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Robustness of equilibrium in Kyle model of informed speculation

Abstract

We analyze single-period Kyle (1983) model where the risk-neutral informed trader can use arbitrary (linear or non-linear) deterministic strategies, and the market makers can use arbitrary pricing rules. We call a Nash equilibrium robust if the first variations of all agents' expected payoffs with respect to a small variation of any agent's conjecture (including themselves) vanishes at equilibrium. In other words, all market participants are indifferent to small errors of beliefs of the others and themselves. Our notion of robustness is consistent and can be viewed as a particular case of the definition given in Stauber (2006, 2011). We show that the standard linear Nash equilibrium of Kyle (1983) is robust with respect to small "conjecture errors" of the agents in a sense defined above. Moreover, we demonstrate that the only robust Nash equilibrium of Kyle (1983) model is a standard linear one.