Bayesian Learning of Market Information Structure Causes Bubbles*

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<Abstract>

In this paper, we theoretically explore asset pricing bubbles in an environment characterized by asymmetric information. We consider two uncertainties in our model, uncertainty of dividends and uncertainty of the existence of informed traders. There are three types of market participants in our model; a market maker, informed traders, and uninformed traders. Assuming the market maker uses Bayesian learning, he updates his belief about the dividend of stock through transactions. There are two types of markets. In one type of market, informed traders exist. In the other they do not. The market maker does not know whether the informed traders exit or not. The market maker also updates his belief about the existence of informed traders through transactions. We find that, (1) when the market maker does not know of the existence of informed traders and the informed traders actually exist, the stock price monotonically converges to its fair values on average, and (2) when market maker does not know of the existence of informed traders and the informed traders do not actually exist, the stock price systematically deviates from its fair values, causing asset pricing bubbles to occur. This situation is called as the information mirage that Camerer and Weigelt (1991) found in their asset market experiments. However, after the market maker sufficiently updates his belief, he can adequately find the non-existence of informed traders. Then, asset pricing bubbles shrink and the stock price returns to its fair value. The result indicates that the whole process of bubbles is shown; bubbles arise, grow and burst, which is not common in literature. We also confirm this process by numerical simulations.

Keywords: Asset market bubbles, Asymmetric information, Bayesian updating
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