Managing Multilocation Demand in Supply Chains:
An Experimental Investigation

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Risk pooling is a common method for managing the supply-demand mismatch problem in a multilocation retailer setting. In this paper, we experimentally investigate alternative risk-pooling demand aggregations strategies in a two-stage supply chain. In one strategy, retailers act as if they are centralized and use a joint inventory to fulfill demand. In the other, retailers act as if they are decentralized but can transfer inventory after demand is realized. In this latter decentralized scenario, we also consider whether the upstream manufacturer or downstream retailers set the inventory transfer price. One key experimental result is that the decentralized demand aggregation strategy, when the manufacturer sets the transfer price, produces a win-win outcome over the traditional centralized strategy: both the manufacturer and retailers earn higher profits. We also find that the decentralized demand aggregation strategy, when the retailers set the transfer price, outperforms the normative theory and leads to the most equitable payoffs. In an effort to account for these results, we develop a simple behavioral model and show that it better captures decisions. We then conduct a subsequent experiment that examines revenue sharing contracts with risk pooling and find that they can lead to even further supply chain benefits.