

# Entry as a Source of Post-Merger Price Discipline



By Elizabeth M. Bailey\*

## Antitrust Insights

### From the Editor

Entry—including the threat of entry—is a market dynamic that is critical in evaluating the competitive impact of a proposed transaction. What matters in such an analysis is easy to articulate—the new entry must occur reasonably quickly, be profitable for the entrant, and sufficient to return or keep pricing at pre-merger levels. However, demonstrating empirically that entry would or would not prevent the merged entity from raising prices is a challenging task.

In this issue of *Antitrust Insights*, Elizabeth M. Bailey, a Vice President in NERA's Boston office, describes a practical, empirical approach to the analysis of entry. The approach that she describes involves a careful review of the time and cost that it would take for entry to occur, an analysis of a potential entrant's upfront investment costs and future revenue stream, and an assessment of the scale of entry that would be needed to return or keep pricing at pre-merger levels. All three dimensions of entry—the time it would take, the expected profits, and scale—are related, and an economically consistent analysis integrates all three elements simultaneously.

Liz has deep expertise in analyzing the competitive effects of proposed mergers, acquisitions, and joint ventures. She has evaluated the impact of numerous transactions in the US and Europe, and she has submitted many reports and presentations to the US Department of Justice and the Federal Trade Commission. She has studied a wide variety of retail industries including supermarkets, discount retailers, optical stores, and book retailers, as well as numerous upstream and downstream segments of the petroleum industry.

I hope you enjoy this issue.

Lawrence Wu, Editor

The economic analysis of entry is often treated as an afterthought in merger analyses. Compelling analyses of entry as a source of post-merger price discipline, however, can be decisive. For example, in the Department of Justice (DOJ) Antitrust Division's 2008 closing statement in XM Satellite Radio Holdings Inc.'s merger with Sirius Satellite Radio Inc., the DOJ closed its investigation based, in part, on "the fact that a number of technology platforms [were] under development that [were] likely to offer new or improved alternatives to satellite radio."<sup>1</sup> Entry was similarly instrumental in the Federal Trade Commission's (FTC) closing of its review of Omnicare's acquisition of NeighborCare in 2005 (pharmacy services to long-term care facilities), in the DOJ's closing of its review of National Oilwell's acquisition of Varco in 2005 (offshore drilling for oil and gas), and the DOJ's investigation into Playbill's acquisition of Stagebill (publishing of theater bills) in 2002.<sup>2</sup>

In this article, I describe the key components of an effective entry analysis under the FTC and DOJ *Horizontal Merger Guidelines*.<sup>3</sup>

### The Importance of Assessing the Competitive Impact of Entry

Economic theory shows that entry can be an important component of the competitive process. In a perfectly competitive industry, if firms are earning positive economic profits, economic theory says that new firms will enter,



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thereby expanding output and reducing prices.<sup>4</sup> Entry would continue to take place, with prices continuing to fall, until economic profits in the industry are driven down to zero.

That entry may take place when prices are high is one reason why there is not a clearly defined relationship between market concentration and price.<sup>5</sup> The structure-conduct-performance paradigm teaches that markets with higher levels of concentration have higher prices, all else equal. However, if the threat of entry is an important determinant of pricing by incumbent firms, the expected positive relationship between concentration and price may be muted.

In the context of the *Horizontal Merger Guidelines*, entry is defined relative to an appropriately defined relevant product and geographic market. In general, entry refers to competition the merged firm would face from suppliers that do not currently compete in the relevant market, but would if the merged firm were to attempt to raise prices post-transaction.

The *Horizontal Merger Guidelines* make a distinction between “uncommitted” and “committed” entrants. An uncommitted entrant is one that would find it profitable to enter within one year and with little to no sunk costs.<sup>6</sup> A committed entrant, by contrast, would incur substantial sunk costs to enter. From an economic perspective, there is little practical distinction between uncommitted and committed entrants. Both uncommitted and committed entrants are equally important supply responses in a competitive effects analysis of a proposed transaction.

There are many sources of potential entry in addition to “greenfield” entry, e.g., entry which is entirely new and built from the ground up. Entry can come from suppliers of the relevant product outside the relevant geographic market. For example, if, hypothetically, the relevant product and geographic market is defined to be organic food retailers in Norfolk County, Massachusetts, an organic food retailer located outside of Norfolk County would be an entrant if it is likely to respond to a Norfolk County retailer’s attempt to raise prices post-transaction by opening stores in Norfolk County. Similarly, entry can come from suppliers located in the relevant geographic area that could begin to sell products in the relevant market, even if they did not do so prior to the

transaction. For example, a non-organic food retailer located in Norfolk County would be an entrant into the relevant market if it began offering organic foods at its Norfolk County retail locations post-transaction.

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Because entry is an important component of the competitive process, it makes sense for merger analysis to consider the potential for entry to maintain competitive conditions post-transaction. As discussed below, the *Horizontal Merger Guidelines* describe a useful conceptual approach to assessing the potential for entry to maintain pre-merger competitive conditions post-transaction. In the discussion below, I focus my attention on the empirical analyses that can be used to evaluate the effectiveness of entry as a source of post-merger price discipline.

### Establishing the Three Aspects of Timely, Likely, and Sufficient Entry

According to the *Horizontal Merger Guidelines*, a transaction raises no antitrust concerns in markets where entry is “easy.” Since “easy” can be in the eye of the beholder, the *Horizontal Merger Guidelines* focus on identifying entry that would be “timely, likely, and sufficient” to discipline a merged firm’s attempt to raise prices post-transaction. The element of timeliness is important because it addresses how long the entry process is expected to take. The *Horizontal Merger Guidelines* state that entry which would take place within two years from the planning stage to significant market impact would generally be considered timely. Examining the likelihood of entry is important because for entry to occur, a potential entrant would have to find such entry profitable. Entry is more likely if the potential entrant would find entry profitable. The



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importance of considering whether entry would be sufficient is to ensure that the magnitude of entry that is likely to occur would be such that prices would remain at pre-merger levels post-transaction. If so, then entry would be sufficient.

All too frequently, an entry analysis consists of little more than a statement about the manufacturing capacity of firms that do not currently supply the relevant geographic market (e.g., the capacity of manufacturers located in Asia that are poised to enter the United States with a flood of imports). This approach to an entry analysis hits none of the three prongs of the timely, likely, and sufficient framework that is outlined in the *Horizontal Merger Guidelines*. Not surprisingly, this type of approach is rarely given much weight by the staff at the antitrust agencies.

A better, but still incomplete, approach provides details on the cost and time of the upfront expenditures and capital investments that would need to be made by a new entrant. In some situations, it may seem to be enough to argue that entry would take place because the cost to enter is small. However, if the stream of revenues associated with that entry is even smaller, entry would not take place because it would not be profitable to do so. This second approach hits about half of the prongs: entry may be timely and the costs of entry may be low, but there are open questions about the profitability of entry and whether entry would be sufficient to discipline a post-merger price increase.

An even better approach includes analyses that are capable of demonstrating that an attempt by the merged firm to raise prices above competitive levels would lead to a timely, likely, and sufficient entry response, i.e., one that would maintain prices at competitive levels. Since the time, cost, and incremental revenues for each of the various possible sources of entry described above may be different, a separate and fact-specific entry analysis following the framework described in the *Horizontal Merger Guidelines* may be required for each form of entry.

### **Demonstrating that Entry Would Occur in a Timely Fashion**

As indicated above, according to the *Horizontal Merger Guidelines*, timely entry is usually interpreted as two years

from the planning stage until an entrant is up and running.<sup>7</sup> For this reason, developing information and evidence that entry would be timely depends on market-specific facts. While the *Horizontal Merger Guidelines* do not specifically address when the planning stage begins, the start of an entrant's planning stage is usually assumed to coincide with the point in time at which the merged entity actually raises price post-transaction, which could be as soon as the first day after the transaction closes.

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To address how long it would take to get up and running, it is often helpful to work with knowledgeable business people to understand the investments that would need to be undertaken by the new entrant. Capital investments would include the type of equipment that would need to be purchased; other possible investments may include the time and costs associated with performing research and development, preparing engineering drawings, performing product testing, qualifying raw material suppliers, receiving certification, performing inspections, obtaining any permits or licenses, establishing a track record, or meeting certain customer qualification requirements.

In understanding the investments that the potential entrant would need to undertake, it is important to keep in mind that



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it may not be necessary for the potential entrant to recreate the size and scale of one of the merging parties. Rather, as discussed in more detail below, the size and scale of entry only must be sufficient to return prices to pre-merger levels. In practice, the latter is frequently much smaller than the former.

Once a list of a potential entrant's investments has been developed, the time to meet each entry step can be determined. It is important to keep in mind that these steps may be able to run concurrently rather than in a stepwise fashion. Establishing reliable and defensible estimates for the times of each component needed for entry is important to developing a credible and compelling entry analysis.

There are several reliable ways to obtain reasonable estimates. One method is to rely on the experience of industry experts or business personnel responsible for purchasing new equipment and/or qualifying new suppliers. Another method is to obtain data from equipment vendors and input suppliers to obtain estimates of lead time and delivery times.

Examples of prior entry are likely to be useful benchmarks as well. In some situations, a natural experiment may exist that allows for an estimate of the time it would take for new entry to occur. For example, suppose an exogenous event results in the unexpected long-term closure of a refinery that supplies wholesale gasoline to a particular relevant geographic market. If that event results in prices for wholesale gasoline in that relevant market going up (at least initially), one could calculate how many days, weeks, or months it took until a new (or perhaps an existing) supplier responded by bringing in wholesale gasoline to the relevant market by pipeline, barge, or truck.<sup>8</sup>

### **Showing that Entry is Likely in Response to an Attempt to Raise Prices Above Pre-Merger Levels**

In the merger context, economists think about whether entry is likely by asking whether an entrant would find entry profitable. That is, would a new entrant's sales cover the entrant's costs, both upfront and ongoing, as well as provide the entrant with an adequate return on its investment?

Assessing profitability means evaluating two things: the upfront investment costs and the stream of profits that would

flow from product (or service) sales following entry. These two components are used to develop the cash flows from entry.

In preparing the time frame for entry, one typically has already identified the items the potential new entrant will need to purchase or lease up front. There are several approaches that can result in reliable and credible estimates of these upfront investment costs. Useful sources may include estimates from knowledgeable industry experts or business personnel, invoices that show the amounts paid for recent purchases, and price quotes from vendors. In addition to the upfront investment costs, there may be opportunity costs associated with entry that, if applicable, should be taken into account. For example, if an upgrade requires the temporary shutdown of existing equipment, any lost margins should be accounted for as an upfront investment cost.

Entry would be profitable if the flow of annual revenues from product (or service) sales less avoidable fixed and variable costs covers the upfront investment costs and allows for a return on the investment. Incremental revenues are the appropriate metric because if entry or expansion takes place at the expense of existing sales (e.g., because the facility is at or near capacity), the opportunity cost associated with the cannibalization of existing sales should be taken into account.

A useful starting point for estimating the revenue stream is to estimate the volume of sales at pre-merger prices that the entrant would be able to make. It is useful to think about where the entrant would garner sales in order to gauge whether those sales estimates are reasonable. Sources of sales for the new entrant can include lost sales from the merging parties when they attempt to raise price, new customers that result from growing demand, and/or internal sales due to vertical integration.

A net-present-value (NPV) analysis based on the flow of costs and revenues over time could then be used to determine whether entry would be profitable.<sup>9</sup> To calculate the NPV of the cash flows, an assumption regarding the investment's life span (e.g., 10 years) needs to be made.<sup>10</sup> In addition, the analysis should incorporate the new entrant's discount rate, which reflects the firm's opportunity cost of funds. If the NPV is positive the entrant will enter.<sup>11</sup>



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One potential source of tension—and a commonly asked question when assessing whether entry would be “likely”—is this: if an entrant would find entry profitable at pre-merger prices, why doesn’t entry occur pre-transaction? One way to reconcile this perceived tension is to understand that additional sources of sales may be available to the potential entrant post-transaction that were not available pre-transaction. Specifically, in the face of a small but significant non-transitory increase in price post-transaction, one new source of sales for the entrant would be those sales that the merging parties would lose when they attempt to raise prices post-transaction.

### **Determining Whether Entry Will Occur at a Sufficient Scale and Volume of Sales to Return Pricing to Pre-Merger Levels**

The last prong of a compelling entry analysis is to establish the sufficiency of new entry as a source of post-merger price discipline. In other words, will entry return post-merger prices to pre-merger levels?<sup>12</sup> If the scale of the entry event is small relative to the likely post-merger reduction in quantity in the absence of entry, then the sufficiency prong will not be satisfied unless more than one entrant enters or if the entrant enters with more than one facility. On the other hand, if the scale of entry is greater than the likely post-merger reduction in quantity in the absence of entry, then although one entrant could supply more than the post-merger reduction in quantity, the post-merger price might fall below the pre-merger level.<sup>13</sup>

An important economic component related to the sufficiency of entry is the appropriate scale of entry for the potential entrant. One reasonable choice for the scale of entry is the size of the posited post-merger output reduction. A second approach is to consider the entrant’s scale of entry to be the smallest average annual amount of sales that the entrant would need to earn over time to just be profitable at pre-merger prices. The *Horizontal Merger Guidelines* refer to this as the minimum viable scale (MVS).<sup>14</sup> Under this approach, one issue is whether the size of the posited post-merger output reduction is much larger than the MVS or much smaller than the MVS. If the posited post-merger output reduction is much larger than the MVS, then more than one entrant, or one entrant with multiple facilities, would need to enter in order to return prices to pre-merger

levels. On the other hand, if the posited post-merger output reduction is much smaller than MVS, post-merger prices will fall below pre-merger price levels unless the entrant chooses to operate with excess capacity.

A third possible approach, and one that may be the most practical, is to determine the scale of a reasonably-sized competitor that would be an effective source of post-transaction price discipline. The competitor could be a standalone firm, or it could be part of a larger existing firm. Using that scale of operation as a guide, one can then develop a business plan for the potential entrant. Once the business plan is developed, the analysis would determine whether such an entry event would be sufficient (as defined by the *Horizontal Merger Guidelines*) by comparing that scale of entry to the hypothetical post-merger reduction in quantity (that would occur in the absence of entry).

### **Empirical Analyses of the Effectiveness of Entry**

In evaluating whether entry would be profitable for a potential entrant, examples of actual past entry are often helpful. These examples and the effect of these entrants on pricing and output are helpful in demonstrating that there are no significant barriers to future entry.

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However, the absence of any actual recent entry need not invalidate a well-developed entry analysis. Rather, the lack of recent entry may simply mean that prices are already at competitive levels, in which case additional entry (prior to the merger) would not make economic sense, as it would drive prices below pre-merger levels, thereby causing entry not to



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be profitable. Entry in response to a price increase, on the other hand, may make additional sales available to the entrant, resulting in profitable entry even with prices returning to pre-merger levels.

In some situations, there may be natural experiments that provide useful data for analysis. For example, it may be useful to assess whether entry took place in response to an increase in price due to an unexpected event that led to the elimination of capacity. While natural experiments can be informative in inferring whether entry would—or would not—take place in the face of a small but significant non-transitory increase in price, analyses of such events require careful thinking. Key questions that help to determine whether such an event would be informative in the context of evaluating the likelihood of entry in the face of a small but significant non-transitory increase in price (SSNIP) post-merger include:

- Did prices for the relevant product rise after the event? If so, by how much?
- Was the price increase expected to be temporary or longer-lived?
- Did the event give rise to other unusual conditions such that the conditions post-event would not approximate conditions post-merger in the face of a SSNIP? In other words, was “all else equal” after the event?

Consider, for instance, the following hypothetical. Suppose there is a question about the timeliness, likelihood, and sufficiency of entry into offshore marine services in the United States Gulf of Mexico.

Would it be useful to examine the entry that occurred (or did not occur) after a dramatic natural event, such as a Category 5 hurricane that took place a year prior to the proposed transaction? Suppose, for example, that after the hurricane, it was observed that prices for offshore marine services in the United States Gulf of Mexico rose immediately by over 50 percent, but no entry took place. It may be tempting to infer that the event suggests that entry in response to a SSNIP

post-merger would not be timely, likely, or sufficient. However, as the questions above illustrate, even dramatic events like a Category 5 hurricane may not provide the right conditions for an analysis of entry post-merger. In particular, if the hurricane also resulted in a significant destruction and interruption of onshore logistical support infrastructure, a scarcity of resources such as personnel and equipment used to provide off-shore marine services, as well as higher fuel costs, higher wages (due to the lack of personnel), and increased project risks due to the unknown scope of work being encountered in the aftermath of the hurricane, then the hurricane would not be an informative event, as all else is not being held equal.

On the other hand, would it be useful to examine the entry that occurred (or did not occur) if a vessel that had been used for providing offshore marine services in the United States Gulf of Mexico unexpectedly sank or could no longer be in service? Suppose it was observed that prices for offshore marine services in the United States Gulf of Mexico rose immediately after such an event. If the likely post-merger reduction in quantity (in the absence of entry) necessary to generate a SSNIP is approximately equal to one vessel, then such an event may be informative as to the timeliness, likelihood, and sufficiency of entry into offshore marine services in the United States Gulf of Mexico in the face of a hypothetical SSNIP post-merger.

### Conclusions

Economic theory recognizes the important role that entry plays in competitive dynamics. In the long run, entry occurs in response to profit opportunities. For this reason, an analysis of entry is an important economic component of an investigation into the competitive effects of a proposed merger. An informative economic analysis of entry addresses the timeliness, likelihood, and sufficiency of entry, as outlined in the *Horizontal Merger Guidelines*. An analysis of each of these three components is detailed and fact-specific, and a well-developed analysis of entry can be decisive in addressing the competitive concerns with a proposed transaction.

*The opinions expressed herein do not necessarily represent the views of NERA Economic Consulting or any other NERA consultant.*



## Notes

- \* Gregory K. Leonard, G. Steven Olley, and Lawrence Wu provided valuable insights.
- 1 The closing statement in the XM-Sirius merger is available at [http://www.justice.gov/atr/public/press\\_releases/2008/231467.pdf](http://www.justice.gov/atr/public/press_releases/2008/231467.pdf).
- 2 The closing statement in Omnicare-Neighborcare is available at: <http://www.ftc.gov/os/caselist/0410146/050616stmtcomm0410146.pdf>. Discussions of National Oilwell-Varco and Playbill-Stagebill are available at: <http://www.justice.gov/atr/public/guidelines/215247.htm>.
- 3 The Department of Justice and Federal Trade Commission 1992 *Horizontal Merger Guidelines* ("*Horizontal Merger Guidelines*") are available at: <http://www.justice.gov/atr/public/guidelines/hmg.htm>.
- 4 Economic profits are different from accounting profits. Unlike accounting profits, economic profits incorporate opportunity costs.
- 5 See, for example, Richard Schmalensee, "Inter-Industry Studies of Structure and Performance" in *Handbook of Industrial Organization, Volume 1*, edited by Richard Schmalensee and Robert D. Willig. Amsterdam: North-Holland, 1989.
- 6 If entry requires significant sunk costs to be made, all else equal, entry is less likely to take place because the entrant will have made investments that have no other purpose but the entry event. A sunk cost is a cost that is lost forever once it has been paid. In practice, at least a portion of the upfront and capital expenditures will probably not be sunk. For example, if a forklift can be sold as a used good, only that portion of the cost of the forklift that cannot be recouped via resale is sunk. On the other hand, investments in research and development and costs associated with testing, marketing, and certifying a new product are costs that are more likely to be sunk costs in their entirety.
- 7 Specifically, the *Horizontal Merger Guidelines* indicate that the two-year time horizon is from planning stage until "significant market impact," which may be before or after the point in time at which the entrant is up and running.
- 8 As discussed below, this natural experiment also may be useful as a way to evaluate the "sufficiency" of new entry. To do that, one would need to evaluate the magnitude of the initial price increase, the quantity removed from the relevant market as a result of the refinery outage, and the extent to which wholesale prices fell as a result of the new entry.
- 9 In some cases, it may be tempting simply to check that the cumulative profits earned from product (or service) sales exceed the upfront investment costs within a reasonably short time horizon (i.e., the number of years it would take for the investment to be paid back) without undertaking an NPV calculation. This simpler approach, however, can lead to errors in two opposing directions. On the one hand, the simpler approach may turn out to be overly optimistic regarding the prospects for entry because this approach does not explicitly account for a potential entrant's need to earn a competitive return on its investment. On the other hand, this approach may be overly pessimistic because, even if the payback period seems to be longer than a few years, the investment may still make good business sense.
- 10 Additional real-world complexities can also be incorporated into the NPV calculation (e.g., tax treatment of depreciation).
- 11 If entry appears very profitable at current prices, yet entry is not already occurring, it becomes necessary to reevaluate the assumptions used in the NPV calculation.
- 12 An analysis of the sufficiency of entry also must consider the availability of key inputs (e.g., environmental permits). In addition, entry may not be sufficient if the potential entrant does not provide comparable services to those offered by the merging parties.
- 13 Another possibility is that the entrant would only supply the size of the posited post-merger output reduction, choosing instead to operate with excess capacity, thereby returning prices to pre-merger levels (rather than below pre-merger levels).
- 14 See *Horizontal Merger Guidelines*, Section 3.3.

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