Oxera

Agenda

Advancing economics in business

Why markets matter for evidence-based merger analysis

While the Merger Guidelines structure represents the standard approach to merger analysis in the USA, economists have proposed methods to dispense with market definition and estimate the competitive effect directly. In this article, Malcolm Coate and Jeffrey Fischer, economists at the US Federal Trade Commission, argue that market definition is necessary to evaluate the assumptions of any merger analysis and, thus, cannot be dispensed with. Moreover, they suggest that market definition plays an important role in the stakeholders' merger guidance process, the regulator's merger screening process, and the court's merger decision process

In recent years, theoretical developments in economics have created a controversy in merger analysis over whether it is necessary for the plaintiff to prove a relevant antitrust market to prevail in a merger challenge. Although market definition has long been a staple of merger analysis,[1] some economists argue for relaxing the requirement to substantiate an antitrust market when evidence of unilateral anti-competitive effects obviates the need for an independent assessment of market definition.[2]

We disagree with this view. Market definition provides a necessary reality check on any formal economic study of a merger's competitive effect. These economic studies tend to fall into one of two broad categories: parameterised theoretical models of the closeness of competition for the products of the merged firm; or empirical examinations of the effects of previous structural change on prices. In either case, economic studies serve to predict the price effects of the merger and, to the extent that the predictions are consistent with a market analysis, those predictions may be given significant weight. On the other hand, if the predictions are diametrically at odds with the insights gleaned from structural market analysis, close review of all the evidence is necessary to resolve any inconsistencies found. Furthermore, as a relatively quick method for determining a rough census of substitutes for the merging firms' products, market definition also has several practical benefits. These include providing guidance to both the business community and agency staff, and, later in the process, providing guidance to judges in their efforts to assess the merits of both the plaintiff's and the defendant's arguments.

Background on structural analysis in the Merger Guidelines

In the USA, modern merger analysis dates to the 1982 version of the Merger Guidelines.[3] Building on the original 1968 Guidelines, the 1982 revision introduced the now-standard methodology for defining markets, transformed the structural analysis from the four-firm concentration ratio to the Herfindahl statistic, added a more sophisticated competitive effects analysis, and highlighted the importance of barriers to entry. (A minor revision in 1984 provided a few technical corrections and introduced merger-specific efficiencies as a factor that merited consideration.) The next major revision occurred in 1992, when the Department of Justice—this time in collaboration with the Federal Trade Commission (FTC)—issued new Guidelines that highlighted the importance of a detailed competitive effects analysis, in order to flesh out whatever concerns the market-based share analysis had generated.[4] In addition to refining the analysis of entry, the new Guidelines expanded the discussion of both collusion ('coordinated interaction') and single-firm anti-competitive behaviour ('unilateral effects').

The Guidelines methodology applies a two-stage approach. In the first stage, the analyst defines a relevant market in which to study the merger's competitive effects. The Guidelines' market definition process evaluates whether a hypothetical monopolist (that controlled the prices of a specific group of products) could profitably impose a small but significant, non-transitory, increase in price (SSNIP). Using this market, the Guidelines move to a second-stage

The analyses and conclusions set out in this article are those of the authors and do not necessarily represent those of the Federal Trade Commission, any individual Commissioner, or any Commission Bureau. Unpublished papers cited in the article are available at SSRN.com.

analysis of market structure, conduct and performance. The core question focuses on whether the merger under review is likely to change market structure in such a way as to allow the merged firm (possibly in combination with the other firms in the market) to materially raise price or reduce innovation. At the FTC, an informal Transparency Project has tracked the merger review process over the 15 plus years following the 1992 revision, and this has led to a series of papers.[5]

Coate and Fischer (2008) find that practical realities transform the hypothetical monopolist test from a complex, iterative analytical algorithm into a practical method to test for a pseudo-exogenous market definition.[6] In effect, the FTC staff study the industry and generally devise both a narrow market and a broader market within which a merger review is possible. The hypothetical monopolist test is then applied to the narrow market to determine whether this market is appropriate. If, as is usually the case, a hypothetical monopolist could profitably impose the SSNIP, that market is accepted. Otherwise, if the price increase is not profitable, the carefully selected broader market is accepted. Most interesting of all, in roughly half the surveyed cases, the market definition is considered obvious given the institutional realities of the competitive process.

Within the relevant market, the FTC staff identify the competitors that matter to the competitive process (labelled 'significant competitors') from those that have only a fringe effect on competition. This 'rivals' variable is then interpreted through either a coordinated interaction or unilateral effects theory.[7] A dominant-firm model is applied to all two-to-one mergers, as the initial evaluation of the competitive significance of the two players in the market is sufficient to trigger the concern. For matters involving three or more rivals, a tendency exists to apply coordinated interaction to homogeneous goods markets and unilateral effects to differentiated goods markets—although significant cross-over exists, especially for differentiated goods markets with a substantial number of significant rivals (unilateral enforcements are generally limited to markets in which the share of the merged firm would exceed 35%).[8]

For either coordinated interaction or unilateral effects, the Guidelines analysis serves to define a 'testable hypothesis' for the competitive effect of the merger.[9] Coordinated effects theories include the maverick model (the loss of an identifiable maverick firm leading to a collusive price increase), a tacit collusion model (the market under review is already performing in a less than competitive manner, and the merger would allow performance to deteriorate further), or a regime-shift model (the structural change caused by merger undermines the forces of competition in the market). Most investigations fail to find evidence that the acquired firm is a maverick, or that the market is not performing competitively. Thus, most matters focus on whether the merger is likely to lead to a regime shift. Evidence associated with the likelihood of either anti- or pro-competitive performance serves to test the relevant theory of concern and often underpins the staff recommendation. In some cases, the staff lacks the evidence to test the theory of concern, and thus the analysis is purely structural.

Concerns regarding unilateral anti-competitive behaviour are generally based around one of three theories. First, mergers resulting in a market with a single firm maintaining a large share, along with a fringe of smaller firms, are analysed under a dominant-firm model. Second, spatial models asserting closeness of competition are also regularly used, particularly when the factual evidence highlights relatively unique similarities between the products of the merging firms. Finally, standard game theoretic models are considered relevant in other cases. Given that the core analyses are usually undertaken by attorneys (advised by economists), the exact exposition of the theories often needs to be inferred from the totality of the evidence. Again, when possible, evidenced considerations serve to test these theories.

The case files highlight three types of evidence, two of which—customer concerns and hot documents—are evaluated with standard legal analysis to determine whether the specific claim can be linked to a concrete competitive concern. Customer-specific problems with a merger or documents that over-generalise the impact of the merger from incomplete information are not considered credible evidence. Although these types of evidence have not always fared well in US courts, the objections run more to validity of the evidence and not the general idea of using complaints and documents to prove a case.[10] The third type of evidence involves natural experiments in the market that are compatible with a competitive concern. This evidence is customised to the specific theory under review and describes a real market occurrence, with a structural impact comparable to the effect of the merger in question. Robust econometric analysis represents the 'gold standard' natural experiment, but more qualitative analyses are also often used.[11] Evidence may also be used to prove that the merger is unlikely to substantially lessen competition.[12]

Staff entry analyses are most relevant when a competitive concern has been substantiated. These evaluations generally track the three questions of the Guidelines on timeliness, likelihood, and sufficiency of entry.[13] Both timeliness and sufficiency evaluations are usually well grounded in the facts. Likelihood analysis often just addresses issues of sunk costs and scale, without any real modelling of entry. Here, the analysis has the most room for improvement because financial

modelling should be able to address the question of how a timely entrant could secure sufficient market share to generate the revenues necessary to cover fixed costs.

Merger analyses conclude with some type of summation process, in which the implications of market definition, competitive effects and entry are considered in aggregate, along with the impact of merger-specific efficiencies.[14] While the basic Guidelines model has survived the test of time, it is clear that the entire analysis is predicated on market definition. If the analyst is unable to define a market, Guidelines analysis is not possible.

Market-free merger analysis

Economists have long recognised that the market definition exercise was not necessary to evaluate the competitive effect of a merger in circumstances in which that effect could be directly measured. Two general approaches have been considered: one a structural analysis based on theory and the other a reduced-form methodology (often based on cross-section, time-series econometrics). Theorists moved first and derived models of the competitive process that, once parameterised, could be used to simulate the effect of a merger.[15] Initial models were fairly simple, using straightforward economic workhorses (eg, the homogeneous goods Cournot or differentiated products Bertrand models). Consideration of efficiencies (often integrated into the simulation) and entry or expansion by other rivals were necessary to complete the analysis. More sophisticated models generalised the demand system, allowing for a wider array of customer behaviour, but required a more complex estimation methodology.[16] Theoretically, market definition was not needed because the competitive impact of the close competitors entered into the analysis through the parameters associated with these firms, while the impact of the more distant rivals drove the coefficients associated with aggregate effects. These models gained favour in academic journals, and were used internally in several agency analyses. Courts were sceptical of these models and remain reluctant to accept their predictions.

The second modelling approach is most closely associated with the *Staples* litigation.[17] In this matter, US office supply chain, Staples, proposed to acquire its rival, Office Depot, in a merger that would have combined two of the three national office supply superstore chains. In the USA, office supplies are available through numerous other sources, including such large firms as Wal-Mart and Target, as well as various mail-order sites (and, today, countless websites). In a broad 'office supply' market, the merger would almost surely have passed antitrust review. The FTC concentrated its analysis on the likely competitive effects of the transaction, presenting an econometric model showing that prices for a sample of consumable office supplies increased as the number of office supply superstores in a geographic area declined. This method posits a reduced-form link between the number of relevant rivals and market performance (often price), controlling as best as possible for other explanatory variables. Standard market definition analysis did not play a role because the plaintiff 'proved' the anti-competitive effect directly. Although the court in the *Staples* case did not uncritically accept this methodology, the effects evidence, in combination with some standard market definition considerations, was sufficient to justify a preliminary injunction against the acquisition.[18]

Why markets are needed

Although these methodologies are superficially compelling—after all, the purpose of market definition is to simplify the competitive effects analysis, and if sophisticated economic techniques can demonstrate anti-competitive effects directly then the market definition exercise seems redundant—economists generally confuse stating a testable hypothesis with testing a hypothesis. The problem is most clear with respect to the theoretical analysis. Cournot or Bertrand models of competition are only theories of how the competitive process is likely to play out. Without evidence 'confirming' the applicability of the model, all the economist has is an opinion on the likely competitive effect of the merger. While the underlying proposition of profit maximisation is clearly useful (as this hypothesis defines the core of economic science and has survived over two centuries of study), the specific assumptions that underlie the economist's application of deductive logic to predict the effect of the merger may not be applicable to the industry in question.[19] In effect, all the theorists have is a possibility model that defines a result that might stem from the merger. Market definition analysis, coupled with relevant natural experiment evidence, is needed to test the theory for the specific environment in which the model is to be applied.[20]

For reduced-form modelling, the problems are more complicated. While a reduced-form model may be viewed as a natural experiment for the likely effect of the merger, the hypotheses that sit behind the natural experiment can only be designed correctly if the fundamentals of the market are understood. It is not logical to assert that strong empirical results eliminate the need for market analysis. To do so would be to claim that strong empirical results preclude an alternative market. Thus, the assertion that market analysis is not needed amounts to a claim that the model is, with certainty, correctly specified. Of course, it may be possible to design into the competitive effects model a specific test for model specification, thus

avoiding the logical problems. Certainly, it is possible to suggest that empirical evidence on the lack of substantial product substitution supplements the initial weak evidence associated with a specific market definition, and thus a well-specified reduced-form model confirms the proposed market at the same time as it identifies a likely anti-competitive effect.

Market definition serves several other purposes beyond merely defining the playing field for the structural analysis. First, the Merger Guidelines provide guidance to the business community, and create some assurances that the analysis conducted by staff will not be arbitrary. For this guidance to be helpful, however, it has to be reasonably simple: little purpose is served in providing guidance that requires a full investigation and analysis in order to predict (with high likelihood) the conclusion which the staff will reach. Firms have a good idea who their rivals are, and a rule of thumb that mergers in markets with more than, say, five pre-merger rivals are likely to pass antitrust scrutiny provides a quick way to assess the probability that the relevant agency will challenge a proposed transaction. Complex rules—in particular, complex econometric analyses—do not serve this purpose.

Second, at the beginning of an investigation, staff (aided by a handful of customer and competitor interviews and a few documents from the merging firms) must recommend whether to close the investigation or to invest additional resources. FTC enforcement history suggests that mergers with three remaining rivals were more likely to be found to be problematic than those with four or five rivals.[21] Thus, any market model that offers some comfort that the merger will not reduce the number of competitors unduly will assist staff considerably in making early decisions.

Third, case law has relied on market definition for decades. This makes sense because judges, who are necessarily generalists with heavy caseloads, need ways to make decisions relatively quickly while assessing a large amount of complex information. Shortcuts should be viewed as good, not bad. Although developments in economic theory mean that the criteria used by judges to underpin their decisions have changed and will continue to do so, the decision process enshrined in case precedents is helpful to the evolution of the judicial process. For example, economic learning has allowed the *Philadelphia National Bank* precedent to evolve from one in which market concentration almost guaranteed an anti-competitive concern (in the structuralist era of the 1960s) to one where the presumption could be rebutted (in the 1970s under *General Dynamics*) and into an organisational scheme for the rule of reason (for the two decades after *Baker Hughes*).[22] Market definition is a simple screen that, once passed, allows both the plaintiff to present evidence that the particular merger under scrutiny is anti-competitive, and the defendant to present evidence to the contrary. Should the plaintiff fail to present compelling evidence of a specific antitrust market, however, the judge may reasonably conclude that the plaintiff also lacks compelling evidence of anti-competitive effects. In other words, the market precedent allows the courts to economise on transaction costs.

Conclusion

This article points to several reasons why defining antitrust markets remains an important part of a rigorous merger analysis. From the beginning of an investigation—where the number of effective competitors in a market serves as a quick screen for possible anti-competitive mergers—to the end of an investigation and any associated litigation—where evidence on the market serves as a check on more formal empirical analyses—the concept of the market serves as an organising framework for the analysis. Competition agencies and courts should resist the temptation to omit this step and rely solely on the economic predictions of a merger's impact on price.

Malcolm Coate and Jeffrey Fischer

[1] See, for example, *U.S. v. Philadelphia National Bank,* 374 U.S. 321 (1963), *U.S. v. General Dynamics,* 415 US 485 (1973), and *U.S. v. Baker Hughes Inc.,* 731 F. Supp. 3 (D.D.C. 1990), aff'd 908 F.2d 981 (D.C.Cir. 1990).
[2] See, for example, Baker, J. and Shapiro, C. (2008), 'Reinvigorating Horizontal Merger Enforcement that has Declined as a Result of Conservative Chicago Analysis', in R. Pitofsky (ed.), *Where The Chicago School Overshot The Mark*, UK: Oxford University Press, pp. 235–89.
[3] U.S. Department of Justice (1982), *Merger Guidelines*, Antitrust Trade Regulation Report, No. 1069.
[4] U.S. Department of Justice and Federal Trade Commission (1992), *Horizontal Merger Guidelines*, Antitrust Trade and Regulation Report, No. 1559.
[5] Coate, M.B. (2009), 'Transparency at the Federal Trade Commission: Generalities and Innovations in Merger Analysis', *CPI Antitrust Chronicle*, December.
[6] See Coate, M.B. and Fischer, J.H. (2008), 'A Practical Guide to the Hypothetical Monopoly Test for Market Definition', *Journal of Competition Law and Economics,* **4:**1, 1031–63.
[7] For more information on FTC collusion cases, see Coate, M.B. (2008), 'Alive and Kicking, Collusion Theory in Merger Analysis at the Federal Trade Commission', *Competition Policy International*, **4**:2, 99–114; and for details on FTC unilateral effects enforcement, see Coate, M.B. (revised 2009), 'Unilateral Effects under the Guidelines: Models, Merits, and Merger Policy'.
[8] Coate, M.B. (2009), 'Did the European Union's Market Dominance Policy Have a Gap? Evidence from Enforcement in the United States', *European Competition Journal*, **5**:3, 695–706.
[9] Coate, *supra* note 7.
[10] See, for example, *U.S. v. Englehard Corp.,* 970 F. Supp. 1463 (M.D. Ga., 1997), aff'd 126 F. 3d 1302 (11th Cir. 1997), *U.S. v. Sunguards,* 172 F. Supp. 2d 172 (D.D.C. 2001), and *FTC v. Arch Coal, Inc, et al.,* 329 F. Supp. 2nd 109 (D.D.C., 2004).
[11] Coate, M.B. and Fischer, J.H. (2009), 'Daubert, Science and Modern Game Theory: Implications for Merger Analysis', *Supreme Court Economic Review,* forthcoming.
[12] Both anti- and pro-competitive evidence is discussed in Coate, M.B. (2005), 'Empirical Analysis of Merger Enforcement Under the 1992 Merger Guidelines', *Review of Industrial Organization*, **27**, 279–300.
[13] Coate, M.B. (2008), 'Theory Meets Practice: Barriers to Entry in Merger Analysis', *Review of Law and Economics*, **4:**1, pp. 183–212.
[14] For a discussion on balancing, see Coate, M.B. (2005), 'Efficiencies in Merger Analysis: An Institutionalist View', *Supreme Court Economic Review,* **13**, pp. 189–240. For an overview of the efficiencies evaluated at the FTC, see Coate, M.B. and Heimert, A. (2009), 'Merger Efficiencies at the Federal Trade Commission, 1997–2007', Bureau of Economics Issues Paper.
[15] Werden, G. and Froeb, L. (1994), 'The Effects of Mergers in Differentiated Products Industries: Logit Demand and Merger Policy', *Journal of Law, Economics and Organization*, **10**:2, 407–26.
[16] Hausman, J.A. and Leonard, G.K. (1997), 'Economic Analysis of Differentiated Products Mergers Using Real World Data', *George Mason Law Review*, **5**, pp. 321–43.
[17] See *F.T.C. v. Staples,* 970 F. Supp. 1066 (D.D.C. 1997).
[18] The court in the *Staples* case did not seem impressed with the econometric evidence (*Id.* at 1076), but recognised the totality of the evidence as supportive of a standard structural concern.
[19] Coate and Fischer, *supra* note 11, pp. 31–46.
[20] Gavil touches on this point, noting that the *Republic Tobacco* appeal may have failed because the court required a market within which to understand the relevant evidence. Gavil, A. (2005), 'On the Utility of Direct Evidence of Anticompetitive Effects', *Antitrust*, **19**, pp. 59–65.
[21] See the papers cited in note 7 above; see also Coate and Fischer, *supra* note 11, pp. 35 and 42.
[22] *Supra*, note 1.