MERGER ANTITRUST LAW

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Class 15 (October 20): H&R Block/TaxACT (Unit 9)[1]

After finishing up anything on coordinated effects, mavericks, unilateral effects, and efficiencies in *H&R Block*. If all goes well, this will be the last class on H&R Block (but don't hold your breath).

Mavericks

A "maverick" is a competitor that disrupts coordinated interaction among the other, more accommodating competitors that would occur in the absence of the maverick. When an accommodating competitor acquires a maverick, the acquiring firm is likely to suppress the maverick's disruptive conduct to the competitive harm to the market. The *H&R Block* court, as do many analysts, treats the maverick analysis as part of the coordinated effects theory. While this is analytically proper, it is more convenient in talking to clients to isolate mavericks in their own separate theory.

Mavericks have that Potter Stewart "I know it when I see it" quality. The most likely reason a firm is a maverick is idiosyncratic: The particular management of the firm simply believes—rightly or wrongly—that being disruptive is profit-maximizing over whatever time horizon the management has. There is an argument that mergers should not be prohibited simply because one merging firm's current management—perhaps even just the current CEO—believes in being disruptive. After all, even in the absence of the merger, the management in the future could change its strategy and become more accommodating, or shareholders could become disillusioned with a disruptive strategy and vote the current management out.

The agencies and the courts commonly find the elimination of a maverick in a market susceptible to oligopolistic interaction (coordinated effects) to be a valid theory of anticompetitive harm. Still, the courts at least are likely to require a plaintiff invoking a maverick theory to show that the firm likely would remain a maverick and continue to disrupt the market if the merger did not occur. The *H&R Block* court set out a sensible four-part test for the elimination of a maverick through a merger to be anticompetitive:

(1) the market must be conducive to a materially higher degree of coordinated interaction than it exhibits premerger;

(2) the disruptive conduct of the merger target must be a material contributor to the inability of the market to achieve this higher degree of coordinated interaction;

(3) the acquisition of the merger target is likely to result in the discontinuance of the disruptive conduct; and

[1] A reasonably complete set of the most important filings in the litigation (including the trial transcript) may be found here on AppliedAntitrust.com.

(4) the discontinuance of the merger target's disruptive activity is likely to result in a materially higher degree of coordination interaction in the market to the harm of consumers.

Typically, smaller firms have more incentive to be a maverick than larger firms because they have less to lose in pursuing a disruptive pricing strategy. Consider a single-price market. If a large firm elects an aggressive pricing strategy, it must lower the prices on all the products making up its large market share. This will result in a large margin loss that the aggressive strategy will have to make up in the profits from substantial additional sales of the now lower-priced products. On the other hand, a small firm has relatively few existing sales on which it must reduce its prices and hence requires a much smaller increase in sales to offset this loss. This difference could lead a smaller firm to pursue an aggressive pricing strategy when a larger firm would not. Of course, when the disruptive firm merges with a horizontal competitor, the combined market share increases, reducing the incentive of the combined firm to continue the aggressive strategy.

Read the *H&R Block* treatment of mavericks (pp. 118-21), the maverick section of the Horizontal Merger Guidelines (HMG §§ 2.1.5 and 7.1), and the class slides (slides 77-87).

Unilateral effects

The next topic will be unilateral effects. Unilateral effects is the primary theory of anticompetitive harm employed today by the agencies in their horizontal merger investigations. It is hard to find a modern agency decision to challenge a horizontal merger that did rely on this theory, so it is important that you understand the theory and its application.

Theory. The basic idea of the unilateral effects theory is straightforward and echoes a bit the underlying economics of a one-product SSNIP test in a two-product candidate market. Assume firms A and B produce differentiated products that are substitutes, that is, the products exhibit some cross-elasticity/diversion between each other. This means that if firm A was to increase its price and firm B was to hold its price constant, firm A would lose some sales (its marginal sales) and some of these lost sales would be diverted to firm B at firm B's original price.[2] Say that we have the following pre-price increase situation:

Pre-Price Increase

	p	mc	margin	q	Profits
Firm A	$300	$100	$200	100	20000
Firm B	$350	$90	$260	120	31200

BTW, firm A should be at its profit-maximizing output level in the pre-price increase situation. Now suppose that firm A increases its price by $30 to $330 and, as a result, firm A loses 15 units, 9 of which go to firm B. Now we have:

[2] Remember, when firm A increases its price, firm B's product becomes more attractive to some of firm A customers at firm B's original price.

Post-Price Increase

Firm A increases prices by:	$30
Firm A marginal (lost) unit sales:	-15
Diversion: A to B	60%
Unit sales firm A loses to firm B:	9

	p	mc	margin	q	Profits	Profit change
Firm A	$330	$100	$230	85	$19,550	-$450
Firm B	$350	$90	$260	129	$33,540	$2340

Note that firm A loses $450 due to the price increase (as it should since firm A was originally at its profit-maximizing output and price). Firm B's profits increase by $2340 as a result of the diversion, but what happens to firm B is irrelevant to firm A. So firm A should not raise its price.

Suppose that firm A acquires firm B. Now firm A seeks to maximize the joint profits of itself and firm B. When firm A increased its prices, firm B gained nine units of sales from the diversion, which provided firm B with an additional $2340 in profits. Jointly, the combined firm makes $1890 when firm A increases its price and firm B holds its price constant, so the combined firm can profitably increase firm A's price postmerger.[3]

This is the theory of unilateral effects. The recapture of diverted sales by firm B changes the combined firm's profit-maximizing function and *creates upward pricing pressure*. Now you should read Section 6 of the Horizontal Merger Guidelines and slides 88-102 of the class notes.

Example 2 illustrates unilateral effects diagrammatically and is worth some study (slides 95-100). Think about the examples this way: When A acquires B, hold B's price constant and require A to compensate B for B's profit losses from diverted sales when A increases production and lowers its price. This internal accounting within the combined firm maintains B's profits at the premerger levels and books all of B's losses to A, allowing us to look only at A's incentives to change production levels and price postmerger. (Note that the combined firm's profits are unchanged regardless of how the firm accounts for losses between A and B on its internal books.) Premerger, A did not consider B's profit losses when A made its profit-maximizing decisions. Postmerger, however, A must compensate B for B's losses when A increases its production. This imposes an *opportunity cost* on A postmerger that did not exist premerger.[4]

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[3] This analysis does not explain by how much the combined firm should increase firm A's price postmerger. Moreover, usually with unilateral effects, if the combined firm should increase firm A's price, then it should also increase firm B's price. As the hypothetical monopolist increases firm B's price. the profit-maximizing increase in frim A's price decreases.

[4] An opportunity cost is the potential benefit an actor foregoes when choosing one alternative over another. For example, by attending law school a student foregoes the income she would have made by continuing to work for three years. This foregone income is an opportunity cost for the student. Opportunity costs are real costs in the sense that they must be deducted from the benefits of taking the action. If attending law school increases the net present value of the student's income stream by $4 million but the student foregones income of $300,000 by attending law school, the net present value of law school is $3.7 million. For some good quick treatments, see Jason Fernando, *Opportunity Cost Formula, Calculation, and What It Can Tell You*, Investopedia.com (undated), Marginal

Slide 95 shows the accounting for Example 2. We see that firm A's premerger profit-maximizing production level is 140, which provides a market-clearing price of 160. But A did not take into account the profit loss to B if A were to increase its production and lower its price. When a acquires B, however, A must consider B's losses. Using our accounting assumption that A must pay B for its losses, A must take into account this opportunity cost when calculating marginal revenue. In particular, if A increases production by one unit, B will lose 0.3 units ($D_{AB} = 0.3$). If B's profit margin ($\$m_B$) is 140 at B's premerger price (which could be different than A's premerger price), then the loss to B will be $D_{AB} * 0.3 * \$m_B = 140 = 42$. Postmerger, A will have to consider this *marginal opportunity cost* in A's marginal revenue:

$$\begin{aligned} mr_A^{postmerger} &= mr_A^{premerger} - D_{BA}\$m_B \\ &= 300 - 2q - 42 \end{aligned}$$

So the merger reduces A's postmerger marginal revenue.[5] Diagrammatically, since A's postmerger marginal revenue is less than its marginal cost, this shifts A's postmerger marginal revenue down and to the left (slide 96). As a result, the intersection of A's postmerger marginal cost and marginal cost shifts to the left (slide 97). A must reduce production level and increase its price to satisfy its postmerger first-order condition. Setting A's postmerger marginal revenue equal to A's marginal cost, A's postmerger production level decreases to 119 and its postmerger price increases to 181 (slide 97). It is this difference between the profit-maximizing first order condition for a single firm premerger and the profit-maximizing first order conditions for the combined firm postmerger and how to interpret the terms in the first order condition. This is the heart of the unilateral effects theory.

Slides 98-100 develop Example 2 numerically and graphically. You can see on slide 99 how firm A's profit curve changes with the acquisition. Slides 101-02 summarize the general principle behind Example 2. Slides 103-04 approach unilateral effects more formally. These slides are optional but well worthwhile if you are up for a little math.

Unilateral effects as a theory of anticompetitive harm was conceived to handle situations like the Nestlé-Dreyer's merger if the relevant market is all-ice cream (slides 105-07). In an all-ice cream market, the HHIs fall below the Merger Guidelines thresholds for indicating competitive concern. But the high cross-elasticities among super-premium ice cream and relatively low cross-elasticities between super-premium ice cream and regular ice cream suggest that the merger could eliminate local competition between Nestlé and Dreyer's, resulting in higher super-premium ice cream prices and harm to consumers.

In practice, however, unilateral effects is not used as originally conceived. Instead, if there is cross-elasticity between the products of the merging companies of the magnitude necessary to have a material anticompetitive unilateral effect, it is almost always possible to define the relevant market narrowly around those products and other very close substitutes. In these narrow markets, the combined company's market share and the resulting increase in market concentration have been high enough to easily predicate the *PNB* presumption. Indeed, as you

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Revolution University, *What Is Opportunity Cost* (YouTube), or Econclips, *Opportunity Cost: The Road Not Taken* (YouTube).

[5] As you can see, you could equivalently treat the marginal opportunity cost of B's loss as an addition to A's marginal cost.

can see, the economics behind unilateral effects and market definition using one-product SSNIP tests are closely related and typically yield comparable results.

Slides 108-09 give the Merger Guidelines' requirements for the application of the theory and examine two types of evidence especially probative on the theory. Unilateral effects also has implications for market definition (slide 110) and offsetting marginal cost efficiencies (slide 111).

Finally, read the excerpts on unilateral effects from New York v. Deutsche Telekom AG (T-Mobile/Sprint) and United States v. Anthem (Anthem/Cigna) (pp. 205-29). These excerpts should give you a much better feel of how parties argue and courts treat unilateral effects as a theory of anticompetitive harm.

Merger simulation

Diversion ratios, as already apparent, are fundamental to unilateral effects (slide 113). In our example above, when firm A increased its production level, some, but presumably not all, of its increased unit sales came from firm B. Now suppose that firm A *increases* its price (decreases its production level). Say Δq_A is the total decrease in A's sales and $\Delta q_{A\to B}$ is B's gain of unit sales from A, and let Δp_A be the price decrease in A necessary to clear the market after the production increase. Then we can define the diversion ratio from A to B as:

$$D_{A\to B} \equiv D_{AB} = \frac{\frac{\Delta q_{A\to B}}{\Delta p_A}}{\frac{\Delta q_A}{\Delta p_A}} = \frac{\Delta q_{A\to B}}{\Delta q_A}.$$

For example, if in response to a SSNIP in A's product, firm B loses 100 unit sales and firm B gains 25 units of those sales, then the diversion ratio from A to B is 0.25.

Why do diversion ratios matter? Remember, the unilateral effects theory is based on internalizing the externality firm A imposes on firm B when firm A changes its output (price) levels. In the case where A decreases its output to increase price, the magnitude of this (positive) externality on B is the number of units B gains as a result of A's price increase (Δq_B) times the gross margin ($p_B - c_B$) B earns on each diverted unit. Since diversion is in the opposite direction from when A increased production and decreased price, to keep B's profits at premerger levels B has to pay A (rather than the other way around). As we can see from the schematic equations earlier, the magnitude of A's postmerger adjustment to its production levels depends on the magnitude of the externality the merger internalizes: the more B earns from the diverted sales, for example, the larger the payment from B to A and the greater A's reduction in its production level to reequilibrate its marginal revenue and its marginal cost postmerger. If we know the magnitude of the externality the merger internalizes, the shape of A's residual demand curve, and A's marginal costs, we can estimate the magnitude of A's production reduction and the resulting price increase for A's products as a result of the merger (under whatever assumption we make about how other firms respond to this price increase with their own output and price changes).

Estimates of the magnitude of the changes in price and output that would result from a merger is known as *merger simulation* (slides 114-16. Antitrust economists define a measure called the *gross upward pricing pressure index* (*GUPPI*) to measure the magnitude of the pricing

externality, which they can then use to assess the merged firm's incentive to raise prices under a unilateral effects theory in the absence of entry, repositioning, and efficiencies:

$$GUPPI_A \equiv \frac{\text{Value of profits from sales diverted to product B}}{\text{Value of all sales lost by product A}} = \frac{\Delta q_B \left(p_B - c_B \right)}{\Delta q_A p_A},$$

where the merging firms produce products A and B, respectively, and $GUPPI_A$ is the measure for product A. Section 6.1 of the 2010 DOJ/FTC Horizontal Merger Guidelines implicitly creates of measure of this type. Right now, don't try to make sense of what a GUPPI means. Just learn the definition.

Let $m_B = \frac{p_B - c_B}{p_B}$ be the percentage gross margin of product B and D_{AB} be the unit

diversion ratio between product A and product B. Then multiplying by p_B/p_B yields:

$$GUPPI_A = \frac{\Delta q_B}{\Delta q_A} \frac{\left(p_B - c_B \right)}{p_B} \frac{p_B}{p_A} = D_{AB} m_B \frac{p_B}{p_A},$$

which is the usual form of a GUPPI in antitrust analysis. The larger the GUPPI, the more firm A has an incentive to increase its prices when it acquires firm B.[6] Read slides 117-18.

Before continuing, we should make three important points about GUPPIs:

1. GUPPIs, like elasticities, are dimensionless, that is, they do not change in magnitude with different units of measurement. As the above equation shows, GUPPIs are the product of three ratios (each of which is dimensionless). So changing the dollar measure from dollars to pounds sterling, for example, will not change the magnitude of the GUPPI.
2. GUPPIs give you more information about the likely price effects of a merger than cross-elasticities. As you know, diversion ratios (D_{AB}) are mathematically related to cross-elasticities (ε_{AB}), but GUPPIs weigh the diversion ratios by the percentage margin of product B. So if we hold the cross-elasticity between product A and B constant (which, in turn, holds the diversion ratio constant), the greater the percentage gross margin of product B, the more incentive firm A has to raise its prices postmerger (since A is recapturing more of the lost marginal profits on A's own sales). So among antitrust economists, diversion ratios and GUPPIs are "crowding out" cross-elasticities as the variables of interest.
3. Without more structure on the demand system, the cost functions, and the nature of equilibrium in the market (i.e., how firms react to changes in one another's output and price choices), GUPPIs give at best only a qualitative indication of the magnitude of the likely price increases that might result from a horizontal merger. In other words, as the GUPPI increases, the magnitude of the likely postmerger price increase is likely to increase, but we cannot tell by looking at the GUPPI what the price increase is likely to be.

[6] We may call this a *unit sales GUPPI* because the measure of diversion is unit sales. We could also create a dollar sales or revenue GUPPI by measuring diversion in dollar sales (see slide 118).

By adding structure, however, we can use GUPPIs to simulate price increases resulting from mergers. In the very special case of linear residual demand curves and equal diversion ratios ($D_{AB} = D_{BA} = D$), equal marginal costs, equal prices, and equal market shares, Bertrand competition, no changes in the prices of any nonmerging firm, and no entry, expansion, repositioning, or efficiencies, the GUPPI gives the profit-maximizing price increase postmerger under the unilateral effects theory. The profit-maximizing price increase for product A when B keeps its price at its premerger level:

$$\frac{\Delta p_A^*}{p_A} = \frac{GUPPI}{(1-D)} = \frac{Dm}{(1-D)}.$$

The profit-maximizing price increase for both product 1 and product 2 when raising the price of both products:

$$\frac{\Delta p_1^*}{p_1} = \frac{\Delta p_2^*}{p_2} = \frac{GUPPI}{2(1-D)} = \frac{Dm}{2(1-D)}.$$

In other words, the profit-maximizing price increase when the merged firm raises the price of both products is half of the profit-maximizing price increase when the merged firm raises the price of only one of the two products. This makes sense given the model's linearity of demand and the symmetry assumptions. Slide 119 reports these results and slides 120-27 provide some applications. Slide 128 illustrates how the formula for simulated postmerger price increases becomes much more complicated as the assumptions are relaxed.[7] GUPPIs are beginning to appear in some court opinions, but they are often plagued with data problems and, to date, have only provided additional support for more reliable means of proving the requisite anticompetitive effect (slide 129).

Note that if we impose enough structure on the model to allow GUPPIs to predict the magnitude of postmerger price increases, we can use merger simulations using GUUPIs to apply the hypothetical monopolist test for market definition. Warren-Boulton did this in H&R Block/ TaxACT to support his conclusion that DDIY was the relevant product market (see pp. 92-93). Warren-Boulton also used his merger simulation using GUPPIs more directly to support his conclusion that the merged firm would raise prices under the unilateral effects theory (see pp. 128-30). This part of the opinion deserves some careful attention. Given the background provided by the class notes, you should be able to understand what Warren-Boulton was doing here.

For completeness, I have included a few slides on a dominant firm with a competitive fringe, which can be part of a theory of unilateral effects (slides 130-33). You can skip those for now, but we will return to this theory in a later unit.

Efficiencies

The defendants' next rebuttal argument addressed in the opinion is that of efficiencies (pp. 134-39). Read this section of the opinion and Section 10 of the Horizontal Merger Guidelines. The class notes in the Downward Pricing Pressure Defenses deck (slides 12-40) provide some more detail.

[7] You will not be required to apply the formula on slide 128. I include it only to show you how complicated the formulas become for more general situations.

On Tuesday, we will finish with anything we did not cover on H&R Block/TaxACT. We will then turn to U.S. Sugar/Imperial Sugar, our next case study. The court publicly released the opinion on September 28, 2022, so this is brand new.

Enjoy the reading! Email me if you have any questions.