Scenario Approach and Feedbacks Using PI-controller Under Idealized Market Conditions

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A number of recent papers, the apparatus of financial mathematics was used to elaborate new approaches to the analysis of stock exchange. In particular, B. Barmish and co-authors exploit the PI-controller approach. The main attention is paid to the idealized market conditions and prices generated by a non-trivial Geometric Brownian Motion. Under these conditions, a combination of static and dynamic linear feedbacks leads to the positivity of the robust mathematical expectation. Such a strategy does not guarantee a profit; however it shows itself efficient in simulations. Additional assumptions on the model uncertainties are required; specifically, those related to the range of possible variations of the parameters of the moving average model. In this paper, we provide a survey of the stock exchange trading strategy mentioned above, together with the scenario approach. This latter was chosen purposely, since approach can be used to optimize the choice of the feedback coefficients.

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