

**IS IT LIVE OR IS IT MEMOREX?  
MODELS OF VERTICAL MERGERS AND ANTITRUST ENFORCEMENT**

by

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I'll start with the usual disclaimer. My comments today are my views. They do not necessarily reflect the views of the U.S. Federal Trade Commission or any of the individual commissioners.

Some years ago, the television advertisements for the recording tape Memorex featured the jazz singer Ella Fitzgerald hitting a high note and shattering a wine glass. The note was recorded on Memorex tape, and the advertisement showed a replay of the recorded voice having the same glass-shattering effect as the original. If we think of the recording as a model, then the message of the ad was that the model captured the reality perfectly and in every detail. What I will refer to as “economic Memorex,” i.e., economic models, is not such a close approximation to reality. Regrettable as that might initially seem, the power of modeling comes from simplifying reality. Yet, when we use a model to understand the real world, we must always confront whether the results of the model are real or whether they are modeling distortions.

Both Professor Church<sup>1</sup> and Bishop, Lofaro, Rosati, and Young<sup>2</sup> (BLRY) have performed exhaustive reviews of the literature on vertical mergers and have wrestled with this basic problem. To the extent that I can summarize it briefly, Professor Church's approach is to try to match basic facts of a market to a set of underlying modeling assumptions that appear critical in the sense that alternate assumptions yield different predictions regarding the effects of vertical mergers. BLRY take a more broad-brush view of the models. In practice, both papers suggest that antitrust challenges to vertical mergers should be rare, but they arrive at that result in different ways. Professor Church takes the models more literally and identifies a relatively narrow set of circumstances under which these models predict an anticompetitive effect. Using arguments from decision theory, BLRY suggest that there should be a presumption that vertical mergers are pro-competitive. They then suggest a structured approach for overcoming that presumption.

I agree with BLRY on the role of prior beliefs. My predecessor, Luke Froeb, along with several of my current colleagues have recently made a similar set of arguments with respect to vertical restraints.<sup>3</sup> In evaluating vertical mergers, we must never forget that the economics of vertical relationships is fundamentally different from the economics of horizontal relationships. Two rivals generally have a mutual incentive to increase their prices. A company and either its supplier or distributor generally have a mutual incentive to lower their prices. We should never lose sight of that basic distinction.

Of course, this point does require qualification. I devoted a substantial portion of the early part of my career to theories underlying those qualifications and to looking for evidence to support those theories. As intriguing as I find these theories, we need to place them in proper perspective. More so than in publishing academic journal articles,

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<sup>1</sup> Jeffrey R. Church, *The Impact of Vertical and Conglomerate Mergers on Competition* (Brussels: European Commission) 2004.

<sup>2</sup> Simon Bishop, Andrea Lofaro, Francesco Rosati, and Juliet Young, *The Efficiency-Enhancing Effects of Non-Horizontal Mergers* (Brussels: European Commission) 2005.

<sup>3</sup> James C. Cooper, Luke Froeb, Daniel P. O'Brien, and Michael Vita, “Vertical Antitrust Policy as a Problem of Inference,” *International Journal of Industrial Organization*, vol. 23, 2005, pp. 639-664.

sound public policy requires that we put the emPHASis on the right syllABLEs. If we focus too much on theoretical exceptions to the general rule – and there is a real risk of doing so simply because they are intellectually more interesting – then we will get the emphasis wrong.

The basic dilemma in vertical merger policy is how to identify the presumably small number of vertical mergers that might be harmful to competition. What sort of evidence should be brought to bear on the question, and what exactly does the evidence have to show for us to conclude that a vertical merger is likely to be harmful to competition?

In some industries, markets are local and the extent of vertical integration varies by market and, hopefully for the econometrically minded, within markets over time. In the U.S., two that come to mind are soft drinks and cable television. Suppose one found that prices were higher in more vertically integrated markets. Better yet, suppose there was previous experience with vertical mergers, and we saw that previous mergers were followed by price increases not observed in other apparently comparable markets. This kind of “difference in difference” estimate would be the ideal kind of evidence to support an effects-based challenge to a vertical merger.

Of course, most industries do not have structures that give rise to such evidence. In those cases, is it possible to bring a case? I agree with Professor Church that identifying a purely structural set of criteria is problematic. In the United States, we are reluctant to base a horizontal merger case on purely structural criteria except in extreme cases where the number of remaining suppliers is very small. Purely structural cases would seem to be even more problematic with vertical mergers, where even the theoretical links are tenuous.

How about customer testimony? In the wake of the Arch Coal<sup>4</sup> and Oracle<sup>5</sup> decisions in the U.S., the role of customer testimony in judicial decisions on horizontal mergers has been called into question. Customer testimony would be more problematic in a vertical mergers case as the directly affected customer might also be a competitor.

We could hope for hot documents, but usually we do not find them.

So, in the end, a successful vertical case would have to rest on some sort of model. As is evident from both the Church and BLRY papers, there are many models to choose from. How should we choose among them, and how do we decide whether the predicted effect of the model is “live” or “economic Memorex”? How do we know when model predictions are real as opposed to modeling distortions?

I do not have a simple answer. To illustrate the difficulty, ask yourself how a Microsoft-Intel merger would be treated in antitrust review. In my current position, I of course cannot say what I think and perhaps it is even imprudent for me to raise the possibility. I

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<sup>4</sup> Federal Trade Commission v. Arch Coal, 320 F. Supp. 2d 109, DDC, 2004.

<sup>5</sup> U.S. v. Oracle, 331 F. Supp 2d. 1098, N.D. California, 2004.

think I can safely make three predictions. First, there would be general agreement that the Microsoft's software and Intel's microprocessors are complements. Second, many people would argue that both firms are, to use European terminology, dominant, or, to use U.S. terminology, in possession of monopoly power. Third, many people would argue that such a merger should be blocked. The merger opponents would no doubt include some who just object to concentration of "economic power," but I am confident it would also include some who fully understand the Cournot/Spengler<sup>6</sup> model of mergers of successive/complementary monopolists. In this example, where the choice of model might seem clear relative to other vertical cases, some people might argue that the predictions of the model are "economic Memorex," not "live."<sup>7</sup>

Models of vertical mergers are, I believe, particularly prone to economic Memorex effects. The problem is that the interesting cases involve small numbers of firms at successive stages of production. Because the numbers are small, it is natural to consider game theoretic models; but vertical settings pose a particular challenge for how we model equilibrium. As everyone here no doubt knows, a Nash equilibrium is one in which each agent makes a decision holding the behavior of other agents constant. In a standard Cournot model, for example, each firm chooses an output holding the output of all other sellers constant. If you think about it, though, not every actor's behavior is constant. When a firm sells another unit of output, someone buys it; so the behavior of the buyer is not held constant. In a standard Cournot model, the buyers are not formal players in the game, so we treat the equilibrium as a Nash equilibrium. In a model of vertical market structure, though, one must confront the issue of whether vertically integrated firms sell the intermediate good. The difficulty that arises is that if they do, the customers, i.e., the downstream firms, are themselves players in the game. When one firm changes its output, there is simply no logical way for it to conjecture that the behavior of both the other upstream and the other downstream firms remain constant. I first ran across this problem in 1984 when I was deriving the model ultimately published as "Vertical Mergers and Market Foreclosure."<sup>8</sup> I resolved the issue in the way that I thought and still think made the most sense. As Profesor Church discusses in his paper, a literature has arisen exploring alternative resolutions. Similar kinds of issues arose with respect to the formal game-theoretic foundations of the Ordovery, Saloner, and Salop model.<sup>9</sup> I do not believe that the change in results from changing those assumptions tell us much about how real economic outcomes relate to anything we might observe. Many of the results in this part of the literature strike me as being economic Memorex, not "live."<sup>10</sup>

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<sup>6</sup> Joseph J. Spengler, "Vertical Integration and Antitrust Policy," *Journal of Political Economy*, vol. 58, 1950, pp. 347-52.

<sup>7</sup> In effect, the argument would be that the Cournot/Spengler model simply assumes away a key part of the problem. This is the most common type of economic Memorex effect.

<sup>8</sup> Michael Salinger, "Vertical Mergers and Market Foreclosure," *Quarterly Journal of Economics*, vol. 103, 1988, pp. 345-356.

<sup>9</sup> For the original article, see Janusz A. Ordovery, Garth Saloner, & Steven C. Salop, "Equilibrium Vertical Foreclosure," *American Economic Review*, vol. 80, 1990, pp. 127-42. For discussion of the game-theoretic issues, see David Reiffen, "Equilibrium Vertical Foreclosure: Comment," *American Economic Review*, vol. 82, 1992, pp. 694-97; and Janusz A. Ordovery, Garth Saloner, & Steven C. Salop "Equilibrium Vertical Foreclosure: Reply," *American Economic Review*, vol. 82, 1992, pp. 698-703.

<sup>10</sup> This is a different type of modeling distortion from the possible distortion of applying the Cournot/Spengler model to a hypothetical Intel-Microsoft merger. Here, the modeling adds a feature – the

So how do we conclude that model predictions are real? My thesis advisor urged his students to write about the economy, not the economics literature. I think that advice would serve us well in the area of vertical mergers. If we start with the existing models and modify the assumptions, we are analyzing the literature. If we start with cases and incorporate what appear to be the most important features of those cases into a model, I think we have a chance of identifying real effects of mergers. In my previous brief stint at the FTC, I was assigned to work on a series of mergers by Coke and Pepsi with their bottlers. Most Coke and Pepsi bottlers handled other brands, and the effect of the mergers on the so-called allied brands was a cause of potential antitrust concern. Having recently derived the successive Cournot model, I initially considered applying it to those mergers, but realized that the fit was not good. Instead, it seemed that the essence of the situation was a downstream multiproduct firm that purchased the inputs from different suppliers and that the mergers entailed the downstream firm with one of those suppliers. I still think it was a good match.<sup>11</sup>

In addition to the process by which it came about – i.e., matching the model to the case instead of vice versa - there are two features of that model I would like to point out. First, the model has a monopoly rather than an oligopoly structure. To use modern enforcement terminology, it is a unilateral effects model that captures how a vertical merger changes incentives. Put another way, the model began with the businesses involved, not the industry. Such a model is, I believe, less prone to “economic Memorex” effects. Second, and related, the model predicts that vertical mergers can result in all prices going up, all prices going down, or an increase in some prices and a decrease in others. Which of the possibilities occurs depends on demand and cost conditions that can, in principle, be measured. Of course, when I derived the model in 1986, my views in the Bureau of Economics were perhaps less influential than they are now; and my arguments that we should try to parameterize the model with data from the industry did not prevail. Still, most of the literature surveyed by Professor Church and BLRY rests on highly stylized demand and cost assumptions. That striking feature, which I believe is the result of trying to make game theoretic assumptions tractable, limits the practical policy implications of the models. What are we to do when we have a model that says that some but not all vertical mergers are harmful, but the model is formulated in such a way that it is hard to match it to the factual setting of a particular case in a way that would stand up to cross-examination? No matter how many models of this sort we have in the literature, they are not going to form the foundation of a valid basis for challenging vertical mergers.

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importance of commitment on the part of vertically integrated firms not to participate in the market for the intermediate good – that is not a feature of the actual problem.

<sup>11</sup> The model was ultimately published as Michael Salinger, “Vertical Mergers in Multi-Product Industries and Edgeworth’s Paradox of Taxation,” *Journal of Industrial Economics*, Vol. 40, 1991, pp. 545-556; reprinted in Louis Philips (ed.), *Applied Industrial Economics* (Cambridge: Cambridge University Press) 1998.

If I had prevailed in 1986 to get the Bureau of Economics to calibrate the model I suggested to the soft drink industry, I am now confident it would have predicted that the mergers posed no threat to competition. In a merger retrospective, my predecessor as Bureau Director David Scheffman in collaboration with former FTC Chairman Tim Muris and Pablo Spiller concluded that those mergers were indeed beneficial to competition.<sup>12</sup> In citing this example, I am not giving a case in which a model was used successfully to challenge a vertical merger. I am simply speculating about a type of model that could conceivably be the basis for a model-based challenge to a vertical merger in the absence of the sort of effects-based statistical analysis that we would ideally like to see. I would also reiterate that with any model result, we have to ask, “Is it live or is it (economic) Memorex?” Do we believe that the results of the model are real. This has to be a judgment call, as there will be no ex ante way to see if the proverbial glass shatters. In exercising this judgment, a strong dose of skepticism about claims of anticompetitive harm from vertical mergers is in order. It is hard to say in the abstract what would make the model results sufficiently persuasive to overcome that skepticism other than it is going to take solid industry-specific evidence, not mere theorizing about one of several possible effects in a general setting.

Let me close by thanking you for asking me to speak today. The subject is one that I have of course been interested in for many years; and one of the most exciting prospects of my new position is to work with my colleagues in London and Brussels to try to reach agreement on this fascinating, difficult, and important element of antitrust law.

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<sup>12</sup> Timothy J. Muris, David T. Scheffman, and Pablo Spiller, *Strategy, Structure, and Antitrust in the Carbonated Soft Drink Industry* (New York: Quorum Books) 1993.