Title: Labor Cost Free-Riding in the Gig Economy

Abstract:
We propose a theory of gig economies in which workers participate in a shared labor pool utilized by multiple firms. Since firms share the same pool of workers, they face a trade-off in setting pay rates; high pay rates are necessary to maintain a large worker pool and thus reduce the likelihood of lost demand, but they also lower a firm’s profit margin. We prove that larger firms pay more than smaller firms in the resulting pay equilibrium. These diseconomies of scale are strong too; firms smaller than a critical size pay the minimal rate possible (the workers’ reservation wage), while all firms larger than the critical size earn the same total profit regardless of size. This scale disadvantage in labor costs contradicts the conventional wisdom that gig companies enjoy strong network effects and suggests that small firms have significant incentives to join an existing gig economy, implying gig markets are highly contestable. Yet we also show that the formation of a gig economy requires the existence of a large firm, in the sense that an equilibrium without any firms participating only exists when no single firm has enough demand to form a gig economy on its own. The findings are consistent with stylized facts about the evolution of gig markets such as ridesharing.

[This is a joint work with Zhen Lian, Sebastien Martin and Garrett van Ryzin. This work was done prior to Garrett joining Amazon.]

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Bio:
Garrett van Ryzin is a Distinguished Scientist at Amazon in the Supply Chain Optimization Technologies (SCOT) group. Before joining Amazon, he was a Distinguished Scientist and Head of Marketplace Lab at Lyft, working on pricing and market design. Prior to Lyft, Garrett was Head of Marketplace Optimization Advanced Development at Uber. Garrett was also a Professor of Decision Risk and Operations at Columbia University and subsequently Professor of Operations, Technology and Information Management at Cornell Tech. Garrett received a bachelor’s degree in Electrical Engineering from Columbia University, and holds a master’s degree in Electrical Engineering and Computer Science and Ph.D. in Operations Research from MIT.