Organisation for Economic Co-operation and Development

DAF/COMP/GF/WD(2020)46

Unclassified

English - Or. English

2 December 2020

DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS
COMPETITION COMMITTEE

## Global Forum on Competition

# ECONOMIC ANALYSIS IN MERGER INVESTIGATIONS – Contribution from the United States

**- Session III -**

**9 December 2020**

This contribution is submitted by the United States under Session III of the Global Forum on Competition to be held on 7-10 December 2020.

More documentation related to this discussion can be found at: oe.cd/mergerinv.

Please contact Mr James Mancini if you have questions about this document [James.Mancini@oecd.org].

**JT03469326**

# *Economic Analysis in Merger Investigations*

## - Contribution from the United States –

## 1. Organization of Economists at U.S. Agencies

1. Economists at the United States Federal Trade Commission ("FTC") and the Department of Justice Antitrust Division ("DOJ") (collectively, the "Agencies") are organized into independent economics groups: the Bureau of Economics at the FTC; and the Economic Analysis Group at DOJ. The heads of these groups, the Bureau Director at the FTC and the Deputy Assistant Attorney General at DOJ, report to the Commission and the Assistant Attorney General ("AAG") respectively, and are selected by the Chairman and the AAG. These chief economists are often academic economists whose tenure at the agencies typically lasts from one to three years.

## 2. Economists' Participation in Investigations

2. Economists work together with attorney colleagues on all merger investigations that proceed beyond initial screening after one agency or the other has received clearance to pursue an investigation. In the early stages of an investigation, economists typically review information submitted by the parties in their premerger notification documentation and participate with attorneys in initial interviews with industry participants. Through this qualitative information, the economist gains an understanding of how to think about competition in this industry, and with regard to provisional product or service markets. As the investigation progresses, economists build on that understanding to develop analyses to shed light on potential theories of harm as consideration is given to the question of whether to enter into a full phase investigation. The tight timeline of an initial phase merger investigation often requires economists to employ relatively basic models. An important task for economists in the initial phase of investigations that eventually may progress to full phase investigations is to develop a plan to analyze the theories of harm, including consideration of an analytical approach and identification of the requisite product or industry information to be requested from the merging parties and other industry participants.

3. If an investigation proceeds to a full phase investigation, the economic analysis often becomes significantly more involved. This can include estimating economic parameters for use in basic modes of analysis such as upward pricing metrics or building empirical oligopoly models of competition for merger simulation. Another common type of analysis exploits important market events, such as entry and exit, to estimate the impact of changes in the number of independent competitors. Economists also review tools used to aid decisions made by market participants in the ordinary course of business for key insights they may reveal about competition in the market. In evaluating arguments advanced by private parties during the investigation or in litigation, economists may employ an array of quantitative analyses, ranging from simple comparisons of key statistics to regression analyses, in order to confirm or reject their arguments or the assumptions underlying those arguments. We discuss examples of application of these various types of analysis below.

4. Finally, Agency economists sometimes serve as testifying experts when a merger is challenged in court, although it is also common for the agencies to hire outside economists to serve in this role. The selection of a testifying economist is based on many factors including the industry knowledge of the economists, the familiarity with the economics literature most relevant to the theories of harm, and resource constraints. Even when an outside economist serves as an agency's testifying expert, staff economists often provide litigation support to the expert, assisting with data analysis and evaluating new evidence provided by the merging parties during the investigation.

## 3. Some Common Types of Quantitative Merger Analyses Performed by U.S. Antitrust Agencies

### 3.1. Upward Pricing Pressure Analysis

5. Upward Pricing Pressure ("UPP") tools assess the incentive for a firm unilaterally to raise prices post-merger. The DOJ/FTC 2010 Horizontal Merger Guidelines describe a methodology to calculate the upward pricing pressure of a proposed merger known as the "Gross Upward Pricing Pressure Index," or "GUPPI."[1] This calculation takes account of lost sales that would be recaptured by the merger partner following a price increase. The following examples illustrate how UPP analysis has been used in enforcement actions.

6. Starting in 2014, the FTC investigated a proposed transaction in which the second largest U.S. cigarette manufacturer at the time, Reynolds American, proposed to acquire Lorillard, the third largest U.S. cigarette manufacturer.[2] To resolve concerns that the acquisition as proposed would reduce competition, the Commission accepted a settlement that required that the firms divest four brands plus Lorillard's manufacturing facilities in Greensboro, North Carolina to Imperial, the fifth largest cigarette manufacturer in the United States.[3]

7. One of the economic analyses performed by FTC staff was an estimation of the first-order effects of these combined transactions on prices and consumer welfare. This analysis is described in Hanner et al. (2016).[4] The approach was based on the same foundations as a traditional GUPPI calculation, but had to extend beyond a basic GUPPI in order to account for the effects of the divestitures as well as the acquisitions and any creditable marginal cost reductions.[5] In essence, this approach estimates the combined effect on prices in two steps. The first step is to calculate net pricing pressure effects on each product, which include estimates of terms representing the margins earned on sales diverted to newly acquired products, the margins no longer captured on sales diverted to divested products, and cost efficiencies. This calculation produces an estimate of the transactions' impact on the

[1] U.S. Dep't of Justice & Fed. Trade Comm'n, Horizontal Merger Guidelines (2010), §6.1, https://www.justice.gov/atr/horizontal-merger-guidelines-08192010.

[2] See https://www.ftc.gov/system/files/documents/public_statements/644971/150526reynoldscommstatement.pdf.

[3] FTC Press Release, FTC Approves Final Order Preserving Competition in U.S. Market for Cigarettes,

(July 31, 2015), https://www.ftc.gov/news-events/press-releases/2015/07/ftc-approves-final-order-preserving-competition-us-market.

[4] See Hanner, Dan, Ginger Zhe Jin, Marc Luppino, and Ted Rosenbaum, "Economics at the FTC: Horizontal Mergers and Data Security," *Review of Industrial Organization* 49, no. 4 (2016): 613-631.

[5] See Miller, Nathan H., Marc Remer, Conor Ryan, and Gloria Sheu, "Pass-Through and the Prediction of Merger Price Effects," *The Journal of Industrial Economics* 64, no. 4 (2016): 683-709 and Jaffe, Sonia, and E. Glen Weyl, "The First-Order Approach to Merger Analysis," *American Economic Journal: Microeconomics* 5, no. 4 (2013): 188-218.

marginal costs of each product, including opportunity costs. The second step uses information about how firms pass marginal cost changes through in their prices to translate the output of the first step to price effects and consumer welfare effects.

8. Another example of UPP analysis is provided by the analysis of the 2015 proposed merger of GE and Electrolux, two competing manufacturers of household appliances. The DOJ challenged the proposed merger on the basis that it would reduce competition in markets for cooking appliances, including ranges, cooktops and wall ovens. The parties abandoned their transaction during the trial.

9. Evaluating the competitive effects of the merger required a comparison of the merger's potential to increase prices through its reduction of competition against its potential to reduce costs due to merger-specific efficiencies. The parties to that merger claimed that the efficiencies achieved through the merger would lower variable costs by 3.5 percent. However, the DOJ's analysis concluded that cost savings of this magnitude would not be sufficient to deter a price increase. The UPP tool offered a way to compare these two countervailing effects on the profit maximizing price of these products. The UPP analysis presented by the DOJ's economic expert demonstrated that the recapture of the portion of lost sales that would divert to the other merging party following a price increase would provide the merged firm with the net incentive to raise prices unless the merger also reduced marginal costs by multiples of the percentage claimed by the merging parties.6 In this case, the analysis supported the conclusion that the merger would raise prices.

## 3.2. Entry/Exit Analysis

10. In 2013, the FTC investigated the proposed merger of Office Depot and OfficeMax which combined two of the largest office supply retail chains and two of the largest suppliers of office products to businesses in the United States.[7] Similar to the analyses conducted by the FTC's econometric expert in *Staples*,[8] and in subsequent matters such as *Whole Foods*,[9] FTC staff used reduced-form regression models to estimate the relationship between the parties' margins and prices and the number of competitor stores within various drive-times of each store.[10] The estimation technique relied on variation in the number of competitors due to entry and exit. These estimates were then used to predict the effect of eliminating competition, via the hypothetical closure of one party's stores, on the other party's margins and prices. As in the *Staples* analysis, FTC staff estimated the effects of varying levels of competition using both panel data and cross-sectional

[6] See Chugh, Randy, Nathan Goldstein, Eric Lewis, Jeffrey Lien, Deborah Minehart, and Nancy Rose, "Economics at the Antitrust Division 2015-2016: Household Appliances, Oil Field Services, and Airport Slots," *Review of Industrial Organization* 49, no. 4 (2016): 535-556.

[7] FTC Press Release, FTC Closes Seven-month Investigation of Proposed Office Depot/OfficeMax Merger, (November 1, 2013), https://www.ftc.gov/news-events/press-releases/2013/11/ftc-closes-seven-month-investigation-proposed-office.

[8] A summary of the analysis conducted in *Staples* is presented in Ashenfelter, Orley, David Ashmore, Jonathan B. Baker, Suzanne Gleason, and Daniel S. Hosken, "Empirical Methods in Merger Analysis: Econometric Analysis of Pricing in FTC v. Staples," *International Journal of the Economics of Business* 13, no. 2 (2006): 265-279.

[9] See section IV of the Public Version of the Expert Report of Kevin M. Murphy, Ph.D. in Federal Trade Commission v. Whole Foods Market, Inc at https://www.ftc.gov/sites/default/files/documents/cases/2007/08/070823murphy.pdf.

[10] The economic analysis performed by FTC staff in this investigation is described in more detail in Brand, Keith, Martin Gaynor, Patrick McAlvanah, David Schmidt, and Elizabeth Schneirov, "Economics at the FTC: Office Supply Retailers Redux, Healthcare Quality Efficiencies Analysis, and Litigation of an Alleged Get-Rich-Quick Scheme," *Review of Industrial Organization* 45, no. 4 (2014): 325-344.

regressions. The analysis in the 2013 investigation expanded on the *Staples* analysis by considering additional dependent variables, including store/department-level margins at the stock-keeping unit (SKU) and department levels, store/SKU-level prices, and store-level price indices. Unlike in the *Staples* case, FTC staff concluded that the results of this analysis did not provide a sufficient basis for concluding that the proposed merger was likely to be anticompetitive.

## 3.3. Merger Simulation

11. Merger simulation involves the use of models to compare predicted prices before and after a proposed horizontal or vertical merger. These models are calibrated using real-world data. Merger simulation has been used by the Agencies in horizontal and vertical mergers, as the following examples illustrate.

### *3.3.1. Horizontal Mergers*

12. In 2011, DOJ challenged H&R Block's proposed acquisition of 2SS Holdings, Inc., the maker of TaxACT. These firms were the second- and third-largest sellers of digital do-it-yourself tax software that consumers would use to complete and file their annual income tax returns. At trial, the DOJ explained that the merger would harm competition under unilateral and coordinated economic theories and provided evidence and testimony in support of each theory. The Court found the merger to be anticompetitive and blocked the transaction.

13. Simulating the unilateral effects of the merger required constructing a representation of how consumer demand would respond to price changes. In this case, the DOJ's economic expert was able to calibrate key demand parameters of a Bertrand model of competition from observable data, including switching data obtained from the federal government's tax agency, the Internal Revenue Service. The switching data provided the number of times that an income tax filer would use a different method of preparing their taxes than that person used in the previous year. Both the expert and the Court acknowledged that since the data recorded customer switching that may be due to any reason, it was not the same as the more desirable measure of the diversion among substitutes that would occur in response to a price increase. However, it was determined to be an informative proxy for price-based diversion. In the Opinion, the Court cited a merger simulation analysis presented by the DOJ's economic expert as testimony contributing to the Court's conclusion that the merger would lead to a unilateral incentive to raise prices and also as supportive of DOJ's product market (as the tool was also used to simulate a merger of all firms in the market as part of the Hypothetical Monopolist test).[11]

14. According to one count, roughly half of the FTC's merger enforcement actions taken from 2000 through 2018 involved parts of the healthcare sector.[12] Consequently, the FTC's Bureau of Economics has invested considerable effort developing and refining analytical approaches appropriate for evaluating mergers of healthcare providers, such as hospitals and doctors. For instance, commercial prices for healthcare services are generally determined through bilateral bargaining between medical insurers ("payers") and providers, so economic analysis of healthcare provider mergers must evaluate how a

[11] *United States v. H&R Block, Inc.*, 833 F. Supp. 2d 36 (D.C. Cir. 2011), *available at* https://www.justice.gov/atr/case-document/file/498141/download.

[12] Wilson, Nathan E, "Editor's Note: Some Clarity and More Questions in Health Care Antitrust," *Antitrust Law Journal* 82, no. 2 (2019): 435-440.

merger is likely to influence that bargaining.[13] Payers establish networks of healthcare providers to service the patients who receive healthcare coverage via the payer. Payers sell access to those networks, together with other complementary services, such as claims processing, utilization review, and (in the case of full insurance) the commitment to pay for medical services that are actually consumed, to local employers and individuals. One of the ways payers appeal to potential customers is to establish attractive provider networks at competitive prices.

15. Providers and payers negotiate over the prices providers will be paid for providing services as part of the payer's network. If they fail to reach an agreement, the payer excludes the provider from its network. Network exclusion is unattractive to both sides because providers may lose patients and payers may lose customers. The division of rents generated by inclusion of the provider in the payer's network depends on the relative unattractiveness of each party's outside options. The leverage of the payer over a particular provider derives from the payer's ability to steer patients away from the provider. The provider's leverage comes from its incremental contribution to the payer's customers' willingness to pay (WTP) for the network.14 If two merging providers continue to negotiate independently with the payer, the merger causes the disagreement payoff for each of the merging providers to increase depending on how many patients steered away from the one provider would divert to the merger partner. This change in disagreement payoffs due to recaptured sales will cause the post-merger bargaining to result in higher prices being paid to the merging providers. Alternatively, the merging providers may wish to negotiate as one, so that the payer must either include both payers in-network or neither. The consequence of this would be that any patients who view the merging providers as their top two choices would have to visit their third most-favored provider if the payer and the merged providers do not reach an agreement, which lowers the payer's disagreement payoff, again resulting in the merged providers being able to demand higher prices. Note that whether the merging providers negotiate separately or together as an all-or-nothing package, an important determinant of the effect of the merger is the extent to which patients see the providers as being close substitutes, similar to the importance of diversion ratios in merger analysis in posted-price differentiated products markets.

### *3.3.2. Vertical Mergers*

16. In 2016, telecom firm AT&T announced its intent to acquire Time Warner, a media firm. The DOJ challenged the merger due to concerns that the vertical combination of a provider of television content, Time Warner, would raise prices to distributors of television programming that competed against AT&T distribution products, DirecTV and U-Verse. This would in turn raise the prices consumers paid for television service subscriptions. The merger was consummated in 2019 after the trial court and the appeals court both ruled in favor of the merging firms.

[13] For a more detailed discussion of the use of bargaining models in the FTC's analysis of hospital mergers, see Farrell, Joseph, David J. Balan, Keith Brand, and Brett W. Wendling, "Economics at the FTC: Hospital Mergers, Authorized Generic Drugs, and Consumer Credit Markets," *Review of Industrial Organization* 39, no. 4 (2011): 271-296.

[14] For an example of the FTC's use of willingness-to-pay in hospital merger analysis, see the Plaintiff's Findings of Fact in Federal Trade Commission and State of Illinois v. Advocate Health Network *et al.*, https://www.ftc.gov/system/files/documents/cases/161207_2016.05.31_ecf_no._468_plaintiffs_redacted_pfofcol.pdf.

17. Predicting the likely net effect of a vertical merger requires considering the potential incentive to foreclose or disadvantage rivals in one market through strategic actions in another vertically related market, as well as potential internal pricing efficiencies achieved through aligning the incentives of the merging firms. In this case, incorporating a bargaining model to capture negotiations between content providers and distributors was critical to an appropriate assessment of each potential effect. In particular, the prospect of increased customer diversion to DirecTV and U-Verse would soften the expected financial blow to the merged firm whenever it failed to reach a deal with a rival distributor to carry the Time Warner content; the bargaining model provided a basis to quantify how that would affect leverage in the negotiation as well as the resulting terms. Extending the analysis into the downstream market through a logit model, the DOJ estimated that the merger would cause subscribers to television services to pay hundreds of millions of dollars in increased fees.[15]

## 3.4. Demand Estimation

18. As discussed above in the context of healthcare provider mergers, the degree of substitutability between the merging firms is a crucially important piece of information in analyzing the likely effects of a merger. Estimating demand relationships can be a valuable technique to assess substitutability. Several discrete choice models of patients' hospital choices estimated using either hospital discharge data or health claims records have been introduced in the recent economics literature. These models can yield estimates of both diversion ratios between providers and the change in the customers' willingness-to-pay resulting from a particular provider combination. Models that work well for estimating demand in hospital markets may not be feasible when considering other provider markets, such as physicians, where the number of physicians available to a patient may be an order of magnitude greater than the number of hospitals from which they can choose. FTC economists have developed empirical models to estimate these demand relationships in provider markets where the number of providers can be large.[16]

19. In one approach described in Carlson *et al.* (2013), patients are partitioned into microsegments. Conceptually, the microsegments can be defined in enough detail so that all patients in a microsegment share identical values of relevant patient characteristics, such as medical condition, age, gender, residential location (i.e., zip code), household composition, and interactions of these characteristics. The model is also very flexible with respect to physician characteristics. For instance, a doctor who works out of two separate offices could be included in the model as two different choices, one for each office. Patients in one microsegment may have a strong preference for the first office, while patients in another microsegment may have a strong preference for the second office. Estimates of diversion ratios can be obtained as a function of doctors' shares of patients within the microsegments.

[15] See Gee, Evan, Craig Peters, and Jeffrey Wilder, "The Year in Review: Economics at the Antitrust Division 2018-2019," *Review of Industrial Organization* 55, no. 4 (2019): 537-550.

[16] See Carlson, Julie A., Leemore S. Dafny, Beth A. Freeborn, Pauline M. Ippolito, and Brett W. Wendling, "Economics at the FTC: Physician Acquisitions, Standard Essential Patents, and Accuracy of Credit Reporting," *Review of Industrial Organization* 43, no. 4 (2013): 303-326.

## 3.5. Critical Loss Analyses based on Ordinary Course Business Tools

20. The Agencies sometimes use "critical loss analysis" in considering market definition questions.[17] Product market assessments often need to evaluate whether a candidate market has properly included alternative products that are sufficiently close substitutes to products within the market that they would discipline an attempted price increase by a hypothetical monopolist of the in-market products. Critical loss analysis can be a useful tool in implementing this "hypothetical monopolist test." In one commonly used version of critical loss analysis, the economist calculates the magnitude of sales that a hypothetical monopolist in a candidate relevant market could lose before a specified price increase became unprofitable. This is the "critical loss." The economist then estimates the likely actual loss that the hypothetical monopolist would suffer if it actually did raise prices by the specified amount. If the predicted actual loss for a specified price increase is smaller than the estimated critical loss, the specified price increase is estimated to be profitable. This evidence can support an inference that the candidate market is sufficiently broad to constitute a relevant antitrust market.

21. Critical loss analysis was utilized in the DOJ's 2019 challenge of Novelis's proposed acquisition of Aleris. DOJ challenged the merger due to concerns that combining two of the largest producers of automotive aluminum brazing sheet (ABS) in the United States would substantially reduce competition. Automotive ABS is a relatively expensive material used by auto-makers to manufacture certain parts of automobiles in which its lighter weight is more valuable than the cheaper material costs associated with steel. Rather than go through a full trial, the DOJ and the merging parties agreed to enter into binding arbitration over the single issue of product market. After both sides presented evidence and testimony in an arbitration hearing, the arbiter found that DOJ's market definition correctly excluded steel; as a result, the merging firms agreed to divest a set of competitive assets for this product.

22. This arbitration presented a version of the hypothetical monopolist test: would substitution to steel make unprofitable a hypothetical monopolist's attempt to raise price on automotive ABS. To analyze that question, critical loss analysis could be employed to evaluate the profitability of a uniform price increase of a specified amount. A challenge to implementing that method is finding a measure of the price elasticity of the in-market product. In this case, the investigation revealed the presence of a predictive tool used by Novelis to make certain business decisions. The business tool factored in the prices of materials as well as the characteristics of each car part being manufactured to predict whether the part would be made with automotive ABS or with steel. This model provided valuable insights to DOJ economists who were able to simulate how changes in the price of automotive ABS would affect these material sourcing decisions. In this way, the economists were able to generate an estimate of the price elasticity of demand for aluminum ABS. The output of the analysis supported the documentary evidence suggesting that automotive ABS demand was sufficiently inelastic to support a profitable increase in price and a finding that the relevant antitrust market properly excluded steel.[18]

[17] *See* U.S. Dep't of Justice & Fed. Trade Comm'n, Horizontal Merger Guidelines (2010), §4.1.3, https://www.justice.gov/atr/horizontal-merger-guidelines-08192010.

[18] See Drennan, Ronald, Helen Knudsen, Tom Whalen, and Jeffrey Wilder, "The Year in Review: Economics at the Antitrust Division 2019-2020," *Review of Industrial Organization* 57, no. 4 (2020): 815-825.

## 3.6. Economic Analysis in Litigation Support

23. In 2015, Anthem and Cigna, two large providers of commercial health insurance, announced their intent to merge. The DOJ challenged the merger due to concerns that it would reduce competition to provide health insurance to large employers in several metropolitan areas throughout the United States. The merger was ultimately blocked after both the trial court and the appeals court ruled in favor of the DOJ.

24. A major element in Anthem's defense of its merger was the claim that the merger would benefit health insurance customers by lowering the prices that physicians and hospitals would charge to patients that used the merged firm's insurance products. The DOJ countered this claim in several ways, including by questioning the verifiability of the magnitude of such savings should they be found to be cognizable and merger specific. Economists played a key role in this debate as the DOJ's economic expert was able to exploit a flaw in the "best-of-best" analysis presented by Anthem's expert. The offered analysis focused on specific healthcare providers (doctors and hospitals) that appeared in both the Anthem and the Cigna expenditure data and ignored providers that were used by only one merging insurer. For each provider used in common, the analysis calculated a percentage discount by comparing actual charges to list charges. Assuming that the merged firm would be able to simply apply the greater of the two percentage discounts to all fees charged by each provider in this common set, the best-of-best savings were calculated based on the difference between the pair of measured discounts for each such provider, and those differentials were then summed across all common providers to calculate total savings. The analysis was severely flawed, especially considering the complexity of the contracts that dictated the merging insurers' reimbursements to these healthcare providers.

25. The DOJ was able to illuminate the dangers of treating complex contracts as if they followed a simple linear structure of constant percentage discounts by applying the best-of-best methodology to different subsets of customers covered by a single insurer. One approach to this rebuttal was a reliance on the fact that these insurers' contracts with healthcare providers made no distinctions between insurance customers for whom the insurance company bore the financial risk and customers who bore the financial risks themselves – provider reimbursement for those two subsets would be determined by the same methodology. Since these two customer segments faced identical price terms, an accurate calculation of the difference in terms across these two segments should produce a value of zero. However, the resulting erroneous estimate of $1 billion in savings (instead of zero) exposed the flaw that caused the best-of-best methodology to generate severe over-estimates of the savings it purported to measure.[19]

[19] See Gerstle, Ari, Helen Knudsen, June Lee, Robert Majure, and Dean Williamson, "Economics at the Antitrust Division 2016-2017: Healthcare, Nuclear Waste, and Agriculture," *Review of Industrial Organization 51*, no. 4 (2017): 515-528.