

## MODERN INDUSTRIAL ORGANIZATION: A COMMENT

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Discussion about modern industrial organization (“IO”) and its impact on the state of economic theory and antitrust law has become something of a trend in antitrust circles. There have been numerous papers and conferences addressing these issues and much of the discussion has focused on what impact the “new IO” models that use game theory to challenge the existing IO consensus have had on antitrust law.<sup>1</sup> Others have focused on the important contributions that come from another school of thought, New Institutional Economics (“NIE”).<sup>2</sup> While each of these schools of thought provides new insights into industrial organization theory, their relative contributions to litigation and antitrust policy are quite different.

To consider whether these models have had a positive marginal impact, it is necessary to begin with the existing consensus. Clearly, what is generally thought of as the existing conventional wisdom is represented in academic writings of Stigler, Bork, and Posner, among others,<sup>3</sup> and in judicial opinions of Posner and Easterbrook, among others.<sup>4</sup> This analysis, generally associated with the University of Chicago, is based on neoclassical microeconomic theory and has, as one of its main marginal contributions, the ability to explain why various horizontal and vertical relationships may not necessarily result in a reduction in total welfare.<sup>5</sup> Confidence in the market to discipline behavior, and to ultimately drive out anticompetitive behavior, is a cornerstone of the analysis, and there is widespread recognition that this literature contributed to major changes in antitrust law over the last 30 to 40 years. Vertical restraints are no longer regarded as obvi-

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<sup>1</sup> See, e.g., Bruce H. Kobayashi, *Game Theory and Antitrust: A Post-Mortem*, 5 GEO. MASON L. REV. 411 (1997); Herbert Hovenkamp, *Post-Chicago Antitrust: A Review and Critique*, 2001 COLUM. BUS. L. REV. 257 (2001); Jonathan B. Baker, *A Preface to Post-Chicago Antitrust*, in POST-CHICAGO DEVELOPMENTS IN ANTITRUST ANALYSIS (Roberto Pardolesi & Antonio Cucinotta eds., 2002).

<sup>2</sup> A collection of articles that fit this description can be found in *MARKETS AND HIERARCHIES, THE TRANSACTION COST ECONOMICS PERSPECTIVE* (Glenn R. Carroll & David J. Teece eds., 1999).

<sup>3</sup> See, e.g., GEORGE STIGLER, *THE ORGANIZATION OF INDUSTRY* (1968); ROBERT H. BORK, *THE ANTITRUST PARADOX: POLICY OF WAR WITH ITSELF* (1978); RICHARD A. POSNER, *ANTITRUST LAW, AN ECONOMIC PERSPECTIVE* (1976).

<sup>4</sup> See, e.g., *Khan v. State Oil*, 93 F.3d 1358, 1361-64 (7th Cir. 1996), *vacated*, 522 U.S. 3 (1997) (Posner, J., discussing the economics of maximum resale price maintenance and criticizing existing per se rule prohibiting maximum resale price maintenance); *A.A. Poultry Farms v. Rose Acre Farms, Inc.*, 881 F.2d 1396, 1401-03 (Easterbrook, J., discussing the economics of predatory conduct); see also Fred S. McChesney, *Talking 'Bout My Antitrust Generation*, 52 EMORY L.J. 1401, 1409-11 (2003).

<sup>5</sup> See, e.g., BORK, *supra* note 3 at 280-288.

ously anticompetitive,<sup>6</sup> concentration is irrelevant without attention to entry conditions,<sup>7</sup> horizontal restraints can in fact be pro-competitive,<sup>8</sup> allegations of predation must be accompanied by evidence of an ability to recoup losses,<sup>9</sup> and competitors are regarded suspiciously when they allege foreclosure.<sup>10</sup>

NIE has also contributed to some of these changes in antitrust law. NIE encompasses neoclassical economics into a broader framework that incorporates institutions, property rights, and contracting. It explicitly takes into account the way transaction costs affect the frictionless world of neoclassical economics.<sup>11</sup>

In contrast, the models of game theory take a different methodological approach.<sup>12</sup> Rather than attempt to analyze institutions or property rights, these analyses often suppress any serious consideration of such attributes in favor of the use of abstract models of firm behavior and strategic decision-making.<sup>13</sup> Such models focus on business strategy and attempt to analyze the interactive nature of firms' decision-making when the outcome for one firm depends on the actions of other firms.<sup>14</sup> The objective of such models is to find the solution or equilibrium where firms find their optimal strategies after they have taken account of their rivals' possible reactions, and all

<sup>6</sup> See *Continental T.V., Inc. v. GTE Sylvania Inc.*, 433 U.S. 36, 57-58 (1977) (holding that a vertical arrangement to restrain trade made between a manufacturer and a retailer is reviewed under a rule of reason standard); *State Oil Co. v. Khan*, 522 U.S. 3, 7-8 (1997) (stating that vertical maximum retail price maintenance is not a *per se* violation of the antitrust laws).

<sup>7</sup> See *United States v. Waste Management, Inc.*, 743 F.2d 976, 983 (2d Cir. 1984) (stating that "we believe that entry into the relevant product and geographic market by new firms or by existing firms in the Fort Worth area is so easy that any anti-competitive impact of the merger before us would be eliminated more quickly by such competition than by litigation.")

<sup>8</sup> See *Broadcast Music, Inc. v. Columbia Broadcasting System, Inc.*, 441 U.S. 1, 21-23 (1979) (finding that blanket licensing provisions applied to musical compositions had pro-competitive effects, and was therefore not *per se* illegal).

<sup>9</sup> See *Matsushita Electric Industrial Co. v. Zenith Radio Corp.*, 475 U.S. 574, 589 (1986) (quoting BORK, *supra* note 4 at 165 for the proposition that for predation to be rational, "[t]he future flow of profits, appropriately discounted, must . . . exceed the present size of the losses").

<sup>10</sup> See *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.*, 429 U.S. 477, 488-489 (1977) (for the proposition that plaintiff is not entitled to damages flowing from profits they would have earned had competition been reduced and that such injury is not the type the antitrust laws were intended to forestall).

<sup>11</sup> What actually constitutes these various schools of thought is not uncontroversial. Some in the so-called Chicago school believe that NIE has not raised new issues. See Richard A. Posner, *The New Institutional Economics Meets Law and Economics*, 149 J. OF INSTITUTIONAL & THEORETICAL ECON. 73 (1993).

<sup>12</sup> See, e.g., ERIC RASMUSEN, *GAMES AND INFORMATION* (1989). For a discussion and critique see Sam Peltzman, *The Handbook of Industrial Organization: A Review Article*, 99 J. POL. ECON. 201 (1996).

<sup>13</sup> See Peltzman, *supra* note 12 at 203.

<sup>14</sup> See Rasmusen, *supra* note 12 at 21.

such decisions are mutually consistent.<sup>15</sup> Much attention has been paid to game theory models that find competitive problems with business practices generally considered pro-competitive or competitively neutral by conventional analyses.<sup>16</sup> For example, while the conventional wisdom has been that predation is largely irrational, some game theory models have found particular circumstances when predation could be an equilibrium.<sup>17</sup> Other examples include vertical mergers,<sup>18</sup> exclusive dealing,<sup>19</sup> exclusive territories,<sup>20</sup> and the “leverage theory” of tying.<sup>21</sup>

Game theory models are popular in economic journals and the results generated from these models have made a significant impact on the study of industrial organization.<sup>22</sup> The focus of industrial organization has shifted to the study of oligopoly and the variables that affect oligopolists’ decision-making, such as the timing of strategic decisions, the availability of information, and the ability to commit to a strategy.<sup>23</sup> However, after many years and much energy, these efforts have not produced a general theory of oligopoly behavior or a general theory about when particular business practices may be pro or anti-competitive. Critics point out that game theory models generate too many potential answers without providing any way to determine which is more or less likely.<sup>24</sup> That is, many models suffer from a “multiplicity of equilibria”—many potential solutions or equilibria for

<sup>15</sup> *Id.*

<sup>16</sup> Not all game theory models find anticompetitive results. However, as discussed below, the fact that some models generate anticompetitive conclusions and others generate pro-competitive or neutral conclusions is a weakness of the methodology given the lack of testable hypotheses that can be used to separate the more likely from the less likely.

<sup>17</sup> See Paul Milgrom & John Roberts, *Predation, Reputation and Entry Deterrence*, 27 J. ECON. THEORY 280 (1982); David Kreps & Robert Wilson, *Reputation and Imperfect Information*, 27 J. ECON. THEORY 253 (1982).

<sup>18</sup> See Janusz A. Ordover, et al., *Equilibrium Vertical Foreclosure*, 80 AM. ECON. REV. 127 (1990).

<sup>19</sup> See Eric B. Rasmusen et al., *Naked Exclusion*, 81 AM. ECON. REV. 1137 (1991).

<sup>20</sup> See Patrick Rey & Joseph Stiglitz, *The Role of Exclusive Territories in Producers’ Competition*, 26 RAND J. ECON. 431 (1995).

<sup>21</sup> See Michael D. Whinston, *Tying Foreclosure, and Exclusion*, 80 AM. ECON. REV. 837 (1991).

<sup>22</sup> See, e.g., HANDBOOK OF INDUSTRIAL ORGANIZATION (Richard Schmalensee & Robert D. Willig eds., 1989) at 259-410.

<sup>23</sup> See, e.g., JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION (1988) at 240-276.

<sup>24</sup> See Kobayashi, *supra* note 1 at 412 (discussing problems in the application of game theory to antitrust law); Peltzman, *supra* note 13; Franklin M. Fisher, *Games Economists Play: A Noncooperative View*, 20 RAND J. ECON. 113, 116 (1989) (stating that game theory says “nothing remarkably helpful” about the analysis of oligopoly); Steven Postrel, *Burning Your Britches Behind You: Can Policy Scholars Bank on Game Theory?*, 12 STRATEGIC MGMT. J. 153, 154 (1991) (“[G]ame theory does not, of itself, contain a substantive account of behavior . . . . Game theory is no more a theory of business behavior than calculus is a theory of consumer behavior” (emphasis in original)).

a given problem depending on the model's underlying assumptions.<sup>25</sup> Advocates respond that there cannot be a general theory of oligopoly because it would deny the very richness of business behavior and diversity of strategies that exist in the real world.<sup>26</sup> However, even advocates admit that if the new IO is going to ultimately prove useful, it must be able to generate testable hypotheses and its conclusions must be supported by solid empirical evidence.<sup>27</sup> Yet, game theory models often do not lend themselves to empirical methods traditionally used in economics because it is difficult to formulate testable hypotheses related to the models' critical assumptions. For example, some models depend on assumptions about the behavioral strategies used by firms, including what they may consider about their rivals' behavior, whether they will commit to a particular strategy, and the amount of information available to different firms or the order of players' (firms') moves.<sup>28</sup> It is generally true that economic models depend upon certain assumptions (that is, they are models). Many assumptions underlying the game theory models are not testable, may vary depending on the particular situation being analyzed, and can critically affect the basic conclusions of the analysis.<sup>29</sup>

NIE has also had a significant impact on economics.<sup>30</sup> Its beginnings are generally attributed to the contributions of Ronald Coase and Oliver Williamson. NIE disputes the traditional neoclassical treatment of the firm as a production function or a black box in which the amount of output produced, and the boundary of the firm, is determined by the amount of inputs used.<sup>31</sup> NIE focuses instead on the relative costs of transacting in the marketplace versus transacting within a firm.<sup>32</sup> This approach led to a reconsideration of vertical integration as an attempt to find the balance between these sources of cost.<sup>33</sup> It also led to the recognition that particular contracts

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<sup>25</sup> See Kobayashi, *supra* note 1; Peltzman, *supra* note 12.

<sup>26</sup> See Carl Shapiro, *The Theory of Business Strategy*, 20 RAND J. ECON. 125 (1989).

<sup>27</sup> *Id.*

<sup>28</sup> See Peltzman, *supra* note 12; Postrel, *supra* note 24.

<sup>29</sup> For an empirical analysis of various theories of predation, including those theories based on game theoretic results see JOHN R. LOTT, JR., ARE PREDATORY COMMITMENTS CREDIBLE? (1999).

<sup>30</sup> NIE is labeled "new" to distinguish itself from the old institutional economics associated with Thorstein Veblen, J.R. Commons and others. Complete descriptions of NIE can be found in: Scott E. Masten, *About Oliver Williamson*, in FIRMS, MARKETS, AND HIERARCHIES: THE TRANSACTION COST ECONOMICS PERSPECTIVE 37 (Glenn R. Carroll & David J. Teece eds., 1999); Peter Klein, *New Institutional Economics*, ENCYCLOPEDIA OF LAW AND ECONOMICS 456 (Boudewijn Bouckaert & Gerrit De Geest eds., 2000).

<sup>31</sup> Oliver Williamson, *Revisiting Legal Realism*, in FIRMS, MARKETS, AND HIERARCHIES: THE TRANSACTION COST ECONOMICS PERSPECTIVE 211 (Glenn R. Carroll & David J. Teece eds., 1999).

<sup>32</sup> *Id.*

<sup>33</sup> See, e.g., Oliver E. Williamson, *Assessing Vertical Market Restrictions: Antitrust Ramifications of the Transaction Cost Approach*, 127 U. PA. L. REV. 953 (1979); Oliver E. Williamson, *The Vertical*

or practices may result as firms attempt to avoid hazards associated with contracts that are nearly always incomplete.<sup>34</sup> A substantial amount of empirical work has been done to test these general principles with much of it supporting NIE theories.<sup>35</sup> NIE has been described as an “empirical success story” with the empirical studies being more consistent with the predictions of NIE than is generally found in industrial organization.

Interestingly, while both the game theoretic literature and NIE have impacted economics, their effect on antitrust law and policy is quite different. Game theoretic models have not been prominently featured in litigation and results from those models have had surprisingly little impact on the law. For example, as noted above, predation is one area that has been the subject of intense game theoretic interest.<sup>36</sup> A number of game theory models have found predation to be an equilibrium outcome as long as there is a small probability that the predator will act irrationally.<sup>37</sup> Yet, courts have not adopted these models in their analysis. Rather than focusing on those characteristics that generate predation in the game theory models, such as asymmetries of information, imperfect information or uncertainty of rivals’ strategies, courts remain focused on price-cost margins and evidence of recoupment.<sup>38</sup>

Some have pointed to the Supreme Court’s 1990 reversal of the lower court’s summary judgment decision in the Kodak case as an adoption of the new IO.<sup>39</sup> However, the Kodak decision has generated more articles in economic journals and law reviews than it has generated new legal precedent.<sup>40</sup>

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*Integration of Production: Market Failure Considerations*, 6 AM. ECON. REV. 112 (1971).

<sup>34</sup> While there are game theory models that attempt to address issues central to NIE, for example the role of information, those models largely treat the issues as underlying assumptions whereas NIE treats the issues as something to be explained rather than assumed. The fundamental difference between NIE and game theory is that game theory models explore the consequences of business strategizing while NIE is concerned with economizing, that is, understanding the underlying reasons a business, concerned with optimizing in a less than perfect world, chooses from among imperfect business alternatives.

<sup>35</sup> Oliver E. Williamson, *The New Institutional Economics: Taking Stock and Looking Ahead* 38 J. ECON. LIT. 607 (2000); Paul L. Joskow, *The Role of Transaction Cost Economics in Antitrust and Public Utility Regulatory Policies*, 7 J. L. ECON. & ORGAN. 53 (1991); Howard A. Shelanski & Peter G. Klein, *Empirical Research in Transaction Cost Economics*, in *FIRMS, MARKETS, AND HIERARCHIES: THE TRANSACTION COST ECONOMICS PERSPECTIVE* 89 (Glenn R. Carroll & David J. Teece eds., 1999).

<sup>36</sup> See Alvin K. Klevorick, *The Current State of the Law and Economics of Predatory Pricing*, 83 AM. ECON. REV. 162 (1993).

<sup>37</sup> See Milgrom & Roberts, *supra* note 17.

<sup>38</sup> See Klevorick, *supra* note 36; Hovenkamp, *supra* note 1. In one recent predation case, a court explicitly rejected a theory found in the game theory literature and advanced by plaintiffs, that predation in one market could be used to build a reputation to monopolize other markets. See *United States v. AMR Corp.*, 140 F. Supp. 2d 1141, 1215-1216 (D. Kan. 2001).

<sup>39</sup> See Steven C. Salop, *Exclusionary Vertical Restraints Law: Has Economics Mattered?*, 83 AM.

The contributions of NIE, on the other hand, are evident in court decisions and antitrust policy.<sup>41</sup> While it is more typical to attribute the changes in antitrust since the 1970s to the Chicago school, NIE has provided additional insights into the reasons firms engage in various business practices, most notably vertical mergers and vertical restraints.<sup>42</sup> These contributions by NIE have led to more robust efficiency rationales for these practices. That is, while neoclassical micro-theory and analysis from the Chicago school criticized policies hostile to these practices, they did so mostly on the basis of finding some link between the practice and an effect on competition.<sup>43</sup> While they also provided some analysis of how such practices could be pro-competitive, NIE offers a much more detailed and developed framework for explaining the efficiencies that might guide these arrangements.<sup>44</sup> For example, efficiencies associated with vertical mergers are now well accepted due to a better understanding of why firms integrate. Exclusive dealing arrangements can be explained as a result of potential hold-ups with incomplete contracts, and tying arrangements can be explained as risk sharing, or monitoring.<sup>45</sup> The theories and explanations offered by NIE for these types of practices have played an important role in their rule of reason treatment by the court.<sup>46</sup>

It is interesting and instructive to ask why, given its success in the economics literature, game theory models have not had the same impact on antitrust law, especially when other economic methods and schools of thought have made such contributions. One possible explanation is that game theory models are too complex for judges and juries. Indeed, the models involve sophisticated mathematics and require at least a heuristic understanding of difficult concepts.<sup>47</sup> As noted above, equilibrium is an

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ECON. REV. 168, 169-70 (1993) (“exclusionary market power” has been the subject of interest in the game theory literature and was “implicit” in the *Kodak* decision).

<sup>40</sup> See Hovenkamp, *supra* note 1 at 286-88 (“there has not been a single defensible plaintiff’s victory in a case where the defendant’s market power depended on a *Kodak*-style lock-in theory ” and “no decision, even in the Ninth Circuit, has endorsed [the *Kodak*] panel’s approach to the market power question”).

<sup>41</sup> See the cases cited in notes 6-10.

<sup>42</sup> See Williamson, *supra* note 33.

<sup>43</sup> See, e.g., BORK, *supra* note 3 at 134-160.

<sup>44</sup> See Joskow, *supra* note 35.

<sup>45</sup> See Benjamin Klein, *Transaction Cost Determinants of “Unfair” Contractual Arrangements*, 70 AM. ECON. REV. 356 (1980); Benjamin Klein, *Market Power in Franchise Cases in the Wake of Kodak: applying Post-Contract Hold-up Analysis to Vertical Relationships*, 67 ANTITRUST L.J. 283 (1999).

<sup>46</sup> See, e.g., Richard A. Posner, *The Rule of Reason and the Economic Approach: Reflections on the Sylvania Decision*, 45 U. CHI. L. REV. 1 (1977).

<sup>47</sup> See, e.g., Rasmussen, *supra* note 12.

essential concept in these theoretical models; but that idea may not seem as important or even realistic to the non-theory audiences of litigation. In addition, with the problem of too many equilibria, the debate can quickly turn to concepts such as equilibrium selection, equilibrium refinement, and even to the trembling hand equilibrium. Yet many sophisticated and complex ideas make it into the law. Therefore, complexity alone cannot explain game theory's relative weak showing in antitrust law.<sup>48</sup>

Another potential explanation is that the models are perceived as too speculative for courts. Models with conclusions that are sensitive to the underlying assumptions may not be highly regarded by lawyers and judges.<sup>49</sup> There is a possibility an expert economist, basing their opinion on a game theory model, would have to admit that they do not actually know what complex repeated game the defendant firm is playing or whether their model is capturing that game. They might have to confess that there are other models that give opposite conclusions. And it is unlikely that the types of evidence presented in litigation would help the expert sort through the models and determine which is more or less likely. Such scenarios make it less likely that lawyers will offer such testimony as well as less likely that judges would find it convincing.

Perhaps the successful history of Chicago economics has left an impression on judges that the consequences of making a Type I error are far more serious than making a Type II error. That is, finding a business practice anti-competitive could end that practice in the marketplace, across industries, and for an extended period of time. If such a finding was a mistake, it would be a very costly mistake. On the other hand, allowing an anti-competitive practice to go on may also be a mistake, but there is the belief that the market disciplines bad business practices.

Generally, economic theory and the law evolve as new ideas survive not only theoretical inspection, but empirical testing.<sup>50</sup> Marginal improvements to the conventional wisdom, regardless of whether they are labeled Chicago, NIE or new IO, are accepted only through this process. There appear to be instances in which new ideas from NIE have made it into the conventional wisdom and into the law.<sup>51</sup> In some cases, game theory models may generate these same results. However, those game theory models that generate conclusions that are at odds with the conventional wisdom have not made significant inroads into the law or into the existing wisdom.

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<sup>48</sup> See William E. Kovacic, *The Influence of Economics on Antitrust Law*, 30 ECON. INQUIR. 294 (1992).

<sup>49</sup> See Malcom B. Coate & Jeffrey H. Fischer, *Can Post-Chicago Economics Survive Daubert?*, 34 AKRON L. REV. 795, 795-96 (2001).

<sup>50</sup> See Timothy J. Muris, *Economics and Antitrust*, 5 GEO. MASON L. REV. 303 (1997).

<sup>51</sup> See the cases cited in notes 6-10.

Until those models and their conclusions are tested, and we know something about the error rates associated with them, it is appropriate for them to remain in the economic journals, but be absent from litigation.