

## THE PROTECTED PROFITS BENCHMARK: INPUT PRICE, RETAIL PRICE, OR BOTH?

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In a recent article in this *Journal*,<sup>1</sup> Professor Steven Salop proposed a “Protected Profits Benchmark” (PPB) as a safe harbor in determining whether the combination of the retail price charged by a vertically integrated provider (VIP) and the price of inputs that a rival purchases from the VIP to compete at the retail level indicates a refusal to deal or, alternatively, produces an anticompetitive price squeeze.<sup>2</sup> Professor Salop’s basic idea is to compare the price of the inputs at issue with the sum of (1) the direct cost of supplying the inputs to the rival, and (2) the profit forgone when selling inputs to the rival displaces retail sales the VIP would otherwise have made. Thus, the VIP’s profits would be the same when (1) its rival purchased inputs at a price equal to PPB, or (2) it sold units of its retail product that otherwise would have been displaced by its rival’s sales.

With its focus on the price for the essential input (which would be of paramount concern under allegations of a refusal to deal), the PPB deals with one of the two ways in which a price squeeze situation can arise. As the Supreme Court cogently observed in *linkLine*:

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<sup>1</sup> Steven C. Salop, *Refusals to Deal and Price Squeezes by an Unregulated Vertically Integrated Monopolist*, 76 ANTITRUST L.J. 709 (2010).

<sup>2</sup> As the Supreme Court recently noted, whether an alleged price squeeze raises an antitrust concern (apart from predatory pricing at the retail level) depends on whether: (1) a firm has an antitrust duty to deal; and (2) it has monopoly power in the market in which it and the rival alleging a price squeeze compete. See *Pac. Bell Tel. Co. v. linkLine Commc’ns, Inc.*, 555 U.S. 438 (2009). Although for purposes of the discussion in this Comment I assume that these prerequisites have been satisfied, it is noteworthy that the Supreme Court has observed that the circumstances under which there is a duty to deal are limited. *linkLine*, 555 U.S. at 448 (citing to *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585 (1985)—a decision which the Court had previously characterized “as at near the outer boundary” of antitrust liability in *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398 (2004)).

The plaintiffs in this case, respondents here, allege that a competitor subjected them to a “price squeeze” in violation of § 2 of the Sherman Act. They assert that such a claim can arise when a vertically integrated firm sells inputs at wholesale and also sells finished goods or services at retail. If that firm has power in the wholesale market, it can simultaneously raise the wholesale price of inputs and cut the retail price of the finished good. This will have the effect of “squeezing” the profit margins of any competitors in the retail market. Those firms will have to pay more for the inputs they need; at the same time, they will have to cut their retail prices to match the other firm’s prices.<sup>3</sup>

That is, the *relationship* between retail and input prices—not their absolute levels—is the primary issue in determining whether a price squeeze exists. In other words, the VIP has two instruments at its disposal: its own retail price and the input price. Under certain circumstances, only the difference between them matters.

Professor Salop’s discussion of the PPB treats only one of the instruments (by implicitly assuming the retail price is fixed) and, thus, ultimately provides an incomplete answer to the question of establishing a safe harbor for the VIP’s pricing. When the VIP and its rivals sell similar (undifferentiated) products and employ similar production processes, the PPB by design establishes a presumptively procompetitive margin between retail and input prices. However, as the VIP and its rivals become increasingly dissimilar in product offerings and/or production processes, determining whether the retail/input price margin is anticompetitive becomes increasingly complex and introduces complications that were only partially addressed by Professor Salop.

The remainder of this comment is organized as follows. I first present Professor Salop’s example that illustrates how, with undifferentiated products and use of the same production processes by the VIP and its rivals, the PPB facilitates entry by equally or more efficient rivals (to the extent there is a duty to deal), because the VIP would realize the same unit profits as its output changed in response to the rival’s entry and pricing decisions. I next present findings from the regulatory economics literature on the issues of pricing essential inputs and preventing price squeezes when firms compete with different production processes and/or offer differentiated products. I conclude the comment by discussing the implications of these complications for establishing a safe harbor benchmark.

#### I. PROTECTED PRICE BENCHMARK—UNDIFFERENTIATED PRODUCTS

Professor Salop presented the following simple example to illustrate the PPB. Suppose:

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<sup>3</sup> *linkLine*, 555 U.S. at 442.

- It costs \$10 to produce a unit of the input, one unit of which is used by either the VIP or the rival in producing a retail product;
- The VIP has additional costs of \$30 when using the input as part of its retail product, resulting in a total cost of \$40;
- The VIP sells the retail product for \$100, resulting in a profit of \$60 per unit; and
- Each unit of the retail product sold by the rival results in one less unit of the VIP's retail product being sold.

In this example, the PPB would equal \$70: the \$10 cost of producing the input plus the \$60 profit per unit the VIP would sacrifice when a unit of the rival's retail product is selected instead of the VIP's own product. The result in this simple case is equivalent to the well-known efficient component pricing rule (ECPR).<sup>4</sup> Input prices no greater than this benchmark would fall within a safe harbor.

## II. DIFFERENTIATED PRODUCTS AND DIFFERENT PRODUCTION PROCESSES: IMPLICATIONS FOR PRICING ESSENTIAL INPUTS AND RETAIL PRODUCTS

As Professor Salop acknowledges, calculating the PPB can be considerably more complicated when the rival's retail product is not a perfect substitute for the VIP's retail offering. In such cases, when the VIP sells a unit of input to its rivals, the reduction in its retail sales is not necessarily one-for-one; consequently, the relevant profit forgone from selling fewer units of the retail product can differ from the simple example illustrated above.

Professor Salop appears to conclude that accounting for differentiated products necessarily produces a lower PPB.<sup>5</sup> In particular, his prescription appears to require that the forgone profit component in his simple example be multiplied by the proportion of the particular rival's sales that are diverted from the VIP.<sup>6</sup> Since this proportion is necessarily less than one, the resulting PPB

<sup>4</sup> See, e.g., William J. Baumol & J. Gregory Sidak, *The Pricing of Inputs Sold to Competitors*, 11 YALE J. ON REG. 171 (1994).

<sup>5</sup> Salop, *supra* note 1, at 729. In an earlier article in this *Journal*, Professor Salop similarly explained:

When the two firms sell differentiated products, the benchmark price would have to be adjusted to take into account the fact that not all of the purchaser's sales would displace output sales of the integrated firm. As a result, the protected-profits input price benchmark would be *lower* than the standard ECPR calculated above.

Steven C. Salop, *Exclusionary Conduct, Effect on Consumers, and the Flawed Profit-Sacrifice Standard*, 73 ANTITRUST L.J. 311, 370–71 (2006) (emphasis added).

<sup>6</sup> A subtle, but crucial, technical detail is that the diversion ratio results from a thought experiment in which the VIP raises (or lowers) the price of the essential input by a small amount.

would generally be correspondingly smaller than in the homogeneous goods case, all else equal. For example, if 80 percent of the rival's sales are expected to be former customers of the VIP (with the remaining 20 percent coming from other rivals and new customers), Professor Salop would reduce the profit component in the above example from \$60 to \$48 ( $0.8 \times \$60$ ) to produce a PPB of \$58. While this example illustrates the possibility that a change in the price in the essential input may produce a change in the volume of rivals' output that is greater than the VIP's lost volume in retail sales, it can at the same time be the case that when the VIP reduces its retail price, the resulting increase in its output displaces fewer units of the rival's product. This second consideration would be important in assessing whether a reduction in the VIP's retail price after a rival has agreed on a price for an essential input is an anticompetitive price squeeze.

A. ESSENTIAL INPUT PRICING AND PRICE SQUEEZES: FINDINGS FROM THE ECONOMIC LITERATURE

In fact, Professor Salop's adjustment to the lost profits component only partially incorporates the nuances outlined in the previously published articles he cites in support (and a related article discussed in more detail below). For example, Armstrong et al. describe the term that adjusts the profit component<sup>7</sup> as follows: "[T]he displacement ratio is the change in [the VIP's] final product sales divided by the change in [the VIP's] sales of [the input] to the fringe as the [input] price is altered a little."<sup>8</sup> This displacement ratio, in turn, consists of two components: (1) the ratio of the change in the VIP's output to the change in the output of fringe firms and (2) the ratio of the change in the output of the fringe firm to the change in the number of units of the input.

Armstrong et al.'s analysis focuses on the question of the proper price for an "essential input," which is based on the profit per unit earned by the vertically integrated firm's retail product. Weisman's analysis considers the parallel price squeeze problem: when the price of the "essential input" is taken as given (e.g., it is determined by a regulator), how high must the VIP's retail

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<sup>7</sup> This is the functional equivalent to Professor Salop's "Div" term. See Salop, *supra* note 1, at 729.

<sup>8</sup> Mark Armstrong et al., *The Access Pricing Problem: A Synthesis*, 44 J. INDUS. ECON. 131, 139 (1996). Like Professor Salop, Armstrong et al. discuss the adjustment to the standard ECPR result in the context of product differentiation. They initially note that in the special case of independent products, the resulting input price should include no mark-up over costs—on the basis that the amount of forgone profit in the VIP's retail product when its sales are displaced by firms using an essential input decreases as products become more differentiated. However, in the special case of completely independent products, it is questionable whether an antitrust duty to deal would even exist. Since the firm capable of supplying the input is not vertically integrated into the market in which the seeker of the input would compete, antitrust liability is unlikely to exist. See PHILLIP E. AREEDA & HERBERT HOVENKAMP, *FUNDAMENTALS OF ANTITRUST LAW* 7-83 to 7-85 (4th ed. 2011).

price be in order to avoid an anticompetitive price squeeze.<sup>9</sup> In particular, Weisman's analysis considers the opportunity cost from profits forgone in selling fewer units of the essential input as a result of lowering the retail price and the concomitant increase in retail volume. With differentiated products, the forgone profits from reduced sales of the essential input are smaller than would be the case with homogeneous products. Consequently, just as Armstrong et al.'s formulation produces a lower essential input price benchmark than does the conventional ECPR, Weisman's framework produces a lower minimum procompetitive retail price benchmark.<sup>10</sup>

The following two Parts describe how these nuances in the previous literature introduce possible complications not fully addressed in Professor Salop's approach: (1) the VIP may use more (or fewer) units of the input to produce one unit of its output than do the rival firms,<sup>11</sup> and (2) not only (as Professor Salop explains) do the changes in the vertically integrated firm's and fringe firms' outputs need not be one-for-one, the magnitude of such changes can also depend on whether the changes are the result of price changes to the VIP's essential input or to retail prices.

#### B. DIFFERENCES IN THE INTENSITY OF USE OF AN ESSENTIAL INPUT

Turning to the relative intensity with which the VIP and its rivals use the input to produce the competing products, consider an example in which the rival requires only one unit of input for every two units of its output, while the VIP needs one unit of input for every one of its retail products.<sup>12</sup> Assume that

<sup>9</sup> See Dennis L. Weisman, *The Law and Economics of Price Floors in Regulated Industries*, 47 ANTITRUST BULL. 107 (2002).

<sup>10</sup> With homogeneous products and identical production processes, Weisman's minimum procompetitive price (price floor) is the mirror image of the conventional ECPR: Minimum Price = Retail Cost + (essential input price – essential input cost). *Id.* at 120. With differentiated products, the unit profit in the essential input would be multiplied by a term similar to Armstrong et al.'s displacement ratio. Their definition of the displacement ratio would be modified as follows to describe Weisman's approach: "[T]he displacement ratio is the change in [the VIP's] sales of [the input] to the fringe divided by the change in [the VIP's] final product sales as the retail price is altered a little."

<sup>11</sup> Armstrong et al.'s displacement ratio =  $\frac{dV}{dR} \frac{dR}{dA}$ , where the first component is the ratio of the change in the VIP's volume to a one-unit change in the output of rival firms (that results from a small change in the price of the essential input) and the second component is the inverse of the ratio of the change in the number of units of the "essential input" to a one-unit change in rivals' output. Armstrong et al., *supra* note 8, at 139. Accordingly, as described in the next Part, the PPB for products for which the VIP requires more units of the essential input would be *higher* than would be the case with identical production processes. Hence, the simple ECPR formula in the stylized example above need not represent an upper bound on the essential input price, as Professor Salop seems to suggest.

<sup>12</sup> That competing products may use particular inputs with varying intensity is not an extreme assumption. For example, in the early stages of telecommunications competition, local telephone companies' Centrex systems competed with private branch exchange (PBX) systems in providing intra-company switching functionality to medium and large businesses. Centrex services typ-

apart from this production difference, the two products are indistinguishable. Armstrong et al.'s approach would result in an adjusted PPB in which the forgone profit in one unit of retail sales would be doubled. In the example above, the VIP would realize \$120 in profit from selling two units of its retail product, which is the same profit it would earn by selling one unit of the input at \$130 (\$10 cost + 2 x \$60), which in turn would displace two units of the VIP's retail sales.<sup>13</sup>

The resulting PPB would also satisfy an equally efficient competitor test. In particular, the rival would pay \$65 ( $\$130/2$ ) per unit of output for the essential input. Therefore, if its costs for other production inputs were no greater than \$35 per unit of output, it would be able to match the VIP's price and be viable, while a more efficient rival would be even more profitable. In turn, the total cost (including the cost incurred by the VIP in supplying the essential input) per unit of this rival's output would be \$40 ( $\$10/2 = \$5$  for the essential input + \$35), which would be the same as the VIP's cost for producing a unit of output.<sup>14</sup>

Since adjustments to the PPB to account for possibly different production processes are more information-intensive than the conventional ECPR, determining whether the VIP's price for the essential input satisfies this benchmark may best be determined through a two-step process: (1) an input price at or below the conventional ECPR would be presumptively valid, (2) subject to possible adjustment to the ECPR resulting from a detailed examination of the use of the essential input by the VIP and its rival. In examining whether such an adjustment is warranted, the issue of whether there are any cost differences in supplying the input to the rivals relative to the use of the input to produce the VIP's retail product could also be addressed.

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ically required more intensive use of "essential inputs"—the telephone lines to the business locations—than did an otherwise comparable PBX system. *See, e.g.*, Jerry A. Hausman & Timothy J. Tardiff, *Efficient Local Exchange Competition*, 40 ANTITRUST BULL. 529 (1995).

<sup>13</sup> This type of adjustment would also apply if the rival used the essential input more intensely than the VIP (perhaps because its production process economized on other units). The basic idea is to equalize the mark-up on a per-unit-of-output basis. When products are otherwise homogeneous, a PPB with this property (1) provides the same profit to the VIP when it supplies retail units as it receives from selling essential inputs to rivals that would displace these units, and (2) allows an equally efficient rival to cover its cost when it matches the retail price currently charged by the VIP.

<sup>14</sup> In his earlier article, Professor Salop suggested that the PPB could be adjusted to account for cost differences between providing the essential input to rivals and providing it as part of the VIP's retail product. Salop, *supra* note 5, at 370 n.214. The adjustment to the PPB illustrated by this example is essentially the same as Professor Salop's suggestion. In particular, the cost of supplying the essential unit used to produce a unit of the rival's output is \$5 less than the costs of essential inputs used to produce one unit of the VIP's output. This difference is deducted from the sum of the cost of the essential input plus forgone retail profit to produce a PPB of \$65 per unit of rival's output, or equivalently \$130 per unit of the essential input.

## C. PRODUCT DIFFERENTIATION

The fact that less than one unit of the VIP's output may be displaced by a one-unit increase in the output of rival firms complicates the determination of whether the combination of the VIP's prices for its retail output and the essential input constitutes a price squeeze. In addition to a possible adjustment to the PPB along the lines Professor Salop suggests, the issue of whether the VIP's retail price responses are predatory comes into play as well.<sup>15</sup>

For example, suppose the VIP competes with a single rival that uses the essential input and a group of "fringe" firms that do not.<sup>16</sup> For a small decrease in the price of the essential input, the rival's unit sales would increase. Suppose (following Professor Salop<sup>17</sup>) that 80 percent of the gain in units would be diverted from the VIP and the other 20 percent would be diverted from the "fringe" firms. Accordingly, Professor Salop would reduce the unit profit in the VIP's retail product (\$60 in the previous example) by 20 percent (resulting in  $0.8 \times \$60 = \$48$ ) and add that amount to the cost of producing the input (\$10 in the previous example) to arrive at a PPB of \$58.

Now consider the VIP's retail price. If the VIP decreased its retail price by a small amount after the rival using the essential input enters, the VIP's retail sales would increase. For example, if (1) before the retail price decrease, the VIP sold 300 units, the rival 100 units, and the "fringe" firms 75 units and (2) sales were diverted to the VIP in proportion to those volumes, 57.14 percent<sup>18</sup> of the VIP's volume increase would be diverted from the rival using the essential input and the other 42.86 percent from "fringe" firms.<sup>19</sup> If the price of

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<sup>15</sup> Professor Salop suggests that with differentiated products, the lower PPB he recommends could lead to more intense price competition. Salop, *supra* note 1, at 729. This outcome would raise the possibility of subsequent allegations of predatory pricing by the VIP.

<sup>16</sup> The presence of rivals that produce the retail product without using the "essential input" would raise the question of whether an antitrust duty to deal even exists. As the Supreme Court noted in *linkLine*, if the VIP does not have monopoly power in the retail market at issue, there is no antitrust duty to deal. *Pac. Bell Tel. Co. v. linkLine Commc'ns, Inc.*, 555 U.S. 438, 448 n.2 (2009).

<sup>17</sup> Salop, *supra* note 1, at 730.

<sup>18</sup>  $57.14 \text{ percent} = 100/(100 + 75)$ .

<sup>19</sup> Under the multinomial logit model, volume is diverted between products in proportion to their pre-existing market shares. (When the overall market elasticity is non-zero for the firms explicitly included in the analysis, the model would include an "outside good" and the pre-existing market shares would account for volumes assigned to the "outside good.") Technical details are available from the author upon request. Versions of the logit model have been used to simulate the effects of mergers and other competition issues. *See, e.g.*, Luke M. Froeb, Timothy J. Tardiff & Gregory J. Werden, *The Demsetz Postulate and the Welfare Effects of Mergers in Differentiated Products Industries*, in *ECONOMIC INPUTS, LEGAL OUTPUTS: THE ROLE OF ECONOMISTS IN MODERN ANTITRUST* 141 (Fred S. McChesney ed., 1998); Timothy J. Tardiff, *Efficiency Metrics for Competition Policy in Network Industries*, 6 *J. COMPETITION L. ECON.* 957 (2010); J. Douglas Zona, *Structural Approaches to Estimating Overcharges in Price-Fixing Cases*, 77 *ANTITRUST L.J.* 473 (2011).

the input was set at the PPB of \$58, the minimum procompetitive retail price (so as to avoid allegations of a price squeeze) produced by Weisman's analysis would be \$67.43.<sup>20</sup> Like the simple ECPR, the profit per unit associated with this retail price ( $\$27.43 = \$67.43 - \$10 - \$30$ ) would exactly offset the profit forgone in selling 0.5714 fewer units of the input to its rivals ( $\$48 \times 0.5714$ ). That is, a decrease in the retail price to this level would not decrease the VIP's profits, consistent with the logic underlying the ECPR that the VIP be indifferent between selling the input and the displaced amount of the output.

In summary, with differentiated products, the VIP could increase its profits by lowering its retail price because each unit of stimulated demand would displace less than one unit of its rival's output. Such a price decrease is not exclusionary, despite the resulting decrease in the margin between the VIP's price and the price it charged the rival for the essential input.<sup>21</sup>

### III. IMPLICATIONS

To the extent that there is a duty to deal,<sup>22</sup> when a rival enters with a homogeneous product that uses an essential input in the same proportions as the VIP, the conventional ECPR provides a benchmark for the input price in that it would allow equally efficient rivals to be viable and would make the incumbent indifferent between selling a unit of the input or a unit of potentially displaced output. As such, an input price at or below this benchmark would be conducive to static economic efficiency, at least in the short run.

To the extent that competition takes place among firms offering differentiated products, perhaps employing different technologies, the task of establishing bright-line tests becomes considerably more complicated. To begin with, there is the paradoxical situation that as the rival's offerings become less similar to the VIP's (and hence the conclusion that there exists a duty to deal becomes less supportable), the adjusted PPB described by Professor Salop becomes lower—in the limit, the PPB would be the cost of providing the input in a situation where there was no direct competition downstream.<sup>23</sup> Once

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<sup>20</sup> The unit profit included in the minimum procompetitive price would be 57.14 percent of the \$48 ( $\$58 - \$10$ ) unit profit included in the price of the essential input, which when added to the VIP's \$40 cost of producing a unit of its retail product produces the minimum procompetitive price of \$67.43.

<sup>21</sup> Weisman demonstrates that the VIP retail price can be higher than the minimum price, depending on the price elasticity of demand for its retail product. Weisman, *supra* note 9, at 128–29.

<sup>22</sup> See, e.g., Glen O. Robinson, *On Refusing to Deal with Rivals*, 87 CORNELL L. REV. 1177 (2002). Professor Robinson notes that the duty to deal, even for a firm with monopoly power, is exceptional.

<sup>23</sup> It is also noteworthy that the analysis in the Armstrong et al. article upon which Professor Salop relied is based on a regulator maximizing (static) welfare (consumer surplus plus industry

established, possible dissimilarity between products may well result in narrowing the initial margin between the prices the VIP charges for the input and its retail offering as it attempts to improve its profits by displacing units sold by its rival. In short, while adjusting the conventional ECPR to account for less than perfect demand substitutability has some surface appeal, the task of answering the fundamental question of whether there is sufficient margin between that price and the VIP's retail price as competition unfolds may well be complex and fact-intensive. In light of the facts that (1) mechanical application of the type of adjustment suggested by Professor Salop provides potential rivals with ever greater margins as they become less direct competitors and (2) under the same circumstances VIPs may have incentives to reduce retail prices independent of any intention to improperly exclude those rivals that rely on inputs obtained from the VIP, the conventional ECPR could well serve as the presumptively valid starting point for a price squeeze determination.

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profits) when setting the input price. In contrast to this regulatory focus, in an unregulated setting, consistent with the antitrust laws, there is no reason to "force" a VIP to price at such economically efficient levels as long as it is not trying to exclude. See Richard Gilbert, *The Protected Profits Benchmark: A Refusal to Deal Metric?*, *supra* this issue, 78 ANTITRUST L.J. 689 (2013).

