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**DESIGNING ANTITRUST RULES  
FOR ASSESSING UNILATERAL  
PRACTICES: A NEO-CHICAGO  
APPROACH**

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## ABSTRACT

### Designing Antitrust Rules for Assessing Unilateral Practices: A Neo-Chicago Approach\*

This essay describes an approach for designing antitrust rules for assessing whether firms have engaged in anticompetitive unilateral practices that is based in part on the error-cost framework pioneered by Judge Easterbrook. We focus particularly on the role of economic theory and evidence in forming presumptions about the likelihood that unilateral business practices reduce welfare and on the implications of this role for the kinds of research that economists need to conduct concerning unilateral business practices. We then apply this approach to tying.

Our approach towards designing legal rules proceeds in two steps. First, economic theory and empirical evidence are used to formulate explicitly a set of presumptions regarding the cost and likelihood of errors resulting from condemning welfare-increasing business practices or condoning welfare-reducing ones. Second, based on those presumptions, a legal rule that minimizes the cost of errors is selected. We will refer to this as a neo-Chicago approach, since it accepts the fundamental tenet of Chicago thinking that legal rules and legal outcomes can and should be assessed based on their efficiency properties, while also incorporating the learning of the Chicago and post-Chicago literatures in designing these rules.

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## I. Introduction

Businesses engage in a variety of practices to increase their sales and profits often at the expense of competitors. These “unilateral practices” become suspect under the competition laws only when the firm that uses them has what is termed “monopoly power” under the laws of the United States and a “dominant position” under the laws of the European Union and many of its member states.<sup>1</sup> There is great variation across practices, over time, and among jurisdictions in how the courts analyze unilateral practices to determine whether they are anticompetitive or not. The courts have, for example, devised quite different rules for evaluating “low” prices over time and across jurisdictions. Compare *LePage’s* and *Michelin II*.<sup>2</sup> To take another example, plaintiffs face high hurdles in showing predatory pricing in the United States since *Brooke Group* but low hurdles in showing tying under *Jefferson Parish*.<sup>3</sup>

This variation results in part from the fact that the welfare-effects<sup>4</sup> of unilateral practices are inherently difficult to assess. Economics and experience provides a strong presumption that certain coordinated practices are generally harmful; there is thus little variation in the analysis of practices such as price fixing. Not so for unilateral practices. There is no basis for suggesting that aggressive pricing is generally bad. In fact, it is usually what society wants. But few would dispute that it is possible that a firm could cleverly use low prices to secure a monopoly for itself. Given this uncertainty it is not surprising that different courts at different times and places have reached different results. But this is hardly a satisfying outcome, especially since the differences are seldom justified in economic terms.

Economic and legal scholars have suggested two major alternative approaches to the antitrust analysis of unilateral practices. Both of these would impose some coherency and consistency. Beginning in the early 1950s, the Chicago School literature argued that many unilateral practices should be *per se* legal.<sup>5</sup> That was based on two observations.

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<sup>1</sup> Sherman Antitrust Act, 15 U.S.C. §§ 1-7 (1890); Treaty of the European Communities, Official Journal C 325, 24 December 2002. This Essay draws on United States and European competition law because these are large jurisdictions (together they account for almost sixty percent of the world’s industrial production) with well-established bodies of law. *IMF World Economic Outlook*, 2003.

<sup>2</sup> *LePage’s v. 3M*, 324 F.3d 141 (3d Cir. 2003); *Michelin v. Commission*, Case T-203/01.

<sup>3</sup> *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993); *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 104 S. Ct. 1551 (1984).

<sup>4</sup> Throughout this paper the term “welfare” refers to social welfare—the measure economists mainly advocate for evaluating competition policy. See, e.g., MASSIMO MOTTA, *COMPETITION POLICY: THEORY AND PRACTICE* 20 (2004); Oliver E. Williamson, *Economies as an Antitrust Defense: The Welfare Tradeoffs*, 58 AM. ECON. REV. 18 (1968); Richard Schmalensee, *Sunk Costs and Antitrust Barriers to Entry*, 94 AM. ECON. REV. 471 (2004). Most of what we say does not depend on whether we use social welfare or the more narrow measure of consumer welfare that the courts and regulatory authorities typically use for evaluating antitrust issues.

<sup>5</sup> Aaron Director is viewed by most observers as the intellectual father of the Chicago School approach to antitrust. See THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW (Peter Newman, ed., Macmillan Reference 1998), at 227-33, 601-05; ROBERT H. BORK, *THE ANTITRUST PARADOX* (1978), at

The first was that many of these practices usually provided efficiencies. The second is based on what we will call “impossibility theorems”: these involved the application of price theory to demonstrate that firms with monopoly power lacked the incentives to use certain practices for anticompetitive purposes.

The post-Chicago<sup>6</sup> literature challenged the second observation. Beginning in the early 1980s, modern industrial organization used game theory to derive “possibility theorems” that showed certain behavior could be anticompetitive in particular circumstances.<sup>7</sup> As Kovacic and Shapiro observe: “Some types of conduct, such as long-term contracts with key customers or preemptive capacity expansion, *could* deter entry and entrench dominance, but they also *could* generate efficiencies. The only way to tell in a given case appeared to be for the antitrust agencies and the courts to conduct a full-scale rule of reason inquiry.”<sup>8</sup> The models, however, find that whether a practice increases or decreases welfare depends on specific assumptions being valid and model parameters taking on particular values. They do not provide much practical guidance when the courts or regulatory agencies get into a rule-of-reason inquiry. Having led us to the rule-of-reason path, the theories abandon us for the rest of what can be a very long journey.

This Essay describes an approach for designing antitrust rules for assessing whether firms have engaged in anticompetitive unilateral practices that is based in part on the error-cost framework pioneered by Judge Easterbrook.<sup>9</sup> We focus particularly on the role of economic theory and evidence in forming presumptions about the likelihood that unilateral business practices reduce welfare and on the implications of this role for the kinds of research that economists need to conduct concerning unilateral business practices. We then apply this approach to tying.

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xv; Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 U. PENN. L. REV. 925, 925-26 (1979). Articles from Chicago School proponents began appearing in the mid-1950s. *See, e.g.*, Robert H. Bork, *Vertical Integration and the Sherman Act: The Legal History of an Economic Misconception*, 22 U. CHI. L. REV. 157 (1954); Aaron Director & Edward H. Levi, *Law and the Future: Trade Regulation*, 51 NW. U.L. REV. 281 (1956); Ward S. Bowman, Jr., *Tying Arrangements and the Leverage Problem*, 67 YALE L.J. 19 (1957); John S. McGee, *Predatory Price Cutting: The Standard Oil (NJ) Case*, 1 J.L. & ECON. 137 (1958); Lester G. Telser, *Why Should Manufacturers Want Fair Trade?* 3 J.L. & ECON. 86 (1960).

<sup>6</sup> The term “post-Chicago” was popularized by Herbert Hovenkamp and Oliver Williamson. *Post-Chicago Analysis After Kodak: Interview with Professor Steven C. Salop*, 7 ANTITRUST 20 (1992).

<sup>7</sup> Paul L. Joskow, *Transaction Cost Economics, Antitrust Rules, and Remedies*, 18 J.L. ECON. & ORG. 95, 104 (2002).

<sup>8</sup> William E. Kovacic & Carl Shapiro, *Antitrust Policy: A Century of Economic and Legal Thinking*, 14 J. ECON. PERSP. 43, 55 (2000).

<sup>9</sup> Easterbrook emphasizes the importance of presumption in structuring antitrust inquiries. He observes that the full rule-of-reason approach is often impractical and advocates a more structured rule of reason. We specify a two-state decision theoretic approach and make use of derive the presumptions in light of existing theory and empirical evidence. Our approach can yield modified *per se* legality rules for unilateral practices. *See* Frank H. Easterbrook, *The Limits of Antitrust*, 63 TEX. L. REV. 1 (1984).

The approach is based on three related principles.

- (1) It is not possible to distinguish procompetitive from anticompetitive practices with certainty. Economics can provide some guidance but cannot separate the good from the bad with precision.
- (2) Socially desirable antitrust rules should minimize the expected cost of errors resulting from condoning harmful practices or condemning beneficial ones, while maintaining a degree of predictability for businesses and administrative ease for the courts.<sup>10</sup> Such rules would help maximize the long-run welfare generated by the competitive process.
- (3) Assessing the likelihood and cost of errors for which a legal rule is being devised for a particular practice requires forming a set of presumptions based on current economic knowledge and experience.

Our approach towards designing legal rules then proceeds in two steps. First, economic theory and empirical evidence are used to formulate explicitly a set of presumptions regarding the cost and likelihood of errors resulting from condemning welfare-increasing business practices or condoning welfare-reducing ones. Second, based on those presumptions, a legal rule that minimizes the cost of errors is selected.<sup>11</sup> We will refer to this as a neo-Chicago approach, since it accepts the fundamental tenet of Chicago thinking that legal rules and legal outcomes can and should be assessed based on their efficiency properties,<sup>12</sup> while also incorporating the learning of the Chicago and post-Chicago literatures in designing these rules.

We begin by briefly summarizing the evolution of economic thinking on the competitive character of unilateral behavior and its effect on how courts and competition authorities consider those antitrust issues. We then describe the methodology proposed in this Essay along with several pragmatic aspects of how this approach could be implemented in practice to the assessment of unilateral practices. We apply this neo-Chicago approach to tying—one of the more unsettled areas of antitrust law concerning unilateral practices.

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<sup>10</sup> This error-cost approach has been applied to legal rules generally as well as antitrust in particular. *See, e.g.,* Richard A. Posner, *An Economic Approach to Legal Procedure and Judicial Administration*, 2 J. LEGAL STUD. 399, 400 (1973); Easterbrook, *supra* note 9. For recent applications see C. Frederick Beckner III & Steven C. Salop, *Decision Theory and Antitrust Rules*, 67 ANTITRUST L.J. 41 (1999); Keith N. Hylton & Michael Salinger, *Tying Law and Policy: A Decision-Theoretic Approach*, 69 ANTITRUST L.J. 469 (2001).

<sup>11</sup> Formally, this approach relies on a Bayesian decision-theoretic framework. There is a “prior distribution” on possible market outcomes. Error costs are minimized subject to this prior distribution. *See* Hylton & Salinger, *supra* note 10; Beckner & Salop, *supra* note 10.

<sup>12</sup> NICHOLAS MERCURO AND STEVEN G. MEDEMA, *ECONOMICS AND THE LAW: FROM POSNER TO POST-MODERNISM* (1997) at 57.

## II. Unilateral Practices: From Pre- to Post-Chicago

The “pre-Chicago approach” refers to judgments concerning business practices that are not based on an economic analysis of whether firms with market power have the incentive or ability to engage in such practices for anticompetitive reasons. These judgments typically fail to consider whether, and to what extent, those business practices result from procompetitive efforts to achieve efficiencies. The pre-Chicago approach, instead, is based on what might best be described as “intuitions” about whether practices are nefarious or not. The Supreme Court used this intuitive approach in many cases that examined unilateral practices in the first three quarters of the twentieth century—a period that is sometimes called the pre-Chicago era in antitrust.<sup>13</sup>

One of the major pre-Chicago contributions is the so-called “leverage doctrine,”<sup>14</sup> which is behind a number of decisions that condemned various unilateral practices when used by firms with significant market power. Starting with *Terminal Railroads*, the courts seemed to believe that a firm with a monopoly in one market, call it M, has always an incentive to extend that monopoly to a market for a complementary product, call it C, and thereby get two monopoly profits instead of one.<sup>15</sup> Following this reasoning the courts found that several types of unilateral practices should be illegal *per se*. One concern was that a monopolist would tie the purchase of its monopoly product to other competitive products in order to extend its monopoly power to previously competitive markets. Tying was therefore illegal *per se*.<sup>16</sup> Another broad concern was that a manufacturer would use vertical agreements with its distributors to extend a monopoly to the downstream market. This belief led to *per se* illegality for resale price maintenance,<sup>17</sup> exclusive territories,<sup>18</sup> and exclusive dealing.<sup>19</sup>

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<sup>13</sup> As we shall see, the fact that the pre-Chicago views were not based on rigorous economic analysis does not mean they were necessarily wrong. The post-Chicago economic literature discussed below can be viewed as an attempt to show that some of the business practices condemned by the pre-Chicago courts could have been anticompetitive given the right set of facts.

<sup>14</sup> See, e.g., Bowman, *supra* note 5.

<sup>15</sup> *United States v. Terminal Railroad Association*, 224 U.S. 383 (1912).

<sup>16</sup> *International Salt Co. v. United States*, 332 U.S. 392, 396 (1947). As we discuss in more detail below, tying is now treated under a rule of quasi *per se* illegality.

<sup>17</sup> *Dr. Miles Medical Co. v. John D. Park & Sons Co.*, 220 U.S. 373 (1911). Following *Dr. Miles*, legislative action made resale price maintenance under certain circumstances. All resale price maintenance again became *per se* illegal in 1975 when these laws were repealed. DENNIS W. CARLTON & JEFFREY M. PERLOFF, *MODERN INDUSTRIAL ORGANIZATION* 635-41 (3d ed. 1999). As discussed below, the Court recently removed the *per se* prohibition on maximum resale price maintenance.

<sup>18</sup> Exclusive territories were initially analyzed under rule of reason, such as in *White Motor* but subsequently found *per se* illegal under *Schwinn*. *White Motor Co. v. United States*, 372 U.S. 253 (1963); *United States v. Arnold Schwinn & Co.*, 388 U.S. 365 (1967). As discussed below, *Schwinn* was itself subsequently overruled by *Sylvania*.

<sup>19</sup> A showing that some threshold share of the relevant market has been affected is also required, although that share does not have to be high. Exclusive contracts about 1 percent of the relevant market was

Another significant pre-Chicago view was that firms could use predatory actions to drive rivals out of the market, thereby creating a monopoly position for the predator.<sup>20</sup> For example, a large firm could set low, predatory prices so that its competitors would lose money and exit. Predatory pricing was considered under the rule of reason, but courts were free to apply reason as they thought best, and many defendants lost.<sup>21</sup>

### A. The Chicago School

The Chicago School made a significant contribution to antitrust by applying basic price theory to a variety of practices that were viewed suspiciously by the courts. The most famous is the “single monopoly profit theorem.” In a vertical chain of production there is a single monopoly profit to be had. A firm that has a monopoly at one level of the vertical chain can secure that if it charges a monopoly price for its product and everyone else charges a competitive price for theirs’. It would then prefer to have as much competition as possible at every other level of the chain because that will reduce the price of the final product, increase sales, and thereby maximize the total profit that it receives. This theorem is fatal, or so it appeared, to the leverage doctrine. The monopoly has no incentive to monopolize competitive levels of the chain because it can never get more profit than it currently obtains from having a monopoly at one level.<sup>22</sup> Variants of the single monopoly profit theorem have been applied to tying, essential facilities, and, more broadly, to the analysis of vertical integration and restraints.<sup>23</sup>

Much has been written on the influence of the Chicago School on modern antitrust.<sup>24</sup> The Chicago School’s arguments, including the single monopoly profit

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insufficient to trigger liability in *Tampa Electric*, but a share of 16 percent was sufficient in *Standard Stations*. *Tampa Electric Co. v. Nashville Coal Co.*, 365 U.S. 320 (1961); *Standard Oil Co. v. United States*, 337 U.S. 293 (1949).

<sup>20</sup> *Standard Oil Co. v. United States*, 221 U.S. 1 (1911).

<sup>21</sup> See, e.g., John S. McGee, *Predatory Price Cutting: The Standard Oil (N.J.) Case*, 1 J.L. & ECON. 137 (1958).

<sup>22</sup> In fact the monopolist has an incentive to destroy market power at other levels of the chain. A second monopoly for example would result in a higher price for the final product and reduce its sales. This result, known unhelpfully as double marginalization, dates back to Cournot in 1838. AUGUSTIN A. COURNOT, *RESEARCHES INTO THE MATHEMATICAL PRINCIPLES OF THE THEORY OF WEALTH* (R.D. Irwin 1986) (1838).

<sup>23</sup> BORK, *supra* note 5, at 195-201.

<sup>24</sup> See, e.g., Posner, *supra* note 5; Kovacic & Shapiro, *supra* note 8; Herbert Hovenkamp, *Antitrust Policy After Chicago*, 84 MICH. L. REV. 213 (1985); POST-CHICAGO DEVELOPMENTS IN ANTITRUST LAW (Antonio Cucinotta et al., eds., 2002); INGO L.O. SCHMIDT & JAN B. RITTALER, *A CRITICAL EVALUATION OF THE CHICAGO SCHOOL OF ANTITRUST ANALYSIS* (1989); Edmund W. Kitch, *The Fire of Truth: Remembrance of Law and Economics at Chicago, 1932-1970*, J.L. & ECON. 163 (1983); Michael S. Jacobs, *An Essay on the Normative Foundations of Antitrust Economics*, 74 N.C.L. REV. 219 (1995); Melvin W. Reder, *Chicago Economics: Permanence and Change*, 20 J. ECON. LIT. 1 (1982); Alan J. Meese, *Tying Meets the New Institutional Economics: Farewell to the Chimera of Forcing*, 146 U. PA. L. REV. 1 (1997); William H. Page, *The Chicago School and the Evolution of Antitrust: Characterization, Antitrust Injury, and Evidentiary Sufficiency*, 75 VA. L. REV. 1221 (1989); Herbert Hovenkamp, *Post-Chicago Antitrust: A Review and Critique*, 2001 COLUM. BUS. L. REV. 257 (2001); Christopher S. Yoo, *Vertical Integration and Media Regulation in the New Economy*, 19 YALE J. ON REG. 171, 187-205 (2002).

theorem, have made significant inroads in the Supreme Court’s treatment of vertical restraints. One of the earliest Chicago-influenced decisions, *Sylvania*, overruled precedent and analyzed territorial restraints imposed by manufacturers on distributors under the rule of reason, rather than finding them illegal *per se*.<sup>25</sup> More recently, the Court has overturned the *per se* prohibition on maximum resale price maintenance—a manufacturer’s setting of a maximum price that their distributors can charge.<sup>26</sup> (The setting of a minimum retail price by manufacturers is, however, still illegal *per se*.) Another significant Chicago contribution is in the treatment of predatory pricing claims. The Chicago School thinking influenced Supreme Court decisions that have made predatory pricing claims difficult for plaintiffs to pursue.<sup>27</sup> The courts have therefore gone in the direction desired by the Chicago School—and the period after *Sylvania* is sometimes described as the “Chicago era” in antitrust—although not for all practices considered by the Chicago School or as far as the Chicago School advocated.

## **B. Post-Chicago Ideas and Models**

In the 1980s, some economists started kicking the tires on the Chicago results. They found that it was possible to develop models in which firms could use their monopoly in one market to affect adjacent markets in ways that reduced social welfare and therefore might be deemed anticompetitive.<sup>28</sup> Michael Whinston’s article on tying is a seminal paper in that strand of the literature.<sup>29</sup> He locates some assumptions under which a monopoly has incentives to tie its monopoly product to a secondary product in order to eliminate competition in the secondary market. More precisely, he shows that leveraging a monopoly position in the tying market onto an adjacent tied market may be privately profitable when the tied market is subject to economies of scale and, therefore, is imperfectly competitive, and when leveraging successfully induces the exit, or deters the entry, of competitors in the tied market.<sup>30</sup> Subsequent articles by other economists

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<sup>25</sup> *Continental T.V. v. GTE Sylvania*, 433 U.S. 36 (1977).

<sup>26</sup> *State Oil Co. v. Khan*, 522 U.S. 3 (1997).

<sup>27</sup> *See, e.g., United States v. AMR Corp.*, 140 F. Supp. 2d 1141 (D. Kan. 2001), *aff’d*, 335 F.3d 1109 (10th Cir. 2003); *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993). The development of the Areeda-Turner test for predatory pricing, which severely limited successful predatory pricing claims in the United States, was also influenced by the Chicago School. *See Kitch, supra* note 24, at 209.

<sup>28</sup> The models focus on social welfare and not consumer welfare. All of the models with which we are familiar show that unilateral actions by monopolists can reduce social welfare in the short-term under certain conditions. This result requires that the decline in the welfare of competitors exceed the positive impact of those actions on consumer welfare in the short-term. Hence, a decrease in social welfare in the short-term does not necessarily imply a decrease in long-run consumer welfare. Therefore, these models are useful for assessing the effect on social welfare, the measure that economists prefer, but not for assessing the effect on consumer welfare, the measure that courts and regulatory agencies have adopted.

<sup>29</sup> Michael D. Whinston, *Tying, Foreclosure, and Exclusion*, 80 AM. ECON. REV. 837 (1990).

<sup>30</sup> Whinston is careful to observe the limited practical use of these results. “Even in the simple models considered here, which ignore a number of other possible motivations for the practice, the impact of this exclusion on welfare is uncertain. This fact, combined with the difficulty of sorting out the leverage-based

identified other sets of assumptions under which monopolies had both the incentive and ability to foreclose competition in a secondary market either to attain an additional monopoly profit there or to protect their monopoly profit in the primary market.<sup>31</sup> Likewise, another strand of the modern economics literature undercut the proposition that firms lacked the incentive or ability to engage in predatory pricing.<sup>32</sup>

The post-Chicago approach had an impact on both U.S. and European antitrust. In the United States, it received a limited Supreme Court imprimatur in *Kodak*. On review of summary judgment dismissing the claim that the defendant used its position in the market for photocopier parts and micrographics equipment to monopolize the market for servicing these machines, the Court found that it was possible that a firm could use its dominant position with respect to its locked-in customers to monopolize a derivative aftermarket.<sup>33</sup> The plaintiffs in the case had relied on an economist who presented arguments that follow the post-Chicago literature.<sup>34</sup> In effect, the Court rejected the *per se* legal approach that would follow from the Chicago School in favor of a rule-of-reason approach that would consider the possibility of anticompetitive behavior in the particular factual circumstances of the case.<sup>35</sup> The U.S. Department of Justice relied on post-Chicago approaches in two well-known cases it initiated in the late 1990s.<sup>36</sup> In *Microsoft III*, it argued that Microsoft had promoted its own browsing software for the purpose of deterring a challenge to its operating system monopoly. That line of argument prevailed with the district court and, to an extent, the D.C. Circuit Court of Appeals.<sup>37</sup> The

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instances of tying from other cases, makes the specification of a practical legal standard extremely difficult.” Whinston, *supra* note 29, at 855-56.

<sup>31</sup> See Jay Pil Choi & Christodoulos Stefanadis, *Tying, Investment, and the Dynamic Leverage Theory*, 32 RAND J. ECON. 52 (2001); Dennis W. Carlton & Michael Waldman, *The Strategic Use of Tying to Preserve and Create Market Power in Evolving Industries*, 33 RAND J. ECON. 194 (2002).

<sup>32</sup> See, e.g., JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* (1988), at ch. 9. See also, Patrick Bolton, Joseph F. Brodley, & Michael H. Riordan, *Predatory Pricing: Strategic Theory and Legal Policy*, 88 GEO. L.J. 2239, 2250-51 (2000).

<sup>33</sup> *Eastman Kodak Co. v. Image Technical Serv. Inc.*, 504 U.S. 451 (1992).

<sup>34</sup> Stephen Calkins, *Supreme Court Antitrust 1991-92: The Revenge of the Amici*, 61 ANTITRUST L.J. 269, n.183 (1993).

<sup>35</sup> *Kodak* has had a limited effect even in aftermarket cases. One commentator states that “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 that “the lower courts have bent over backwards to construe *Kodak* as narrowly as possible.” Herbert Hovenkamp, *The Reckoning of Post-Chicago Antitrust*, in POST-CHICAGO DEVELOPMENTS IN ANTITRUST LAW (Antonio Cucinotta et al., eds., 2002), at 8. The initial view that *Kodak* would usher in an era in which the courts followed adopted the post-Chicago view ignored the fact that the Court was only looking at summary judgment.

<sup>36</sup> Kovacic & Shapiro, *supra* note 8, at 57-58.

<sup>37</sup> *United States v. Microsoft*, 253 F.3d 34 (D.C. Cir. 2001). The D.C. Circuit accepted the basic argument that Microsoft tied a browser to the operating system to prevent nascent competition that could threaten Microsoft’s operating system monopoly. However, it remanded the tying claim (whose effect was on the tied market rather than the tying market) for reconsideration under a rule-of-reason analysis (having rejected the *Jefferson Parish* approach for the case of software platforms).

economic subtext for this case can be found in an article, in the post-Chicago tradition, by Dennis Carlton and Michael Waldman.<sup>38</sup> In *American Airlines*, the Justice Department pressed a post-Chicago predatory pricing theory<sup>39</sup> that was rejected, on summary judgment, by the District Court and the Tenth Circuit Court of Appeals.<sup>40</sup>

The European Commission has relied on post-Chicago arguments in several well-known merger control cases in the last several years.<sup>41</sup> The Commission blocked a merger between Tetra Laval, the leading (and according to the Commission dominant) supplier of drink carton packaging equipment and Sidel, the leading (but not allegedly dominant) maker of machines used in the production of plastic bottles. The Commission expressed concern over, among other things, “conglomerate effects” resulting from the merger. It argued that, for example, the combined entity would have the ability and incentive to use its existing dominance of Tetra Laval in carton packaging “as a ‘lever’ in order to achieve a dominant position on the [plastic bottle] equipment markets.”<sup>42</sup> On appeal, the Court of First Instance accepted the possibility of such conglomerate effects but that the Commission had failed to show that such anticompetitive effects were likely given the facts of the case. Similar arguments were relied on in the Commission’s decision to block the merger of General Electric and Honeywell.<sup>43</sup> It remains to be seen how these theories will ultimately fare in the European courts.

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<sup>38</sup> Carlton & Waldman, *supra* note 31. This model was not presented at trial. Carlton was, however, a consultant to Sun and made presentations on its behalf to the Justice Department, providing an outline of the type of suit Sun believed the government should file against Microsoft. JOHN HEILEMAN, *PRIDE BEFORE THE FALL: THE TRIALS OF BILL GATES AND THE END OF THE MICROSOFT ERA 88-94* (2003).

<sup>39</sup> As academic support the Justice Department cited, for example, the post-Chicago theories discussed in Patrick Bolton, Joseph F. Brodley & Michael H. Riordan, *Predatory Pricing: Strategic Theory and Legal Policy*, 88 GEO. L.J. 2239 (2000). See Brief for the Appellant United States of America, *United States v. AMR Corp.*, 335 F.3d 1109 (10th Cir. 2003) (No. 01-3202) (public redacted version); Reply Brief for the Appellant United States of America, *United States v. AMR Corp.*, 335 F.3d 1109 (10th Cir. 2003) (No. 01-3202) (public redacted version).

<sup>40</sup> *United States v. AMR Corp.*, 140 F. Supp. 2d 1141 (D. Kan. 2001), *aff’d*, 335 F.3d 1109 (10th Cir. 2003).

<sup>41</sup> In addition, the Commission’s decision finding that Microsoft had abused its dominant position by allegedly tying its media player to its operating system was based on a theory that we would put in the post-Chicago tradition. The Commission found, “In a nutshell, tying WMP with the dominant Windows makes WMP the platform of choice for complementary content and applications which in turn risks foreclosing competition in the market for media players. This has spillover effects on competition in related products such as media encoding and management software (often server-side), but also in client PC operating systems for which media players compatible with quality content are an important application.” See Commission Decision of 24.03.2004, Case COMP/C-3/37.792, available at <http://europa.eu.int/comm/competition/antitrust/cases/decisions/37792/en.pdf>, at ¶842. This argument echoes an economic literature that shows that under some assumptions markets can tip and that firms can engage in anticompetitive actions to make markets tip to themselves and thereby establish a monopoly. See, e.g., W. Brian Arthur, *Competing Technologies and Lock-In by Historical Events*, 99 ECON. J. 116 (1989).

<sup>42</sup> *Tetra Laval BV v. Commission*, Case T-5/02, 2002 E.C.R. II-4381, at ¶143.

<sup>43</sup> *General Electric and Honeywell have appealed that decision. Honeywell Int’l v. Commission*, Case T-209/01; *General Electric Co. v. Commission*, Case T-210/01. The Commission apparently relied on the

The post-Chicago literature is a collection of what we have termed “possibility theorems.”<sup>44</sup> In the vertical foreclosure strand of the literature, these theorems all begin with the “simplifying” assumption that the practice in question does not generate any benefits such as reduction in production costs, lower transaction costs, or improved convenience for consumers.<sup>45</sup> The theorems are based on further assumptions about demand, costs, and how firms strategically interact with each other. Finally, the theorems show that the practice reduces social welfare when certain parameters of the model (these might relate to the elasticity of demand, the magnitude of fixed costs, or the shape of the cost curve) take a particular range of values.

These models provide valuable insights but are of limited use in many cases. It is often impossible to use data, or other evidence, to confirm the assumptions that underlie those models or to assess whether their “critical” parameters do, indeed, fall in the range of values required for the practice to reduce social welfare. These models tell us that it is conceivable, as a matter of theory, that a practice is anticompetitive in the sense that it raises the profit of the firm engaging in that practice at the expense of society.

### C. Implications for the Design of Antitrust Rules

The Chicago and post-Chicago literatures have relied on economic theory to question the intuitions of the pre-Chicago approach. Both literatures emphasize efficiency as the ultimate criterion for the design of antitrust rules and reject most pre-Chicago *per se* illegality rules concerning unilateral practices. Yet where the Chicago School tended to advocate *per se* legality, post-Chicago thinking enthuses over rule-of-reason analyses. The post-Chicago literature has shown that the economic propositions resulting from both Chicago and post-Chicago models are theoretical possibilities; they depend on assumptions that may or may not hold true in any particular case and which are hard to test given the current state of empirical knowledge. We are thus left with a fair amount of economic indeterminacy.

Where do we go from here? For some the solution is more game theory.<sup>46</sup> So far, however, years of work using this approach have failed to provide any of the practical guidance the courts need to weigh anticompetitive and procompetitive effects in a rule-of-reason analysis. We see no reason to believe this will change. Others have confidence that the rule-of-reason approach allows juries, courts, and regulators to discern the right

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post-Chicago models developed for some of the complainants by Jay Phil Choi (*See* Stefan Schmitz, *The European Commission’s Decision in GE/Honeywell and the Question of the Goals of Antitrust Law*, 23:3 U. Pa. J. Int’l Econ. L., 539, YEAR at 578-9) and Janusz A. Ordover (*See* Robert J Reynolds & Janusz A. Ordover, *Archimedean Leveraging and the GE/Honeywell Transaction*, 70 ANTITRUST L.J. (2002).

<sup>44</sup> Joskow, *supra* note 7.

<sup>45</sup> Making such extreme assumptions to focus on a particular issue is standard in economics. Moreover, the authors are careful to note that it is not possible to use the models to craft antitrust policy. Whinston, *supra* note 29; Carlton & Waldman, *supra* note 31. Unfortunately, economists and regulatory authorities sometimes ignore these caveats. *See, e.g.*, European Regulators Group, *Draft Joint ERG/EC Approach on Appropriate Remedies in the New Regulatory Framework*, November 2003.

<sup>46</sup> Kovacic & Shapiro, *supra* note 8.

answer for the matter at hand. But as Benjamin Franklin once said, “So convenient a thing it is to be a *reasonable Creature*, since it enables one to find or make a Reason for every thing one has a mind to do.”<sup>47</sup>

### **III. Unilateral Practices: A Neo-Chicago Approach**

Competition policy will inevitably make mistakes. The vagaries of the judicial process, the fact that evidence is seldom as clear as one would like, and human fallibility make errors inevitable in all areas of the law. But the usual problems are compounded for unilateral practices by the lack of robust economic guidance. Firms will thus get away with anticompetitive practices if competition policy is too lenient, and they will be discouraged from engaging in procompetitive practices if it is too strict. Sound competition policy must begin with an assessment, based on economic theory and evidence, of how likely and costly such mistakes are. It must then devise administrable legal rules that minimize the expected costs of these errors and make antitrust enforcement predictable for businesses. These are precisely the two stages of the neo-Chicago methodology proposed in this paper, as described in the introductory section.

To implement this approach for the assessment of the unilateral behavior of firms with market power, we first formulate three presumptions—or, in the language of Bayesian decision-making, we state three prior beliefs—regarding the nature, cost and likelihood of the errors resulting from the assessment. These presumptions or prior beliefs are independent of the facts of any specific case. However, they affect how we process the evidence in each specific case and how we want to establish burdens of proof and ultimately the degree of antitrust scrutiny. Then, based on those presumptions, we proceed to select a legal rule that, while easy to administer and enforce, minimizes the cost of those errors.

We hold three presumptions.

- (1) Many unilateral practices that have raised concerns are also widely used in competitive markets and therefore presumably result in efficiencies for firms or consumers.
- (2) The impossibility theorems developed by the Chicago School are likely to be close to the truth in many real world markets, since market forces generally prevent unilateral anticompetitive strategies, such as predatory pricing and monopoly leveraging, from being profitable in the long term.
- (3) Condemning procompetitive practices is likely to be more costly than exonerating anticompetitive practices all else equal.

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<sup>47</sup> BENJAMIN FRANKLIN, WRITINGS 1339 (1987).

In the next three sections we explain the economic reasons supporting these three presumptions. We then consider their implications for the design of legal rules.

### **A. Prior Beliefs about Efficiency**

Consider a practice in which firms in both competitive and uncompetitive markets engage. We would expect that the practice cut costs or enhanced value to consumers—after all, competitive firms cannot survive indefinitely if they do not use the most efficient methods of producing, designing and distributing products.

Many unilateral practices that are challenged under the antitrust laws are ones that non-dominant firms engage in regularly. These include tying,<sup>48</sup> vertical restraints such as exclusive contracts and exclusive territories,<sup>49</sup> nonlinear pricing including loyalty discounts,<sup>50</sup> and aggressive price-cutting.<sup>51</sup> There is no reason to believe that practices that generate efficiencies when firms lack market power do not generate those same efficiencies when firms possess market power. For these practices, therefore, our prior is that firms are generally engaging in them because it is efficient, and therefore procompetitive, for them to do so. That said, and as we show in the case of tying, economists do not understand these sources of efficiencies well at the moment and it is difficult to document them persuasively. It is also not surprising that business people have difficulty documenting and sometimes even articulating these efficiencies. Consequently, the courts should provide some deference to efficiency explanations offered for unilateral practices that are common in competitive markets. That may entail imposing the burden of proof on the plaintiff to demonstrate that the efficiencies are not significant or are simply being offered as a pretext by the defendant.<sup>52</sup>

### **B. Prior Beliefs on Anticompetitive Intent and Effect**

The principal implication of several decades of economic investigation on the competitive effects of unilateral practices such as exclusive dealing and tying is that there should be *no* presumption on the part of competition authorities that these practices are

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<sup>48</sup> David S. Evans & Michael A. Salinger, *Why Do Firms Bundle and Tie? Evidence from Competitive Markets and Implications for Tying Law*, YALE J. ON REG. (forthcoming); Paul Seabright, *Tying and Bundling: From Economics to Competition Policy*, Edited Transcript of a CNE Market Insights Event, Sept. 19, 2002, at [http://www.cne.org/pub\\_pdf/2002\\_09\\_19\\_tying\\_bundling.htm](http://www.cne.org/pub_pdf/2002_09_19_tying_bundling.htm).

<sup>49</sup> Jan B. Heide, Shantanu Dutta, & Mark Bergen, *Exclusive Dealing and Business Efficiency: Evidence From Industry Practice*, 41 J.L. & ECON. 387, 404 (1998).

<sup>50</sup> John Temple Lang & Robert O'Donoghue, *Defining Legitimate Competition: How to Clarify Pricing Abuses Under Article 82 EC*, 26 FORDHAM INT'L L.J. 83, 91 (2002). *See also*, ROBERT B. WILSON, *NONLINEAR PRICING* (1993), at ch. 1-2.

<sup>51</sup> MOTTA, *supra* note 4, at 443.

<sup>52</sup> Evidence of significant consumer harm from a practice can help reduce the likelihood of false convictions, without significant attendant increases in false acquittals, and should be part of any legal rule. *See* Howard H. Chang, David S. Evans & Richard Schmalensee, *Has the Consumer Harm Standard Lost its Teeth?*, in *HIGH STAKES ANTITRUST: THE LAST HURRAH?* (Robert W. Hahn ed., 2003).

anticompetitive, even when undertaken by firms with monopoly power.<sup>53</sup> Firms with the *ability* to cause consumer harm do not often have an *incentive* to do so. Anticompetitive actions aimed at excluding competitors from adjacent markets to achieve monopoly power often result in a reduction of overall firm profits. Firms with the *incentive* to act anticompetitively do not often have the *ability* to do so, either because they do not have the ability to pre-commit to an anticompetitive course of action or because they cannot extract any anticompetitive rents due to the countervailing power of buyers and/or potential entrants.

There is no basis, therefore, for assuming without further evidence that a firm is engaging in such practices for the purpose of maintaining or acquiring a monopoly. And there is no reason to believe that, even if its intent were anticompetitive, it would have the ability to harm consumers or lower welfare by reducing competition. We discuss these observations further below for the specific case of tying.

### C. Prior Beliefs on Error Costs

With these prior beliefs in mind let us turn to an analysis of error costs. Table 1 shows the standard error matrix with the shaded boxes reflecting the two possible errors that enforcement agencies and the judicial system can make: falsely condemning competitive practices (“false convictions”) and falsely absolving anticompetitive practices (“false acquittals”).<sup>54</sup> We believe that the costs of false convictions in antitrust decisions involving unilateral practices are likely to be significantly larger than those of false acquittals. As Judge Easterbrook wrote, “the economic system corrects monopoly more readily than it corrects judicial errors. There is no automatic way to expunge mistaken decisions of the Supreme Court. A practice once condemned is likely to stay condemned, no matter its benefits. A monopolistic practice wrongly excused will eventually yield to competition, though, as the monopolist’s higher prices attract rivalry.”<sup>55</sup>

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<sup>53</sup> See, *inter alia*, Michael D. Whinston, *Exclusivity and Tying in U.S. v. Microsoft: What We Know and What We Don’t Know*, 15 J. ECON. PERSP. 63 (2001); Patrick Rey, Paul Seabright, & Jean Tirole, *The Activities of a Monopoly Firm in Adjacent Competitive Markets: Economic Consequences and Implications for Competition Policy*, IDEI mimeo (2001), at [http://idei.fr/doc/wp/2001/activities\\_abs.pdf](http://idei.fr/doc/wp/2001/activities_abs.pdf).

<sup>54</sup> We borrow the colorful acquittal/conviction terminology from the criminal context, even though it is technically incorrect.

<sup>55</sup> Easterbrook, *supra* note 10, at 15.

**Table 1. Possible Errors in the Antitrust Assessment of Business Practices**

	<b>Illegal</b>	<b>Legal</b>
<b>Harmful to competition</b>	Percent of cases correctly condemning anticompetitive practices	Percent of cases falsely absolving legitimate practices
<b>Not harmful to competition</b>	Percent of cases falsely condemning legitimate practices	Percent of cases correctly absolving legitimate practices

That is, if an anticompetitive business practice is mistakenly permitted, the very monopoly profits flowing from that practice attract aggressive competition and new entrants. Market forces play no such general corrective role for procompetitive business practices found anticompetitive.<sup>56</sup> And by restraining legitimate acts, antitrust laws would reduce the value of being a legitimate market leader, which is the goal that drives innovation.

#### **D. Design of Legal Rules**

Let us define a spectrum of plausible legal rules or standards for finding that behavior is anticompetitive that ranges from weak to strong. A weaker standard is one that makes it easier to establish that a practice is anticompetitive and therefore decreases the percentage of false acquittals and increases the percentage of false convictions. Error costs vary as we move across this spectrum. The social objective is to find the rule on this spectrum that minimizes the expected cost of these errors. This cost is given by the likelihood of error and the social cost of each type of error.

Consider first how legal rules can be designed to minimize the likelihood of error. The total proportion of cases that are erroneously decided is the sum of the percentages in the top right and lower left boxes in Table 1. Now, consider the implications of our presumptions for choosing a legal rule. Our priors tell us that practices, such as tying or exclusive dealing, that are commonly used by competitive firms as well as by firms with market power, are generally procompetitive. This means that most cases involving such practices belong in the bottom row (i.e., not harmful to competition). In this situation, it is better, all else equal, to choose a stricter standard, lowering the rate of false convictions, while accepting an increase in the rate of false acquittals. Intuitively, if most of the cases

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<sup>56</sup> Firms are likely to be reluctant to implement alternative businesses practices that replicate the one found anticompetitive, as such practices are likely to also be found anticompetitive.

involve permissible business practices, the error rate in evaluating those cases is more important, as they result in a greater number of errors.<sup>57</sup>

Another important factor in deciding on the right legal standard in an error cost framework is the social cost of a false conviction versus that of a false acquittal. (Implicitly, we assumed that they were the same in the numerical example above.) It is socially desirable, all else equal, to decrease those errors that are more costly. When the social cost of false convictions is large relative to that of false acquittals, as our presumptions imply, error-cost minimization requires a stricter standard.

Given our presumptions on efficiencies, anticompetitive intent and effects, and on error costs, the legal rule that minimizes the expected cost of false convictions and acquittals will necessarily involve significant *evidentiary hurdles* prior to establishing that a unilateral practice undertaken by a firm with market power is anticompetitive. In practice, this rule can be implemented through a series of screens based on the findings of the economic literature.

Although modern economics has not identified all necessary and sufficient conditions for any unilateral practice to be anticompetitive, it has been better at determining the necessary conditions.<sup>58</sup> Those conditions can be used to screen out practices that could not be anticompetitive, because the necessary conditions do not hold. When one of those necessary conditions fails, we can assume that the practice is not suspect.

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<sup>57</sup> A numerical example may be instructive. Suppose there are 40 cases that involve permissible practices and 20 cases that involve anticompetitive practices. And suppose that the error rate for both types of cases is 10 percent at the existing legal standard. There will thus be on average 4 false convictions (10 percent of 40) and 2 false acquittals (10 percent of 20), for a total of 6 erroneously decided cases. Suppose we can move to a stricter standard that lowers the error rate in assessing permissible practices to 5 percent while increasing the error rate in assessing anticompetitive practices to 15 percent. (The error rates for false convictions and false acquittals do not, of course, necessarily trade off one-to-one as we change the legal rule. The example offered here is for illustrative purposes.) Is this worthwhile? The number of false convictions decreases to 2 (5 percent of 40) while the number of false acquittals increases to 3 (15 percent of 20), for a total of 5 errors, or 1 fewer than before. We have thereby decreased the total number of errors by moving to a stricter standard because we lowered the error rate for those practices that are most common.

We have greatly simplified the analysis here for expositional purposes. Table 1 is presented in terms of outcomes of litigated cases. A more comprehensive analysis would have to also consider “errors” that do not get to court—there will be harmless practices that firms do not engage in for fear of antitrust liability under the prevailing legal standard, as well as harmful practices not litigated because potential plaintiffs do not believe their expected gain from litigation to be positive under the prevailing legal standard. On a related note, we have to recognize that the behavior of firms may change as legal rules change. Moving to a stricter legal standard may encourage more anticompetitive behavior. For example, literal *per se* legality may result in firms undertaking new forms of anticompetitive behavior that would easily be identified as anticompetitive if litigated.

<sup>58</sup> In our experience, economists and regulators often use post-Chicago reasoning to motivate an anticompetitive claim but then ignore the necessary conditions the flow from the post-Chicago literature.

If all those conditions are met, we still have to balance anticompetitive and procompetitive effects in a final stage prior to concluding that the practice is anticompetitive overall. Indeed, as we showed above, for unilateral practices it is important to consider efficiencies in the analysis. A proper inquiry into efficiencies can be time consuming and is accordingly best done only for those practices that pass through the earlier screens. For example, if a defendant lacks significant market power, economic theory says that it lacks the ability to exclude competitors and cause consumer harm, so we should end the inquiry there. Similarly, if a defendant's tying arrangements or exclusive contracts do not actually foreclose competitors from competing, anticompetitive effects are also unlikely. Again, the inquiry should be terminated. Because analyzing market power or examining the degree of foreclosure are, compared to addressing efficiencies, much more amenable the standard tools available to economists, they should be the basis for safe harbors to be considered before addressing efficiencies.

The "predatory pricing test" prevailing in the United States since *Brooke Group* is structured along these lines. Two screens are applied. First, are the challenged prices below a reasonable measure of the seller's costs? Second, is there a "reasonable prospect, or, under §2 of the Sherman Act, a dangerous probability, of recouping its investment in below-cost prices"?<sup>59</sup> It is important to recognize that the approach proposed in this Essay does not pretend that this test will detect all possible price predation. Rather, relying on an error-cost approach, it takes the position that that it is better to err on the side of letting some predatory pricing through rather than condemning some competitive pricing. Because setting low prices is the hallmark of competition (so that the cost of falsely condemning legitimate price cutting is high) and because successful predation is rare (so that the likelihood of false acquittals is low), the Supreme Court has properly moved to a stricter standard for showing predation.

The European Court of Justice's "exceptional circumstances test" in *Magill* and *IMS Health* is also structured this way. Compulsory licensing is imposed only if four necessary conditions are satisfied: (1) the intellectual property is indispensable for firms to compete in a secondary market; (2) the failure to license that intellectual property results in the elimination of all competition on that secondary market; (3) the intellectual property is needed to produce a new product for which there is likely consumer demand; and (4) there is no objective justification for the refusal.<sup>60</sup> We have argued elsewhere that these conditions isolate compulsory licensing to those situations in which the prospective

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<sup>59</sup> *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993).

<sup>60</sup> Order of the President of the Court of First Instance (Oct. 26, 2001), case T-184/01 R, *IMS Health v. Commission*, 2001 E.C.R. II-3193, at ¶103, available at [http://europa.eu.int/smartapi/cgi/sga\\_doc?smartapi!celexplus!prod!CELEXnumdoc&lg=en&numdoc=62001B0184\(01\)](http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexplus!prod!CELEXnumdoc&lg=en&numdoc=62001B0184(01)). See Christian Ahlborn, David S. Evans & A. Jorge Padilla, *When Is There an Obligation to Deal under the Competition Laws: Recent Developments in the United States and Europe*, Working Paper (February 2004).

social benefits of licensing are so large that they offset the negative and widespread effects of reducing the incentives to create intellectual property.<sup>61</sup>

Both the “predatory pricing test” and the “exceptional circumstances test” can be viewed as what we term “modified *per se* legality” rules. The practices (pricing low, refusing to license a competitor) are presumed to be legal even for firms with significant market power. They are found illegal *only if* the plaintiff can clear relatively high hurdles. Not surprisingly, there have been no successful prosecutions of predatory pricing claims in the United States since *Brooke Group* and only one successful attempt to force compulsory licensing of intellectual property in Europe since *Magill*.<sup>62</sup>

#### IV. Implications for Tying Doctrine

Tying refers to the practice of requiring customers to take one product in order to get another. It was originally treated as a *per se* offense in the United States. Justice Frankfurter, in an early decision that epitomizes the pre-Chicago approach, said that tying agreements “serve hardly any purpose beyond the suppression of competition.”<sup>63</sup> The Supreme Court came close to backing away from that maxim in its *Jefferson Parish* decision in 1984. Four justices advocated applying the rule of reason but the majority tepidly rejected that approach, noting “It is far too late in the history of our antitrust jurisprudence to question the proposition that certain tying arrangements pose an unacceptable risk of stifling competition and therefore are unreasonable ‘per se.’”<sup>64</sup> Instead it required that a tying allegation pass through several screens before being considered *per se* illegal. This is an example of a modified *per se* illegality standard. Tying is also an abuse of dominance under Article 82 of the EC Treaty. The European approach is similar in many respects to that in the United States, and we treat them as the same for the purposes of our discussion.<sup>65</sup>

The courts and enforcement agencies have never taken Justice Frankfurter’s condemnation literally.<sup>66</sup> If they did, the courts would be deluged with cases, and the

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<sup>61</sup> See Ahlborn et al., *supra* note 60, at 12. The Supreme Court also seems to have moved to a modified *per se* legality standard for the refusal to share property. *Verizon Communications v. Law Offices of Curtis V. Trinko*, 124 S.Ct. 872 (2004).

<sup>62</sup> *Radio Telefis Eireann and Independent Television Publications Ltd. v. Commission* (1 June 1994), Joined Cases C-241/91P and C-242/91P. The plaintiff prevailed in *Magill* in part because the Court viewed the intellectual property rights to be highly questionable, under the laws of most member states, in that case.

<sup>63</sup> *Standard Oil Co. v. United States*, 337 U.S. 293, 305 (1949).

<sup>64</sup> *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 104 S. Ct. 1551, 1556 (1984).

<sup>65</sup> See David S. Evans, A. Jorge Padilla & Christian Ahlborn, *The Antitrust Economics of Tying: A Farewell to Per Se Illegality*, ANTITRUST BULL. (forthcoming).

<sup>66</sup> For an overview of the Supreme Court’s positions towards tying cases throughout the past century, see Victor H. Kramer, *The Supreme Court and Tying Arrangements: Antitrust as History*, 69 MINN. L. REV. 1013 (1985).

economy would grind to a halt. Tying is pervasive and there is seldom a principled basis, as we discuss below, for distinguishing ties that fail the tests that implement the modified *per se* illegality standard prevailing in the United States and the European Union from the ones that are never challenged.

Yet tying is a potent allegation and the finding of a tying violation can have profound economic effects. In April 2003, for instance, MasterCard and Visa settled an antitrust case in which a certified class of about 5 million merchants claimed that the card associations had engaged in an illegal tie by requiring merchants who accepted their credit cards also to accept their debit cards. After a district court found on summary judgment that the associations failed several of the major prongs of the *Jefferson Parish* test, the associations agreed to allow merchants to accept credit and debit separately and to pay \$3 billion in damages.<sup>67</sup> And in March 2004, the European Commission found that Microsoft committed a tying violation by failing to market a version of its Windows PC operating system without media player technology.<sup>68</sup>

The Chicago tsunami left tying law untouched. The courts often accepted the Chicago single monopoly profit theorem when it came to other allegations of monopoly leveraging, but not those that involved tying. Today, both the law and economics are best described as confused. There is little support among economists for the modified *per se* illegality standard applied in the United States and Europe,<sup>69</sup> since it does not correspond to any recognized theory that could be used to distinguish procompetitive from anticompetitive tying. Economic theory supports a rule-of-reason approach to tying in which the potential anticompetitive effects and efficiency benefits of tying are carefully balanced given the facts of the case.<sup>70</sup> Yet, the discipline has not provided sharp tests for distinguishing anticompetitive from procompetitive tying.<sup>71</sup>

This is fertile ground for the neo-Chicago approach proposed in this Essay.

#### **A. Prior Beliefs on Efficiencies**

Tying covers a range of business practices. Suppose there are two “components” A and B. Firms could provide these components as separate products A and B or they could combine them into a product AB. The combination could result because firms

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<sup>67</sup> The payments are to be made over ten years, with a present discounted value of around \$2.2 to \$2.6 billion. The first author was a consultant to Visa U.S.A. in this matter.

<sup>68</sup> Commission Decision of 24.03.2004 (Case COMP/C-3/37.792 – Microsoft), available at <http://europa.eu.int/comm/competition/antitrust/cases/decisions/37792/en.pdf>. Microsoft has appealed this decision to the Court of First Instance (CFI). *Microsoft v. Commission*, Case T-201/04. Both authors made written and oral submissions to the Commission on behalf of Microsoft during the investigation as well as to the CFI on Microsoft’s motion for annulment.

<sup>69</sup> See, e.g., MOTTA, *supra* note 4, at 467-68; BORK, *supra* note 5, at 372-75.

<sup>70</sup> See also, David S. Evans, A. Jorge Padilla & Michael A. Salinger, *A Pragmatic Approach to Identifying and Analyzing Legitimate Tying Cases*, in EUROPEAN COMPETITION LAW ANNUAL 2003: WHAT IS AN ABUSE OF A DOMINANT POSITION? (Hart Publishing, forthcoming).

<sup>71</sup> See, e.g., Whinston, *supra* note 29, at 855-56; Carlton & Waldman, *supra* note 31, at 215.

distribute A and B together, by firms inducing or requiring customers to take one to get the other, or by integrating the components together in ways that may make the combination more useful than the sum of the parts.

As a technological matter, firms could offer A, B, and AB. Tying occurs in an economic sense when firms offer AB but do not offer both components A and B as separate choices. For example, if firms offer AB and B then A is tied to AB in the sense that customers can get A only if they buy AB. In *Jefferson Parish*, A was hospital surgical services and B was anesthesiology services. Patients could not bring in their own anesthesiologist. The hospital only offered the combination. In *Tetra Pak II*, A was carton packaging machines and B was the consumable cartons used.<sup>72</sup> Customers could only use cartons sold by the machine manufacturer.

Many firms tie products in the economic sense of the term. Cars only come with air conditioners, mobile phones often only with ring tones, newspapers with arts sections, law degrees with courses on torts and contracts, computer operating systems always with internet-communication protocols, and cameras with built-in flashes, just to give a few examples. In some cases, consumers can only get the bundle (newspapers) while in others they can get the bundle (mobile phones with ring tones) as well as a component (ring tones); sometimes the components are available from different suppliers than the bundle. Tying is so common that we tend not to notice it.

There are obvious business reasons why firms would offer AB together. These include benefits of integration, economies of scope in distributing products, packaging cost savings, reduced transaction costs for businesses and consumers, and increased reliability for consumers. A firm that offers AB would offer A and B separately as well only if there were sufficient demand for it to cover the costs of doing so. If the fixed costs of offering B are high relative to the demand for B, a firm may decide to offer only AB and A. It therefore ties the purchase of B to the purchase of A. If consumers generally use A and B together, they may find it is cheaper and more convenient to buy them together. Even if the fixed costs of offering A and B separately are modest, if there are few potential takers firms will only offer AB.<sup>73</sup>

Thus, while the economic evidence is limited, casual empiricism suggests that tying yields efficiencies. And the fact that this practice persists in competitive markets suggests that tying must result in lower prices or better quality. These sources of efficiency remain regardless of the degree of market power held by the firm that engages in tying.

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<sup>72</sup> Commission Decision of 24.07.1991 (Case IV/31043 - (IV/31043 - Tetra Pak II), available at [http://europa.eu.int/smartapi/cgi/sga\\_doc?smartapi!celexplus!prod!CELEXnumdoc&lg=en&numdoc=392D0163](http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexplus!prod!CELEXnumdoc&lg=en&numdoc=392D0163).

<sup>73</sup> For a general discussion of the economic reasons for competitive tying, see Evans & Salinger, *supra* note 48.

## B. Prior Beliefs on Anticompetitive Intent and Effect

Modern economic theory shows that, for given market structure, firms with a monopoly in A prefer that complementary product B be supplied at the lowest price possible. They will lose profit in the short run if they tie for anything other than efficiency reasons. They may still lose profit even if they can secure future profits by eliminating competition and deterring entry.<sup>74</sup> Indeed, economic theorists have shown that a firm with monopoly power in the tying good A might have the *incentives* and *ability* to tie B anticompetitively *only if* the market for B is imperfectly competitive and tying deters potential competitors from entering the market for B or, alternatively, helps the monopolist to preserve its market power in A.<sup>75</sup>

A recent model by Dennis Carlton and Michael Waldman looks at the use of tying to protect an initially monopolized market from entry.<sup>76</sup> In their model, entry takes more time in one market than in the other and there are economies of scope from being in both markets. By reducing the profitability of being in one market only, tying may deter the potential entrant from entering in either or both markets. This model, and others similar to it, are useful because they help identify the necessary conditions that must hold for tying to be a competitive problem.<sup>77</sup> However, they are not useful beyond that because it is not possible to determine whether the assumptions and parameter values that would be sufficient for a tie to be welfare reducing hold as a practical matter. As Carlton and Waldman note, “[T]rying to turn the theoretical possibility for harm ... into a prescriptive theory of antitrust enforcement is a difficult task. For example, the courts would have to weigh any potential efficiencies from the tie with possible losses due to foreclosure, which by itself is challenging due to the difficulty of measuring *both* the relevant efficiencies and the relevant losses.”<sup>78</sup>

Tying could be used, in principle, anticompetitively for one of the reasons described in the post-Chicago literature. Or it could be used nefariously in ways that economists have never imagined and that would come to light only by examining the facts of a particular case. However, a balanced reading of the post-Chicago literature indicates that firms with the ability to tie anticompetitively often do not have an incentive to do so, and those with the incentive often fail to have the power to cause harm to

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<sup>74</sup> See Patrick Rey & Jean Tirole, *A Primer on Foreclosure*, in HANDBOOK OF INDUSTRIAL ORGANIZATION: VOLUME III (forthcoming), at 47.

<sup>75</sup> See, e.g., Whinston *supra* note 29, Carlton & Waldman *supra* note 31, and Barry Nalebuff, *Bundling*, Yale ICF Working Paper #99-14 (1999).

<sup>76</sup> See Carlton & Waldman, *supra* note 31.

<sup>77</sup> Ahlborn, Evans and Padilla present a structured rule-of-reason test that is based on the necessary conditions for welfare-reducing tying found by Whinston and Carlton and Waldman. Evans et al., *supra* note 65, at 2.

<sup>78</sup> See Carlton & Waldman, *supra* note 31, at 215. Emphasis added.

competition.<sup>79</sup> Our prior, therefore, is that in most occasions firms engaging in tying do so because it is efficient.

### C. Prior Belief on Error Costs

Condemning procompetitive tying wipes out the efficiencies provided by tying in the case considered by the courts, increases the likelihood that the courts will condemn similar tying arrangements in other cases, and deters all firms from providing efficiencies through tying arrangements that subsequently seem vulnerable to legal challenge. Conversely, the courts' failure to condemn anticompetitive tying increases the likelihood that a firm with monopoly power in one market will obtain a monopoly in an adjacent market or perpetuate its existing monopoly—in both cases restricting output and imposing the standard monopoly loss triangle on society. Moreover, other monopolies will not be deterred from engaging in similar anticompetitive behavior and this will lead to further losses.

These considerations would not matter if courts could accurately distinguish between procompetitive and anticompetitive tying. Some limited insights into the likelihood and direction of errors comes from a recent study by Nalebuff and Majerus. They reviewed 11 tying cases in the United States and Europe and assessed whether the court reached the right judgment.<sup>80</sup> They did so starting from prior judgments that were more disposed towards viewing tying as anticompetitive than we have argued for above.<sup>81</sup> Therefore, they are more likely to agree with a judgment of anticompetitive tying than would a reader who agrees with our prior beliefs on efficiencies and anticompetitive intent. Table 2 summarizes our understanding of their conclusions.

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<sup>79</sup> Rey et al., *supra* note 53.

<sup>80</sup> While the report nominally contains thirteen separate cases, two are about different aspects of the GE/Honeywell merger. Also, since one of the cases had not been decided when the report was completed, we exclude it, leaving 11 cases. Barry Nalebuff & David Majerus, *Bundling, Tying and Portfolio Effects: Part 2-Case Studies*, DTI Economics Paper (February 2003). *See also*, David S. Evans, A. Jorge Padilla & Michael A. Salinger, *supra* note 70.

<sup>81</sup> *See generally*, Barry Nalebuff & David Majerus, *Bundling, Tying and Portfolio Effects: Part 1-Conceptual Issues*, DTI Economics Paper (February 2003). *See also*, Barry Nalebuff, Bundling as an Entry Barrier, 119 Q.J. Econ. 159, 183 (2004).

**Table 2. A Decision-Theoretic Perspective on Nalebuff and Majerus (2003)**

	Illegal	Legal
Harmful to competition	<i>Four (36%)</i>	<i>None (0%)</i>
Not harmful to competition	<i>Three (27%)</i>	<i>Four (36%)</i>

This is a small, idiosyncratic, and subjective sample of cases. But these represent the leading cases in the United States and the European Union, and the judgments of these authors are instructive. There are no instances in which the courts found that an anticompetitive tying practice (by the authors' judgment) was legal—that is, there were no false acquittals. There are three instances in which the courts found that a procompetitive tying practice (again by the authors' judgment) was illegal—the rate of false convictions was therefore 27 percent.<sup>82</sup> Assuming that each type of error is equally costly—denote the error cost per case by  $c$ —the expected error cost per case is  $0.27c$ .

The distribution of cases in Table 2 suggest that existing tying law is far from minimizing error costs.<sup>83</sup> Suppose we think about making the existing standard stricter. For example, suppose the likelihood of false convictions decreases by 20 percentage points while likelihood of false acquittals increases by 20 percentage points.<sup>84</sup> This will result in the following error cost matrix shown in Table 3.

<sup>82</sup> Evans et al. argue that the actual percent of false convictions is probably much higher. Evans et al., *supra* note 70, at 16.

<sup>83</sup> Table 2 shows that of the 11 tying cases examined, 64 percent (7/11) are not harmful to competition and 36 percent (4/11) are harmful. For a harmful act, the existing standard will correctly condemn 100 percent (4/4) of the time and falsely exonerate it 0 percent of the time (0/4). Similarly, for a harmful act, the existing modified *per se* illegality standard will correctly exonerate it 57 percent (4/7) of the time and falsely condemn it 43 percent of the time (3/7).

<sup>84</sup> As a simplifying assumption, suppose that the population of the litigated cases is unchanged, so that we still have 64 percent of cases involving acts that are not harmful and 36 percent that are harmful. Moving to the stricter standard decreases the false conviction rate by 20 percentage points, from 43 percent to 23 percent, while at the same time, the false acquittal rate is increased by 20 percentage points, from 0 percent to 20 percent. The proportion of false acquittals out of total cases is now 7 percent (20 percent false acquittal rate times the 36 percent of harmless practices) and the proportion of false convictions is now 15 percent (23 percent false conviction rate times the 64 percent of harmful practices).

**Table 3. Error Costs Under a Stricter Legal Standard**

	<b>Illegal</b>	<b>Legal</b>
<b>Harmful to competition</b>	29%	7%
<b>Not harmful to competition</b>	15%	49%

Errors are now made 22 percent (7 percent false acquittals plus 15 percent false convictions) of the time, so that the expected error cost per case is lower under the new standard,  $0.22c$  compared to  $0.27c$ . This calculation is illustrative, and depends on a number of strong assumptions, but the basic intuition is that because most cases involve practices that are not harmful, we should err toward a standard that is more likely to result in false acquittals than false convictions. In addition, if we believed that the cost of false convictions was higher than the cost of false acquittals, as we suspect is likely, that would provide an additional reason to move toward an even stricter legal standard.

**D. Design of Legal Rules**

Based on the prior belief stated above we can discard two extreme approaches for assessing tying practices. We can reject a *per se* illegality standard—the pre-Chicago approach—on the grounds that tying is generally procompetitive. While the Nalebuff-Majerus work implies that two-thirds of all cases involve practices that are not harmful to competition, a *per se* illegality test would result in all of them being found illegal. We may also be able to reject, although less confidently, a *per se* legality standard—the Chicago School approach—on the grounds that tying could be used anticompetitively.<sup>85</sup> The Nalebuff-Majerus results imply that roughly one-third of cases involved anticompetitive ties.

Two other possible standards are consistent with our approach to the design of legal rules for tying; they both impose significant hurdles to any finding of anticompetitive tying. A modified *per se* legality standard would presume that tying is procompetitive unless a plaintiff could present strong evidence that tying did not result in efficiencies but was used mainly to obtain or maintain a monopoly. Such evidence would

<sup>85</sup> If the cost of false convictions were substantially higher than the cost of false acquittals, a *per se* legality rule might well be optimal under certain circumstances. With *per se* legality, the four cases of anticompetitive tying in Table 2 from the Nalebuff-Majerus analysis would become false acquittals (with no false convictions), compared to the three false convictions (with no false convictions) under prevailing legal standards. If false convictions were more than four-thirds as costly as false acquittals, then a *per se* legality standard would be preferable. We also note that a complete analysis would also have to consider a range of factors not included here, such as “errors” that do not get to court and the impact of changing legal standards on firms’ behavior.

require a significant demonstration that there was a causal link between the practice and a likely reduction in consumer welfare. Tying could be found illegal but probably only in “exceptional” circumstances.<sup>86</sup> A structured rule-of-reason approach would employ a series of screens to focus only on those tying practices that could plausibly result in anticompetitive behavior. A plaintiff would need to show:

- (1) An anticompetitive effect is possible. A number of safe harbors would allow ties where they are unlikely to be anticompetitive, such as cases in which the defendant lacked market power in the tying product.
- (2) An anticompetitive effect is plausible. There would have to be an economic theory of anticompetitive effect that fits the facts of the case.
- (3) Offsetting efficiency benefits, if present, are insubstantial.<sup>87</sup>

### **E. The Role of Efficiencies in Choosing Between Standards**

The choice between a structured rule-of-reason approach and modified *per se* legality is difficult and may depend on the class of tying arrangements under consideration. A modified *per se* legality rule will result in more false acquittals. The cost of false acquittals must be compared to the cost of the additional administrative costs of having to proceed through a series of complex screens as well as the costs of false convictions from applying that structured analysis. The structured rule of reason will prove most useful in extreme situations. That is, when it is clear after the first two screens that the alleged anticompetitive effects are highly implausible but there is convincing evidence supporting efficiency benefits. Or when the tie survives the two first screens and no efficiencies can be rigorously argued. Otherwise, it may prove inconclusive.

The efficiency properties of tying arrangements should thus play a paramount role in the adoption of one standard or the other. Evans and Salinger find in their study of competitive tying that efficiencies are clearly present in the cases they examine—in part because the structure of the markets makes other explanations implausible—but are difficult to quantify and document.<sup>88</sup> The same is likely to be true for tying practices engaged in by firms with market power. To minimize errors, they suggest allocating the burden of proof so that defendants have the burden of coming forward with an efficiency

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<sup>86</sup> See Evans et al., *supra* note 65, at 65.

<sup>87</sup> *Id.* at 56-64.

<sup>88</sup> The D.C. Circuit argued that the single-product test in *Jefferson Parish* was a proxy for determining whether there are efficiencies. The economics of tying explains why that is not correct. Consider a situation in which A is the tying product, B is the tied product, and AB is the combination. The *Jefferson-Parish* test looks at whether there is separate demand for B. That focuses on the wrong question. Tying is a violation because the firm did not offer the tying product A in addition to the tied combination AB. The question is therefore whether the failure to offer that separate choice (i.e., not offering A separately and allowing customers to supply their own B) is driven by efficiency reasons. Many competitive products would fail the single-product test because they consist of bundles (AB) for which components or spare parts are available separately.

explanation for their practice, but plaintiffs bear the burden of showing that the efficiency explanation is not valid.

Efficiencies are apparent in several leading tying cases, but with one exception their presence was largely ignored or rebuffed by the courts. In *Jefferson Parish* the District Court agreed with the defendant that the anesthesiology system in place was efficient because it provided 24-hour anesthesiology coverage and because having a closed group of physicians, nurses, and technicians provided for better standardization of procedures, monitoring of staff, and maintenance of equipment.<sup>89</sup> That seems like a plausible argument to us and consistent with transaction cost economics.<sup>90</sup> The Appeals Court rebuffed it, noting that anesthesiologists testified they would have been willing to provide 24-hour coverage without a contract and that the defendants had not adequately demonstrated that other alleged efficiencies existed and could not be achieved through less restrictive means.<sup>91</sup> The Supreme Court never seriously considered efficiencies and found for the hospital on the grounds that it lacked market power. By contrast, the Supreme Court recognized that it was probably efficient for the *Times Picayune* newspaper to require advertisers to place ads in both the morning and evening editions, because it saved having to reset the newspaper. Nevertheless, lack of market power in the advertising market was the main reason the Court ruled in favor of the newspaper.<sup>92</sup>

In the limited number of European cases on tying, there has yet to be a successful defense based on efficiencies.<sup>93</sup> For example, in *Hilti*, the defendant argued that the reliability and safety of its nail gun system was enhanced by the ties and other restriction connecting its nail guns, nail cartridges, and nails used in the system.<sup>94</sup> The European Commission rejected Hilti's justification on the grounds that there are less restrictive actions that would satisfy those objectives.<sup>95</sup> It is hard to know from the record, since the discussion of efficiencies is not well developed, whether the Commission was correct.

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<sup>89</sup> *Hyde v. Jefferson Parish Dist. No. 2*, 513 F. Supp 532, 540 (D. La. 1981), *rev'd*, 686 F.2d 286 (5th Cir. 1982), *rev'd*, 466 U.S. 2 (1984).

<sup>90</sup> For a discussion of the transaction cost economics of firms, see Joskow, *supra* note 7; DON WALDMAN & ELIZABETH JENSEN, *INDUSTRIAL ORGANIZATION: THEORY AND PRACTICE* (1998), at 54-57.

<sup>91</sup> *Hyde v. Jefferson Parish Dist. No. 2*, 686 F.2d 286, 292 (5th Cir. 1982).

<sup>92</sup> *Times-Picayune Publishing Co. v. United States*, 345 U.S. 594, 611-12 (1953).

<sup>93</sup> See Ahlborn et al., *supra* note 60, at 31.

<sup>94</sup> Commission Decision of 22 December 1987 (IV/30.787 and 31.488 - Eurofix-Bauco v. Hilti), *available at* [http://europa.eu.int/smartapi/cgi/sga\\_doc?smartapi!celexplus!prod!CELEXnumdoc&lg=en&numdoc=388D0138](http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexplus!prod!CELEXnumdoc&lg=en&numdoc=388D0138).

<sup>95</sup> *Id.* at ¶88.

## V. Concluding Remarks

Our proposed approach provides a unifying framework for evaluating unilateral practices. It draws on years of research by both Chicago and post-Chicago scholars and is consistent with some of the seminal court decisions in the United States and the European Union. While this approach imposes some coherence on antitrust law, it also provides some flexibility. First, it does not require that the same form of rule apply to every practice. Prior judgments on the procompetitive and anticompetitive uses of a practice can influence the choice of rule and the screens that are used to minimize error costs. Second, the same analytical framework could be used for different prior beliefs on the nature of socially beneficial competition. Indeed, this approach provides a rigorous way of analyzing whether and to what extent antitrust rules should vary across jurisdictions, practices and time.

Economics could provide more help in applying this approach. It is unrealistic to ask economics to provide off-the-shelf guidance for the myriad fact patterns that one encounters in real-life antitrust. But economics itself needs to move towards theory and empirics that can separate the good from the bad for competition. Unfortunately, although the game-theoretic approach embraced by the post-Chicago literature is valuable for helping to understand business practices, it has yet to demonstrate that it is capable of yielding what we would call “identification theorems:” useful descriptions of the circumstances determining whether a practice is procompetitive or anticompetitive. Kovacic and Shapiro conclude their survey of the first century of antitrust by noting, “The availability of new data sources like electronic point-of-purchase data, the refinement of flexible game-theoretic models, and the new emphasis on innovation assures that robust arguments over the proper content of competition policy will flourish in the 21st century.”<sup>96</sup> In the four years since this was written, we have seen very little progress in the theoretical literature that would help competition authorities or courts separate procompetitive from anticompetitive behavior.<sup>97</sup> Encouragingly, one of the most important developments in the scholarly literature on modern industrial organization is the increased effort to bring facts—by way of case studies or rigorous econometric analyses—to bear on theory.<sup>98</sup>

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<sup>96</sup> Kovacic & Shapiro, *supra* note 8, at 58-59.

<sup>97</sup> As noted by Kyle Bagwell and Asher Wolinsky in a recent paper, “So industrial organization has a new language/discipline [game theory] and perhaps a superior one to what it had before, but has this language generated new insights to the substance of industrial organization? By taking a very broad view, one might argue that it has not. ... In particular, has the game theoretic framework delivered a new class of models that consistently facilitates better quantitative predictions than what would have been available in its absence? ... Here, we note that important new empirical work in industrial organization makes extensive use of game theoretic models, but we also caution that there is as yet no simple basis to conclude that the game theoretic approach provides consistently superior predictions.” Kyle Bagwell & Asher Wolinsky, *Game Theory and Industrial Organization*, Columbia University Department of Economics: Discussion Paper No. 9900-03 (April 2000), at 40-41, at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=239431](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=239431).

<sup>98</sup> See, e.g., Ariel Pakes, *A Framework for Applied Dynamic Analysis in I.O.*, NBER Working Paper Series 8024, at <http://www.nber.org/papers/w8024>; Ariel Pakes, *Common Sense and Simplicity in Empirical*

The neo-Chicago approach described in this paper points to a research agenda for economists that could help provide practical information to the courts and regulatory authorities for the purpose of developing sound rules. Economists need to better understand the extent to which competitive (non-dominant) firms engage in the kinds of business practices that become suspect when they are used by firms with market power and why competitive firms engage in these practices.<sup>99</sup> Doing so will help determine whether there are plausible efficiencies from those practices as well as informing judgments about the likely importance of those efficiencies. More generally, economists need to develop theory and empirics that can help assess the cost and likelihood of errors (of both kinds) for assessing unilateral practices. As economics evolves, it is possible that it will develop more identification theorems that can be used to separate procompetitive from anticompetitive practices. In the meantime, economics needs to help courts and regulatory authorities do the best they can to sort through complex business practices and develop rules that do not toss out too much of the good with the bad.

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*Industrial Organization*, Keynote Address to the International Industrial Organization Conference, Boston (April 2003), at <http://post.economics.harvard.edu/faculty/pakes/papers.html>.

<sup>99</sup> See Evans & Salinger, *supra* note 48; David S. Evans & Michael A. Salinger, *The Role of Cost in Determining When Firms Offer Bundles and Ties*, Working Paper, May 2004; David S. Evans & Michael Salinger, *An Empirical Analysis of Bundling and Tying, Over-The-Counter Pain Relief and Cold Medicine*, Prepared for CESifo Summer Institute 2004 Meeting on *Recent Trends In Antitrust*, Venice, Italy (July 21-22, 2004).