer.

Now we can fill in the "brute force" spreadsheet for the profit gains and losses for Ace and CorelDRAW. We see that the total profit gain is negative, so Ace-CorelDRAW is not a relevant market.

Step 3. Expand the candidate market to include the next best substitute

Given the diversion ratios in the second table of the hypothetical, the next best substitute is either Freehand or Sketch. The diversion ratio for Ace to Freehand is 40%, while the diversion ratio from CorelDRAW to Sketch is 50%. Looking only at diversion ratios Sketch would be the next best substitute, but looking at the value of diversion (i.e., recapture profits) Freehand is the next best substitute. So let's look at Freehand first.[3]

"Brute force" spreadsheet for a Freehand-Ace-CorelDRAW candidate market:

	"Retained" Diversion Ratio	OOM %Diversion Ratio	Original %loss	New OOM %Loss	Gain				Loss				Net
					Δp	%Retained	Retained Seats	Gain	%Loss	Lost Seats	Margin	Loss	
Freehand	70%	30%	8%	2.40%	16.25	97.60%	224	3647.8	2.40%	-5.52	60.00%	-1076	2571
Ace	80%	20%	12%	2.40%	11.25	97.60%	586	6588	2.40%	-14.4	60.00%	-1944	4644
CorelDRAW	30%	70%	40%	28.00%	6.45	72.00%	378	2438.1	28.00%	-147	60.00%	-11378	-8940
													-1724

Again, we see that the net profit gain of the SSNIP is negative (since CorelDRAW loses so much unit volume to Sketch).

Step 4. Look at another candidate market

At this point we could expand the three-product candidate market to include Sketch, but consistent with the smallest market principle we should first test an Ace-CorelDRAW-Sketch candidate market:

"Brute force" spreadsheet for an Ace-CorelDRAW-Sketch candidate market:

	"Retained" Diversion Ratio	OOM %Diversion Ratio	Original %loss	New OOM %Loss	Gain				Loss				Net
					Δp	%Retained	Retained Seats	Gain	%Loss	Lost Seats	Margin	Loss	
Ace	60%	40%	12%	4.80%	11.25	95.20%	571	6426	4.80%	-28.8	60.00%	-3888	2538
CorelDRAW	80%	20%	40%	8.00%	6.45	92.00%	483	3115	8.00%	-42	60.00%	-3251	-135
Sketch	60%	40%	30%	12.00%	4.95	88.00%	417	2065	12.00%	-56.88	60.00%	-3379	-1314
													1089

Now the net profit gain is positive, so Ace-CorelDRAW-Sketch is a relevant product market.

Closing observation 1: Actually, Freehand is probably not the next product to add to the candidate market in Step 3. Look at the (gross) loss column in the Ace-CorelDRAW candidate market table above. Ace losses only $5832 from diversion to outside of the candidate market,

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[3] See the notes at the end.

while CorelDRAW loses $11,377.8. Moreover, Ace also losses sales to Sketch. This suggests that the market should be expanded first to stem the large losses from CorelDRAW (as well as the much smaller losses to Sketch from Ace), which means expanding the candidate market first to Sketch, not Freehand.

Closing observation 2: Although it does not apply in this hypothetical, if both three-product candidate markets failed the hypothetical monopolist test, the fourth product to include in the market would be the next best substitute outside the market to products of the merging firms. So the new candidate market would be Freehand-Ace-CorelDRAW-Sketch. This keeps some symmetry of the candidate market around the products of the merging firms. (Remember the symmetric candidate market expansion in the gasoline stations example).