

Review: Selected Research and Writings of Aviv Nevo, New FTC Bureau of Economics Director

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INTRODUCTION

The Federal Trade Commission has named Aviv Nevo as the new FTC Bureau of Economics Director, filling a position left vacant since February 2022. Professor Nevo's appointment was unanimously approved by the FTC commissioners.

Professor Nevo will maintain his tenured position as the George A. Weiss and Lydia Bravo Weiss University Professor in the Wharton School of Business and Department of Economics at the University of Pennsylvania. Professor Nevo previously held tenured positions at the University of California, Berkeley, and Northwestern University; served as the Deputy Assistant Attorney General for Economic Analysis at the U.S. Department of Justice Antitrust Division from 2013 to 2014; and testified as an economic expert on numerous matters.¹

A leading authority in the antitrust and competition field, Professor Nevo has made important contributions to contemporary merger review and antitrust practice. This article discusses these major contributions as well as his writings on antitrust policy and regulation, and provides a summary of his selected academic research.

MAJOR CONTRIBUTIONS TO CONTEMPORARY MERGER REVIEW AND ANTITRUST PRACTICE

In a 2014 speech during his tenure as the Deputy Assistant Attorney General for Economic Analysis, Professor Nevo advocated that antitrust practitioners expand their toolkit beyond traditional models of competition, deploying other models that better reflect the particularities of each setting and industry. As industries evolve and new industries emerge, competition policy should continue to refine the set of tools to evaluate competitive effects.²

Professor Nevo has made important methodological contributions to the expansion of the antitrust toolkit. These include methods that allow practitioners to more accurately evaluate the effects of alleged conduct and predict merger effects in industries that feature differentiated products, bargaining, and dynamic demand.

Mergers with differentiated products. Merger simulation methods helped merger review become less reliant on market definition and concentration measures. Coupled with methods that more accurately measure closeness of competition, they offer a key advancement in merger review in industries with differentiated products. Professor Nevo made important contributions in this area, extending merger simulation methods to account for rich patterns in closeness of substitution.³ Beyond contributions to the state of the art, Professor Nevo also published articles focused on practitioners, which helped demystify and popularize many of these methods.⁴

In his paper "Mergers with Differentiated Products: The Case of the Ready-to-Eat Cereal Industry," Professor Nevo modeled consumer demand for differentiated cereal products as well as firms' price competition in a game theoretic framework.⁵ He used detailed data on product characteristics, prices, sales, and consumer demographics to determine consumer preferences over the attributes that characterize cereal products. He then used this more detailed characterization of consumer choices and firm behavior to perform a merger simulation and predict the post-merger equilibrium for two consummated mergers, demonstrating that the merger simulation predicted actual outcomes fairly closely.

This is a classic study in contemporary merger review, particularly because it allowed consumers to differ in their substitution patterns, and thus was free from implausible implications in more rigid models. It was also one of the first studies to evaluate the predictive performance of merger simulations.⁶

Mergers with a bargaining framework. When prices are determined through bargaining, as is frequently the case in many business-to-business industries including healthcare and video content, applying standard models can yield implausible implications, such as that firms have negative marginal costs.

Professor Nevo's coauthored paper "Mergers When Prices Are Negotiated: Evidence from the Hospital Industry" modeled how hospitals determined their prices through their bargaining with managed care organizations (MCOs), and used this model to

simulate and analyze the effects of potential hospital mergers.⁷ In addition, the authors quantified how effective MCOs could steer patients toward cheaper hospitals via coinsurance and restrain hospital prices.

Dynamic demand. Dynamic demand—a situation in which consumption decisions at different points in time are interrelated—is present in a number of industries. For example, dynamic demand is relevant for durable or storable goods, or industries with meaningful switching costs. Professor Nevo’s work on dynamic demand has covered a wide range of settings: household purchases of laundry detergent,⁸ soft drinks,⁹ residential broadband,¹⁰ and mobile devices and apps.¹¹ In this work, he and coauthors demonstrated that when dynamic incentives were present, estimating a standard (static) model could lead to biased estimates. For example, ignoring consumers’ stockpiling of durable goods during promotions could overestimate consumers’ own-price elasticities and underestimate cross-price elasticities to close substitutes, potentially favoring the approval of certain mergers.¹²

WRITINGS ON ANTITRUST POLICY AND REGULATION

Professor Nevo has also written extensively on antitrust policy and merger review. These policy writings advocate a central role for economics in antitrust litigation, recommend against major changes to merger enforcement, and discuss how economic tools should be adapted to market realities. They also offer advice on best practices for persuasive economic testimony at merger trials.

Economic analyses are “central to the [antitrust] inquiry.”

Following a string of high-profile merger losses for the government between 2018 and 2020, Professor Nevo and coauthors wrote that “these decisions do not portend a diminished role for economics.” They remarked that the central question of the likelihood of anticompetitive effects is an “inherently economic” question. While courts may find any specific analysis in a specific case unpersuasive, this is by no means an indication that the court places little weight on economic analyses, or that other economic analyses could not have been persuasive.¹³

In extensive comments submitted in response to the DOJ and FTC 2022 request for information on merger enforcement (“2022 RFI Comments”), Professor Nevo and coauthors similarly cautioned against arguments to place a lesser emphasis on economics in merger review in an effort to make antitrust enforcement more cost-effective. They argued that this would limit the agencies’ toolkit “by ignoring the input of economics,” and instead suggested a series of procedural changes they argued might be more effective in reducing the cost of merger enforcement.¹⁴

The mainstream academic literature does not call for major changes to the Guidelines. In their 2022 RFI Comments, Professor Nevo and coauthors cautioned that the mainstream academic literature does not call for major changes to the Guidelines. Rather, the 2010 Horizontal Merger Guidelines in particular “have largely stood the test of time” and are “a reliable summary of the tools commonly used to evaluate merger effects.” They further argued that major changes are not yet called for even in areas where popular concerns have been voiced, such as claims of increasing markups, competitive effects from increased cross-ownership, monopsony power in labor markets, and coordinated effects.¹⁵

Stronger structural presumptions are unlikely to meaningfully aid in blocking harmful mergers. In their 2022 RFI Comments, Professor Nevo and coauthors warned against strengthening structural presumptions and reducing the presumption thresholds. They argued that courts may not be receptive to lower thresholds that are not supported by the literature. They also noted that changes to structural presumptions would make debates about market definition more important rather than less important.¹⁶

Economic analysis must reflect market realities, and different industries may better lend themselves to different tools.

Professor Nevo and a coauthor characterized high-quality empirical research in general as research with “careful design” and “thoughtful modeling,” in which the existing toolkit is “used according to the specifics of the question being studied and the available data.”¹⁷

Indeed, the 2022 RFI Comments noted that data availability calls for different weight to be placed on certain types of evidence based on the industry at issue. For example, consumer packaged goods industries are frequently rich in detailed scanner panel data. There are typically no equivalent data for business-to-business industries, acquisitions in digital markets, or mergers involving potential future competition. Hence, a data source “that may represent the most informative available data in a business-to-business setting may be given less prominence in a consumer packaged goods setting” where more detailed data analyses should be given more weight.¹⁸

Persuasive economic testimony should help the court interpret the significance of other evidence. Professor Nevo and coauthors noted that courts often find economic testimony unpersuasive when its conclusion appears at odds with key facts. In particular, the authors found that courts tend to ignore or reject economic theorizing when it is inconsistent with market realities. Instead, the authors encouraged economic experts to take the time to teach, including acknowledging and preemptively addressing “unhelpful” case evidence in order to put it in context and attempt to persuade the court.¹⁹

Persuasive economic testimony should put forward compelling (not complex) quantitative analyses. Professor Nevo and coauthors noted that when the factual record is complex or conflicting, courts often find economic analysis unpersuasive if it is primarily based on the documentary record or “conclusory restatements of basic principles, simplistic calculation of market shares or GUPPIs, or checklist-style review of the factors bearing on the risk of coordination.” Instead, they encouraged economic experts to analyze hard data in order to “put forward compelling quantitative analyses.” They clarified that a compelling quantitative analysis “need not be in the form of complex econometrics” because “greater complexity can risk undermining the court’s appreciation of the simple insights.” They pointed to natural experiments as an example of a compelling but not overly complex quantitative analysis.²⁰

Quantitative analysis can also be misused. Professor Nevo and coauthors also emphasized the appropriateness of quantitative tools and warned against their misuses. For example, one erroneous analysis often put forward by merging parties is regressions of prices on the HHI. In a recent paper, Professor Nevo and coauthors explained that because both the price and concentration measures are equilibrium outcomes, such a regression “does not recover a causal effect that could inform the likely competitive effects of a merger.”²¹ Additionally, in the 2022 RFI Comments, he and coauthors recommended that the Horizontal Merger Guidelines expressly warn against such misuse.²²

Vertical merger framework. Professor Nevo and coauthors offered comments to the Draft Vertical Merger Guidelines, where they explained the challenges to generalizing vertical mergers. The comments endorsed the ability and incentive framework that ultimately appeared in the 2020 Vertical Merger Guidelines. They also discussed the importance of evaluating merger specificity and a net evaluation of the new combinations of incentives and ability that the merger creates.²³

Antitrust cannot offer solutions to every problem. In the context of evaluating popular calls to break up big tech companies, Professor Nevo explained that even if breakups were to lead to additional competition, competitive markets “are generally good at reducing prices and increasing variety, quality, and output.” Yet he cautioned that increased competition could also lead to unexpected outcomes, for example, reducing privacy and increasing the misuse of data, or creating more misinformation. He suggested that instead of pursuing actual breakups, agencies should use the leverage such threats can offer to “get targeted settlements to well specified problems.”²⁴

SELECTED ACADEMIC RESEARCH

Professor Nevo’s academic research combines sound economic theory and careful empirical work. The selected papers demonstrate that, in his academic work, he has repeatedly developed novel methods to model features of demand and of the interactions between firms. Professor Nevo’s work suggests that he places important value in carefully inspecting the facts of any given case and employing less standard tools where these enhance the analysis. Using a more expansive and flexible toolkit allows for the competitive analysis to better reflect the particular facts of each industry. Below is a summary of selected academic work from Professor Nevo.

Oligopolistic competition in the cereal industry. Due to the high markups observed in the cereal industry, early research had concluded that the industry exhibited nearly collusive pricing behavior. Professor Nevo analyzed market power in the cereal industry by estimating a consumer demand model and three supply models with different industry structures. With this approach, he showed that the industry’s prices were consistent with non-collusive behavior and mostly driven by product differentiation and multi-product firm pricing.²⁵ In another paper, Professor Nevo and a coauthor studied the cereal industry to understand the negative correlation between coupons and shelf prices. They found that this is consistent with strategic firm interactions in an oligopoly setting as well as incentives faced by brand managers to meet sales target towards the end of the fiscal year.²⁶ In addition, as discussed earlier, Professor Nevo used data from the cereal industry for merger simulations based on a differentiated demand model.²⁷

Storable consumer goods. Consumers face a dynamic problem when purchasing storable or durable goods and thus have an incentive to stockpile them during promotions. In a series of work with a coauthor, Professor Nevo has shown evidence for this intertemporal substitution and developed methods to estimate dynamic demand models. Their research initially bridged a theoretical inventory model with scanner data to demonstrate that the data are consistent with dynamic behavior.²⁸ Building on this research, they then developed a dynamic demand model and estimated it using scanner data.²⁹ Their later work further advanced this literature by developing a computationally simpler model that can be estimated using aggregate, market-level data.³⁰

Residential broadband. Broadband pricing can involve a three-part tariff: consumers pay a monthly access fee, are given a data allowance, and are charged a per gigabyte fee for any usage exceeding the allowance. Professor Nevo has two recent papers studying the demand for residential broadband under such pricing as well as alternative pricing designs. In the first paper, Professor Nevo and coauthors modeled consumers’ dynamic demand for broadband in which consumers were forward-looking about their

broadband usage relative to their usage allowance. The model estimates indicated a large difference in consumers' marginal and infra-marginal value of internet content, which implies that usage-based pricing could eliminate low-value traffic.³¹ In the second paper, Professor Nevo and coauthors studied consumer sensitivity to price and to network congestion. They developed a model where consumers chose their usage for peak and off-peak periods in response to price and congestion. They used these model estimates to evaluate various policies proposed to reduce network congestion, such as peak-use pricing and throttling connectivity speeds.³²

Over-The-Top (OTT) video. Professor Nevo and coauthors studied consumers' cord-cutting behavior and found meaningful substitution between OTT videos (i.e., video streaming services such as Netflix) and TVs.³³ The authors discussed two policy implications of these results. First, they suggested that when investigating video markets, competition authorities should "carefully consider the role of OTT video services when defining markets for media merger cases." Second, they noted that the substitution raised concerns for network neutrality. Since many TV services providers such as Comcast (formally, multiple-system operators, or MSOs) also provide internet services, a prerequisite for accessing OTT videos, they may degrade the quality of internet traffic to OTT videos to impede cord-cutting. However, the authors found that the market conditions suggested MSOs had little incentives to do so.³⁴

Mobile app platforms. In a recent working paper, Professor Nevo and coauthors studied the indirect network effects on mobile app platforms (e.g., iOS or Android).³⁵ Using data on device sales and app downloads for both Apple's App Store and Google's Play Store, they estimated a dynamic model of consumer demand for devices and apps. They found that app markets exhibit significant indirect network effects: on average, a 1 percent increase in the number of apps on an app platform leads to a 1.5 percent increase in device sales. They also found that the indirect network effects are heterogeneous across individual apps.

Real estate marketing platforms. Professor Nevo and coauthors studied platform differentiation in real-estate marketing platforms by comparing two platforms: the Multiple Listing Service, an established platform offering bundled services from real estate agents, and a For-Sale-By-Owner platform, a newly established two-sided platform with no bundled services.³⁶ They found that the performance of the two platforms differed mostly in the amount of time needed for a sale and the probability of sales rather than the price of the sale. They further found that the differences are not driven by network sizes, but rather by buyers and sellers sorting themselves into each platform depending on their levels of patience.

Household decision-making. In a study to understand different food purchase patterns across countries, Professor Nevo and coauthors developed and estimated a demand model for food products and nutrients. They found that cross-country differences are mainly driven by an interaction between the economic environment and differential preferences.³⁷ In another study to understand households' shopping patterns during the Great Recession, Professor Nevo and coauthors analyzed their substitution between time and market goods. They found that households were able to smooth a sizable fraction of consumption during recessions by allocating time to nonmarket work (e.g., shopping activities such as using coupons, and shopping at discount stores).³⁸

Price measurements. Price measurements are central to empirical analyses of consumer demand and welfare, as well as firm competition. In one study, Professor Nevo and coauthors found that measurement errors in the Nielsen Homescan data are correlated with household characteristics. They demonstrated how this could lead to biased estimates and how corrections can be made.³⁹ In another study, Professor Nevo demonstrated a way to construct a price index using an estimated-demand system. His approach accounted for introduction of new products and quality changes in existing products, both of which are lacking in and lead to an overestimate of the CPI.⁴⁰

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The views expressed herein are solely those of the authors, who are responsible for the content, and do not necessarily represent the views of Cornerstone Research.

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ENDNOTES

- ¹ Professor Nevo's trial testimony includes *United States v. Aetna et al.*, *United States v. Sabre et al.*, *FTC v. Wilhelmsen et al.*, and *FTC v. Qualcomm*.
- ² Aviv Nevo, "Mergers That Increase Bargaining Leverage," Remarks as Prepared for the Stanford Institute for Economic Policy Research and Cornerstone Research Conference on Antitrust in Highly Innovative Industries, January 22, 2014.
- ³ Aviv Nevo, "Mergers with Differentiated Products: The Case of the Ready-to-Eat Cereal Industry," *RAND Journal of Economics*, 31(3), 2000, pp. 395–421 ("Nevo (2000)"); Aviv Nevo, "Identification of the Oligopoly Solution Concept in a Differentiated-Products Industry," *Economics Letters*, 59(3), 1998, pp. 391–395.
- ⁴ Aviv Nevo, "A Practitioner's Guide to Estimation of Random Coefficients Logit Models of Demand," *Journal of Economics and Management Strategy*, 9(4), 2000, pp. 513–548.
- ⁵ Nevo (2000).
- ⁶ Oliver Budzinski and Isabel Ruhmer, "Merger Simulation in Competition Policy: A Survey," *Journal of Competition Law and Economics*, 6(2), 2010, pp. 277–319 at p. 312.
- ⁷ Gautam Gowrisankaran, Aviv Nevo, and Robert Town, "Mergers When Prices Are Negotiated: Evidence from the Hospital Industry," *American Economic Review*, 105(1), 2015, pp. 172–203.
- ⁸ Igal Hendel and Aviv Nevo, "Measuring the Implications of Sales and Consumer Inventory Behavior," *Econometrica*, 74(6), 2006, pp. 1637–1673 ("Hendel and Nevo (2006)"); Igal Hendel and Aviv Nevo, "The Post-Promotion Dip Puzzle: What Do the Data Have to Say?," *Quantitative Marketing and Economics*, 1(4), 2003, pp. 409–424 ("Hendel and Nevo (2003)").
- ⁹ Igal Hendel and Aviv Nevo, "Intertemporal Price Discrimination in Storable Goods Markets," *American Economic Review*, 103(7), 2013, pp. 2722–2751 ("Hendel and Nevo (2013)"); Hendel and Nevo (2003).
- ¹⁰ Aviv Nevo, John L. Turner, and Jonathan W. Williams, "Usage-Based Pricing and Demand for Residential Broadband," *Econometrica*, 84(2), 2016, pp. 411–443 ("Nevo et al. (2016)"); Jacob Malone, Aviv Nevo, and Jonathan W. Williams, "The Tragedy of the Last Mile: Economic Solutions to Congestion in Broadband Networks," Working Paper, 2017 ("Malone et al. (2017)").
- ¹¹ Amandeep Singh, Kartik Hosanagar, and Aviv Nevo, "Network Externalities and Cross-Platform App Development in Mobile Platforms," Working Paper, 2021 ("Singh et al. (2021)").
- ¹² Hendel and Nevo (2006), p. 1668.
- ¹³ Kostis Hatzitaskos, David L. Meyer, and Aviv Nevo, "The Future of Economics in Merger Trials: Rumors of Its Demise Are Greatly Exaggerated," *Antitrust*, 35(2), 2021, pp. 48–54 ("Hatzitaskos et al. (2021)") at p. 52.
- ¹⁴ John Asker, Kostis Hatzitaskos, Bob Majure, Ana McDowall, Nathan Miller, and Aviv Nevo, "Comments on the January 2022 DOJ and FTC RFI on Merger Enforcement," April 20, 2022 ("2022 RFI Comments"), pp. 37–39.
- ¹⁵ 2022 RFI Comments, pp. 6–15.
- ¹⁶ 2022 RFI Comments, pp. 15–17.
- ¹⁷ Aviv Nevo and Michael D. Whinston, "Taking the Dogma Out of Econometrics: Structural Modeling and Credible Inference," *Journal of Economic Perspectives*, 24(2), 2010, pp. 69–82 at p. 80.
- ¹⁸ 2022 RFI Comments, pp. 17–18.
- ¹⁹ Hatzitaskos et al. (2021), pp. 52–53.
- ²⁰ Hatzitaskos et al. (2021), p. 53.
- ²¹ Nathan Miller, Steven Berry, Fiona Scott Morton, Jonathan Baker, Timothy Bresnahan, Martin Gaynor, Richard Gilbert, George Hay, Ginger Jin, Bruce Kobayashi, Francine Lafontaine, James Levinsohn, Leslie Marx, John Mayo, Aviv Nevo, Ariel Pakes, Nancy Rose, Daniel Rubinfeld, Steven Salop, Marius Schwartz, Katja Seim, Carl Shapiro, Howard Shelanski, David Sibley, and Andrew Sweeting, "On the Misuse of Regressions of Price on the HHI in Merger Review," *Journal of Antitrust Enforcement*, 10(2), 2022, pp. 248–259 at p. 249.
- ²² 2022 RFI Comments, pp. 28–29.
- ²³ Kostis Hatzitaskos, W. Robert Majure, Ana McDowall, and Aviv Nevo, "Comments on the January 2020 Draft Vertical Merger Guidelines," February 19, 2020, available at https://www.ftc.gov/system/files/attachments/798-draft-vertical-merger-guidelines/vmg13_hatzitaskos_majure_mcdowall_nevo_comment.pdf.
- ²⁴ Aviv Nevo, "If Breaking Up Is the Answer, Then What Is the Question?," *Competition Policy International*, October 25, 2021, available at <https://www.competitionpolicyinternational.com/if-breaking-up-is-the-answer-then-what-is-the-question/>.
- ²⁵ Aviv Nevo, "Measuring Market Power in the Ready-to-Eat Cereal Industry," *Econometrica*, 69(2), 2001, pp. 307–342.
- ²⁶ Aviv Nevo and Catherine Wolfram, "Why Do Manufacturers Issue Coupons? An Empirical Analysis of Breakfast Cereals," *RAND Journal of Economics*, 33(2), 2002, pp. 319–339.
- ²⁷ Nevo (2000).
- ²⁸ Igal Hendel and Aviv Nevo, "Sales and Consumer Inventory," *RAND Journal of Economics*, 37(3), 2006, pp. 543–561; Igal Hendel and Aviv Nevo, "Intertemporal Substitution and Storable Products," *Journal of the European Economic Association*, 2(2–3), 2004, pp. 536–547; Hendel and Nevo (2003).
- ²⁹ Hendel and Nevo (2006).
- ³⁰ Hendel and Nevo (2013).
- ³¹ Nevo et al. (2016).
- ³² Malone et al. (2017).
- ³³ Jacob B. Malone, Aviv Nevo, Zachary Nolan, and Jonathan W. Williams, "Is OTT Video a Substitute for TV? Policy Insights from Cord-Cutting," *Review of Economics and Statistics*, forthcoming, 2021 ("Malone et al. (2021)"); Brian McManus, Aviv Nevo, Zachary Nolan, and Jonathan W. Williams, "The Steering Incentives of Gatekeepers in the Telecommunications Industry," NBER Working Paper No. 30399, 2022.
- ³⁴ Malone et al. (2021).
- ³⁵ Singh et al. (2021).
- ³⁶ Igal Hendel, Aviv Nevo, and François Ortalo-Magné, "The Relative Performance of Real Estate Marketing Platforms: MLS versus FSBOMadison.com," *American Economic Review*, 99(5), 2009, pp. 1878–1898.
- ³⁷ Pierre Dubois, Rachel Griffith, and Aviv Nevo, "Do Prices and Attributes Explain International Differences in Food Purchases?," *American Economic Review*, 104(3), 2014, pp. 832–867.
- ³⁸ Aviv Nevo and Arlene Wong, "The Elasticity of Substitution between Time and Market Goods: Evidence from the Great Recession," *International Economic Review*, 60(1), 2019, pp. 25–51.
- ³⁹ Liran Einav, Ephraim Leibtag, and Aviv Nevo, "Recording Discrepancies in Nielsen Homescan Data: Are They Present and Do They Matter?," *Quantitative Marketing and Economics*, 8(2), 2010, pp. 207–239.
- ⁴⁰ Aviv Nevo, "New Products, Quality Changes and Welfare Measures Computed from Estimated Demand Systems," *Review of Economics and Statistics*, 85(2), 2003, pp. 266–275.