

Asymmetric Information, Risk Sharing and Market Liquidity

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(Dated: November 8, 2012)

We analyze the impact of market makers' risk aversion on the equilibrium in a speculative market consisting of a risk neutral informed trader and noise traders. The unwillingness of market makers to bear risk causes the informed trader to absorb large shocks in their inventories in the equilibrium. Her optimal strategy is to drive the market price to its fundamental value while disguising her trades as the ones of an uninformed strategic trader. From a mathematical point of view, this corresponds to constructing a Markov process which is conditioned to equal $g(N)$ at a future date, where N is some normal random variable, such that the drift coefficient of this Markov process in its own filtration is some given function, b . Furthermore, the equilibrium conditions dictate a certain relationship between g and b , which makes the direct use of well-developed theory of h -transforms impossible in this context. We show the existence of such process and find them explicitly in some special cases. Given this construction we solve for the equilibrium in this market and show that the demand for the traded asset is a mean reverting process and prices exhibit reversal. We also find that an increase in risk aversion leads to lower market depth, less efficient prices, stronger price reversal and slower convergence to fundamental value. The endogenous value of private information becomes remarkably non-monotonic in risk aversion.

Joint work with Albina Danilova