

REVISING THE HORIZONTAL MERGER GUIDELINES

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ABSTRACT

The U.S. Department of Justice and the Federal Trade Commission are currently in the process of revising their Horizontal Merger Guidelines. I explain that if a revision is to occur, then there are certain parts of the Guidelines that are most in need of revision, including the sections on unilateral and coordinated effects, committed and uncommitted entry, numerical concentration thresholds for safe harbors, and fixed costs. I also explain what should not become part of any new Guidelines, such as replacing the market definition/market concentration starting point with a competitive effects framework such as “upward pricing pressure.” The proposed Guidelines were published in April 2010. I present my reactions to the proposed Guidelines and discuss several caveats that courts, foreign antitrust agencies, and the business community should be aware of as they try to interpret what the proposed Guidelines suggest about appropriate antitrust policy.

JEL: L1; L4; K21

I. INTRODUCTION

The Horizontal Merger Guidelines (the Guidelines) of the U.S. Department of Justice (DOJ) and the Federal Trade Commission (FTC) have had an enormous influence not just on how U.S. antitrust agencies conduct merger policy but also on how courts and antitrust agencies throughout the world make decisions about the antitrust consequences of mergers.¹ The DOJ and

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¹ U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, HORIZONTAL MERGER GUIDELINES (revised 1997), available at http://www.usdoj.gov/atr/public/guidelines/horiz_book/hmgl.html [hereinafter HORIZONTAL MERGER GUIDELINES].

FTC are currently in the process of revising those Guidelines. In Part II of this paper, I explain that if a revision is to occur, then there are certain parts of the Guidelines that are most in need of revision. I also explain what should not become part of any new Guidelines. In Part III of this paper, I react to the newly proposed Guidelines that were published in April 2010 and explain the many caveats that courts, foreign antitrust agencies, and the business community should be aware of as they try to interpret what the proposed Guidelines suggest as appropriate antitrust policy. In Part IV, I present my conclusions.

II. HOW TO REVISE THE MERGER GUIDELINES

A. Overview

The Guidelines have proven to be a valuable and durable guide to antitrust practitioners and courts. Accordingly, radical change is not needed. Nonetheless, to the extent a revision does occur, it is desirable to update and improve the Guidelines to reflect developments in merger analysis over recent years as well as changes in the types of issues that the agencies face in reviewing mergers. This section of this paper summarizes some of my views on (1) the appropriate focus and scope of issues that should be addressed in the Guidelines, and (2) specific areas where revisions to the Guidelines would help practitioners and courts evaluate whether a proposed transaction will adversely affect competition. With respect to the appropriate focus of the Guidelines, my major conclusions are as follows.

The Guidelines should focus on the first steps taken by agencies in analyzing mergers and should not try to provide a detailed explanation of the analytical techniques that may be used in the merger review process. Merger reviews often require sophisticated analyses of competitive effects that are specific to the facts of a given transaction and the scope of available data. Because it is not possible to provide an exhaustive list of possible modes of analysis, the Guidelines should not incorrectly suggest that some types of analyses are preferable to others. More detailed explanations of specific techniques can be better provided through statements that accompany the closing of investigations, as well as through commentaries.

Additionally, it would be inappropriate at present to incorporate an alternative to the Guidelines' current analytical starting point based on market definition and market concentration by replacing this starting point with one that is based on a competitive effects framework such as "upward pricing pressure" (UPP). Although UPP is a promising tool for merger analysis, it is a sophisticated partial merger simulation analysis and exhibits the same strengths and limitations as other forms of merger simulation. There has also been very little empirical analysis performed to date that

validates the predictive value of UPP in assessing the competitive effects of mergers. As a result, UPP does not today provide a simple or proven mechanism for identifying potential mergers that may or may not raise competitive concerns. Perhaps experience will prove it to be useful, but until that happens, it should remain as one of many techniques designed to analyze competitive effects.

With respect to more specific revisions to the Guidelines, my major conclusions are as follows. First, the Guidelines should emphasize the importance of empirical evidence in overcoming enforcement agencies' skepticism about the role of competition in constraining post-merger price increases and other behavior. Specifically, the Guidelines should give significant weight to empirical evidence about the effect of past mergers on prices and innovative activity. Similarly, the Guidelines should recognize that historical evidence about the impact of entry or large buyers on preserving post-merger competition and about the firms' past track record in achieving cost savings should be given significant weight in merger analysis.

Second, the distinction between "unilateral" and "coordinated" effects in the Guidelines is artificial and should be de-emphasized. Both types of effects are properly understood as variants of noncooperative game theory, with unilateral effects models typically reflecting a static oligopoly model with differentiated products and coordinated effects reflecting more dynamic considerations often involving homogeneous products. In practice, the unilateral effects approach is often used when standard "coordinated effects" analysis based on market definition implies a very narrow market that might make agencies or courts uncomfortable for advocacy purposes. The revised Guidelines can make a valuable contribution by stressing that it is not illogical to identify competitive harm in narrowly but properly defined markets that include products subject to merger-related price increases.

Third, the Guidelines should place greater emphasis on the benefits to consumers that can result from merger-related savings in fixed costs. Current agency practice takes a skeptical view of fixed costs efficiencies and, as a result, agencies often fail to account fully for the nature of competition in industries in which fixed costs are substantial. Such industries, including computers, telecommunications, pharmaceuticals, and others, are often characterized by intense dynamic competition, and reductions in fixed costs in these sectors can increase incentives to invest in research and development (R&D) and innovation. Failure to account fully for the effect of mergers on such incentives can cause agencies to stop mergers that would benefit consumers by fostering such innovation.

Fourth, there should be a well-established basis for any numerical thresholds for safe harbors in the Guidelines. Many approved transactions involve Herfindahl-Hirschman Index (HHI) changes in excess of the

thresholds identified in the Guidelines, reflecting in part the weak empirical basis for the thresholds originally set forth. The agencies and the academic community should place greater emphasis on research that would help to establish thresholds that provide better guidance to courts and practitioners. Nonetheless, the Guidelines should stress that no set of thresholds can be strictly applied and that a variety of other factors also need to be considered in the merger review process.

Fifth, the Guidelines should stress the difficulty of anticipating future changes in competitive conditions and should acknowledge that merger enforcement should not be based on speculative assessments of future conditions. For example, attempts to assess the impact of a proposed merger based on hypothesized “innovation markets” frequently are highly speculative and should not be incorporated into the revised Guidelines. Similarly, claims that a proposed transaction will reduce “potential competition” are often based on speculative assessments of whether one of the participants in a proposed merger would have entered the market in the absence of the merger.

Sixth, the Guidelines should revise its approach to geographic market determination, shifting the focus of the analysis from one using supplier locations as a starting point to one based on the competitive alternatives faced by consumers at different geographic locations. This modification would eliminate what appear to be potential inconsistencies in the approach taken to define geographic markets and price discrimination markets in the Guidelines.

Seventh, the Guidelines’ distinction between “committed” and “uncommitted” entry is artificial and should be de-emphasized. The distinction between “committed” entrants, which incur significant sunk entry-related costs, and “uncommitted” entrants that do not fails to adequately recognize that there is a continuum between committed and uncommitted entry. This analytical distinction has not been useful in practice and should be replaced by a discussion that is not based on arbitrary “bright line” rules.

Finally, the Guidelines’ use of the term “maverick” should be clarified. A maverick is not a wild firm that is out of control but one whose economic incentives make it an aggressive competitor. The personality of the CEO should not be the focus of analysis.

B. The Appropriate Focus and Scope of the Guidelines

The Merger Guidelines have provided a durable and valuable guide to practitioners and the courts and have succeeded in making merger analysis more sensible and consistent. The Guidelines’ analytical framework is basically sound and identifies the economically appropriate set of questions that enforcement agencies and courts need to address in analyzing the competitive effects of a merger. The Guidelines’ focus on the right question—will

a proposed merger adversely affect competition—has provided stable and reliable guidance to practitioners and courts.

Although the Guidelines have generally held up well over time, there is still room for improvement. Nearly 20 years have passed since the Guidelines last underwent a significant revision, and there have been significant developments in merger analysis as well as significant changes in the types of transactions before the agencies. The review process now underway provides the agencies an opportunity to clarify certain conceptual shortcomings of the current Guidelines and to improve their usefulness to practitioners and courts.

The Antitrust Modernization Commission, the bipartisan commission created by Congress with members appointed both by Congress and the President, came to a very similar conclusion in 2007. After hearing testimony from a wide range of antitrust scholars and practitioners, the Commission concluded that its “review and study of current merger enforcement standards revealed a general consensus that the framework for analyzing mergers used by the antitrust agencies and the courts is basically sound. . . . Nonetheless, room for improvement exists.”²

1. *The Appropriate Focus*

A basic issue is defining the appropriate focus of the Guidelines. The current Guidelines “describe the analytical framework and specific standards normally used by the Agency in analyzing mergers.”³ The Guidelines also explicitly recognize that “mechanical application of those standards may provide misleading answers to the economic questions raised under the antitrust laws. . . . Therefore, the Agency will apply the standards of the Guidelines reasonably and flexibly to the particular facts and circumstances of each proposed merger.”⁴

In my view, the Guidelines’ focus on the analytical framework instead of the specific details of the review process is appropriate. The Guidelines should not attempt to provide a detailed or precise roadmap of the types of studies agencies will or should perform in analyzing a proposed transaction. Instead, the Guidelines should continue to stress that merger analysis often involves diverse and sophisticated analyses that are often highly specific to the transaction at issue.

Methodologies such as merger simulation or evaluation of natural experiments may be appropriate and feasible in analyzing some, but not all, transactions, and the precise nature of these analyses will differ from transaction to transaction. There is a substantial risk that attempts to use the Guidelines

² ANTITRUST MODERNIZATION COMM’N, REPORT AND RECOMMENDATIONS, at 48 (2007). I was one of the Commissioners.

³ HORIZONTAL MERGER GUIDELINES, *supra* note 1.

⁴ *Id.*

to provide a detailed list of specific methodologies will provide a misleading impression of the merger review process. That is, attempts to provide more detailed information on specific analytic approaches may provide *less* reliable guidance to practitioners by incorrectly suggesting that certain techniques are favored over others. The fact that the Guidelines are used by multiple audiences—including federal agencies other than the DOJ and the FTC, state Attorneys General, practitioners, and courts—reinforces the importance of using the Guidelines to highlight the general economic framework and the central issues for merger analysis, as well as the first steps typically taken by the agencies in the review process.

Commentaries and agency closing statements are preferable mechanisms to provide details about the nature of past agency investigations and to provide transparency into the review process. For example, the DOJ and FTC's 2006 commentary on the review process⁵ as well as the FTC's 2008 review of market concentration in its merger investigations have provided valuable information to practitioners and insight into the review process.⁶ Similarly, statements that accompany the closing of investigations can be used to provide detailed information about the nature of the analyses undertaken in the course of merger reviews.

Practitioners and courts need to understand that the Guidelines are just that—guidelines. This view extends to the Guidelines' use of numerical screens based on HHIs or market shares in defining safe harbors. Such screens are not ends in themselves but provide only a first step in more detailed analysis. This flexibility is essential, because industries that appear to be concentrated based on any empirical thresholds may, in fact, be competitive, and vice-versa.

2. *An Appropriate Starting Point for Merger Analysis: Competitive Effects versus Market Concentration/Market Definition*

It would be inappropriate at this time for the Guidelines to adopt a competitive effects methodology such as “upward pricing pressure” (UPP) or others as a starting point for merger analysis, either in addition to or as a substitute for the Guidelines' current reliance on market definition/market concentration.⁷ Although competitive effects analyses, including UPP, can be valuable in analyzing certain mergers, such approaches are relatively complex. Moreover, an approach such as UPP, though promising, is, at present, untested and thus is not a suitable starting point for merger analysis.

⁵ Dep't of Justice & Fed. Trade Comm'n, *Commentary on the Horizontal Merger Guidelines* (Mar. 2006).

⁶ Fed. Trade Comm'n, *Horizontal Merger Investigation Data, Fiscal Years 1996–2007* (2008) [hereinafter *FTC Horizontal Merger Investigation Data*].

⁷ See, e.g., Joseph Farrell & Carl Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, 10(1) THE B.E.J. THEORETICAL ECON. art. 9 (2010).

UPP is a form of competitive effects analysis that provides a methodology for asking whether price will likely rise as the result of a merger. UPP is, in effect, a sophisticated partial merger simulation analysis and exhibits many of the limitations, as well as the strengths, that apply to other forms of merger simulation analysis. Application of UPP requires information on diversion ratios between products, margins (price less marginal cost), and potential merger-related cost savings. Measurement of each of these elements can be complex and raises a variety of issues that may generate disagreement among practitioners. Measurement issues that arise in UPP analysis can be more complicated than those that typically arise in market definition/market concentration analysis.

The theoretical limitations of standard merger simulation analysis also apply to UPP. These include (1) the static nature of the oligopoly model that provides the theoretical underpinnings of the analysis; (2) potential inconsistencies between available data on margins and diversion ratios (which, in turn, depend on the own-price and cross-price elasticities of demand); and (3) the inability of UPP (and other competitive effects models) to account for product repositioning post-merger. Perhaps most importantly, UPP is new and little empirical analysis has been performed to validate its predictive value in assessing the competitive effects of mergers.

In my view, UPP does not now provide a simple or readily applied alternative to analysis based on market definition/market concentration for use as a first step in identifying mergers that may raise competitive concerns, and should not be incorporated into the Guidelines at this time. This is not to say that UPP or other competitive effects models should not have a role in merger analysis. To the contrary, they can play an important role in the review process and may, over time, prove to be sufficiently valuable to play a more important future role.

As I have stressed in prior work, the development of new empirical forms of merger analysis is a high priority for antitrust analysis. However, application of any new framework requires testing and validation before it can provide a reliable basis for antitrust policy.⁸ Institutionalizing UPP or any other particular technique estimating competitive effects in the Guidelines today would raise the risk that antitrust practitioners and courts would place an undue amount of attention on a new and untested technique. If UPP proves valuable and reliable, such information can be conveyed in closing statements or in commentaries on the Guidelines published by the agencies.

While imperfect and necessarily crude, the market definition/market concentration framework has provided a useful starting point for merger analysis and has served practitioners, courts, federal agencies, and state Attorneys General well. Analyses of competitive effects and market definition/market

⁸ Dennis Carlton, *Why We Need to Measure the Effect of Merger Policy and How to Do It*, 5 COMPETITION POL'Y INT'L 77 (2009).

concentration are complementary and should not be viewed as substitutes. Indeed, a finding that a merger will have an anticompetitive effect implies that competition in a particular economic market would be harmed. Viewed in this way, an analysis that identifies an anticompetitive effect should be viewed as defining a market in which a merger harms consumers. If a court is skeptical of a market definition, then evidence of an anticompetitive effect from a merger can be used to allay some of the court's skepticism. Market definition is a useful exercise only if the use of the definition allows one to calculate market shares that have some usefulness in predicting price as a function of market concentration. If one can empirically show that a relation between market concentration and price exists for some definition of market, then as long as the empirical analysis is done correctly, that relationship validates the usefulness of that particular market definition. Although it is conceivable that there are instances where market definition is impossible to apply but competitive effects analysis can be done, I suspect these cases are rare. The discipline of forcing decision-makers to have a reasonable market definition in mind before finding a harmful competitive effect is likely to be valuable in constraining agencies and especially courts from making decisions based on arbitrary criteria.

Incorporating into the Guidelines a discussion of the role of critical loss analysis in defining markets raises similar concerns about the risks of providing misleading guidance to practitioners and courts that can result from endorsing a particular technique. Various forms of critical loss analysis have been used for many years, but there remains controversy over its use.⁹ At one, level, critical loss is simply a different way of asking the identical question that the Guidelines ask in defining a market: how likely is it that a hypothetical monopolist of some group of products can raise price by, say, 5 or 10 percent? Critical loss analysis by itself introduces no new economic concepts, yet there may be some who think it does. Indeed, based on my recent experience as the Deputy Assistant Attorney General at the DOJ and as a consultant, I have seen many attempts to apply critical loss analysis that have generated significant confusion. As such, critical loss analysis should not at this time be incorporated into the Guidelines as a necessary or standard framework for evaluating market definition. Again, to the extent that critical loss turns out to be a useful way to phrase the question of market definition, its use could be described in closing statements or in commentaries.

C. Specific Areas for Revisions to the Guidelines

As noted above, although the approach to merger enforcement outlined in the Guidelines is basically sound, there are a number of areas in which the

⁹ See, e.g., Joseph Farrell & Carl Shapiro, *Improving Critical Loss Analysis*, 7 ANTITRUST SOURCE 1 (2008); David Scheffman & Joseph Simons, *The State of Critical Loss Analysis: Let's Make Sure We Understand the Whole Story*, 3 ANTITRUST SOURCE 1 (2003).

Guidelines could be refined to better reflect advances in merger analysis. This section briefly identifies several areas where the economic logic in the Guidelines could be clarified or revised, as well as areas where gaps in the Guidelines' economic logic could be filled.

1. The Use of Empirical Evidence to Overcome the Agencies' Skepticism

Often, the competitive consequences of past mergers can be a good guide to the likely effects of a proposed merger. Reliance on such historical evidence can be the most direct way to predict the consequences of a proposed transaction on prices and innovative efforts.

Historically, enforcement agencies have been skeptical about the ability of entrants and large buyers to offset potential anticompetitive effects of mergers. Some of this skepticism is understandable because, for example, a wholesale endorsement of the proposition that entry is easy would imply no need for merger enforcement. Similarly, as discussed below, agencies have been skeptical that consumers can benefit from merger-related savings in fixed costs. Although such skepticism may sometimes be appropriate in analyzing mergers, it is also important that agencies remain open to the consideration of empirical evidence that demonstrates the historical importance of these factors in preserving post-merger competition. For example, a company or industry with a track record of fixed cost savings and increased R&D from prior mergers may be able to show more clearly that such benefits are likely to result from the next transaction. The Guidelines should explicitly recognize that empirical analysis can be persuasive in the evaluation of these factors.

2. The Artificial Distinction between Unilateral and Coordinated Effects

The Guidelines suggest that there is one economic theory that underlies the analysis of unilateral effects of a merger on competition and another that provides the basis for coordinated effects. As described in the Guidelines, mergers can reduce competition through unilateral effects because "merging firms may find it profitable to alter their behavior unilaterally following the acquisition by elevating price and suppressing output."¹⁰ Alternatively, the Guidelines suggest that mergers can reduce competition through coordinated interaction by creating market conditions that "are conducive to reaching terms of coordination, detecting deviations from those terms, and punishing such deviations."¹¹

However, the Guidelines' distinction between unilateral and coordinated effects is artificial and provides a misleading view to practitioners, courts, and others of the economic theory that provides the foundation for merger enforcement. Instead, both unilateral and coordinated effects analyses are

¹⁰ HORIZONTAL MERGER GUIDELINES, *supra* note 1, § 2.2.

¹¹ *Id.* § 2.1.

properly understood as variations of noncooperative game theory, which provides the general theoretical basis for all types of concerns about the potential adverse effects of mergers on consumers.

Empirical unilateral effects models are often based on static models of Bertrand competition, which reflects the (highly stylized) view that firms compete by making noncooperative decisions when determining prices for differentiated products. The Bertrand model is static in the sense that firms are assumed to make simultaneous decisions about price while recognizing the interdependence of their decisions. Analysis of coordinated effects is typically less formal than that of unilateral effects, and often involves identifying and evaluating a variety of factors that affect the way that firms respond to each other's actions over time.

Thus, a principle distinction between the Guidelines' analysis of unilateral and coordinated effects is the extent to which the analysis focuses on static or dynamic factors. This seems like a peculiar use of terminology over substance, and both types of analyses are properly considered as variants of noncooperative game theory. There is no reason that a static differentiated product model based on Bertrand competition cannot be extended to account for dynamic competition, in which case it would look like what the Guidelines would call a coordinated effects model.

The Guidelines appear to suggest that unilateral and coordinated effects analysis may be distinguished based on whether the merging firms are each other's next best substitutes and whether rivals hold price constant in response to price changes by the merged firm.¹² If there is, in fact, an adverse competitive effect of the merger holding constant rivals' prices, then according to the Guidelines the two merging firms by themselves constitute a relevant market. That is, the logic of the Guidelines implies that the market is very narrow. The antitrust agencies should explicitly recognize this implication of the Guidelines and not be embarrassed by it. But there is no need for an anticompetitive merger to be limited to firms that are each other's next best substitutes—all the competitive constraints on the merged firm should matter and there certainly is no reason to limit analysis to cases where rivals do not alter their prices post-merger.

As a practical matter, unilateral effects analysis is often used in circumstances in which the standard "coordinated effects" analysis based on the market definition/market concentration framework would imply a very narrow market definition that might make agencies and courts uncomfortable. That is, litigators may find it easier from an advocacy perspective to argue that the market is broad while relying on a unilateral effects analysis to demonstrate a competitive impact. A revision to the Guidelines can make

¹² I use the word "appear" because, in practice, unilateral effects are often estimated using a merger simulation model that allows for the nonmerged firms to alter their prices post-merger.

a valuable and basic contribution by stressing that it is not illogical to define markets that consist of the set of products subject to a modest post-merger price increase. That is, the agencies should not be reluctant to advocate a narrow market that is properly defined.

It is possible to draw a distinction between a situation in which a merger harms competition by reducing the number of firms competing in the same competitive game as that which existed pre-merger and a situation in which there are not only fewer firms post-merger but the competitive game has changed. For example, the competitive game could have changed because certain information may become more transparent, allowing for better monitoring of rivals' prices. But the Guidelines contain no such distinction as presently written.

The suggestion to de-emphasize the distinction between unilateral and coordinated effects in the Guidelines today should not be misunderstood to allow the agencies to investigate or challenge mergers on vague or unstated grounds. The agencies should, of course, clearly delineate any theory of competitive harm being explored and, if appropriate, provide guidance to the merging parties as to how those concerns can be addressed.

3. *A Greater Emphasis on Fixed Cost Savings*

The Guidelines currently recognize that mergers may result in substantial savings in fixed costs, but also note that it may be difficult to establish that these savings are merger-specific or to verify them. Agencies are also skeptical that consumers benefit from merger-related savings in fixed costs because, in many oligopoly models, price depends on marginal costs, not fixed costs.

However, such oligopoly models often fail to fully capture the nature of dynamic competition in industries that are characterized by high fixed costs and low marginal costs.¹³ Many industries that are the focus of current anti-trust attention—including computers, telecommunications, pharmaceuticals, and others—fit these criteria, and are characterized by high levels of R&D and intense competition to innovate. In such industries, reductions in the fixed costs of R&D are likely to increase incentives to invest in R&D by lowering the “hurdle” that firms must overcome to realize a profitable opportunity. Failure to account adequately for the effect of mergers on such incentives can cause agencies to stop mergers that would benefit consumers by fostering such innovation.

The Guidelines could provide an improved understanding of fixed cost efficiencies by explicitly recognizing the importance of merger-related

¹³ Fixed cost reductions result in real resource savings which benefit society. However, there is no need to debate whether merger review should be based on consumer surplus or total surplus (including both producer and consumer surplus) as long as the role of fixed cost savings in fostering dynamic competition is properly recognized.

reductions in fixed costs on a firm's incentive to invest in R&D and introduce new products and services that can improve consumer welfare. The economic literature recognizes that much of the gains in consumer welfare over time can be directly attributed to technological innovations and new products including, among others, new drugs and medical treatments, mobile phones, and the Internet.¹⁴

The Antitrust Modernization Commission also recommended that the enforcement agencies "should ensure that they give sufficient credit to certain fixed cost efficiencies."¹⁵ The Commission recognized that fixed cost efficiencies benefit consumers by providing increased incentives to innovate and lower prices in the long run. The Commission also correctly stressed that merger-related savings in fixed costs benefit consumers as well as producers, resulting in resource savings to the economy.

4. *The Need to Establish Numerical Thresholds Based on Empirical Analysis*

As mentioned above, many transactions approved by the enforcement agencies involve levels and changes in concentration in excess of the HHI thresholds now identified in the Guidelines. This reflects the fact that the thresholds incorporated into the Guidelines do not have a solid basis in economic analysis and are currently set at levels that are too low to provide proper guidance to practitioners, courts, and others, though the recent reports by the government agencies have done a good job of addressing this issue.¹⁶

The DOJ, FTC, and academic community should place greater emphasis on analysis that would help to establish thresholds that better reflect the risk of harm to competition that results from a proposed merger. However, the Guidelines need to note and enforcement agencies need to recognize that numerical thresholds can never hope to provide absolute guidance to enforcement activities. Thresholds can at best provide rough guidance, and agencies' enforcement decisions must also account for the large number of other factors that arise in a more detailed review.

5. *Eliminating Reliance on Speculative Theories of Competitive Harm*

The economic literature stresses the difficulty of anticipating discrete future events, such as the difficulty in predicting the source and timing of new innovations due in part to the fact that innovations can come both from

¹⁴ To cite one example, Murphy and Topel find that advances in medical technology and health care have resulted in very large benefits to consumers. They conclude that "[c]umulative gains in life expectancy after 1900 were worth over \$1.2 million to the representative American in 2000, whereas post-1970 gains added about \$3.2 trillion per year to national wealth, equal to about half of GDP." Kevin Murphy & Robert Topel, *The Value of Health and Longevity*, 114 J. POL. ECON. 871 (2006).

¹⁵ ANTITRUST MODERNIZATION COMM'N, *supra* note 2, at 58.

¹⁶ See *infra* notes 5 & 6.

industry outsiders as well as from current market participants. As noted above, the economic literature also recognizes the enormous contribution of new products and services to consumer welfare. Under these circumstances, errors by agencies in understanding the nature of innovation competition can result in significant consumer harm by slowing innovation.

In recent years, enforcement agencies have challenged proposed mergers based on concerns that the transactions would result in a reduction in competition in “innovation markets.”¹⁷ However, the economic literature provides little guidance with respect to how participants in such markets should be identified or how many competitors are needed to preserve the appropriate competition in developing innovations.¹⁸ As a result, enforcement actions based on claims of reduction in competition in innovation markets are inherently speculative.

Agencies may be able to use a careful fact-based analysis to identify circumstances in which a merger would harm innovation competition. For example, certain pharmaceutical markets have well-defined product pipelines that identify new products that may be introduced over various time horizons. Such information may be of value in assessing the impact of pharmaceutical mergers on innovation competition. However, I am not aware of any reliable basis that the Guidelines can use to provide general guidance in identifying transactions that may harm innovation competition. As a result, attempts to use the Guidelines to institutionalize the concept of innovation markets are likely to result in misleading guidance to practitioners and courts.

Similarly, claims that a proposed transaction will reduce “potential competition” often require highly speculative assessments of whether one of the participants in a proposed merger would have entered the market in the absence of the merger. As with innovation, a detailed fact-based analysis may sometimes be able to establish that a merger involves a firm that would have entered in the absence of the proposed transactions. But attempts to describe such conditions in the Guidelines are likely to provide misleading guidance to practitioners and courts.

Enforcement agencies currently make significant efforts to avoid speculation in various parts of a merger review. For example, the agencies do not speculate about whether the parties to a proposed transaction might pursue an alternative transaction in identifying the benchmark against which a proposed transaction is considered. The Guidelines should also refrain from attempting to address other circumstances in which merger analysis is inherently speculative.

¹⁷ See Michael Katz & Howard Shelanski, *Mergers and Innovation*, 74 ANTITRUST L.J. 1 (2007) for a discussion of cases involving innovation markets.

¹⁸ See Dennis Carlton & Robert Gertner, *Intellectual Property, Antitrust and Strategic Behavior*, in INNOVATION POLICY AND THE ECONOMY 3 (A. Jaffe, J. Lerner & S. Stern eds., National Bureau of Economic Research 2003).

6. *A Revised Approach to Geographic Market Determination*

The starting point for the geographic market definition analysis presented in the Guidelines focuses on the competitive conditions faced by suppliers in different geographic areas.¹⁹ The Guidelines define the geographic market by, in effect, drawing a circle around a group of suppliers in a geographic area, and then asking whether a hypothetical monopolist of the identified locations would be able to sustain a price increase. The scope of the geographic market is defined by expanding the geographic area to the point at which outside suppliers would no longer be able to defeat an attempt by the hypothetical monopolist to raise its price.

This approach, however, can provide a potentially confusing view of the competitive impact of a merger between geographically distinct suppliers. Instead, geographic markets are more naturally defined using customers in a geographic location (not suppliers) as the starting point of the analysis. The scope of the geographic market would then be defined by expanding the geographical scope of this customer-centric area to the point that outside suppliers could no longer defeat an attempt by a hypothetical monopolist to raise its price to particular buyers.

Shifting the focus of geographic market analysis in this way would be consistent with how the Guidelines identify price discrimination markets. The Guidelines define price discrimination markets by first identifying a set of “targeted buyers” and then determining what other products to which such buyers may switch in response to an increase in the price of the relevant product. Although under certain conditions, a market with no price discrimination can be equally well defined either by starting with supplier locations or by starting with buyer locations,²⁰ many cases involving geographic market definition involve some ability to price-discriminate. As a result, the consumer-based approach is generally preferable.

7. *The Artificial Distinction between “Committed” and “Uncommitted” Entry*

The Guidelines attempt to distinguish between “committed” entry, which requires that the supplier face significant sunk costs, and “uncommitted” entrants that can rapidly enter and exit without significant sunk costs. According to the Guidelines, uncommitted entrants include firms that do not currently sell in the relevant market but could do so within one year without the expenditure of significant sunk costs.²¹ Committed entrants

¹⁹ HORIZONTAL MERGER GUIDELINES, *supra* note 1, § 1.21 (stating that “the Agency will delineate the geographic market to be a region such that a hypothetical monopolist that was the only present or future producer of the relevant product at locations in that region would profitably impose at least a ‘small but significant and nontransitory’ increase in price”).

²⁰ Dennis Carlton, *Market Definition: Use and Abuse*, 3 COMPETITION POL’Y INT’L 3 (2007).

²¹ HORIZONTAL MERGER GUIDELINES, *supra* note 1, § 1.32.

include firms that could achieve a significant impact on price within two years from the time of initial planning.²²

This distinction, however, is artificial and confusing; it would be more appropriate for the Guidelines to recognize that there is a continuum between committed and uncommitted entry. For example, even firms that make closely related products often need to make irreversible investments in marketing and distribution when extending their product line. While the Guidelines ask the right question—whether competition will be reduced over some relevant time period—the distinction between committed and uncommitted entrants has not proven to be of practical help in answering that question. Instead, empirical evidence based on entry by both “committed” and “uncommitted” entrants should be given full consideration by the enforcement agencies in both identifying market participants and evaluating the likelihood of entry.

8. *A Proper Definition of a “Maverick” Firm*

The Guidelines explain that the removal through a merger of a maverick firm could adversely affect competition. A maverick firm is presumably a firm that is an aggressive competitor. But the current Guidelines do not explain why the firm is a maverick, and that failure could lead to policy mistakes.

Suppose a firm is an aggressive competitor because it is run by an unthinking CEO who loves to cut prices. If that CEO is replaced by a more rational CEO as a result of a horizontal merger, it is true that competition may be lessened, but so too would that happen if the CEO were replaced as the result of a nonhorizontal merger. Should both mergers be prevented? Should psychiatrists be used to assess the relative aggressiveness of the new CEO versus the old CEO? To pursue that type of analysis would be a mistake because it would inject arbitrariness into the merger review process. Any revision of the Guidelines should make clear that a “maverick” is a firm that is an aggressive competitor because of its economic circumstances. A merger could change those circumstances and thereby diminish competition, but the analysis should be based on what rational, profit-maximizing behavior dictates and not on a comparison of the personality traits of the new and old CEO.

D. Conclusions regarding Desirable Revisions

Any revision to the Guidelines should provide general guidance, not a detailed cookbook of how to use techniques of analysis. Commentaries and closing statements can illustrate the advantages as well as the limitations of various techniques. An emphasis on the importance of empirical evidence together with a clarification of the distinction between unilateral and

²² *Id.* § 3.0.

coordinated effects would be my top recommendations. Let us now turn to the new Guidelines that have been proposed.

III. REACTIONS TO THE PROPOSED GUIDELINES

A. Introduction

The DOJ and FTC issued proposed Guidelines in April 2010. These proposed Guidelines not only reflect their own thinking but also take into account some of the many comments that I and others have made. Although the proposed Guidelines do not reflect all of the recommendations discussed in Part II of this paper, they do respond to several. My central conclusion regarding the proposed Guidelines is that they provide an excellent, detailed statement of how the antitrust agencies actually analyze mergers. The Guidelines mention that there are caveats about the appropriate use of the methods described. However, although the antitrust agencies may well understand those caveats, potential users of the Guidelines, including courts, foreign antitrust agencies, and the business community, may not have the same level of understanding. My purpose in this section is not necessarily to highlight the remaining differences between what I have suggested in Part II and what the proposed Guidelines say (that should be evident to the reader), but rather to make clear to those who might use the Guidelines to formulate antitrust policy, such as courts and foreign antitrust agencies, what are some of the limitations of the proposed Guidelines.

I discuss particular aspects of the proposed Guidelines in order to make clear the limitations surrounding some of the methods described. Such clarity is important given the broad set of constituencies that the Guidelines necessarily serve. As described in the proposed Guidelines:²³

These Guidelines are intended to assist the business community and antitrust practitioners by increasing the transparency of the analytical process underlying the Agencies' enforcement decisions. They may also assist the courts in developing an appropriate framework for interpreting and applying the antitrust laws in the horizontal merger context.

If courts and others are to use the Guidelines, it is important that they understand not only what the antitrust agencies might do in evaluating mergers, but rather why it makes economic sense for the antitrust agencies to do what they do, including the strengths, weaknesses, and limitations of the various methods. As one important example, to the extent that the antitrust agencies use methods that are not yet empirically tested, it is important for courts and others to understand that limitation.

²³ FED. TRADE COMM'N & DEP'T OF JUSTICE, HORIZONTAL MERGER GUIDELINES FOR PUBLIC COMMENT, at 1 (Apr. 20, 2010) [hereinafter PROPOSED GUIDELINES].

My comments are intended to clarify those issues in the proposed Guidelines that I view as particularly important for potential users to understand. In Part III.B, I address the Guidelines' proposed general economic framework for merger review. In Part III.C, I discuss the Guidelines' proposed use of the UPP methodology and urge caution in its application given the relatively untested nature of the methodology as a screen for anticompetitive mergers. In Part III.D, I describe the need for additional empirical research to help guide the continued development of merger policy.

I draw several conclusions about the Guidelines' proposed general economic framework for merger review. First, the new numerical cutoffs for HHIs may better reflect how government agencies evaluate mergers than did the cutoffs in the old guidelines, but like the old numerical cutoffs, they lack an empirical basis. Second, any suggestion that the courts should abandon the use of market definition when analyzing the competitive effects of mergers is unwise, as the failure to define markets would likely increase the number of erroneous decisions reached by courts. Third, although the proposed Guidelines mention the potential value of nonprice competition, the emphasis is primarily on price competition. One result is that the proposed Guidelines do not convey clearly to courts and others the importance of efficiencies in stimulating nonprice competition, including competition to innovate. Such nonprice competition may be particularly important in industries (such as telecommunications, computer software, and pharmaceuticals) with high levels of R&D, high fixed costs, and low marginal costs. In such industries, a high margin may not indicate a lack of dynamic competition, and fixed cost or product quality efficiencies may be particularly important in stimulating dynamic competition. Finally, the distinction between unilateral and coordinated behavior, which has been carried over from the previous Guidelines, is not a sharp one and is likely to lead to confusion, particularly to the extent that it suggests that there are two distinct economic theories of oligopoly.

My conclusions with respect to the use of UPP in the section on unilateral effects (Section 6) of the proposed Guidelines are as follows. UPP has not yet been widely discussed in the economic literature as a screen for potentially anticompetitive mergers, and the leading article on the topic (by Farrell and Shapiro) notes a number of caveats in the use of UPP.²⁴ These caveats are of importance to the business community and courts but are not addressed in the proposed Guidelines. Moreover, these caveats include limitations on UPP's power in predicting the price effects of mergers, including the fact that the UPP methodology does not account for the fact that merger-related efficiencies in one product may lower the equilibrium prices of other products involved in the merger.

²⁴ Farrell & Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, *supra* note 7.

Finally, in Part III.D, I note that there has been a dearth of research that tests which merger evaluation methods work and in what contexts they work. The research that has been done suggests that some existing methods may yield inaccurate predictions about post-merger prices in some cases.²⁵ Hence, additional testing of all methods contained in the proposed Guidelines should be a high priority and, until such testing occurs, there will remain concerns about the reliability of the proposed methods.²⁶

B. Some Basic Comments on the Proposed Guidelines

In this section, I comment on the general economic framework presented in the proposed Merger Guidelines, including the proposed use of market concentration measures, the proposed de-emphasis of market definition, the role of nonprice competition, and the proposed Guidelines' attempts to distinguish unilateral and coordinated effects. In each case, the points I raise are almost certainly understood by those at the antitrust agencies who use the methods described in the proposed Guidelines; however, my concern is that the points may not be equally well understood by others relying on the proposed Guidelines, including courts, foreign antitrust agencies, and the business community.

1. *The Absence of Well-Established Economic Research Supporting the New HHI Thresholds*

Like the existing Guidelines, the proposed Guidelines include “HHI thresholds,” both as a screen to determine which mergers are likely to “warrant scrutiny” and as a way to define mergers that are presumed “to be likely to enhance market power.”²⁷ Although the proposed Guidelines have raised the HHI thresholds between “unconcentrated,” “moderately concentrated,” and “highly concentrated” markets from the thresholds in the existing Guidelines, this does not mean that the proposed Guidelines have relaxed the stringency of merger review.²⁸ Rather, increasing the thresholds likely brings the proposed Guidelines more in line with actual agency practice than are the existing Guidelines. However, even with this change, it

²⁵ See, e.g., Craig Peters, *Evaluating the Performance of Merger Simulation: Evidence from the U.S. Airline Industry*, 49 J.L. & ECON. 627 (2006).

²⁶ For more on this point, see Carlton, *supra* note 8.

²⁷ PROPOSED GUIDELINES, *supra* note 23, at 19.

²⁸ In particular, the Proposed Guidelines raise the HHI cutoff from 1000 to 1500 for “moderately concentrated” markets and from 1800 to 2500 for “highly concentrated” markets. In moderately concentrated markets, the proposed Guidelines maintain the standard that mergers that induce HHI changes of 100 or more “potentially raise significant competitive concerns and often warrant scrutiny.” However, for highly concentrated markets, the proposed Guidelines raise from 50 to 100 the change required for mergers to warrant scrutiny and from 100 to 200 the change required for a merger to create a presumption of enhanced market power. *Id.* at 19.

would be a mistake to conclude that the new thresholds reflect actual agency practice in all industries. In fact, the recent FTC review of merger investigations between 1996 and 2007 shows that, even for a given post-merger HHI and merger-induced change in HHI, the ratio of investigations cleared with no conditions to investigations in which relief was sought varies markedly across industries.²⁹

Regardless of the precise cutoff levels used, it would be a mistake for courts to interpret the proposed Guidelines as calling for increased reliance on HHI thresholds, because the value of any HHI thresholds for merger review is extremely limited. At best, HHI thresholds, if based on empirical evidence that relates the thresholds to the likely effects of mergers, could be used as a rough screen for identifying those mergers that might merit further investigation. However, I know of no body of economic research that provides either an econometric or a theoretical basis for the proposed (or existing) thresholds.³⁰ Moreover, there is no basis to apply uniform thresholds across different industries. Hence, to avoid potential misuse of HHI thresholds by courts or other users, it may be preferable for the Guidelines to note simply that HHI levels and changes will be considered one part of merger review, but specific determinations about the implications of the HHI values in any particular merger will be based on empirical research that is specific to the industry in question or at least to industries with similar characteristics.

2. *The Unwise Suggestion that the Courts Should Abandon the Use of Market Definition*

The proposed Guidelines de-emphasize the use of market definition as a tool in merger analysis. Although in some cases the agencies may be able to dispense with the use of market definition and rely on other tools, it would be a mistake for courts, which generally have less antitrust experience than antitrust agencies, to do so. As I explained in Part II, even though market definition may be a crude tool to use, it does provide some structure to an antitrust analysis and its use likely prevents courts from making egregious errors.

²⁹ See *FTC Horizontal Merger Investigation Data*, *supra* note 6, tbls.3.2–3.6. For an example, note that, in the pharmaceutical industry (an industry with important nonprice competition to introduce new and improved products), in markets with post-merger HHIs between 3000 and 5000 and merger-induced changes in HHI between 200 and 1200 (which would be presumed to enhance market power under the Proposed Guidelines), there were nearly as many cases (10) in which the merger was approved with no conditions as cases (11) in which relief was sought. In contrast, for oil mergers, of the 23 markets with HHI levels and changes in this range, relief was sought in 22.

³⁰ To the extent that research on this topic occurs, it should also evaluate concentration measures other than HHI that are used by the agencies, such as the number of “significant competitors in the market.” *Id.* at 4.

In discussing unilateral effects, the proposed Guidelines suggest that a competitive harm could result even if the nonmerging firms in the industry keep their prices unchanged. In such a case, the logic of market definition in the proposed Guidelines would indicate that the products of the two merging firms actually, by themselves, constitute a relevant market. While I sense that enforcement agencies may be reluctant to define explicitly such a narrow market—for fear a court will think the definition is artificial—my view is that one should use and defend a narrow market if it is indeed appropriate. Hence, I am concerned that the unilateral effects framework in the proposed Guidelines may enable government litigators to argue in court either that they have no need for a market definition or that the market is broad but the transaction should be blocked anyway because the parties are close competitors with differentiated products. This approach gives more latitude to government litigators to bring a merger case without having to define and defend an appropriate market. Instead, the Guidelines should help clarify that narrow market definitions can be economically appropriate and reasonable, especially in evaluating the unilateral effects of mergers in industries with differentiated products.

3. Nonprice Competition and the Efficiencies that Can Stimulate Such Competition

The proposed Guidelines mention the potential value of nonprice competition, such as innovation to produce new or improved products. For example, in discussing efficiencies, the proposed Guidelines correctly indicate that efficiencies can come from “improved quality, enhanced service, or new products” in addition to “lower prices.”³¹ The proposed Guidelines also correctly indicate that efficiencies “relating to costs that are fixed in the short term . . . can benefit customers in the longer run, e.g., if they make new product introduction less expensive.”³²

However, relative to the attention paid to price competition, the proposed Guidelines place little emphasis on nonprice competition. For example, the discussion of fixed cost savings is relegated to a footnote, which also notes that although the benefits from fixed costs occur in the longer run, “[t]he Agencies normally give the most weight to the results of this analysis over the short term.”³³ And while the proposed Guidelines note the possibility of efficiencies from improved product quality, they also indicate that “the Agencies consider whether cognizable efficiencies likely would be sufficient

³¹ PROPOSED GUIDELINES, *supra* note 23, at 29.

³² *Id.* at 30. For more on the importance of fixed cost savings, see ANTITRUST MODERNIZATION COMM’N, *supra* note 2, which discusses the ability for fixed cost savings to benefit consumers by creating increased incentives to innovate.

³³ PROPOSED GUIDELINES, *supra* note 23, at 30.

to reverse the merger's potential to harm customers in the relevant market, e.g., by preventing price increases in that market."³⁴ This language does not appear to give as much credit to nonprice effects such as new and improved products that might benefit consumers even if they do not "prevent price increases." Failure to credit such efficiencies would be unfortunate, as economic literature recognizes that much of the gain in consumer welfare over time can directly be attributed to technological innovations and new products, including, among others, new drugs and medical treatments, mobile phones, and the Internet.

I remain concerned that courts or other users of the proposed Guidelines may perceive that merger analysis should place relatively little weight on factors such as (1) consumer benefits that derive from nonprice competition, including competition to innovate and produce new or improved products, and (2) fixed cost and other efficiencies that stimulate such competition. I am particularly concerned that the proposed Guidelines could lead either the antitrust agencies themselves or courts to stop beneficial mergers in industries characterized by high levels of R&D and intense competition to innovate (for example, computers, telecommunications, and pharmaceuticals, among others). Such industries are often characterized by high gross margins (that is, prices that are well above marginal costs), which may lead mergers to be scrutinized closely due to the proposed Guidelines' stated view that "high pre-merger margins normally indicate that each firm's product individually faces demand that is not highly sensitive to price."³⁵ Compounding the problem, the benefits from such mergers often flow from merger-enabled reductions in fixed costs and the associated increase in incentives to invest in R&D and introduce new products. Failure to account adequately for the effect of mergers on such incentives could cause agencies to challenge mergers that would foster such innovation and enhance consumer welfare.

To avoid improper merger enforcement decisions, two important points should be incorporated into the proposed Guidelines and merger review. First, in industries characterized by high levels of R&D and associated high fixed costs, as well as relatively low marginal costs, high short-run gross margins (price minus marginal cost) should not be presumed to demonstrate a lack of competition. Rather, there may be intense, dynamic competition to innovate and introduce new and improved products. Second, in such industries, substantial weight should be placed on merger-related reductions in fixed costs that enhance firms' incentives to invest in R&D and thus potentially generate new (or higher quality) products and services.

³⁴ *Id.* at 30.

³⁵ *Id.* at 12.

4. *The Artificial Distinction between Unilateral Effects and “Coordinated Effects” in the Proposed Guidelines*

The proposed Guidelines carry over the distinction between unilateral and coordinated effects from the present Guidelines.³⁶ The proposed Guidelines correctly note that “[i]n any given case, either or both types of effects may be present, and the distinction between them may be blurred.”³⁷ Nevertheless, the delineation of two separate types of “effects” suggests incorrectly that there is one economic theory of oligopoly that underlies potential unilateral effects of a merger on competition and a separate theory that underlies potential coordinated effects.

In fact, the proposed Guidelines’ distinction between unilateral and coordinated effects is artificial and provides a misleading view to practitioners, courts, and others of the economic theory that provides the foundation for merger enforcement. Both unilateral and coordinated effects analyses should properly be understood as variations of oligopoly theory (which is based on noncooperative game theory), which provide the general theoretical basis for any concerns about the potential adverse effects of mergers on consumers. Unilateral effects models are often based on models of Bertrand competition, which are static in the sense that firms are assumed to make simultaneous decisions about price, recognizing the interdependence of their decisions on current demand, but ignoring the dynamic effects of such decisions. Analyses of coordinated effects, although typically less formal than analyses of unilateral effects, generally focus on dynamic factors affecting firms’ interactions over time.

Thus, a principal distinction between what the proposed Guidelines call unilateral and coordinated effects is the extent to which they focus on static or dynamic factors. As I explained in Part II, this distinction seems like a peculiar use of terminology over substance—both types of analyses are properly considered applications of standard oligopoly theory. There is no reason that a static differentiated product model based on Bertrand competition cannot be extended to account for dynamic competition, in which case it would look like what the Guidelines call a coordinated effects model. Of course, static considerations might be more important than dynamic ones for the evaluation of some mergers, but that does not mean that potential harms are properly considered unilateral in some mergers and coordinated in others. My concern is that suggesting such classifications may lead to substantial confusion, particularly in courts.

³⁶ In particular, in the context of unilateral effects, the Guidelines state that “the elimination of competition between two firms that results from their merger may alone constitute a substantial lessening of competition.” *Id.* at 20. In the context of coordinated effects, the Guidelines state that “a merger may diminish competition by enabling or encouraging post-merger coordinated interaction among firms.” *Id.* at 24.

³⁷ *Id.* at 2.

As explained in Part II, there is an alternative interpretation of the distinction between unilateral and coordinated effects, which is worth highlighting. It is possible to distinguish between a situation in which a merger harms competition only by reducing the number of firms competing and a situation in which a merger harms competition not only because there are fewer firms post-merger but also because the way the firms compete has changed. For example, the way firms compete may change post-merger for reasons such as increased transparency of information allowing for better monitoring of rivals' prices. Making such a distinction between a simple change in the number of firms and a more fundamental change in the nature of competition—and describing how the antitrust agencies will evaluate each possibility—would be useful, but the Guidelines contain no such distinction as presently written.

While I suggest that the proposed Guidelines should de-emphasize the distinction between unilateral and coordinated effects, this should not be misunderstood to allow the agencies to investigate or challenge mergers on vague or unstated grounds. The agencies should clearly delineate the mechanism of competitive harm that is being posited and identify which static and dynamic factors are raising competitive concerns.

C. Upward Pricing Pressure

While the proposed Guidelines do not refer explicitly to the “upward pricing pressure” method for evaluating mergers involving differentiated products, Section 6.1 of the proposed Guidelines (on unilateral effects) uses the phrase “upward pricing pressure” and refers to many of the concepts developed in Farrell and Shapiro’s excellent paper on the method.³⁸ As such, it seems highly likely that the business community and courts will see the discussion of unilateral effects as implicitly referencing and perhaps endorsing UPP as a method for the review of differentiated products mergers.

My concerns with the references to UPP are twofold. First, although Farrell and Shapiro’s paper does an excellent job of discussing the appropriate use of UPP, including the caveats associated with its implementation, those caveats do not appear in the Guidelines and thus may not be understood fully by users of the Guidelines. I discuss some of those caveats in the remainder of this section. In particular, measuring the “UPP index” raises important conceptual and practical issues, which may be difficult to overcome.³⁹ Moreover, even if one can properly measure the UPP index for each product involved in a merger, evaluating what those indexes imply for price

³⁸ Farrell & Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, *supra* note 7.

³⁹ Throughout this section, I use the term “UPP” to refer to the general methodology described in Farrell and Shapiro’s paper and the term “UPP index” to refer to the specific mathematical formula computed as part of the methodology.

changes raises caveats that are discussed in Farrell and Shapiro's article but could easily be missed by users of the Guidelines. For example, due to its single-product focus, UPP does not incorporate the possibility that efficiencies on one product may generate lower equilibrium prices for other products involved in the merger.

Second, the use of UPP as a merger screen is untested; to my knowledge, there is no empirical analysis that has been performed to validate its predictive value in assessing the competitive effects of mergers. I return to the need for more empirical work to evaluate UPP (and other merger review methods) in Part III.D.

1. Conceptual and Practical Measurement Issues in Measuring the UPP Index

To use UPP requires that one compute one (seemingly simple) index to capture the upward pressure that a merger places on the prices of the products sold by the merging firms. In particular, consider the case in which two single-product firms (Firm 1 and Firm 2) merge. The UPP index for the product sold by Firm 1 is defined as follows:⁴⁰

$$UPP_1 = D_{12}^*[P_2 - C_2] - E_1^*C_1,$$

where P_2 is the price of Firm 2's product ("Product 2"), C_j is the marginal cost of Product j , E_1 is the percentage change in Product 1's marginal cost due to the merger, and D_{12} is a diversion ratio equal to the fraction of the sales lost by Product 1 (due to an increase in P_1) that are captured by Product 2. UPP_2 is defined symmetrically. Despite its simple form, proper measurement of the UPP index raises both theoretical and practical issues, which I describe in turn, below.

a. Theoretical Issues with Measuring the UPP Index

As explained in Farrell and Shapiro's paper, the form of the UPP index derives from "the assumption of classic, static Bertrand price setting behavior between the two merging firms."⁴¹ In the static Bertrand setting, under fairly general conditions, if the UPP indexes are positive for all products sold by Firm 1 and Firm 2 (which, in practice, may be substantially more than two products), then the merger will raise the prices of all products sold by each firm.

However, the fact that the specific form of the UPP index depends on the assumption of static Bertrand price setting—in which firms simultaneously set prices taking one another's prices as fixed—raises important theoretical

⁴⁰ The notation here borrows from Richard Schmalensee, *Should New Merger Guidelines Give UPP Market Definition?*, 1 GCP: THE ANTITRUST CHRON. 1 (2009).

⁴¹ Farrell & Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, *supra* note 7, at 15.

issues for the measurement of the UPP index. In particular, recent research has demonstrated that although the concept of UPP is quite general, the details of how the diversion ratio should be computed depend on the specific oligopoly model that actually applies to the industry.⁴² Because it is difficult to know precisely what oligopoly model best applies to an industry, it is difficult to know the correct diversion ratio to use in a more general form of the formula. To the extent that practical implementations rely on the standard diversion ratio (implied by the static Bertrand model), it is important for users to understand that if the industry does not actually conform to the static Bertrand model, the result that positive UPP indexes for all products necessarily imply price increases for all products does not hold.⁴³

An example in which firms do not behave according to the static Bertrand model (where price competition is the only form of competition) may help to clarify this point. Suppose that the following conditions (similar to those discussed in Part III.B.3) hold: Firm 1 and Firm 2 compete to introduce new products; there are several firms competing in the industry; and a merger of Firm 1 and Firm 2 will lower the costs of innovating. In such a case, the merger may be procompetitive, even though the UPP index may be high.

b. Practical Issues with Measuring the UPP Index

In addition to these theoretical concerns, computing the UPP index may raise a number of practical measurement issues. Application of UPP requires reliable product-specific information on diversion ratios between products, gross margins (price less marginal cost), and merger-related cost savings. Measurement of each of these elements may be complex and raise a variety of issues that may generate disagreement among experts. Each of these measurement issues can be more complicated than the issues that typically arise in market definition and market concentration analysis. In the remainder of this section, I describe each of these difficulties.

i. Difficulties with Measurement of Diversion Ratios

Although a diversion ratio is easy to describe, it would be misleading to think that the ease of description carries over to an ease of measurement. In fact, to calculate a diversion ratio, one must implicitly estimate both the own-price and cross-price elasticities of demand. Although such calculations

⁴² See Glen Weyl, *The First-Order Approach to Merger Analysis* (Work in progress, Harvard University 2010), available from the author on request.

⁴³ This critique applies not only to UPP but also more generally to merger simulation models that rely on a specific model of oligopoly such as static Bertrand competition. This critique also highlights the need for empirical work on the accuracy of predictions based on UPP. The extent to which, in practice, deviations from Bertrand competition may bias results based on UPP (or merger simulation) cannot be known without substantial testing.

are fairly common, estimation of demand curves is neither easy nor likely to be something that will not generate controversy.

ii. Difficulties with Measurement of Margins

Similarly, although it is easy to describe a margin as the difference between price and marginal cost, it would be misleading to think that the ease of description translates into an ease of measurement. In particular, the relevant margin involves marginal cost, not average variable cost. It is often difficult to calculate marginal cost because standard accounting data do not do so. If one uses average variable cost as an approximation to marginal cost, then one runs the risk of overestimating margins (and market power), with the consequence that the UPP index will overestimate the incentive to raise prices post-merger, because average variable cost is often below marginal cost.⁴⁴ Moreover, as discussed above (in Part III.B.3), high margins can be consistent with dynamic competition involving innovation, and this type of competition is ignored by the UPP methodology.

iii. Difficulties With Measurement of Cost Savings

Finally, although cost savings associated with a merger may be easy to describe in general terms, they may be difficult to quantify. Despite these difficulties, one cannot ignore efficiencies when computing the UPP index because, absent efficiencies, UPP implies that all mergers between firms selling differentiated products will lead to price increases. The Farrell and Shapiro article recognizes this point and, to address it, suggests using a “standard deduction” to account for “default efficiencies,” so that using UPP will not lead to the investigation of all mergers, but rather will be limited to identifying mergers that create significant price increases.⁴⁵ However, the proposed Guidelines are silent on any sort of “standard deduction” or “default efficiency” gains, so it is unclear how the antitrust agencies will incorporate efficiencies in assessing which mergers to investigate, particularly in the common case in which efficiencies are difficult to quantify with precision.

2. Shortfalls in the UPP Index’s Predictive Ability, Even If Measured Properly

Even if static Bertrand competition is a reasonable description of oligopoly behavior in a given industry and the practical issues with measuring the

⁴⁴ For example, in a long-run equilibrium in a perfectly competitive market with identical firms, price equals marginal cost, which equals average total cost, and thus exceeds average variable cost. See DENNIS W. CARLTON & JEFFREY M. PERLOFF, *MODERN INDUSTRIAL ORGANIZATION* 63 (4th ed. 2005).

⁴⁵ Farrell & Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, *supra* note 7, at 10.

UPP index can be overcome, UPP may be of limited value in predicting a merger's likely effect on prices. Most basically, there are many cases in which UPP does not even yield a clear prediction about the sign of a merger's likely effect on prices (that is, positive or negative). And even in those cases where UPP does yield clear predictions about the direction of a merger's price effects, it is of limited value in predicting the relative magnitudes of the price effects.

a. Limitations of UPP in Predicting the Sign of a Merger's Effect on Prices

Farrell and Shapiro show that (assuming static Bertrand competition) if the UPP indexes for all relevant products are positive, then the merger will increase the price of all products. Note that this result does not provide guidance on the case in which the UPP indexes for some of the products involved in a merger are positive, whereas the UPP indexes for other products are negative. If the UPP indexes for various products have different signs, then UPP yields an indeterminate result. To draw inferences about the effect of a proposed merger on price in such cases, one would need to take the additional step of using a merger simulation model to estimate the predicted price changes post-merger, a task that requires, among other things, specific assumptions about the demand curve for each product.

In their paper, Farrell and Shapiro propose one solution to this indeterminate case. They suggest that "a positive test result for any (significant) product should be enough to trigger further scrutiny."⁴⁶ It is not clear to me why that is the appropriate standard when UPP does not provide any clear predictions in this case.

For an example, Table 1 considers a hypothetical merger between two single-product firms (Firm 1 and Firm 2) in an industry consisting of four symmetric, single-product firms. The example is defined such that if Firm 1 and Firm 2 merge, then, in the absence of any marginal cost efficiencies, the UPP index for each firm is equal to \$6.25.⁴⁷ Table 1 presents three variations on this example, in which the marginal cost efficiency for Product 1 due to the merger is \$5, whereas the marginal cost efficiency for Product 2 is \$8 (Case A), \$10 (Case B), or \$15 (Case C). Hence, in each of these cases, the UPP index is positive for product 1 and negative for product 2,

⁴⁶ *Id.* at 27.

⁴⁷ The details of the example are as follows. The demand curve for Firm 1 takes the linear form: $Q_1 = 50 - P_1 + 0.25 * P_2 + 0.25 * P_3 + 0.25 * P_4$, where Q_1 is the quantity produced by Firm 1, and P_1 through P_4 are prices for Firms 1 through 4, respectively. The demand curves for other firms are symmetric to that of Firm 1. The marginal cost for each firm is \$75. Competition is assumed to be static Bertrand. Hence, at the pre-merger equilibrium, the following conditions hold: each product has a price of \$100, each firm sells a quantity of 25 units, the own-price elasticity for each product is equal to -4 , and the cross-price elasticity between all products is equal to 1.

Table 1. UPP indexes and overall price changes

Case	UPP index (no efficiencies), \$		Efficiencies, \$		UPP index (with efficiencies), \$		Price change, %	
	Firm 1 and Firm 2		Firm 1	Firm 2	Firm 1	Firm 2	Firm 1	Firm 2
A	6.25		5	8	1.25	-1.75	1.76	0.26
B	6.25		5	10	1.25	-3.75	1.71	-0.79
C	6.25		5	15	1.25	-8.75	1.57	-3.42

meaning that in each case, the merger's price effects are indeterminate under the UPP methodology.

Table 1 shows the actual price effects of a merger under these conditions. As seen in the table, the results are quite different across the cases, with price increases for both Product 1 (1.76%) and Product 2 (0.26%) in Case A, but price declines for Product 2 in Cases B (-0.79%) and C (-3.42%). Given that the products have equal pre-merger quantities, a reasonable merger standard might be to approve mergers if and only if the average price change is negative, in which case the merger should be approved for Case C, but not Cases A and B. Regardless of how the price changes are weighed against one another, Table 1 demonstrates that UPP makes no clear prediction about the sign of a merger's effect on price when the UPP indexes are positive for some products and negative for others. A full merger simulation (or some other source of evidence) is required.

b. Limitations of UPP in Predicting the Magnitude of a Merger's Effect on Prices

Farrell and Shapiro recognize that UPP is of limited value in predicting the magnitude of a merger's effect on prices. However, this important limitation of UPP analysis may not be clear to courts or other users of the Guidelines, who may assume that higher UPP indexes necessarily mean larger expected price increases. This section illustrates two limitations of UPP in predicting the size of a merger's effects on prices: (1) due to differences in "pass-through rates" (the rate at which cost changes are passed through to prices), two different mergers may have the same UPP index yet produce significantly different effects on prices; and (2), due to its single-product focus, UPP fails to consider the "feedback effects" that result from a merger's simultaneous effect on the prices of multiple products, including the effect of cost efficiencies for one product on prices of other products.

i. Effect of Different Pass-through Rates

Because of differences in pass-through rates, two different mergers may have the same UPP indexes yet produce significantly different effects on prices. To understand why different pass-through rates matter for a merger's effect

on prices, consider the index UPP_1 , as defined above. One interpretation of this index is that, if one treats the price of Product 2 as fixed, then the effect of the merger on the price of Product 1 is identical to the effect of a cost increase of size UPP_1 on Product 1.⁴⁸ Although a useful insight, this interpretation also demonstrates that the merger's effect on the price of Product 1 depends on the rate at which such cost changes are passed through to price, which can vary widely across industries due to, for example, differences in the shape of demand curves in different industries.⁴⁹

Table 2 presents merger simulation results to demonstrate the potential importance of differential pass-through rates in different industries (because of differences in the shape of the demand curves) on actual merger price effects. In particular, Table 2 presents results from two cases, where Case A uses the same setup as used in Table 1 (including linear demand curves), whereas Case B replaces the linear demand curve with a "PCAIDS" demand curve,⁵⁰ which is calibrated to yield the same pre-merger equilibrium as in Case A.⁵¹ For simplicity, there are assumed to be no marginal cost efficiencies from the merger, which, given the parameters used in the example, means that the UPP index for each merging firm is equal to \$6.25 in both Case A and Case B.

Table 2 presents the results of this simulation, which demonstrate that, given different demand curves and thus different pass-through rates, two mergers with the same UPP indexes can generate substantially different price effects.⁵² In particular, despite the fact that the UPP index is the same for both demand curves (\$6.25), the price increase from the merger is

⁴⁸ See Luke Froeb, Steven Tschantz & Gregory J. Werden, *Pass-through Rates and the Price Effects of Mergers*, 23 INT'L J. INDUS. ORG. 703 (2005); Farrell & Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, *supra* note 7.

⁴⁹ The fact that different demand curves can lead to substantially different price predictions is well understood, having been previously documented in the context of merger simulations. See, e.g., Philip Crooke, Luke Froeb, Steven Tschantz & Gregory Werden, *Effects of Assumed Demand Form on Simulated Postmerger Equilibria*, 15 REV. INDUS. ORG. 205 (1999).

⁵⁰ The PCAIDS demand system, a variant of the Almost Ideal Demand System (AIDS), was proposed for use in merger simulations by Roy Epstein & Daniel Rubinfeld, *Merger Simulation: A Simplified Approach with New Applications*, 6 ANTITRUST L.J. 883 (2001).

⁵¹ For Case A, the linear demand curves for each firm are the same as specified for Table 1 (footnote 47). For Case B, the PCAIDS demand curve for Firm 1 is given by: $S_1 = 0.25 - 0.75 * \ln(P_1) + 0.25 * \ln(P_2) + 0.25 * \ln(P_3) + 0.25 * \ln(P_4)$, with the demand curves for all other firms symmetric to that of Firm 1. For both Case A and Case B, the marginal cost for each firm is \$75. Competition is again assumed to be static Bertrand. Hence, in the pre-merger equilibria for both Case A and Case B, the following conditions hold: each product has a price of \$100, each firm sells a quantity of 25 units, the own-price elasticity for each product is equal to -4 , and the cross-price elasticity between all products is equal to 1.

⁵² As discussed above, the UPP index for Product 1 is precisely the same as a cost change only when the prices of other products are held fixed, so that there are no feedback effects. However, to conform with standard merger simulation methods, the results in Table 2 allow the prices of all products to change. My conclusions are unaffected if I instead model a case

Table 2. UPP and predicted price change from merger simulation

Model	UPP index for Firm 1, \$	Price increase for Firm 1 from merger simulation, %
Case A: demand is linear	6.25	4.61
Case B: demand is PCAIDS	6.25	8.43

substantially larger when the demand curve has the PCAIDS functional form (8.43 percent) than when it has the linear form (4.61 percent).⁵³

ii. *Feedback Effects*

In their paper, Farrell and Shapiro recognize that, whereas UPP looks at price effects for each product in isolation (holding the price of all other products at their pre-merger levels), actual price effects depend on the feedback between the price changes of various products. In particular, they discuss the effect of a marginal cost efficiency for one product on the prices of other products involved in the merger, noting that UPP “does not account for the fact that any cost reduction in Product 2 will raise Product 2’s margin and thus raise the value of sales diverted to Product 2 when the price of Product 1 rises.”⁵⁴ The implication they draw is that the feedback effects make use of UPP conservative.⁵⁵ As I now show, this need not be the case.

There is an important effect of marginal cost efficiencies for Product 2 on the price of Product 2 that then has a feedback effect on the price of Product 1. In particular, to the extent that efficiencies from the merger lower the marginal cost of Product 2, this will tend to *reduce* the price of Product 2, which will in turn put *downward pressure* on the price of Product 1. This effect is completely ignored by UPP.

Table 3 presents simulation results demonstrating these feedback effects. Using the same basic setup as that in Case B from Table 2 (including PCAIDS demand curves), the table reports equilibrium price

in which only the price of Product 1 is allowed to change, with the prices of all other products fixed at their pre-merger levels, thus eliminating feedback effects.

⁵³ Note that this result implies that it is entirely possible for there to be situations in which the UPP index is higher for potential merger A than potential merger B even though the predicted price change (using merger simulation) is larger for potential merger B. This result does not require that the mergers under consideration occur in different industries with different demand curves. For example, even if one restricts attention to a specific type of demand curve (for example, PCAIDS), different combinations of own- and cross-price elasticities can generate the same value for the UPP index but yield different predictions of price changes following a merger.

⁵⁴ Farrell & Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, *supra* note 7, at 12.

⁵⁵ *Id.* at 13–14.

Table 3. UPP index and efficiency in Product 2

Firm 2 marginal cost efficiency, %	Firm 1 “modified UPP index”, \$	Firm 1 price change, %
0	6.25	1.54
5	7.19	1.22
10	8.13	0.86
15	9.06	0.46
20	10.00	0.00
25	10.94	-0.51

changes for Product 1 given different-sized cost efficiencies for Product 2.⁵⁶ It also reports modified UPP indexes, which are the same as the standard UPP indexes except that the lower, post-merger marginal cost is used for Product 2 rather than Product 2’s pre-merger marginal cost.⁵⁷

Two points are clear from the results in Table 3. First, higher efficiencies on Product 2 offset (at least partially) any positive effects from the merger on the price of Product 1. A 20 percent reduction in Product 2’s marginal cost is sufficient to eliminate Product 1’s price increase, whereas a 25 percent reduction in Product 2’s marginal cost leads to a decline of 0.51 percent in the price of Product 1. Second, the UPP index does not capture this effect. The standard UPP index (in which no efficiencies are applied to Product 2’s cost) is \$6.25 in all cases. The modified UPP index, which incorporates the lower marginal cost for Product 2 but not the effect of this lower marginal cost on the price of Product 2, actually yields the counterintuitive and misleading result that the UPP index grows larger as the cost of Product 2 falls, reaching \$10.94 with a 25 percent efficiency on Product 2.

The results in Table 3 demonstrate that, in the presence of substantial efficiencies, UPP may substantially overpredict a merger’s likely effect on prices. Heightening the importance of this point is the fact that such feedback effects are strongest when the products are close substitutes, which is precisely the situation in which careful merger review is most critical. This means that, although the use of UPP may provide one piece of useful information about a merger’s likely price effects, the results need to be interpreted with substantial caution, particularly when important marginal cost efficiencies are present for many products.

⁵⁶ The only change from Case B of Table 2 is that I assume that, due to efficiencies from the merger, the marginal cost of Product 1 falls by 10 percent

⁵⁷ Some researchers have suggested using this modification to UPP as a way to include the effect of cross-product efficiencies. See Schmalensee, *supra* note 40, at 2.

D. The Need for Retrospective Study of Price Effects from Mergers

Although the proposed Guidelines discuss several methods that may be used to predict the price effects of proposed mergers, they do not indicate which methods are (or are not) supported by empirical studies. For many of the methods discussed in the proposed Guidelines, I am not aware of much (if any) empirical evidence validating the methods' predictive power. As a result, empirical validation of those methods remains an important area of research, and the Guidelines should state clearly that research on the methods is ongoing and that new results may lead to modifications or clarifications to the Guidelines.

The few academic studies that have examined the merger-review methods employed by the agencies (and economists in general) have found them to provide inaccurate predictions of post-merger prices in at least some cases. For instance, in his 2006 article, Peters uses data on five airline mergers during the period 1986–1987 to generate predicted post-merger price changes using conventional merger simulation techniques and then to compare those predictions with the observed price changes.⁵⁸ He finds that, in some cases, the standard merger simulation methods do not provide an accurate forecast for post-merger price changes. Instead, he finds that what he terms “supply-side effects”—which include the possibility that the model's main assumptions, such as static Bertrand competition, are incorrect—can, in some cases, cause actual post-merger price realizations to differ substantially from predictions based on pre-merger simulations.⁵⁹

In considering Peters's findings, one should note that UPP is effectively a simplified version of merger simulation. As such, Peters's findings tell a cautionary tale—more such studies should be conducted before one treats UPP, or any other potential merger review method, as a consistently reliable methodology by which to identify anticompetitive mergers. Because it is likely that courts will pay special attention to methods specifically mentioned in the Guidelines, I would prefer that the Guidelines not refer to particular methods (and exclude others), particularly when the reliability of the referenced methods, relative to other methods that might be employed, has not been tested.

While quite useful, even Peters's study is only one example of the type of research required to assess the efficacy of the tools described in the proposed Guidelines for merger evaluation. In particular, Peters evaluates a few specific merger simulation techniques; in practice, the agencies may employ any of the numerous tools described in the proposed Guidelines. What is

⁵⁸ Peters, *supra* note 25.

⁵⁹ As part of his analysis, Peters also studies the simpler method of predicting the post-merger price based on historical relationships between prices and market concentration. Interestingly, he finds that, in many cases, this simpler method yields results that are fairly similar to more sophisticated merger simulation methods. *Id.* at 646.

needed—and what the antitrust agencies are uniquely well positioned to provide—is a systematic study of the accuracy of predictions made by various methods. For each merger that the agencies review closely (for example, each merger for which there is a “second request”), they should record which analytical tools they employed and what predictions they reached with each tool. Then, for those mergers that are consummated, the antitrust agencies should undertake retrospective reviews of actual marketplace outcomes in comparison with those predictions. Only in that way—by combining a record of what tools were used and what conclusions were drawn from each tool with a study of observed outcomes from mergers—can systematic evidence be collected on the efficacy of various methods used in merger review.⁶⁰

E. Conclusions Regarding the Proposed Guidelines

The proposed Horizontal Merger Guidelines do an excellent job of describing how the antitrust agencies analyze mergers. In my experience, when the agencies analyze mergers, they are generally careful in recognizing the limitations inherent in each of their methods of analysis. My primary concern with the proposed Guidelines is that the limitations in the methods included may not come through clearly enough to avoid confusion among audiences that rely on the Guidelines, including courts, foreign antitrust agencies, and the business community.

In Part III, I discussed six specific limitations to the appropriate usage of the proposed Guidelines. First, although the proposed Guidelines update the HHI cutoffs to reflect actual agency practice, to my knowledge, there remains no empirical evidence establishing a relationship between those cutoffs and a merger’s likely effects on prices. Second, any suggestion that the courts should abandon the use of market definition in analyzing merger cases is unwise. Third, while the proposed Guidelines do mention the possibility of nonprice competition, I am concerned that such competition (and the efficiencies that can help to stimulate it) remains underemphasized. Fourth, the distinction between unilateral and coordinated effects in the proposed Guidelines remains artificial, as there are not actually different economic theories of oligopoly underlying these effects. A more natural distinction would be to stress the relative importance of static and dynamic elements of competition, recognizing that both may be important in any particular industry. Fifth, if the Guidelines’ discussion of unilateral effects is to mention UPP, they should also note the limitations of the methodology,

⁶⁰ For a more complete discussion of this line of research, see Carlton, *supra* note 8. As described there, such retrospective studies would need to control for post-merger changes in industry conditions and for the “selection bias” induced by the fact that only consummated mergers can be studied, but there are standard econometric techniques for implementing such controls.

including the fact that it is not designed to predict the magnitude of a merger's effect on prices and can lead to particularly poor predictions when multiple, closely substitutable products experience efficiencies as part of a merger. Finally, there remains a dearth of empirical research to support the accuracy of some of the methods described in the proposed Guidelines when used to predict the likely price effects of a merger. Bolstering the empirical support for the methods and potentially modifying the methods based on what is learned should be a high, ongoing priority of the antitrust agencies.

IV. CONCLUSION

The Merger Guidelines have provided a useful framework for the analysis of mergers for many years. The proposed Guidelines will remedy some, though not all, of the limitations of the previous Guidelines. However, unless the many caveats to some of the techniques discussed in the proposed Guidelines are clearly understood, the proposed Guidelines run the risk of giving courts and foreign antitrust agencies a false impression of the reliability of some modes of merger analysis.