

Research Statement

Meng Liu

While covering various areas in Industrial Organization, my research interests mainly dwell in the field of auctions and mechanism design. I've done work primarily on structural estimation of highway procurement auctions, various applications of scoring auctions, and design efficiency and effectiveness of buying mechanisms.

Highway construction projects serve as a good example where society can benefit from fast completion. A+B auctions, a type of innovative scoring auctions, try to address this concern by incentivizing timely completion through scores that combine price and time incentives. In my job market paper, I investigate in A+B auctions by building a theory of A+B bidding that incorporates incentives and production uncertainty, as well as structurally estimating bidding behaviors and auction performance using data from the California Department of Transportation. The finding is that, in equilibrium, bidders skew the days bid below the true planned construction target days to raise the price bids. Moreover, self-selected construction time that is different from the expected social-optimal time causes significant and substantive *ex-post* efficiency loss, and the auction mechanism can fail at picking the socially-efficient bidders *ex-ante*. Policy implications are that procuring schemes with smaller incentives or even conversion back to traditional contracts are likely to yield better social outcomes with lower private construction costs and less government budget pressure.

To my knowledge, this is the first study so far that tries to structurally investigate in A+B procurement auctions featuring both uncertainty and incentives. Also, the findings may contribute to the classical principal-agent problem with detailed analysis of field data on auctions: it provides real-world evidence and extends our knowledge on how certain contractual designs collapse when incentives and risk are incorrectly or incompletely addressed. To make buying mechanisms more efficient and effective, examination of incentives and uncertainty to their totality is strongly urged.

My next paper aims to find evidence of another type of bid skewing in highway construction projects---the so called 'front-loading'. In highway procurement biddings, bids usually take the form of unit-price contracts (UPCs), and this plausibly provides an environment of bid skewing along the time dimension. I provide a theory of 'front-loading' and show that rational forward-looking bidders have strong incentives to overbid items that are performed (and thus paid for) early in the project duration and shade bids on later items, without changing the final total bid. With 'front-loading' taking place, government agencies are likely to face tighter budgets compared with where 'front-loading' does not occur.

Public procurements take a significantly large part of government spending across the world, calling for research on various buying mechanisms. Passionately devoted to this field of study, I strive to contribute to the knowledge and have a positive impact on how ways of resource acquisition can be improved.