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## Scale Economies and Synergies in Horizontal Merger Analysis

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### Abstract:

Three years ago, the Antitrust Division and the Federal Trade Commission revised their Horizontal Merger Guidelines to articulate in greater detail how they would treat claims of efficiencies associated with horizontal mergers: claims that are frequently made, as for instance in the recently proposed merger between Heinz and Beech-Nut in the market for baby food. While these revisions to the Guidelines have a solid economic basis, they leave open many questions, both in theory and in practice. In this essay, we evaluate some aspects of the treatment of efficiencies, based on three years of enforcement experience under the revised Guidelines, including several litigated mergers, and based on economic principles drawn from oligopoly theory regarding cost savings, competition, and consumer welfare.

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\*\* Both authors are from the University of California at Berkeley. Farrell recently began serving as Deputy Assistant Attorney General for Economics at the Antitrust Division in the Department of Justice, but this essay was essentially written before he took that post. The analysis and opinions expressed here are not purported to reflect Division policy.

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# Scale Economies and Synergies in Horizontal Merger Analysis\*

Joseph Farrell and Carl Shapiro\*\*

22 September 2000

## I. Introduction

Three years ago, the Antitrust Division and the Federal Trade Commission revised their Horizontal Merger Guidelines to articulate in greater detail how they would treat claims of efficiencies associated with horizontal mergers:<sup>1</sup> claims that are frequently made, as for instance in the recently proposed merger between Heinz and Beech-Nut in the market for baby food.<sup>2</sup> While these revisions to the Guidelines have a solid economic basis, they leave open many questions, both in theory and in practice. In this essay, we evaluate some aspects of the treatment of efficiencies, based on three years of enforcement experience under the revised Guidelines, including several litigated mergers, and based on economic principles drawn from oligopoly theory regarding cost savings, competition, and consumer welfare.<sup>3</sup>

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<sup>1</sup> Horizontal Merger Guidelines, §4, revised April 8, 1997.

<sup>2</sup> The FTC voted 3-2 in July 2000 to challenge Heinz's acquisition of Beech-Nut. See *FTC v. Heinz Company and Milnot Holding Corp.* According to the FTC (*Memorandum in support of plaintiff's motion for preliminary injunction*, public version, July 14, 2000, page 1), after the merger two firms, Gerber and Heinz/Beech-Nut, would control 98% of the U.S. baby food market. We understand that Heinz and Beech-Nut claim that their merger will enable them to achieve substantial efficiencies and thus to compete more effectively against the market leader, Gerber. The parties claim that efficiencies will include consolidating production at Heinz's more modern lower-cost manufacturing facility, reducing the cost of food inputs, improving product quality by sharing recipes, and achieving more widespread distribution.

<sup>3</sup> We are certainly not the first to address the question of how efficiencies have been treated under the revised Guidelines. For a very informative set of papers on just this topic, see the Symposium Issue, "The Changing Face of Efficiency," in 7 *George Mason Law Review*, Number 3, Spring 1999. In particular, in this issue, see Robert Pitofsky, "Efficiencies in Defense of Mergers: Two Years After;" Craig W. Conrath and Nicholas A. Widnell, "Efficiency Claims in Merger Analysis: Hostility or Humility?" Jerry A. Hausman and Gregory K. Leonard,

Some skeptics question whether efficiencies are really counted in merger analysis, either by the antitrust agencies or the Courts, but the plain fact is that efficiencies do count. Virtually any significant horizontal merger involves some loss of direct competition, and would thus be at least slightly anticompetitive absent all efficiencies. The Merger Guidelines nevertheless recognize (paragraph 0.1) that most mergers “are either competitively beneficial or neutral.” And this is reflected in practice as well as in the Guidelines: only a small percentage of horizontal mergers notified to the agencies are challenged, and very few indeed in unconcentrated markets.<sup>4</sup> While we cannot speak for the drafters of the Guidelines, a sensible way to understand this practice is that the agencies presume that where the loss of direct competition is slight, the transaction is likely motivated by efficiencies that outweigh that loss, and is thus on balance “beneficial or neutral.” Thus a real sympathy to efficiencies is built into the Guidelines from the start.

Accordingly, the question of efficiencies need be *explicitly* reached only if a merger (otherwise) creates substantial competitive concern. Our discussion therefore can almost take as given that the industry is concentrated and that entry is not trivial, suggesting that economies of scale are likely to be significant in the industry and that market shares may be sticky. It would thus not be surprising if the merged entity could fairly quickly achieve scale not historically achieved by either of the merging parties individually. Practitioners can doubtless call to mind cases where merger proponents make that claim and present it as a merger efficiency. We thus focus much of our discussion around the question: Are simple economies of scale a merger efficiency? More sharply, can a merger that would otherwise be anti-competitive become pro-competitive because it allows the merged entity to achieve lower costs by reaching a larger scale than either merging party enjoyed pre-merger?

Our preliminary analysis suggests that antitrust agencies should be relatively skeptical of efficiency claims based on simple scale economies. First, such scale economies can at least in principle be achieved unilaterally, without a merger, and consumers are likely to benefit if firms compete to do so. A second reason for skepticism, if consumer welfare rather than overall

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“Efficiencies from the Consumer Viewpoint;” and Timothy J. Muris, “The Government and Merger Efficiencies: Still Hostile After All These Years.”

<sup>4</sup> The Guidelines (paragraph 1.51a) describe a market as “unconcentrated” when post-merger HHI is below 1000.

economic efficiency is the standard, is that if simple scale-economy efficiencies are indeed merger-specific, there is reason to doubt that they will be both large enough and sufficiently passed through that consumers will benefit. In contrast, we argue that the agencies should give greater weight to credible claims of genuine (and merger-specific) efficiencies based upon the close integration of specific, hard-to-trade assets owned by the merging parties. Although it is not necessarily common practice in antitrust, we follow our earlier usage and reserve the term “synergies” for such intimate efficiencies.

We also find that a variety of arguments heard in discussion of merger efficiencies are two-edged. Thus, for example, the bigger is an efficiency, the likelier it is to be attained with a merger (and the more important it is to do so), but the less likely it seems to be merger-specific. Similarly, certain claims about the vigor of competition may cut both ways.

The FTC’s successful 1998 challenge to the proposed mergers of leading drug wholesalers illustrates some shortcomings of an efficiency defense based on simple scale economies. That case involved a pair of mergers among the four leading drug wholesalers: McKesson sought to acquire Amerisource, and Cardinal Health sought to acquire Bergen Brunswig.<sup>5</sup> These companies purchase pharmaceuticals from manufacturers, operate warehouses and delivery systems, and sell these drugs in turn to hospitals, pharmacies, clinics, and other entities dispensing drugs. With combined market shares approaching 80%, both sets of merging parties defended their mergers in part by asserting that they expected to achieve significant efficiencies from their consolidations.<sup>6</sup> The claimed efficiencies came predominantly in three areas, all fundamentally related to basic economies of scale: (a) savings through the consolidation of

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<sup>5</sup> FTC vs. Cardinal Health, Inc., 12 F. Supp. 2d 34 (D.D.C. 1998). One of the authors, Shapiro, served as an expert witness for the FTC in this case.

<sup>6</sup> The merging parties also emphasized that entry into drug wholesaling was easy and would protect customers from any anticompetitive price increases. They were hard pressed, however, to explain why small entrants would be efficient even while the merging firms, already far the largest in the industry, needed to grow yet larger to become efficient. As often occurs, the parties’ entry arguments and efficiency claims were at odds with each other. All those who have studied economics are familiar with classical “U-shaped” average cost curves, where costs per unit are high at very small scales, fall to a minimum at some optimum scale, and then rise at even larger scales. Merging parties all too often assert (implausibly) the exact opposite: a hump-shaped average cost curve whereby small entrants are efficient enough to discipline the market, yet the merging firms (with intermediate scale) could significantly lower their costs if they were to grow even larger. (And even if costs took this surprising form, merger would not be the only way to get off the hump.)

warehouses along with an associated reduction in inventories; (b) savings based on volume buying from drug manufacturers; and (c) savings in corporate overhead. The FTC responded with three arguments: that the claimed efficiencies were inflated, that most efficiencies would not be passed on to consumers, and that much of the claimed efficiencies could be achieved without the merger.

Judge Sporkin accepted defendants' assertions that the mergers would lead to significant efficiencies, but went on to say:

“However, this Court finds that evidence presented by the FTC strongly suggests that much of the savings anticipated from the mergers could also be achieved through continued competition in the wholesale industry. While it must be conceded that the mergers would likely yield the cost savings more immediately, the history of the industry over the past ten years demonstrates the power of competition to lower cost structures and garner efficiencies as well.”

Translating this into economic language, competition among drug wholesalers will tend to force the individual firms to achieve available scale economies. If none of the firms has yet reached minimum efficient scale (MES, the smallest scale at which average costs are minimized), perhaps because technological change and buyer consolidation have caused the MES to grow and the industry is still adjusting, then competition will push them to grow in the *absence* of the merger. And consumers stand to reap the gains from the competitive struggle among the wholesalers to capture more sales and thus grow to efficient size. In fact, that very process, while perhaps delaying the time at which any single firm gains efficient scale, is the essence of competition in the presence of newfound scale economies.

One of our goals here is to consider the generality of the arguments just made: under what conditions can merging parties who are direct rivals argue coherently that their merger will accelerate the achievement of efficient scale *and thereby benefit consumers*? One form of this question is: under what conditions can a horizontal merger benefit consumers by enabling the merging parties to “rationalize” output between their two operations, which might entail closing down one operation altogether? As defined more precisely below, we call efficiencies derived merely from such rationalization of output “efficiencies without synergies,” and we contrast

these with “synergies,” in which firms truly combine their core hard-to-trade *assets* in new ways that lead to lower costs or improved quality.<sup>7</sup>

At least one simple and central model of imperfect competition suggests that mergers without synergies are unlikely to benefit consumers, even though such mergers can certainly create efficiencies by allowing scale economies to be exploited more rapidly than otherwise.<sup>8</sup> For this reason, and because non-synergy efficiencies seem more likely to be achieved without a merger, we are led to be wary about giving non-synergy efficiencies as much weight as synergies. Thus, the latter part of this essay focuses on synergies in horizontal mergers, including the key questions of (a) what factors might bear on whether claimed synergies are truly “merger-specific,” and (b) how large a synergy is required to overcome otherwise anti-competitive effects. We note that a great deal of evidence relevant to this analysis is double-edged: the same conditions that tend to make synergies more merger-specific and more beneficial to consumers also tend to make the merger itself more problematic. Although this last point does not help one formulate simple rules for merger enforcement, both government officials and private merger practitioners would do well to recognize that certain arguments they may be inclined to make are not without ambiguity and risk.

As we discuss below in Section III, our distinction between synergies and non-synergy efficiencies turns on the *ability* of an individual firm unilaterally to achieve non-synergy efficiencies, such as simple scale economies. Even if such an efficiency would not in fact be achieved absent the merger, the fact that it *could* be so achieved classifies it as a non-synergy efficiency, and this influences the analysis in a way we discuss below. It is very important not to

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<sup>7</sup> This distinction follows the formal definitions we gave ten years ago in our more theoretical paper, “Horizontal Mergers: An Equilibrium Analysis,” 80 *American Economic Review* 107 (1990).

<sup>8</sup> We are focusing here on the dominant consumer-welfare standard for the evaluation of mergers. With a total-welfare standard, i.e., if one includes accounts for profits as well as consumer welfare, the delay in achieving efficient scale would weigh more heavily. For example, with highly inelastic demand (up to a reservation price), even a merger to monopoly, while leading to higher prices, might create little by way of conventional deadweight loss yet permit efficient production sooner than would arise under competition. Of course, even this observation could be reversed if competition provides the pressure necessary for the supplier(s) actually to achieve cost reductions. See generally Gregory Werden, “An Economic Perspective on the Analysis of Merger Efficiencies,” *Antitrust*, Summer 1997.

confuse this with the enquiry into actual merger specificity of a claimed efficiency, which we discuss now.

## **II. Merger-Specificity: The Guidelines' Balanced Approach**

Under the Guidelines, a claimed merger efficiency must be “verified,” in the sense that it is not vague or speculative but credibly will indeed happen if the merger proceeds. Although much evidence and analysis may go into this determination, we do not address it here. Rather, we focus on the second prong of merger-specificity: whether a verified efficiency will likely also happen even if the merger does not proceed. To some extent this may be a matter of degree or timing rather than a yes/no call, but again this is not the primary focus of our discussion here.

We generally concur with the Guidelines' test for whether claimed efficiencies are “merger specific.” Efficiencies are not merger-specific if individual firms likely can *and will* achieve them without the necessity of merging (or comparable restrictions). Simple scale economies may often fail to be merger-specific on this basis, if one or both of the merging parties would, without great delay, achieve greater scale on its own, as Judge Sporkin found.

To illustrate, consider a claim by two manufacturers of specialized chemicals that their merger will allow them to combine their operations, achieve greater scale than either could alone, and thus will generate efficiencies based on economies of scale. If at least one firm would in fact be likely to grow (soon) in the absence of the merger, these claimed efficiencies are not merger specific, and should count for little in the antitrust analysis of the merger. The larger the claimed scale efficiency and the more readily a firm can expand its output by offering consumers even a slightly better deal, the more likely it would seem that such unilateral expansion would happen (reasonably promptly) absent the merger.

On the other hand, one can envision cases in which unilateral expansion absent the merger is unlikely. Thus suppose that the industry is static or declining, and both firms have operated roughly at their current scales for some years despite an awareness of inefficiently small scale. Evidence such as this would suggest that neither firm would likely expand any time soon in the absence of the merger.



In any event, our point here (anticipating a contrast we will draw with the concept of synergy) is that the enquiry into merger-specificity should be a *realistic* one, focusing on what *will* happen with and without a merger. We illustrate and support this position by considering, and rejecting, two extreme positions on merger-specificity.

First, modern economic theory observes that virtually anything that can be done with a merger can *in principle* be done instead with some kind of contract, perhaps a very complex (or restrictive) one. If the notion of merger-specificity were reserved for efficiencies that cannot be achieved even in theory through contract, then *no* efficiencies could be merger-specific. We reject this criterion because it violates the consequentialism that should underlie economic policy. Ultimately, we should ask what *will* likely happen with the merger, relative to what will likely happen without it. The mere theoretical possibility that an efficiency could be achieved through means other than the proposed merger does not prove that it *would* in fact happen absent the merger.<sup>9</sup> Efficiencies that would be achieved post-merger but that in fact *would surely not* happen absent a merger, must be considered merger-specific, no matter how *imaginable* someone might find their realization absent merger. This position is consistent with the Guidelines, §4, which state:

“The Agency will consider only those efficiencies likely to be accomplished with the proposed merger and unlikely to be accomplished in the absence of the proposed merger or another means having comparable anticompetitive effects. These are termed *merger-specific efficiencies*. [footnote] Only alternatives that are practical in the business situation faced by the merging firms will be considered in making this determination; the Agency will not insist upon a less restrictive alternative that is merely theoretical.”

An opposing extreme position is that any efficiency not historically achieved pre-merger has *ipso facto* been shown to be merger-specific.<sup>10</sup> In essence, this position uses history or the *status quo*

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<sup>9</sup> This criticism is similar to a concern about attacks on collaborations generally based on the availability of “less restrictive alternatives” that could, in theory, achieve the same legitimate business ends of the parties with less of an adverse impact on competition.

<sup>10</sup> This appears to be the position taken by Hausman and Leonard in their article cited above: “Our recommendation is that when a given merger increases consumer welfare [relative to the pre-merger situation], it should be deemed pro-competitive ...” (p. 719) Hausman and Leonard take the view that alternatives to the merger other than the status quo “are typically speculative and not based on a reliable analysis.” (p. 719) In contrast, Conrath and Widnell argue that it is the efficiency claims themselves that tend to be speculative, so that the agencies and the Courts should treat many of them with skepticism. The massive disruptions of service following the Union

as a conclusive proxy for what would happen absent a merger. We reject this *status quo* position also. Firms often achieve efficiencies not previously achieved – this is progress, very often resulting from competition – and it would be wrong to count all progress as weighing on the side of proposed mergers.<sup>11</sup> Interestingly, the status quo criterion is least justifiable when the market is experiencing rapid change: conditions sometimes presented as favoring a sympathetic approach to alleged efficiencies. In the drug wholesaling example, there was a clear industry trend towards scale, driven by both buyers and by changes in information technology, making it inappropriate to forecast firm sizes based only on past or even recent conditions.

Despite rejecting the status-quo position, we follow standard usage and use for convenience the terms “pre-merger” and “post-merger” to describe what should correctly – in a changing environment – be termed “absent-merger” and “with-merger”.

### **III. Efficiencies versus Synergies**

Clearly, an important factor in evaluating the merger-specificity of verified efficiencies is how hard it would be for a firm to achieve the efficiencies unilaterally. At one extreme, some efficiencies might be essentially impossible to achieve unilaterally, because they require intimate integration of the parties’ unique, hard-to-trade assets (below, we discuss some examples to illustrate the notion of intimate integration). We call such efficiencies *synergies*. Synergies require cooperation and coordination of the two firms’ assets that allow production on a *superior production function*, as distinct from causing different *choices* (such as scale) *on a fixed production function*. In other words, synergies allow output/cost configurations that would not be feasible otherwise.

In contrast, a merger involves *no synergies* if each pre-merger partner’s core assets continue in essence to be used separately after the merger: thus the merger involves only changes in business

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Pacific/Southern Pacific railroad merger, approved by the Surface Transportation Board based in part of the STB’s expectation of enormous efficiencies, is a recent and highly visible case of faulty efficiency claims. This merger was approved over the objections of the Department of Justice; Shapiro served as Deputy Assistant Attorney General for Economics at the Antitrust Division while the UP/SP merger was reviewed there.

<sup>11</sup> Among other problems, to do so would also create undesirable incentives for firms contemplating mergers to postpone ordinary efficiency improvement.

decisions such as pricing and output, and no essential recombination of assets. Put slightly differently, a no-synergies merger is one in which the merged entity's outputs, prices and total costs were *feasible* for the parties pre-merger, with different competitive behavior but without deep changes in production.<sup>12</sup> In particular, it is *not* generally a synergy to achieve economies of scale, because firms could unilaterally expand to do so (assuming the necessary inputs can be purchased through normal market transactions or developed internally).

By definition, a synergy will not be achieved by one firm unilaterally without the merger. Of course, this does not conclude the enquiry into merger-specificity, because there could be a less restrictive alternative form of cooperation or trade between the firms (or trade with other willing partners). That said, it seems natural to think that a synergy is more apt to be merger-specific than is an efficiency, such as sheer scale, that can be unilaterally achieved if it is valuable enough. One reason, therefore, for introducing the concept of synergies is that it can help organize the enquiry into merger-specificity. A second reason was discussed in our earlier article, "Horizontal Mergers: An Equilibrium Analysis," 80 *American Economic Review* 107 (1990). As we showed there, one leading theory of oligopoly (Cournot Oligopoly) suggests that mergers with synergies are far more likely to benefit consumers than are mergers with non-synergy efficiencies, even if the latter efficiencies are in fact merger-specific.

The drug wholesaling example helps us illustrate the distinction between basic scale economies and synergies. In that case, the merging firms asserted that they could achieve lower costs by combining their warehousing and delivery operations in various areas around the country. If indeed the merging firms were all operating below minimum efficient scale, costs would be lower if one firm were to grow larger, e.g., by building a larger warehouse, operating a more dense delivery network, or simply achieving a higher capacity utilization rate at its existing facility. But the ability simply to achieve these scale economies is not a synergy: one firm *could* feasibly achieve the same result through internal growth combined with purchasing any

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<sup>12</sup> Formally, in a homogeneous-good industry, the condition is that the merged firm's cost of producing output X is equal to the minimum over  $X_1$  and  $X_2$ , summing to X, of firm 1's pre-merger cost of producing  $X_1$  plus firm 2's pre-merger cost of producing  $X_2$ . Of course, in practice there tends to be some degree of product differentiation in most markets, but (for example) we are hesitant to characterize as "synergies" the combination of one firm's brand name

necessary assets such as larger warehouse space, a larger inventory of drugs, or more delivery trucks. We stress that this is about classifying the claimed efficiency as synergy or non-synergy: thus, whether or not a firm would actually choose to engage in such aggressive internal growth is not at issue here. Indeed, since we are restricting attention to merger-specific efficiencies, we are now assuming that neither firm would in fact engage in such aggressive expansion in the near future. Of course, that question is very relevant to the full enquiry.

In the same vein, efficiency claims based on volume buying or the statistical economies of scale associated with managing inventories are not synergies, although they can be merger-specific: any single firm could obtain deeper discounts from drug manufacturers simply by purchasing in greater volume (through internal growth). Likewise, a firm could unilaterally achieve the scale economies associated with a larger inventory, or the savings associated with reductions in corporate overhead.<sup>13</sup>

One substantial category of “no-synergies” efficiencies is the “rationalization” of output among the facilities of the merging firms. The Guidelines explicitly (§4) speak of “shifting production among facilities formerly owned separately, [enabling] the merging firms to reduce the marginal cost of production.” The Guidelines go on to state that such efficiencies “are more likely to be susceptible to verification, merger-specific, and substantial” than some others, perhaps in part because they can often be implemented rather quickly.

A leading instance of such “rationalization” or production occurs when the parties have brands, or production facilities, that continue their separate existence post-merger (at least for some while), and the merger leads primarily to re-optimization of outputs, prices, promotion activity,

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with another firm’s production capabilities unless the brand name is commercially quite important and the production facilities are specialized and could not easily be replicated by the company owning the brand name.

<sup>13</sup> We recognize that the general definition of “synergies” has some inherent lack of precision. If one firm could replicate the other’s information technology capabilities simply by hiring a new Chief Information Officer, which we would consider an “asset” available in the market, then improvements in information technology based on learning from the other firm are not “synergies.” Alternatively, if the specific skills at one firm are extremely hard, or even impossible, to find outside that firm, such learning would be a “synergy.” As a practical matter, we believe that the enforcement agencies and merging parties should be asking whether the assets being combined are “generally available” or “highly specific” to the merging firms. But also note an efficiency based on purchasing assets or inputs that are readily available in the market may well not be merger specific in the first place, because one firm may well be expected to acquire the necessary assets or inputs without the necessity of entering into an otherwise anti-competitive merger.

etc. For instance, the merged entity might ensure that customers are more likely to be served by nearby rather than by distant facilities post-merger, or might simply shift production from less-efficient facilities to more efficient facilities.

#### **IV. Can Pure Economies of Scale Be Merger-Specific and Save a Merger?**

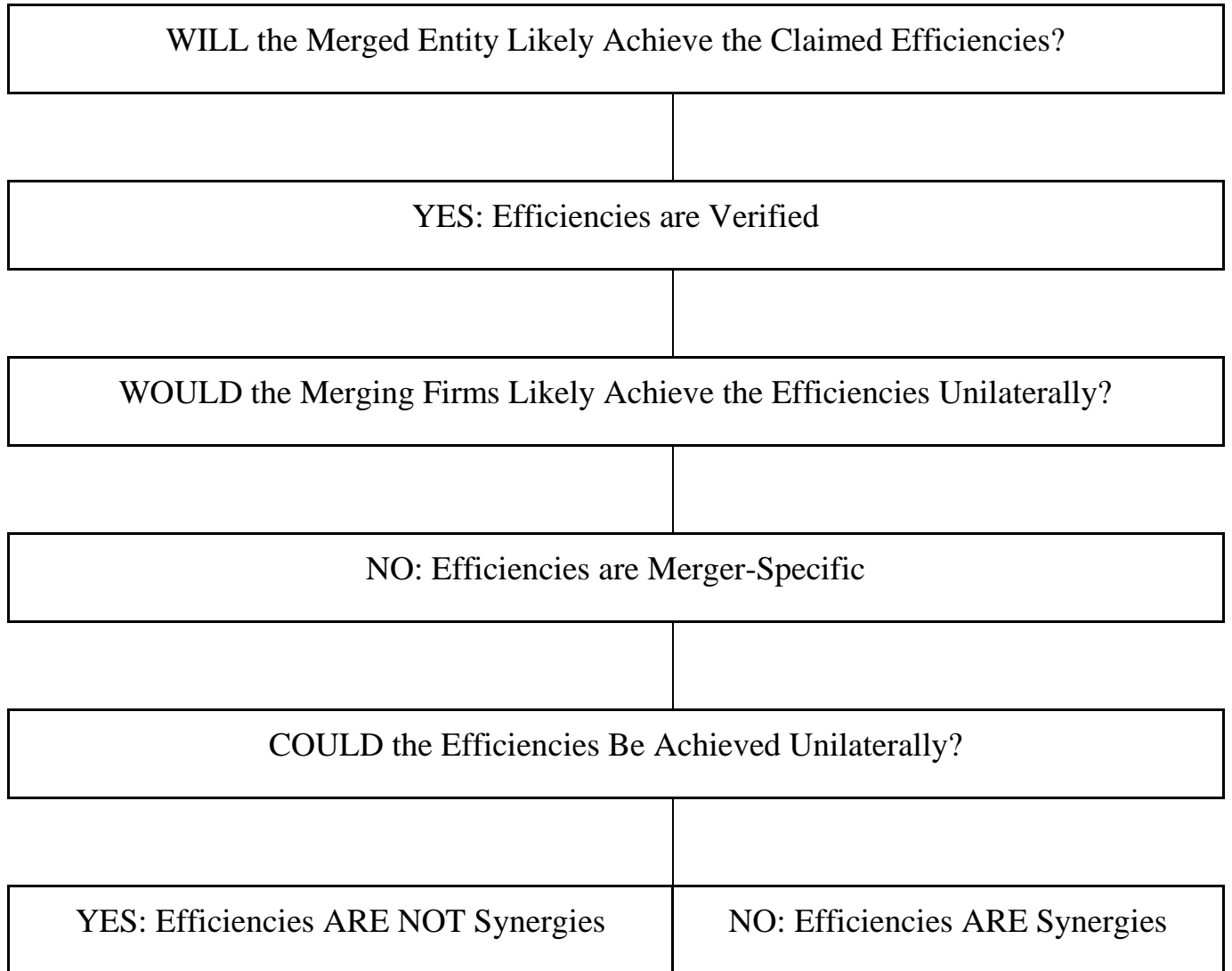
We now ask one of our central questions: whether pure economies of scale, even if they are merger-specific, can “save” what would otherwise be an anti-competitive merger. Put differently, can pure scale economies, the leading example of efficiencies that are not synergies, be sufficient in magnitude to cause prices to fall? To pose the problem most sharply, suppose that attractive economies of scale are available, and that at least one party to a proposed merger currently fails to achieve those economies.<sup>14</sup>

As shown in Diagram 1, the first question we ask is whether these scale economies are merger-specific. For this to be so, two conditions must hold: (a) the merged firm will in fact achieve those economies, *and* (b) the previously too-small pre-merger firm(s) would not do so absent a merger. How plausible is it that both of these conditions can hold simultaneously?

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<sup>14</sup> In a declining industry, a similar question could arise even if historically both parties have achieved efficient scale but at least one is now in danger of dropping well below MES. As discussed above, it is really absent-merger versus with-merger that matters, not literally pre-merger versus post-merger.

**Diagram #1:**  
**Logic Tree for Merger-Specific Efficiencies & Synergies**



Posing the problem this way exposes a fundamental tension: if the economies of scale are very attractive, it is more likely that a merged firm would in fact seek them (and more valuable, at least for total surplus, if they are achieved), but it is *also* more likely that individual firms would try to expand absent a merger. For instance, in the SBC/Ameritech merger, the parties argued that it was very important to provide facilities-based service to large multi-location customers and that this was an efficiency of the merger.<sup>15</sup> Opponents argued that “if it is so important, must not out-of-region entry be pursued regardless of the merger?”<sup>16</sup>

As we noted earlier, the more classically competitive the market, the less likely it is that no-synergies scale efficiencies can be merger-specific, simply because individual firms will find it relatively easy to attract enough customers (without a devastating price decline) to achieve efficient scale. Under imperfect competition, scale efficiencies can be merger-specific, but the same logic limits the scale efficiencies to those insufficiently attractive to have been realized pre-merger. We might thus expect limits on how large or valuable merger-specific scale economies can be. This insight is part of what underlies what we call the “No-Synergies Theorem.”

### ***A. The No-Synergies Theorem***

If expanding output would lower a firm’s unit costs, why would it not so expand? The classical economic answer is simply that the output expansion would drive a price reduction big enough to outweigh the cost gains. A robust and familiar economic argument asserts that if this price effect deters a party from expansion pre-merger, then it will all the more strongly deter the combined firm from engaging in *the same expansion* of output after a no-synergies horizontal merger. After all, post-merger, the price effect would be felt also on the partner’s output, and this unambiguously makes the expansion less attractive. This is the core intuition of the “No-Synergies Theorem” from our 1990 article: absent synergies, a horizontal merger in a Cournot

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<sup>15</sup> The parties argued that not only would the combined firm immediately be able to serve a larger set of locations than either could pre-merger, but that it would also increase the incentives to expand to locations outside either party’s territory.

<sup>16</sup> FCC Docket CC 98-141: *Petition to Deny of Sprint Communications Company, LP*, p.49. Farrell was a consultant for Sprint in this merger proceeding. As is often the case in telecommunications, the distinction here between scale and scope is not simple.

oligopoly (where firms compete in setting quantities) cannot lead to higher total output and a lower price.<sup>17</sup>

### **Application to Growing Markets and Declining Markets**

The logic behind the no-synergies theorem can perhaps be seen best in a market with growing demand. While a merger may indeed accelerate the achievement of minimum efficient scale by the merged entity, it is reasonable to expect that one or both of the merging firms would seek efficient scale on its own, expanding to meet growing demand. And consumers are likely to benefit as the two companies compete for customers in an attempt to lower their average costs.

FTC Chairman Pitofsky has noted precisely this point as a lesson of the treatment of efficiencies that flows from the *Staples* case:

“leading firms in a rapidly expanding market will have difficulty successfully asserting efficiency defenses such as improved purchasing power, increased advertising discounts, better geographic coverage, since the same result may be achieved fairly promptly through internal expansion.”<sup>18</sup>

The suggestion appears to be that growth of a market makes expansion by any given firm substantially easier. One might interpret this to mean either that, inevitably, some expansion will come to at least some firms absent competitive entry; or that firms can and will grow by attracting new customers without the possibly dramatic (and expansion-deterring) price effects of going after other firms’ established customers.

The no-synergies theorem applies with equal force in a declining industry. Suppose that the merging firms are each operating well below minimum efficient scale, perhaps because they have merely maintained their market shares in the presence of declining demand. With a merger, they would close down one firm’s production facilities and consolidate operations at the newer, more efficient facility of the other. If this consolidation would lead to greater output, then the

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<sup>17</sup> We caution, however, that the result is a little more subtle than this: in particular, it does not rule out expansion of output by one of the partners, but only finds that such expansion must be more than undone by output reduction at the other partner’s facilities.

<sup>18</sup> Robert Pitofsky, “Efficiencies in Defense of Mergers: Two Years After,” *op. cit.*, at 48, citing *FTC vs. Staples, Inc.*, 970 F. Supp. 1066 (D.D.C. 1997).



intuition of the theorem suggests that the firm owning the more efficient facility would find it profitable to increase output prior to the merger. Therefore, one must expect, absent synergies, that output will fall and price will rise as a result of the consolidation.<sup>19</sup>

Excess capacity is of course particularly likely in a declining industry, but can also arise elsewhere. In the drug wholesaling case, the parties hoped through consolidation to remove excess capacity and thus improve capacity utilization at their warehouses. The FTC pointed out that excess capacity, while perhaps inefficient in a technical sense, implied that the firms had low marginal cost and thus would have an incentive to compete more vigorously to gain new business or keep their existing customers than they would if they had less excess capacity. Judge Sporkin agreed with the FTC that the presence of excess capacity tended to work in consumers' interests:

“However, the FTC presented evidence to suggest that the driving force behind removing excess capacity in the market was to ease pricing pressures and return prices to ‘rational’ levels. At trial, the government produced internal documents from each of the Defendants discussing the existence of excess capacity in the market and its adverse effects on Defendants’ sell margins. In an internal document provided by McKesson entitled ‘Strategic Overview Summary,’ the company stated that ‘overcapacity = price pressures’.”

Judge Sporkin’s opinion supports the view that consumers are best served if excess capacity is used to compete (which may entail exit at some point in the future) rather than removed from the industry by merger, even if total costs would be lowered by a merger.<sup>20</sup>

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<sup>19</sup> We repeat that the no-synergies theorem makes a strong statement about consumer welfare; it by no means rules out the possibility that a merger without synergies can raise *total welfare*, e.g., through the reduction of substantial fixed costs which leads to sharply higher profits. The debate over whether to use a consumer-welfare standard or a total-welfare standard for the purposes of evaluating mergers that involve significant efficiencies is beyond the scope of this essay. A recent case before Canada’s Competition Tribunal (*The Commissioner of Competition v. Superior Propane Inc.*, 2000 Comp. Trib. 15) affirmed a total-surplus standard, while a recent US case (*United States v. Franklin Electric*, Western District of Wisconsin, 00-C-0334-C), citing *FTC v. Elders Grain*, 868 F.2d 901, 904 (1989), affirmed a standard that requires benefits to consumers (or non-parties such as consumers).

<sup>20</sup> See Richard G. Parker and David A. Balto, “The Merger Wave: Trends in Merger Enforcement and Litigation,” 55 *The Business Lawyer* 351 (November 1999) for a further discussion of Judge Sporkin’s treatment of efficiencies specifically, and of recent merger enforcement more generally.

## ***B. How General is the No-Synergies Theorem?***

### **1. Nature of Pre-Merger Oligopoly Behavior**

The formal no-synergies theorem assumes quantity-taking (Cournot) behavior, and the result genuinely does hinge on some such assumption. To make this point, we note that one can construct examples in which pre-merger interaction is not Cournot and the result does not hold. An illuminating example is offered by highly collusive pre-merger behavior. Thus, suppose that Able and Baker (pre-merger) effectively collude (perhaps tacitly), in such a way that each has 50 percent of a market, and neither achieves efficient scale. Thus the price is the monopoly price based on the marginal cost at inefficiently small scale. If the firms merge, they may be able to combine their output into one production facility and close the other, achieving lower average costs and perhaps also lower marginal costs. If marginal costs fall, the new (monopoly) price will be lower than the old (collusive) price.

The merger achieves this lower price because it “enables” the firms jointly to close one production facility. While of course this would have been physically possible pre-merger (this makes it a no-synergies merger), doing so would have required a very different competitive interaction, such as an agreement between the firms whereby Able paid Baker half the monopoly profits to exit the industry. Assuming that kind of alternative to be illegal, the no-synergies merger not only achieves efficiencies but even benefits consumers.

This collusive example, while extreme, appears representative in the following sense. The key question, as posed above, is why it pays the merged entity to increase production in A, when it did not pay A to expand before the merger. Sharpening this question is the unilateral-effect observation that expansion in A becomes less attractive post-merger because those controlling A now take into account the price effect as it applies to B’s output. Thus, if output is to rise as a result of the merger, something must be overcoming this discouraging effect. Thinking about the collusive example and the no-synergies theorem suggests that the missing factor is how (pre-merger) A expects B to react if A expands; economists call this “conjectural variation”. The no-synergies theorem tells us that if A believes that B will stand pat and not change its output, the Cournot case with zero conjectural variations, then expansions unattractive pre-merger are sufficiently unattractive post-merger that total output cannot rise with the merger. For a merger

to make total expansion more attractive, therefore, it must be that each firm's (or at least the expanding firm's) conjecture pre-merger is that output expansion will be *less* profitable than it would be under Cournot. In other words, firms must expect that expansions will be matched or punished, not ignored or accommodated.

This line of argument leads us tentatively to hypothesize (we have not formally analyzed this case) a generalization of the no-synergies theorem: that no-synergies mergers can increase output and lower price only if pre-merger interaction is *less competitive* (perhaps considerably less competitive) than Cournot.<sup>21</sup> Obviously, merging parties will be reluctant to defend their merger on the grounds that they have already been colluding, or even on the grounds that they have so far failed to achieve very valuable scale economies because each is unwilling to expand for fear of triggering an aggressive competitive response (output expansion) from the other. But this example alerts us to the possibility that the nature of competition in the industry prior to the merger is somehow preventing the merging firms from achieving important scale economies which will be unlocked by the merger.

## 2. Price Discrimination

Another factor that bears on the price penalty from expansion, and thus on the incentives to expand with or without merger, is the feasibility of price discrimination. One would expect that where price discrimination (particularly as between old and new customers) is possible, expansion is more attractive, other things being equal. But this lesson applies both pre- and post-merger; thus it is unclear how the possibility of price discrimination affects the balancing act of arguing that unilateral expansion to achieve scale economies is unattractive pre-merger but becomes attractive post-merger.

We have not conducted a complete analysis of this tension, so merely offer a hypothetical example. Consider again firms Able and Baker, friendly duopolists, let us now say, in a traditional well-established market. A new class of potential customers comes on the scene, but

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<sup>21</sup> Formally, this is the case of a positive conjectural variation parameter: each firm expects the other to match output expansions or reductions. Such behavior is *less* competitive than Cournot behavior. As should be clear, the suggestion is that substantial economies of sheer scale may be more plausibly merger-specific the less competitive the pre-merger behavior of industry participants.

their willingness to pay is below even their incremental cost for either duopolist pre-merger. (These potential customers may have a lower willingness to pay than traditional customers because the new customers have more attractive alternatives or just are not especially well-suited to Able's and Baker's products.) Clearly, neither firm will serve the new customers. Post-merger, it may well be that the merged entity also would not serve these new customers if it could not discriminate in price. However, if the merged entity has sufficiently lower marginal costs, it would have an incentive to serve the new customers if it could discriminate in price between them and the old customers.<sup>22</sup>

### ***C. The Link Between No-Synergies Efficiencies and Market Power***

As noted above, there is a tantalizing interplay between no-synergies efficiencies and pre-merger market power. In particular, it would seem unlikely that there would be scope for large no-synergies efficiencies unless the parties individually had significant market power prior to the merger. After all, in a homogeneous-good industry in which firms have little or no market power, marginal cost will tend to be equalized across "production facilities formerly owned separately" without the need for a merger. Similarly, moving away from homogeneous goods, there may well be efficiency reasons (matching of tastes, experience effects or switching costs, or location of facilities such as distribution centers) why one pre-merger firm rather than the other should serve a particular customer. But that efficiency would presumably have been realized pre-merger absent unilateral market power (over-exercised as regards this particular customer) on the part of the efficient provider.

Thus, whereas mergers in a more competitive market are less likely to raise antitrust concerns in the first instance, a greater degree of pre-merger competition may undermine claims of merger efficiencies. The simplest scale efficiencies *cannot* be merger-specific in ideally competitive markets, and it would seem hard to make a compelling case for merger-specific simple scale economies in highly competitive markets. In a perfectly competitive market, no firm would long operate below minimum efficient scale. If customers shift readily from one firm to another when

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<sup>22</sup> Even in this example, our familiar tension resurfaces: if there are many such new customers, the prospect of serving them (through a strategy of price discrimination) will make it more attractive for one of the merging firms to

the latter offers a slightly better price, no firm would tolerate being inefficiently small: it would cut its price slightly and promptly attract plenty of business and thus support efficient scale.<sup>23</sup>

Another (closely related) way to frame the tension between market power and no-synergies efficiencies runs as follows. In order to claim that only a merger will bring efficiencies of scale, one must argue that pre-merger unilateral expansion is not attractive, even though it would yield those efficiencies. Why not? There must be either barriers to expansion or inducements to stay inefficiently small. These might take the form of customer lock-in, highly differentiated products, or the prospect that expansion will require (or precipitate) large reductions in price. Such conditions are indicative of pre-merger market power, and are also likely to indicate a lack of perfect competition after the merger. In short, there is an upper bound on credibly merger-specific efficiencies, related to the degree of competition in the market.

#### *D. Summary on Efficiencies without Synergies*

While the formal no-synergies theorem is limited to one special (albeit widely used) competitive model (output competition, a.k.a. Cournot oligopoly), we think that its underlying logic is more robust and supports a predisposition to be wary of claims that consumers will benefit from economies of scale achieved through mergers that offer only small synergies.<sup>24</sup> For example, in the drug wholesaling mergers, consider the prospect that efficiencies would result from serving each customer from the nearest distribution center, eliminating cross-hauling inefficiencies. Undoubtedly some costs might be saved in this way. From the customer's point of view, however, the possibility of being served from the nearest distribution center already existed pre-merger. All that has changed is that the option instead to be served from a more distant center has been removed. If a customer had in fact been served from the more distant center, it appears that even pre-merger, competition was not strong enough to induce the nearest center to beat the inefficient offer. It is unclear how the removal of the inefficient option can help the customer.

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expand production without a merger, as this will allow it to achieve the lower marginal cost, attendant to greater scale, needed to make serving the new customers profitable.

<sup>23</sup> Of course, in a fully competitive market, mergers may be one of the means by which firms most rapidly can achieve newly-available economies of scale, and there is no need for merging parties to mount an efficiencies defense since, even together, they lack market power.

A striking lesson from all this is how the very arguments that merging parties may seek to offer regarding no-synergies efficiencies in fact are two-edged.

- Suppose that the relevant economies of scale are large. This makes it more likely that the merged entity will pursue them, and more important that they be achieved – yet it also makes it more likely that one or both of the merging firms will compete vigorously to achieve them absent the merger.
- Suppose that the market is quite competitive. This makes it more plausible that a merger is motivated by efficiency reasons rather than anticompetitive reasons – yet it also suggests that each firm could expand considerably without having a drastic effect on price. Therefore, each merging firm would find it relatively easy to realize economies of scale unilaterally in the absence of the merger. Furthermore, a variety of oligopoly models suggest that the more competitive the market, the less likely it is that reductions in marginal costs (specific to the merged entity) would be passed through to consumers.
- Suppose that entry is easy. Ease of entry tends to protect against anti-competitive effects – but it also suggests that internal expansion may be easy as well, so that a merger is not needed to achieve economies of scale.

Thus, in some respects, the very conditions protecting against anti-competitive consequences seem, if anything, to argue against giving ready credence to parties' claims of merger-specific scale efficiencies. In balancing anti-competitive effects of a merger against efficiencies, at least some factors that strengthen the (no-synergies) efficiencies claims also fuel the underlying competitive concerns.

## **V. Efficiencies Based on Genuine Synergies**

We now consider efficiencies *with genuine synergies*. When synergies are involved, the merged firm can do things that (in a sense) would have been genuinely infeasible or impractical, not

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<sup>24</sup> Again, the no-synergies theorem does not state that economic welfare must fall with a no-synergies merger. Indeed, our 1990 article showed that total surplus may rise, even as consumer surplus falls, with such a merger.

merely contrary to private pricing and output incentives, absent the merger. “Synergies” are by definition not achievable by the merging parties acting unilaterally, at least not following normal business operations. This is relevant to, though not the end of, the question of merger-specificity: it means that achieving synergies without merger requires some other form of cooperation between firms.

### ***A. Are Claimed Synergies Merger-Specific?***

As shown in Diagram #1, and following the Guidelines, one can first ask whether potential synergies are in fact merger specific. A synergy requires that an asset owned by firm A be combined with another asset that A does not own but B does; then the question of merger specificity can (at least in part) be discussed as follows. First, is either the A asset or the B asset readily traded in a reasonably well functioning market? If so, then it would seem unlikely that a merger is required in order to bring such assets together. Even if not, one would then ask about alternative willing partners for either or both proposed merger partners, as well as asking about alternative ways (short of merger) to combine these firms’ assets. Presumably, the harder are the assets to find, the more we are inclined to accept merger-specificity. Thus, in an industry with significant and highly specific assets, synergies are more likely to be merger-specific. (But note that these are precisely the conditions under which entry or expansion by other firms is likely to be hard, making anti-competitive concerns greater.)

While we believe that such an enquiry into possible alternative partners and business arrangements is necessary and unavoidable, it does raise inevitable concerns about “speculative” analysis. Since the merging firms could enter into a wide range of business arrangements either with each other or with alternative partners in the absence of the merger, and since such arrangements often pose subtle business and contractual problems, there can be no simple or precise test for merger-specificity. We certainly agree with the Guidelines that one should be wary of seeking out business arrangements that are highly problematic and unusual but might in theory enable claimed efficiencies to be achieved. In judging the likelihood that alternative, efficient arrangements would arise, one should (a) be realistic about what could in fact happen absent a merger, and (b) treat as equivalent to merger, rather than as an alternative disproving merger-specificity, contracts that necessarily include or produce competitive restrictions tantamount to merger. For example, for two competitors seamlessly to share one another’s

production facilities or sales forces might (in a particular industry) be very unlikely, at least without contractual provisions that limit competition almost as much as a merger.

As we argued earlier, we reject the notion that as a general matter the status quo (or history) should be taken as a conclusive indicator of what can and will happen absent a merger. Yet, if an apparent inefficiency has persisted and been noted for a long time, and other means of resolving it have been tried and failed,<sup>25</sup> perhaps the efficiency may be more merger-specific than one might have thought.<sup>26</sup> On the other hand, if the industry is changing rapidly in relevant ways, we would put considerably less weight on such evidence.

### ***B. Hypothetical Examples of Mergers with Synergies***

To illustrate the economic analysis of various synergies, we now consider a number of actual and hypothetical synergies associated with horizontal mergers.

#### **1. Coordination of Joint Operations**

British Petroleum and ARCO have jointly operated the Prudhoe Bay oil field on Alaska's North Slope for over twenty years.<sup>27</sup> Before merging, they experienced persistent difficulties associated with joint management of this resource which arguably raised the cost of extracting oil from the field. While institutions and contracts had developed over twenty years that tried to address these problems, the parties argued that nevertheless some of the rules or institutions put in place were plainly inefficient. If the firms can show that these inefficiencies are substantial (relative to single-firm management) despite the parties' best efforts to overcome them, we would agree that better management of the joint asset would be a synergy. Whether that synergy is merger-specific depends on whether it can be achieved by means short of merger, but it is a reasonable argument that the twenty years' discouraging experience suggests that it could

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<sup>25</sup> Difficult issues might arise here concerning firms' incentives to experiment and invest in making a non-merger relationship work, when that is possible but difficult, if failure to do so will facilitate merger clearance.

<sup>26</sup> An example might perhaps be the inefficiency associated with roaming arrangements between wireless telephone providers in different territories; by charging each other above-cost per-minute roaming fees, the two providers artificially inflate their marginal costs of provide roaming services to their customers, possibly (though there are other theories) raising the price of such services above what an integrated company would charge.

<sup>27</sup> This example is obviously taken from the recent merger of BP and ARCO; Shapiro served as a consultant and expert witness for BP and ARCO in this merger.



well be merger-specific, because there was no reason to think that the relevant aspects of the market were changing dramatically.<sup>28</sup>

## **2. Sharing Complementary Skills: Manufacturing and Distribution**

Toyota developed a new and superior approach to manufacturing cars, but (initially) lacked a ubiquitous distribution network in North America. General Motors had a well established distribution network, but its manufacturing was less efficient than Toyota's. Had Toyota and General Motors proposed to merge, the bringing together of these assets would have been a synergy. But the synergy could very likely be realized through means other than merger. Toyota's improved manufacturing approach could perhaps – either through licensing, joint venture, or other means – be taken up by General Motors. Alternatively, or at the same time, Toyota could have either developed a distribution network of its own, or arranged distribution through other channels. Either of these alternatives would seem more competitive than a merger, and absent a merger the firms had strong incentives to put the respective alternatives into effect. But if these alternatives took a long time to bring to fruition and required substantial investment, there might nonetheless have been a merger-specific synergy.

## **3. Improved Interoperability**

Two firms, each of which is a significant producer of word processing software, produce rather different products. Firm A produces a fast but stripped-down text processor, "ASCII Alphabet," with very limited features and font supports. Firm B produces a powerful but hard-to-use desktop publishing package, "Beauteous Bitmap." When the products are introduced, the firms perceive themselves as being in unrelated markets. Two years later, the firms become aware that a growing number of end-users use Alphabet to draft documents and then import the files into Beauteous. This process is sometimes fraught with problems, however, because of the very different file formats, and customers increasingly complain. Engineers from the two firms meet to work on improving compatibility. These technical meetings, however, are increasingly canceled or postponed at management's urging, as each firm's marketing department starts to

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<sup>28</sup> As a general matter, one can argue that *something* must be changing in the industry because the proposed merger was not previously proposed. It is unclear how far one ought to push that argument, and we merely note it for now.

report that users perceive the products as being competitors. The firms then propose to merge, and claim that improved interoperability will be an efficiency of the merger.

Clearly, improved interoperability would be an efficiency, and (if each firm keeps its file format proprietary and subject to change) one that neither firm could achieve unilaterally: in other words, a synergy. Turning to merger-specificity, we must then ask whether the synergy could likely have been achieved by less restrictive means. According to our hypothetical, the firms tried to do so, but those efforts were stalled, not by outside forces but (at least partly) because neither party was keen to help a direct competitor. Whether a more careful negotiation could find such a solution is unclear here.

This example thus brings out the point that synergies may be most merger-specific when the firms are one another's significant direct competitors: in some rough sense, the competitive concerns grow *pari passu* with the merger-specific component of the potential efficiency.

#### **4. Combining a Patent with Manufacturing and Distribution**

Brilliant Biotech patents its only product, Cognizance, an IQ-raising treatment that enables the user to understand the economics of merger efficiencies. Brilliant has no manufacturing or distribution capabilities. Megadrug Pharmaceutical has excellent manufacturing, strong distribution, and a powerful brand name. Megadrug proposes to acquire Brilliant Biotech.

If Megadrug has no competing product, there are no evident competitive concerns, leaving aside potential competition issues. Plainly there is an efficiency from combining the patent rights with some manufacturing and distribution capabilities, although it might seem surprising if this required common ownership. Suppose, however, that Megadrug has a rival product, Allege. If there are other firms with suitable manufacturing and distribution assets that lack rival products, this suggests that the synergy is not specific to this competitively troubling merger, even if it required a merger of some kind. If a leading alternative strategy is that Biotech could build manufacturing and gain distribution at great expense over time, the delay and perhaps the cost would be measures of the synergy. On the other hand, if manufacturing and distribution are readily traded, we would be reluctant even to call the combination a synergy.

If Megadrug is much the best partner for Biotech, perhaps partly because it knows the market for this therapeutic class, then the competitive concern and the synergy specific to this merger go somewhat hand in hand.

This case makes it particularly clear that it makes no sense to look literally at pre-merger conditions to see if the acquisition offers efficiencies: prior to the merger, Brilliant Biotech simply was not getting its patented product manufactured and distributed. Assuming that the product just recently received FDA approval, it is plain that merger analysis must to some degree make judgments about the various ways in which Brilliant might proceed if not allowed to merge with Megadrug. This is not speculation; it is a necessary part of the analysis.

### **5. Network Configuration**

Two railroads each have a single track running between A and B. Customers shipping products in one direction sometimes experience delays when a train runs in the other direction on the same track, necessitating complex siding work. The railroads propose to merge, and offer as an efficiency that they will use one track exclusively for A-to-B traffic, and the other for B-to-A.<sup>29</sup>

It is plausible that this side-by-side complementary specialization is an efficiency. Moreover, neither firm alone can offer both an A-to-B-only product and a B-to-A-only product, so if customers demand the ability to get shipments in both directions from a single firm, then the efficiency is a synergy. It is less clear whether it is a synergy if customers would be willing to buy these products separately, because then either firm could unilaterally specialize and thus offer a superior product in its chosen direction. Even if that were unrealistic for some reason, one could ask about coordination to achieve this efficiency short of merger. If realization of this efficiency made the A-to-B line essentially unavailable for B-to-A traffic, then the competitive harm might appear inseparable from the efficiency. If, however, it only meant that B-to-A traffic would be delayed and perhaps priced higher, then the competitive harm might be ameliorated somewhat by a non-merger arrangement.

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<sup>29</sup> This, and the rest of the discussion, of course presupposes that the lines converge at each end at some type of terminal, so that trains can shift from line to line (even if this was not the practice pre-merger).

## 6. Fleet Rationalization

Two trucking companies propose to merge. They serve the same general area and customers, and they assert that they will be far more efficient together by virtue of combining their fleets and thus improving fleet logistics.

This efficiency is not a synergy if it merely involves an expansion in scale, as measured by number of trucks in the fleet: one or both companies could presumably add to its fleet, and would have an incentive to do so if the scale economies are enormous. However, if it takes many years to add trucks, perhaps because they are highly specialized, then the efficiency takes on the character of a synergy (although not necessarily one that is merger-specific if similar vehicles could be obtained from other sources without the same threat to competition).

## VI. Will Synergies Lead to Consumer Benefits?

In discussing no-synergies efficiencies, we noted two points: first, that such efficiencies seem likely to be substantial and merger-specific only when the parties possess market power, and second, that (at least in a leading simple model) they are then unlikely to benefit consumers. We make analogous points here, although much less strongly.

First, while there may well be efficiency gains from recombining assets of any two firms, including firms lacking market power, those gains may be less likely to be merger-specific where market power is lacking. Consider this question: what prevents the firms from realizing the gains from cooperation without a merger? One (by no means the only) category of obstacle is that each firm is reluctant to help its competitor (recall our Alphabet-Beauteous hypothetical). But this answer makes clear sense only where that competitor is an important constraint on the first firm's profits. If the two firms jointly have no market power (i.e., take the price as given), then each should be happy with any cooperation that improves the prowess of both.<sup>30</sup> In this sense, firms without market power, and firms that do not directly compete with one another, should often find it less difficult to achieve synergies without merger than firms each of whom is

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<sup>30</sup> Here we assume that improvements to both firms' prowess are not passed through to consumers, because they jointly lack market power.

an important competitive constraint on the other.<sup>31</sup> Of course, there may well be factors pushing in the other direction: for instance, if market shares are sticky, firms that are initially very small may have much less chance to grow to efficient scale than firms that start out fairly large.

Second, will synergies, such as economies of scale based on combining the merging firms' capital stocks,<sup>32</sup> benefit consumers even if they involve the loss of a significant competitor? Some calculations suggest that quite large reductions in marginal cost are required in order for a merger to lower rather than raise prices. Thus, in our 1990 article, we found that, in a symmetric Cournot merger between two firms each with a 20% market share, in a unit-elastic market, the price will rise unless economies of scale are strong enough that doubling all inputs yields at least 2.4 times the output. Others have given similar calculations, showing that substantial economies of scale or other synergies are required for significant mergers to produce improvements in consumer surplus (as distinct from total surplus).<sup>33</sup>

## VII. Conclusions

Unlike many aspects of merger analysis, analysis of efficiencies should not predictably feature merger proponents pointing out how much competition there is (and how little between the parties), with opponents taking the opposite position. Available non-synergy efficiencies may tend to be largest just where there is pre-existing market power and thus the greatest prospect for enhancing that power via merger. In addition, direct competition between the parties pre-merger can be an important obstacle to achieving synergies without a merger, and thus tends to make efficiencies more merger-specific than they otherwise would be. As a result, many arguments

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<sup>31</sup> Firms without market power may also be less likely to be accused or convicted of collusion if they reach a cooperative agreement that implements synergies.

<sup>32</sup> Why do we describe economies of scale as a synergy here, but not above? The point is that here we are considering a situation in which there are hard-to-trade "capital stocks" that affect the production function and that will be intimately combined post-merger, so that the two firms jointly do indeed have a different production function than the sum of the two.

<sup>33</sup> See for instance Gregory Werden, "A Robust Test for Consumer Welfare Enhancing Mergers among Sellers of Differentiated Products," *Journal of Industrial Economics* 44 (December 1996); Luke Froeb and Gregory Werden, "A robust test for consumer welfare enhancing mergers among sellers of a homogeneous product," *Economics Letters* 58 (1998), 367-369. Hausman and Leonard, *op. cit.*, p. 715-716, offer a numerical example in which a

are double-edged. This may account for some of the confusion surrounding the topic. It would not be surprising if merging parties increasingly address the double-edged concern by arguing in the alternative: if concerns about their union were valid, then the synergies envisioned would indeed be merger-specific. But the tension remains.

More substantively, these tensions indicate the complexity regarding the question of when efficiencies matter most in practice. While there is obvious sense in the Guidelines' observation that efficiencies are most likely to make a difference where there are in any case few competitive concerns, our analysis above also suggests that efficiencies are most apt to be important and merger-specific just where there are real competitive concerns. The difficult balancing concerns are thus brought to center stage.

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merger between a brand with a 50% market share and a brand with a 5% market share, which leads to a 10% reduction in marginal costs for both merging brands, generates net consumer benefits.