

INSIDER TRADING IN THE MARKET WITH RATIONAL EXPECTED PRICE

Fuzhou GONG *Institute of Applied Mathematics, AMSS, Chinese Academy of Sciences,*
Beijing, E-mail: fzgong@amt.ac.cn

Deqing ZHOU *Institute of Applied Mathematics, AMSS, Chinese Academy of Sciences, Beijing*

Abstract: The hidden assumptions of trading strategy space and liquidity parameters in Kyle's model were founded in the first time. In particular, the hidden assumptions of liquidity parameters imply that, two kinds of pricing rules, the rational expected price and the adapted expected price, are both used in Kyle's model. Using the technique of orthogonalization, the relation between the rational expected price and the adapted expected price in Kyle's model was discussed under the two hidden assumptions. It seems that there is a deeply serious contradiction in Kyle's model, which imply wrong results in this model and numberless following papers. In fact, there is no the insider's optimal strategy if the adapted expected price does not used but keeping all other assumptions in Kyle's model. To correct it, under the same assumptions of trading strategy space in Kyle's model, three multi-period discrete insider trading models are presented to examine the insider's optimal strategy, in which the main assumptions are the profit maximizations under three kinds of choice rules and the market efficiency under the rational expected price without the adapted expected price. The sequential equilibriums of the discrete models were given. Furthermore, as the trading time goes to infinity, the asymptotic behaviors of equilibriums are also obtained by using asymptotic analysis. In particular, by the asymptotic behaviors of equilibriums in the first model the insider will exploit private information aggressively, and the result in the information being incorporated into the price is at an exponential convergence rate, which is unlike the case in Kyle's model where insider makes use of the private information in a gradual manner.