RESEARCH STATEMENT

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My research in microeconomic theory addresses the challenge of designing institutions that enhance social welfare, particularly in environments with informational frictions. I investigate fundamental problems in repeated games and mechanism design to build a theoretical toolkit. I have also worked in more applied projects in market design and school choice.

REPEATED GAMES AND LONG-RUN RELATIONSHIPS

My research in repeated games examines how long-run relationships can align private and public interests, with a focus on the role of private information and imperfect monitoring.

I have explored how players cooperate when they hold information that others do not. In [17], Juuso Toikka and I show that efficiency can be achieved even with Markovian private information, provided players can communicate. We prove this by extending ideas from mechanism design ([26]) and combining them with classic constructions from repeated games ([22]). The core intuition is that players can use an *implicit accounting mechanism* to validate each other's behavior. In [21], Gastón Llanes and I explore why apparent defections occur in games without communication, such as when colluding firms deliberately undercut rivals ([28]). We provide a new dynamic programming characterization for approximately efficient equilibria and uncover a key tradeoff that governs how much players separate their private types. This framework is applied to the dynamics of WWI trench warfare, Bertrand price competition, and the social value of communication.

I have also explored how cooperation is sustained when players cannot perfectly observe each other's actions. In [7], Ulrich Doraszelski and I study long-term relationships where players have restricted feedback, meaning they can only condition on summary statistics

of past play. The paper provides a dynamic programming characterization for equilibrium payoffs, similar to [2], and uses this to derive necessary and sufficient conditions for efficient trade under memory limits. In a related vein, my work with Felipe Balmaceda in [3] analyzes how social networks act as monitoring mechanisms. Our main result shows that the optimal network architecture is determined by the speed at which information travels. When information moves slowly, fully clustered networks are efficient for coordinating punishments. In contrast, when information moves quickly, barely connected networks are superior because they maximize the number of players who can punish a defection.

MARKET DESIGN AND SCHOOL CHOICE

I have been involved in applied market design projects that have brought new research questions [4, 12, 14]. In particular, centralized school choice systems are a powerful tool for improving social welfare and equity in education, but their design presents important challenges ([23]). My research in this area leverages the Chilean school choice system–one of the largest and most comprehensive in the world–as a case study to understand important trade-offs in market design.

In [4], we document the design and implementation of the nationwide school choice system in Chile. An important challenge is ensuring stability for families across multiple school years. We propose an approach that respects priorities and breaks ties at the family level, adapting the DA algorithm to a complex, multigrade environment. We also introduce a solution to the problem of overlapping types. Overlapping types has received important attention recently ([30]).

Segregation in schools is an important consideration in school choice systems. In [13], Leonel Huerta and I explore a large market model to show that minority reserves are an effective tool for reducing segregation and can improve the overall system efficiency by assigning more students to their most preferred schools. Our theoretical predictions are confirmed using simulations with Chilean data. The design of priority rules is also critical in school

choice systems ([1]). In [18], Martin Valdevenito and I derive bounds on the efficiency of assignments under different priority rules (e.g., proximity, siblings). We apply these bounds to compare the performance of different priority rules commonly used in practical implementations (distance based, multiple and single tie breaking).

The most recent literature in school choice has observed that families do not have perfect information when making school choices. In [15], Alfonso Montes and I study how information disclosure protocols affect search behavior and welfare in matching markets. We find that full transparency can be suboptimal, but disclosing information about schools likely to be a good match to students can reduce congestion and improve outcomes. This work provides new insights for market designers on how information interventions can subtly yet powerfully affect behavior and welfare.

MECHANISMS AND CONTRACTS

I have explored the problem of how to design rules and institutions to achieve a social goal. In [16], Carlos Pulgar and I study a principal-agent model with both moral hazard and adverse selection. While standard models suggest that the principal should tailor different contracts for different types, we show that the principal optimally pools some types. Thus, our results reconcile contract theory and the observation that incentives are typically one-size-fits-all. In [5], we explore a mechanism design problem to shed light on the question of whether auctions or pricing schemes should be used to sell goods. We set up a dynamic mechanism design problem in which discount rates are heterogeneous. The optimal mechanism uses an auction to encourage competition among buyers followed by a dynamic pricing scheme to screen buyers' valuations.

I have also explored mechanism design problems in which monetary transfers play a limited role. In [19], Jackie Zhang and I examine a dynamic delegation problem where a principal decides on a project with uncertain profitability. A biased agent privately learns the profitability of the project over time and communicates to the principal. We show that

private learning gives rise to the tradeoff between how much information to acquire and how promptly it is reflected in the decision. In [11], I explore the classic problem of allocating a good to agents who have private information about both their valuations and their incomes. This work investigates how optimal mechanisms should be designed when agents' ability to pay is a key factor, moving beyond the standard assumption of quasi-linear utility. I show that budget constraints have substantive implications for the design of optimal allocation mechanisms.

GAME THEORY

Motivated by their use in industrial organization, I have worked in fundamental problems in dynamic games. In particular, dynamic games are important to understand industry dynamics [9]. My work in this area explores robustness properties for these games. In [6], Ulrich Doraszelski and I established the robustness and purification of Markov perfect equilibria (MPE), extending Harsanyi's foundational results from static to dynamic settings [24, 25]. This work, complemented by my existence theorems [20], provides crucial theoretical support for the applied literature relying on MPE. Additionally, we addressed the criticism that these models are overly sensitive to the order of moves [27, 29]. We showed that a broad class of models is "protocol invariant" when time periods are short, meaning the equilibrium outcome is robust to whether moves are simultaneous or sequential [8]. Both results enhance the reliability of predictions from applied dynamic models. In [10], I establish some comparative statics results for normal form games that need not be of strategic complements.

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