

**MERGER ANTITRUST LAW**

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 Georgetown University Law Center  
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Tuesdays and Thursdays, 3:30-5:30 pm  
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**CLASS 13 WRITTEN ASSIGNMENT—INSTRUCTOR’S ANSWER**

**Instructions**

Submit by email by 3:30 pm on Thursday, October 13  
 Send to [wdc30@georgetown.edu](mailto:wdc30@georgetown.edu)  
 Subject line: Merger Antitrust Law: Assignment for Class 13

**Assignment:** 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 (made up) data. Do H&R Block and TaxACT by themselves constitute a relevant product market under the 2010 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       | 0.5     | 0.4     | 0.2     |                           |
| 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:     | TT    | To :<br>H&R | TaxACT | Total<br>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%              |

If you have any questions, send me an email. See you in class.

## INSTRUCTOR'S ANSWER

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| 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%              |

### 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:

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

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.

$$\$m_{H\&R} = \%margin \text{ times price} = (0.4)(25) = 10$$

$$\$m_{TaxACT} = \%margin \text{ times price} = (0.2)(11) = 2.2$$

So

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

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

The recapture ratio  $R_{H\&R}$  is simply the diversion ratio to TaxACT or 26.8%. This is less than the critical recapture ratio of 56.8%, so a one-product SSNIP test on H&R block fails.

The recapture ratio  $R_{TaxACT}$  is simply the diversion ratio to H&R Block or 27.7%. This is more than the critical recapture ratio of 5.5%, so 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.

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**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        |   |
| <i>Gain from inframarginal sales</i> |               |               |   |
| q1                                   | 624           | 855           | DATA FROM PROBLEM   |
| $\Delta q1$                          | -78           | -213.64       | Marginal sales = %Actual loss times q1                    |
| $q2 = q1 - \Delta q1$                | 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  |
| <i>Loss from marginal sales</i>      |               |               |   |
| $\Delta q1$                          | -78           | -213.64       | Already calculated  |
| %margin                              | 40%           | 20%           | DATA FROM PROBLEM   |
| \$margin                             | 10            | 2.2           | %margin times p1  |
| Loss                                 | -780          | -470          | \$margin times $\Delta q1$                                |
| <b>Net gain on SSNIP product</b>     | -97.5         | -117.5        | Gain on inframarginal sales minus loss on marginal sales  |
| <i>Profit on recaptured sales</i>    |               |               |   |
| To TaxACT                            |               |               |   |
| Diversion ratio                      | 26.8%         |               | DATA FROM PROBLEM   |
| $\Delta q_{\text{TaxACT}}$           | 20.90         |               | Recaptured unit sales = Diversion ratio times $\Delta q1$ |
| %margin (TaxACT)                     | 20%           |               | DATA FROM PROBLEM   |
| \$margin (TaxACT)                    | 2.2           |               | %margin times $p_{\text{TaxACT}}$                         |
| Gain on TaxACT                       | 45.99         |               | \$margin times recaptured unit sales                      |
| <i>Profit on recaptured sales</i>    |               |               |   |
| To H&R Block                         |               |               |   |
| Diversion ratio                      |               | 27.7%         | DATA FROM PROBLEM   |
| $\Delta q_{\text{H&R Block}}$        |               | 59.18         | Recaptured unit sales = Diversion ratio times $\Delta q1$ |
| %margin (H&R)                        |               | 40.0%         | DATA FROM PROBLEM   |
| \$margin (H&R)                       |               | 10            | %margin times $p_{\text{H&R Block}}$                      |
| 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:              | <b>FAILS</b>  | <b>PASSES</b> |   |

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 way to answer 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.

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**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       |  |
| <i>Gain from inframarginal sales</i> |               |                |                |  |
| q1                                   | 624           | 855            | 1,131          | DATA FROM PROBLEM  |
| $\Delta q_1$                         | -78           | -213.64        | -113.09        | Marginal sales = %Actual loss times q1                     |
| q2 = q1 - $\Delta q_1$               | 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   |
| <i>Loss from marginal sales</i>      |               |                |                |  |
| $\Delta q_1$                         | -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 $\Delta q_1$                                |
| <b>Net gain on SSNIP product</b>     | <b>-97.50</b> | <b>-117.50</b> | <b>-311.00</b> | Gain on inframarginal sales minus loss on marginal sales   |
| <i>Profit on recaptured sales</i>    |               |                |                |  |
| To TaxACT                            |               |                |                |  |
| Diversion ratio                      | 26.8%         | x              | 9.0%           | DATA FROM PROBLEM  |
| $\Delta q_{\text{TaxACT}}$           | 20.90         | x              | 10.18          | Recaptured unit sales = Diversion ratio times $\Delta q_1$ |
| %margin (TaxACT)                     | 20%           | x              | 20%            | DATA FROM PROBLEM  |
| \$margin (TaxACT)                    | 2.20          | x              | 2.20           | %margin times $p_{\text{TaxACT}}$                          |
| Gain on TaxACT                       | 45.99         | x              | 22.39          | \$margin times recaptured unit sales                       |
| <i>Profit on recaptured sales</i>    |               |                |                |  |
| To H&R Block                         |               |                |                |  |
| Diversion ratio                      | x             | 27.7%          | 30.0%          | DATA FROM PROBLEM  |
| $\Delta q_{\text{TaxACT}}$           | x             | 59.18          | 33.93          | Recaptured unit sales = Diversion ratio times $\Delta q_1$ |
| %margin (H&R)                        | x             | 40%            | 40%            | DATA FROM PROBLEM  |
| \$margin (H&R)                       | x             | 10             | 10             | %margin times $p_{\text{H&R Block}}$                       |
| Gain on H&R Block                    | x             | 591.77         | 339.27         | \$margin times recaptured unit sales                       |
| <i>Profit on recaptured sales</i>    |               |                |                |  |
| To TurboTax                          |               |                |                |  |
| Diversion ratio                      | 30.0%         | 25.0%          | x              | DATA FROM PROBLEM  |
| $\Delta q_{\text{TURBOtax}}$         | -23.40        | -53.41         | x              | Recaptured unit sales = Diversion ratio times $\Delta q_1$ |
| %margin (TurboTax)                   | 50%           | 50%            | x              | DATA FROM PROBLEM  |
| \$margin (TurboTax)                  | 27.50         | 27.50          | x              | %margin times $p_{\text{TURBOtax}}$                        |
| 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:

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

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. To 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               |
| <u>Total</u>                              | <u>44.30</u>                 | <u>112.59</u>  | <u>44.11</u>   | Summing to give total units recaptured                      |
| 2. %Recapture by product $j$              |                              |                |                |   |
| TurboTax                                  | 52.82%                       | 47.44%         | x              | Recaptured units (TurboTax) 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    |
| <u>Check</u>                              | <u>100.00%</u>               | <u>100.00%</u> | <u>100.00%</u> |   |
| 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)                 |
| <u>4. <math>\\$m_{RAve}</math></u>        | <u>15.56</u>                 | <u>14.20</u>   | <u>8.20</u>    | Sum of \$margin contributions                               |
| $\$SSNIP_1$                               | 1.25                         | 0.55           | 2.75           | %SSNIP times p1   |
| $\$SSNIP_1 / \$m_{RAve}$                  | 8.03%                        | 3.87%          | 33.54%         | Calculated  |
| $R_1$                                     | 56.8%                        | 52.7%          | 39.0%          | From problem  |
| $R_1 > \$SSNIP_1 / \$m_{RAve}$            |                              |                |                |   |
|   | 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.