Section 08: Ordinary Differential Equations and Dynamical Systems	Poster number 577

On Dynamic Portfolio Selection via Methods of Guaranteed Control Theory

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ABSTRACT

We consider a dynamic portfolio reconstruction problem in the framework of the game-theoretical, guaranteed approach [1 – 3]. Under assumptions that the evolution of available statistical characteristics of the risky financial instruments is described by differential inclusions rather than stochastic equations [4] the problem of specifying the portfolio management strategy is formulated and solved. The strategy to be constructed is to guarantee the dynamic portfolio efficiency and a prescribed level of the portfolio's risk or portfolio's return [5]. Economic interpretations of the solvability conditions of the above problem are also given, which can be considered as a sort of stability indices of the financial market or its corresponding sectors.

Theoretical results are illustrated by those of numerical experiments based on the real data of the Russian and US financial markets.

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Keywords: *dynamic portfolio selection, guaranteed control*

Mathematics Subject Classification: *90A09, 93C95*

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