Statement on Research and Teaching
Fernando A. Luco Echeverría

Research

I am a microeconomist with research interests in Industrial Organization and Competition Policy (or Antitrust Policy). My research contributes to understanding how the interactions between consumers, firms, and governments impact competition and market outcomes. I focus on research topics that have important policy implications, and I have presented my research at top universities, conferences, and government agencies. My work has been published in top academic journals, is taught in Ph.D. economic programs, and has influenced the work of government agencies that enforce antitrust law.

Broadly speaking, my research may be classified into two categories. In the first set of projects, I address topics directly related to competition policy, such as the impact of policy interventions on firms' incentives to coordinate with their rivals or how vertical mergers impact firms' pricing incentives. In the second set of projects, I examine how behavioral aspects of competition, such as switching costs and bounded rationality, impact market outcomes.

Competition policy

Information disclosure: Most models of competition assume that both consumers and firms know all the information that is relevant for their decision making. This assumption, however, is often at odds with what happens in real-world markets. For example, in many retail markets, such as retail gasoline or in the supermarket industry, consumers may only be informed about a subset of the prices charged by the firms in the market. Similarly, the firms that compete in the market may have limited information regarding their rivals' actions. This lack of information on a key economic variable—price—has prompted governments across the world to implement information-disclosure policies aimed at informing consumers and firms about the prices charged in the market.[1] The goal of these policy interventions is to inform consumers so they make better decisions, and to intensify competition among firms. However, in markets in which firms repeatedly face the same rivals over time, information disclosure may also facilitate tacit and explicit coordination.

In *Who Benefits from Information Disclosure? The Case of Retail Gasoline*, published by the *American Economic Journal: Microeconomics*, I study how these increasingly pop-

[1]Price-disclosure policies have been implemented in countries such as Argentina, Australia, Austria, Chile, France, Israel, Italy, and South Korea, among others, in industries such as retail gasoline, retail pharmacies, and supermarkets. In the United States, the current policy debate on healthcare prices has also led to proposals of price disclosure.

ular policies that make price information available online in real time, impact market outcomes. This paper makes two important contributions to our understanding of how these policies affect competition. First, the theoretical analysis reveals the two opposing effects described above. On the one hand, price disclosure may intensify competition as more consumers become informed about prices. On the other hand, disclosing information allows firms to be better informed about the prices charged by their rivals. If few consumers go online to search for prices before purchasing (e.g., because not everybody has easy Internet access), then disclosing prices allows firms to more easily coordinate and to sustain higher prices because any deviation from an agreement is rapidly observed. This makes deviating from the agreement a less attractive option. Thus, price disclosure may increase or decrease the intensity of competition depending on the extent to which consumers and firms use the disclosed information. Second, using data from a retail-gasoline market in which price disclosure was introduced through a government-run website, I show that while gas station price-cost margins decreased in locations in which consumers used the disclosed information, margins increased in locations in which consumers did not use it. Because the data show that consumer search takes place mostly in high-income areas (where smartphones are more prevalent), this suggests that price disclosure policies benefit consumers in wealthy neighborhoods while they may hurt consumers is poor neighborhoods.

Vertical mergers: In the last decades, a number of proposed vertical mergers between large firms has reinvigorated the debate about antitrust enforcement in the context of these transactions. Examples include transactions such as AT&T and Time Warner, Disney and 21st Century Fox, Aetna and CVS, Humana and Concentra, Luxottica and Essilor, Comcast and NCBU, among many others. In the past, many economists considered these type of transactions to be less harmful to competition than horizontal mergers because, among other effects, they result in the elimination of double margins along the vertical chain which induces a downward pressure in the price of the integrated goods.

In *The Competitive Impact of Vertical Integration by Multiproduct Firms* (joint with Guillermo Marshall, assistant professor at the University of British Columbia), we study how the pricing incentives faced by multiproduct firms, such as retailers, change when they vertically integrate with a supplier. In this paper, that will be published in July 2020 by the *American Economic Review*, we argue that this traditional view of vertical mergers applies to transactions involving single- rather than multiproduct firms. In particular, we argue that vertical integration of multiproduct firms changes the pricing incentives faced by these firms and introduces an anticompetitive pricing pressure that does not exist in the case of single-product firms and that counteracts the procompetitive effects associated with the elimination of double margins. This is, when the integrated firm sells products manufactured by the integrated supplier in addition to substitute products manufactured by non-integrated suppliers, vertical integration leads the firm to increase the price of the substitute non-integrated products to divert demand towards the integrated ones. We provide

empirical evidence of the relevance of this effect in the context of the U.S. carbonated-beverage industry. In light of this evidence, we conclude that the elimination of double marginalization should not be presumed to be procompetitive and that antitrust authorities should include the examination of these novel pricing incentives in future antitrust investigations. The importance of our findings has been recognized by the U.S. agencies in charge of antitrust enforcement (i.e., the Department of Justice and the Federal Trade Commission) that included the setting that we examine in the draft of the new Vertical Merger Guidelines published in January 2020, which provides guidance regarding situations that may trigger antitrust investigations.

Uncertainty and price leadership: In many markets, firms face the same rivals repeatedly over time. As described above, when this happens firms face incentives to coordinate and sustain higher prices than those that they would be able to sustain if they did not face the same rivals time and time again. At the same time, firms that compete in real-world markets often face significant uncertainty about market conditions and their rivals' actions. The economic literature has shown that in the presence of uncertainty, sustaining coordination becomes more difficult than in the absence of it. Therefore, it is natural to ask how the presence of these two forces—repeated interaction and market uncertainty—impact the incentives to coordinate.

In *Price Leadership and Uncertainty about Future Costs* (joint with Jorge Lemus, assistant professor at the University of Illinois at Urbana-Champaign, and resubmitted to the *Journal of Industrial Economics*), we contribute to the antitrust literature by examining both theoretically and empirically how a specific form of uncertainty—uncertainty about future wholesale prices—impacts firms' incentives to coordinate. On the theoretical side, we propose a repeated-game framework to show that a reduction in this uncertainty reduces firms' incentives to coordinate, and that the effect is stronger in markets that have stronger price leaders. On the empirical side, we test the predictions of our model using five years of data (on retail and wholesale prices) from all the stations in a country that implemented a policy that reduced wholesale price uncertainty. Our findings provide strong support to the predictions of the model in that we find that the implementation of the policy disrupted coordination among firms and had larger effects in markets that had stronger price leaders.

Behavioral aspects of competition and their impact on market outcomes

Bounded firm rationality: Most economic research that examines firm behavior assumes that firms choose strategies that maximize expected profits. However, firms often differ from each other not only on observable characteristics that impact production directly (e.g., production technology and firm capacity), but also along characteristics that are more difficult to observe and quantify such as the heterogeneity of their employees in terms

of expertise and background. Though one would expect this heterogeneity to impact the strategies that firms adopt, most models of competition assume it away. In most empirical studies, researchers model firms as engaging in fully rational strategies, which leads to some form of equilibrium play in which firms choose strategies to maximize their expected profits. Importantly, this means that differences across firms, such as the ones described above, do not lead firms to adopt different competitive strategies.

In *Does Strategic Ability Affect Efficiency? Evidence from Electricity Markets* (joint with Ali Hortaçsu, Steve Puller, and Dongni Zhu), we examine the efficiency implications of heterogeneity in bidding behavior by electricity generators in Texas. In this paper, published by the *American Economic Review*, we show that while some firms behave as economic theory suggests they should do (i.e., submitting bids that maximize expected profits, a highly sophisticated behavior), others deviate from this behavior persistently and significantly, and engage in bidding behavior that is less sophisticated (i.e., a rule of thumb). This leads to smaller, low-cost generation firms not producing, while larger firms owning higher-cost generating plants do produce. The result is high-cost electricity generation that is not related to the exploitation of market power. After documenting this heterogeneity in bidding behavior and its implications for market efficiency, we propose a model of bounded firm rationality to explain the deviations that we observe from predictions of traditional models of oligopoly competition. To our knowledge, this is the first paper to propose a model of Behavioral Game Theory to study pricing decisions using field data. Further, we show that our model makes better out-of-sample predictions than more traditional equilibrium models. We also show that our model may be used to examine which mergers between heterogeneous firms may increase the efficiency of the market because they lead less sophisticated firms to bid more efficiently, even if these mergers would not generate cost synergies and would increase market concentration. This is important for antitrust enforcement because mergers with these characteristics are often challenged by antitrust authorities.

Consumer behavior and switching costs: In many markets, such as retirement investment, health care, and cable TV, consumers stick to their decisions even if market conditions change and their past decisions are no longer optimal. This behavior, to which economists refer to as inertia, often results in firms that compete less intensively than what they would do if consumers were more active, and consumers who pay higher prices and enjoy less benefits from their choices than if they had been more active decision makers in the past.

In *Switching Costs and Competition in Retirement Investment*, published by the *American Economic Journal: Microeconomics*, I study why workers show inertia in their retirement-investment decisions. Specifically, I study what drives inertia in workers' choices in the context of retirement investment decisions in a defined-contribution system. This is important because if workers stick to their past decisions when their environment changes, this

may lead to less intense competition among providers, and workers that overpay during their work life and receive lower pensions upon retirement than if they had been more active in the past. Therefore, in light of the increasing popularity of these systems across the world, policy makers must learn what leads to inertia to better design these markets. I contribute to the understanding of the determinants of inertia by identifying two of its sources: the difficulty of the decision for consumers and the time spent when switching providers. I find that, though both factors are important determinants of inertia, the first factor impacts consumers and competition the most. This is informative to policy makers regarding which types of policies are more likely to induce consumers to become more active, thus leading to more intense competition among firms.

Ongoing and future work

Because my published research has focused on a variety of topics, it is natural to ask about the direction of my ongoing and future projects. As an industrial organization economist interested in antitrust policy, my goal is to do research that informs policy makers who make decisions that impact the competitiveness and efficiency of markets. In my ongoing work, I continue to combine high-quality data, economic theory, and state-of-the-art empirical methods to examine frontier topics in competition policy. Examples of my ongoing work include the examination of the competitive impact of bargaining in the context of vertical relationships between multiproduct firms; of natural disasters that disrupt the vertical supply chain and product availability; of common ownership and integration between platforms that compete in two-sided markets; and of how firms may use high-frequency location records such as phone GPS data to learn and influence consumer behavior, among others.

Teaching

I regularly teach Antitrust Economics (ECON 426, undergraduate) and Industrial Organization (ECON 650, graduate). In ECON 426, I teach economic tools used in antitrust analysis of real-world markets. Students learn to apply these tools to address situations associated with competition policy such as the analysis of mergers and collusion. To achieve this, students present antitrust cases that took place in the last decade, focusing on how the cases were examined in court and how they relate to competition models covered in class. I also bring innovative instructional technology to the classroom (e.g., peer instruction through REEF Polling) and, through computational problem sets that extend the models covered in class to consider more realistic situations, I teach highly-valued data-analytic skills that prepare economic majors for quantitative careers.

In ECON 650, I teach empirical methods used in Industrial Organization (IO). The

objective is for graduate students to learn how to apply these methods to policy-oriented questions that they may address in their dissertations and future research. I do this in two ways. First, students learn these empirical methods through the discussion of both the seminal papers that introduced the methods and follow-up papers that applied these methods to important policy-related questions. Importantly, I always include new work by Ph.D. job-candidates to be discussed in the course, and some of these papers are presented by the students who must focus both on the contributions of the papers as well as possible ways to improve them. In this way, students learn to apply these frontier methods to important questions not only in IO but also in fields such as education, health, and public economics. Second, students learn to implement the methods themselves through hands-on computational problem sets that guide them in how to apply these methods to data. I find that the combination of in-classroom discussion, computational problem sets, and the discussion of job-market papers leads students to achieve the goals of this course, making it more likely that they will successfully incorporate these methods in their future research.

I have also organized and co-taught a workshop for graduate students in which they learn to approach research presentations. In this workshop (that is modeled after the Research Communication Training Program at Northwestern University in which I participated several years ago), students learn to become effective public speakers, to prepare effective presentations, and to address audiences and handle questions. Finally, I have participated in the dissertation committee of nine students since I joined the department.

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