

Competition Among Asymmetric Sellers With Fixed Supply

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Motivated by the market for display advertisement over the Internet, we study competition between firms with a fixed supply whose size cannot be changed, and analyze the resulting revenue. We are most interested in studying the asymmetric case in which one large seller dominates the market and competes against a small new entrant seller. We present a model in which sellers announce selling policies, and given these policies buyers distribute their budget in a strategic fashion among sellers so as to maximize the portion of the supply that they receive. As a function of the policies of the sellers, we analyze revenue of sellers in pure and mixed Nash equilibria for the buyers. Our results show a contrast between the near-symmetric case (sellers with similar supply sizes) and the extremely asymmetric case (a very large seller vs. a very small seller). In particular, in the near-symmetric case, simple policies can ensure each seller a revenue almost proportional to her market share. In contrast, in the asymmetric case the large seller has a selling policy that yields disproportionately low revenue for the small seller. Interestingly, in our abstract model, non-monotone selling policies (namely, sometimes giving more of the supply to a buyer who decreases his bid) can offer advantages to the large seller that are (provably) impossible to achieve via monotone selling policies.

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A full version of this paper is available at: <http://ie.technion.ac.il/~ronlavi/papers/competition.pdf>

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