THE CONSTRUCTION OF MARKOWITZ EFFICIENT FRONTIER BY THE SECTIONALLY CURVILINEAR APPROXIMATION

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Abstract

The paper describes an approach to the implementation of the boundary approximation of the feasible set of portfolios in the coordinates [expected return; standard deviation of return]. The authors showed that the Markowitz efficient frontier corresponds the hyperbolic shape exactly only for areas remote from the symmetry axis of the hyperbola. The authors presented the development of the functional connection of the standard deviation with portfolio yield. Since the interval near the axis of symmetry of the curve can be described by a hyperbola only with an increase in measure of inaccuracy, on this area it is offered to approximate it by a cubic parabola. Thus, the approach to Markowitz efficient frontier evaluation implemented by constructing a sectionally curvilinear function.

Keywords: investment analysis; portfolio choice; portfolio optimization; efficient portfolio frontier; capital asset pricing

JEL: G11, G12, G32

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