Information Revelation and Market Crashes

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Abstract: Rational expectations equilibrium models of financial markets have been used to analyze how a competitive market serves to communicate information between traders. Starting with seminal contributions of Radner (1979) and Grossman (1976, 1978), researchers have identified conditions under which equilibrium prices reveal fully or partially all the relevant private or public information in the market. The rational expectations equilibrium model has also been used to demonstrate possibility of a market crash in the absence of significant change of information. In their analysis of the October 1987 stock market crash, Genotte and Leland (1990) showed that a slight change of information can cause discontinuous change of equilibrium price if some traders follow hedging strategies that generate upward sloping asset demand. Barlevy and Veronesi (2003) pointed out that the demand of uninformed competitive traders, who look up to current price for information, can be upward sloping, too, and lead to discontinuity of rational equilibrium prices.

This paper shows the possibility of market crash due to information-regime switching. Under one scenario, as the equilibrium price of an asset decreases in a smooth way due to adverse demand pressure of the noise traders, it reaches a critical value at which the information of uniformed competitive traders changes from partial to full and causes a discontinuous drop of the price. This happens as the information signal about the future asset payoff remains unchanged (in this case, it indicates low expected payoff). The rational expectations equilibrium price switches a regime form where it is uninformative to a regime where it is informative. At the critical price, uninformed traders "finally" realize that the information signal, which the informed traders new all along, is low. The crucial feature of the model is that the distribution of the demand of the noise traders has bounded support.