

How General Equilibrium in Markets with Indivisible Goods Obtains Thanks to Complexity

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Abstract

Indivisibilities in goods or services such as travel, insurance, cars, etc., have long been known to cause serious problems for (Walrasian) equilibrium existence. One of the reasons is the assumption that agents fully optimize. This assumption is theoretically implausible and factually wrong since individual budget allocation problems under indivisibilities are "NP hard." Armed with recent advances into the drivers of human effort and performance in the 0-1 knapsack problem, we propose that markets may equilibrate after all because markets select price configurations that make agents' budget problems sufficiently difficult so that demand is stratified along levels of cognitive effort or capability. In a market experiment with 3 assets and cash, we find that markets settle -- despite the non-existence of Walrasian equilibrium -- at price levels that imply high computational complexity. This leads to lower earnings for participants who use only simpler algorithms (heuristics) when determining which assets to buy.