

Reading Guide: *Office Supply Superstore Mergers in 1997, 2013, 2016 (Office Supply Superstores)*

This reading guide helps both non-presenters and presenters prepare for class. It offers broad and specific questions to spark critical thinking when engaging with required reading (RR). These focus your attention on the most important parts of the required readings, which are often lengthy and include a mix of not-so-important and *crucial* parts. These get you thinking about important concepts and looking for connections across readings and other course materials. Except when otherwise noted, references are to the first required reading: “Prices, Market Definition, and the Effects of a Merger: Staples-Office Depot (1997)” pp. 166 – 193 in *The Antitrust Revolution, Sixth Edition*. This guide ends with suggested goals and advice for the presenting team.

Notes: For this week, the broad questions (necessarily) get specific. Also, there are numerous errors in the (required) appendix of the RR (pp. 189 – 193), which need attention. The specific questions address these issues. Finally, the footnotes are extremely important in this week’s RR: take them seriously as you prepare for class.

Broad Questions:

- A. In assessing the impact of the proposed Staples/Office Depot merger in 1997, how does the approach in the appendix of the RR compare and contrast with the econometric analysis mentioned in the main text?
- B. What is an upward pricing pressure (UPP) test?
 - a. When is it useful?
 - b. What are the key ingredients to conduct the test? Intuition?
 - c. What are the underlying assumptions?
 - d. How does the key formula (given at the end of footnote 37) relate to Werden (1996), which is RR earlier in our course?
 - i. Hint: Look at Equation (6) in Werden (1996) and rewrite. Note that you will end up with an extra $(1 - d)$ with Werden (1996), which is the exact formula, in contrast to the more common approximation given at the end of footnote 37. The presenting team should use the SR to help clarify this issue for the class.
- C. How does the UPP test illustrate how some quantitative analysis, in addition to the always necessary qualitative analysis, *is* possible even in the absence of data needed for a full-blown econometric analysis?
- D. How is the approach of an UPP test fundamentally different from the formulas in Shapiro (1996) for predicting the price effect of a merger (under two assumptions about the functional form of demand)?
- E. How does the economic analysis compare and contrast across the 1997 proposed merger between Staples and Office Depot, the 2013 merger of Office Depot and OfficeMax, and the 2016 proposed merger between Staples and Office Depot?
 - a. Despite the 1997 and 2016 proposed mergers being between the same two firms, the economic arguments and evidence differed greatly. Why? What are these differences?

- F. Which portions of [“Economic Analysis of Retail Mergers at the Competition Bureau”](#) Competition Bureau (2014) are directly relevant to the 1997, 2013 and 2016 investigations?

Specific Questions:

1. What are the exact sales figures and the rounded sales figures used to obtain the market shares and hence the diversion ratios among the OSS firms? (It would be helpful if the presenting team constructed a clear table to illustrate.)
 - a. How is the 100 percent diversion ratio, reported about two-thirds the way down on p. 189, obtained? Show the work. What does it mean?
 - b. How is the 62.5 percent diversion ratio, reported at the bottom of p. 189, obtained? Show the work. What does it mean?
2. How exactly is the gross margin estimate of 23 percent obtained for each firm? Is the gross margin the same thing as the Lerner Index?
3. On p. 190 you may have some trouble following how the authors implement the UPP test using the formula given at the end of footnote 37. To clarify this, work through these questions.
 - a. Looking at the formula in footnote 37 ($D_{12}(\bar{P}_2 - \bar{C}_2) > E_1 \bar{C}_1$) we have a problem. We do not know the level of marginal costs or the level of price for either firm: Staples (Firm 1) and Office Depot (Firm 2). However, the authors assume some symmetry: specifically, for the gross margins (i.e. they assume $M_1 = \frac{\bar{P}_1 - \bar{C}_1}{\bar{P}_1} = M_2 = \frac{\bar{P}_2 - \bar{C}_2}{\bar{P}_2}$ so we can just write a generic M , which they measure as 0.23), for the level of marginal costs (i.e. they assume $\bar{C}_1 = \bar{C}_2$ so we can just write a generic C), and for the marginal cost savings (i.e. they assume $E_1 \bar{C}_1 = E_2 \bar{C}_2$ so we can just write a generic EC). However, they do not assume perfect symmetry: they allow D_{12} (the diversion ratio from Staples to Office Depot) to be different from D_{21} (the diversion ratio from Office Depot to Staples). Can you rewrite $D_{12}(\bar{P}_2 - \bar{C}_2) > E_1 \bar{C}_1$ as $\frac{D_{12}M}{1-M} > E$ where M is the gross-margin? (Hint: The answer is yes. Show the work.)
4. To use the result from the previous part, which shows the UPP test can be written as $\frac{D_{12}M}{1-M} > E$, we need E .
 - a. First, what is E ? (Hint: E is the same as \hat{c} in Werden (1996).)
 - b. On p. 191 the authors say “the FTC calculated the merger-related reductions in marginal costs as 1.4 cents for each dollar of sales.” E is *not* 1.4 (or 0.014). On p. 192 the authors say that $E = 0.018$ (1.8%). How did they obtain that? Show the work. (Hint: 1.4 cents for each dollar of sales means that if you had a *total* of \$280,000 of marginal cost savings and a *total* of \$20,000,000 of sales then you would have \$0.014 savings per dollar of sales: $0.014 = 280,000/20,000,000$. So, $0.014 = \frac{ECQ}{PQ}$. You should now be able to solve for E if you remember that $M = \frac{P-C}{P} = 1 - \frac{C}{P} = 0.23$.)

- c. Does the following verify that the UPP test flags this merger as problematic? Further, are these results consistent with the authors' claim that the LHS (left-hand side) exceeds the RHS (right-hand side) "by at least a factor of 10" (first paragraph on p. 190)?

$$\frac{1 \cdot 0.23}{(1 - 0.23)} = 0.299 > 0.018$$

$$\frac{0.625 \cdot 0.23}{(1 - 0.23)} = 0.187 > 0.018$$

5. In the second paragraph on p. 190 the authors say "We also calculated the lower diversion ratios that would result if we assumed that 40 percent of the sales that were lost by Staples because of the price increase would be diverted to non-OSS firms." Why is this an important thing to consider? How does this relate to Shapiro (1996)?
6. Again, in the second paragraph on p. 190 the authors make an error when computing the diversion ratios in the scenario where some sales are diverted to non-OSS retailers, which affects subsequent calculations through the end of the appendix. Specifically, they say "We also calculated the lower diversion ratios that would result if we assumed that 40 percent of the sales that were lost by Staples because of the price increase would be diverted to non-OSS firms. Under this assumption, the Staples-to-Office Depot diversion ratio falls to 0.48 in S&OD markets and 0.33 in all-OSS markets." The underlined numbers are incorrect and should be 0.60 and 0.375, respectively. In a "S&OD" market, the only OSS are Staples and Office Depot. If 40% of all sales lost by Staples are going to non-OSS, then 60% must be going to OSS. If the only other OSS is Office Depot then the diversion to Office Depot must be 60%. All lost sales have to go somewhere: the diversion ratios must add to one. Hence, 0.48 does not make sense. (In footnote 40 the authors show the calculations and there is an error in including 0.6 in the denominator.)
- a. Review p. 25 of Shapiro (1996). How can you compute 0.375 (the correct diversion ratio from Staples to Office Depot in markets where all three OSS are present and 40% of lost sales go to non-OSS)?
- b. Using the correct diversion ratios, repeat the UPP test using the version of the test you worked with above $\left(\frac{D_{12}M}{1-M} > E\right)$. Is it still true that the test fails by at least a factor of five?
- c. In the fourth paragraph on p. 190 the authors make the same mistake when finding the diversion ratios from Office Depot to Staples when 40% of lost sales go to non-OSS firms. (Note: The third paragraph on p. 190 is fine. It is only when they introduce the idea that 40% go outside that the error occurs.)
- i. Which number should replace 0.360? Show your work.
- ii. Which number should replace 0.225? Show your work.
- iii. Using the correct diversion ratios, repeat the UPP test using the version of the test you worked with above $\left(\frac{D_{21}M}{1-M} > E\right)$. Is it still true that the test fails by a factor between four and six?

7. There is a repeated passage: once on p. 189 and again on p. 191. On p. 191 the authors say:

One such formula, which assumes linear demand, is provided by Hausman *et al.* (2010). Under the same assumptions about shares, diversion ratios, and margins as above, the Hausman *et al.* formula predicts that absent efficiencies, prices at Staples stores would have increased by nearly 9.5 percent in S&OD markets and by about five percent in all-OSS markets, which would result in a price increase, absent efficiencies, of approximately seven percent across all Staples stores in overlap markets, or $7\% - 0.5 \times 1.4\% = 6.3\%$, if one assumes the efficiencies that were accepted by the FTC.

- a. Shapiro (1996) would be a better citation than Hausman *et al.* (2010): it is earlier and the main point of Hausman *et al.* (2010) is the *asymmetric* case, not the symmetric formula, which is used in the passage above. Which is the appropriate formula in Shapiro (1996) to get the predicted price increases at Staples stores?

- i. What do you get if you attempt to replicate the price increases, absent efficiencies, given in the passage? (Note: I cannot replicate them exactly even using the incorrect diversion ratios given earlier in the appendix.)

1. What if you use the correct diversion ratios?

8. The final paragraph of the appendix (on p. 192) muddies the waters a bit regarding Werden (1996). To make sure you are clear, work through these (review) questions.

- a. Do the results in Werden (1996) depend on a particular functional form (e.g. linear) for demand?

- b. Which equation in Werden (1996) is this paragraph referring to? (Hint: It is the completely symmetric special case in Werden (1996), which gives the least complicated formula for checking whether the magnitude of the marginal cost savings will be enough to offset the incentive for the merged firm to raise prices.)

- c. Even using the incorrect diversion ratios given earlier in the appendix I cannot exactly replicate the 25% and the 13% given in this paragraph. I get 28% and 15%, respectively. How to obtain those? Show your work?

- i. What do you get if you use the correct diversion ratios?

- ii. In plain English, what do these numbers mean? Do the errors made in the appendix tend to overstate or understate the harm to competition that a merger of Staples and Office Depot would have caused?

Suggested Goals and Advice for the Presenting Team:

Suggested goals for the presenting team: *Using the 1997 proposed merger, illustrate for the class the extent of analysis possible absent specific econometric results and make sure the class understands the details of the UPP test presented in the appendix. Explain the key differences in the economic arguments and evidence between 1997 and 2016. Illustrate with concrete examples of important qualitative evidence and arguments used in the 1997, 2013 and 2016 matters in both Canada and U.S.* The suggested goals and the broad questions are meant

to help you organize your team presentation in a coherent manner. In contrast, the specific questions are *not*. In other words, all members of your team should be fluent with the specific questions but your presentation should not be explicitly organized around them. Also, the presenting team is expected to read and study the supplemental readings and engage in independent research into the industry to add depth to the presentation. In the past, teams that have attempted to divide the presentation by assigning team members subsets of specific questions or by assigning team members some subset of the required/supplemental reading have ended up with an incoherent presentation. A successful approach is to truly collaborate so that you all fully understand all parts of your team's presentation and how everything fits together.