عنوان مقاله:
Economic Models Involving Time Fractal

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خلاصه مقاله:
In this article, the price adjustment equation has been proposed and studied in the frame of fractal calculus which plays an important role in market equilibrium. Fractal time has been recently suggested by researchers in physics due to the self-similar properties and fractional dimension. We investigate the economic models from the viewpoint of local and non-local fractal Caputo derivatives. We derive some novel analytical solutions via the fractal Laplace transform. In fractal calculus, a useful local fractal derivative is a generalized local derivative in the standard computational sense, and the non-local fractal Caputo fractal derivative is a generalization of the non-local fractional Caputo derivative. The economic models involving fractal time provide a new framework that depends on the dimension of fractal time. The suggested fractal models are considered as a generalization of standard models that present new models to economists for fitting the economic data. In addition, we carry out a comparative analysis to understand the advantages of the fractal calculus operator on the basis of the additional fractal dimension of time parameter, denoted by $alpha$, which is related to the local derivative, and we also indicate that when this dimension is equal to 1, we obtain the same results in the standard fractional calculus as well as when $alpha$ and the nonlocal memory effect parameter, denoted by $gamma$, of the nonlocal fractal derivative are both equal to 1, we obtain the same results in the standard calculus.

کلمات کلیدی:
Fractal calculus, the fractal market equation, the local fractal Laplace transform, the nonlocal fractal Laplace transform