

Research Statement

I am a microeconomic theorist studying problems of economic design. I use tools from game theory to analyze how institutions shape individual behavior and social outcomes. I also employ experimental methods to examine behavioral responses to institutional variation. My research aims to identify and develop implementable solutions to practical design problems, and contributes to three broad areas:

Contest theory. Contests model environments where agents compete for valuable prizes by making costly investments. My research investigates how different design instruments influence investment behavior.

[1] analyzes prize structures in rank-order contests and establishes the winner-takes-all structure as robustly optimal across a broad class of settings and objectives. [8] studies the design of target-based contracts and demonstrates the desirability of weighted contracts that split a budget among those meeting their respective targets in proportion to their weight. [4] examines grading schemes when grades serve as signals of ability and shows how more informative grading schemes encourage investments when agents of moderate ability are likely but discourage investments when such agents are unlikely. [5] explores the role of tie-breaking rules in Tullock contests with ties, and [11] analyzes feedback policies in dynamic all-pay auctions. Broadly, these papers point to a rich theory of how uncertainty in the distribution of abilities, the shape of the effort cost function, and noise in observed output jointly determine the effect of contest structure on investment, and inform my agenda of investigating this theory in greater depth.

Allocation problems. Fair and efficient allocation of resources is a fundamental problem in economics and computer science. However, rules that satisfy classical versions of these requirements typically fail to exist. My research seeks to overcome these impossibility results by examining restricted preference domains and relaxing key axioms.

For the object reallocation problem, where the Top Trading Cycles (TTC) mechanism is well known to be fundamental, [9] introduces the top-two condition as a richness criterion for identifying domain restrictions where TTC remains uniquely desirable or where alternative desirable mechanisms exist. [2] considers settings with multiple objects, identifies conditions under which core allocations exist, and proposes a generalized TTC algorithm that finds an allocation in a version of the stable set. [3] introduces a fairness notion of swap-bounded envy for multi-dimensional allocation problems and proposes a TTC+Serial Dictatorship algorithm that yields fair and efficient outcomes. In separate work, [10] establishes an ordering of k-price auctions based on their worst-case allocative efficiency. These papers contribute to a broader agenda of pushing the boundaries of impossibility results and uncovering new possibilities along the way.

Mechanism design without money. In mechanism design, the Vickrey–Clarke–Groves (VCG) mechanism implements efficient outcomes by using monetary transfers to align incentives. However, in many environments—such as public decision-making or matching—monetary transfers are impractical, and simply implementing the efficient outcome may not be incentive compatible. My research examines the design and performance of optimal mechanisms among those that are incentive compatible without transfers.

For a facility location problem on a plane, [6] identifies the coordinate-wise median mechanism as optimal for a broad class of social cost functions and quantifies the resulting welfare loss. In a principal–agent project selection problem, [7] shows how partial verifiability can mitigate losses arising from the absence of transfers. For instance, under a no-overselling constraint, a simple mechanism that selects the agent’s most preferred project among those meeting a threshold profit for the principal is shown to be optimal. This line of work contributes to a broader agenda of understanding how incorporating practical elements into the design problem can restore compatibility between efficiency and incentive compatibility.

References

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