

Research Statement

I am a microeconomic theorist studying problems of economic design. I use tools from game theory and mechanism design to evaluate how institutions shape individual behavior and social outcomes. I also draw on experimental methods to validate theoretical insights and to study behavioral responses to institutional variation. My research 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

- [1] Andrzej Baranski and Sumit Goel. The effect of competition in contests: A unifying approach. *arXiv preprint arXiv:2410.04970*, 2024.
- [2] Federico Echenique, Sumit Goel, and SangMok Lee. Stable allocations in discrete exchange economies. *Journal of Economic Theory*, 222:105921, 2024.
- [3] Federico Echenique, Sumit Goel, and SangMok Lee. Swap bounded envy. *arXiv preprint arXiv:2508.09290*, 2025.
- [4] Sumit Goel. Optimal grading contests. *Games and Economic Behavior*, 152:133–149, 2025.
- [5] Sumit Goel and Amit Goyal. Optimal tie-breaking rules. *Journal of Mathematical Economics*, 108:102872, 2023.
- [6] Sumit Goel and Wade Hann-Caruthers. Optimality of the coordinate-wise median mechanism for strategyproof facility location in two dimensions. *Social Choice and Welfare*, 61(1):11–34, 2023.
- [7] Sumit Goel and Wade Hann-Caruthers. Project selection with partially verifiable information. *Mathematical Social Sciences*, 132:105–113, 2024.
- [8] Sumit Goel and Wade Hann-Caruthers. Multi-agent contract design with a budget. *R&R at Games and Economic Behavior*, 2025.
- [9] Sumit Goel and Yuki Tamura. Ttc domains. *arXiv preprint arXiv:2501.15422*, 2025.
- [10] Sumit Goel and Jeffrey Zeidel. An efficiency ordering of k-price auctions under complete information. *Economics Letters*, 255:112565, 2025.
- [11] Sumit Goel, Jeffrey Zeidel, and Yiqing Yan. Feedback in dynamic contests: Theory and experiment. 2025.