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Review of scientific advisor on a Ph.D. thesis entitled
"The development of models and methods of investment efficiency analysis in uncertain conditions"
by Zhanar Bimurat
for defense on specialty 6D070300 – "Information Systems"

In investment management, the main notion is investment efficiency. Depending on goals, this notion may be defined in different ways. The thesis considers different forms of investment efficiency. For example, the time of break-even presents the minimum time when investments will be paid off. There are other criteria of investment efficiency considered in the thesis: internal rate of return (IRR), modified IRR, net cash flow, net discounted revenue, index of profitability and others. Investment efficiency is a function of the risk, rate of return and total cost, subject to the fiduciary and other constraints within which investors must operate. Institutional investors implement their investment policies through investment management structures. The aim of the presented thesis is to improve the investment management by applying simulation-based analysis to the financial performance indicators. In the thesis, it is suggested that investment efficiency should be considered as a combination of financial efficiency and non-financial efficiency. Modern portfolio theory had a revolutionary effect on portfolio management. Therefore, we think that investment management structures should be constructed in a more rigorous way, which includes quantitative analysis. In her thesis, Zhanar Bimurat develops quantitative and qualitative methods by which these structures can be developed.

The results of the presented work can be used to develop robust simulation-based systems for modeling and analyzing the effectiveness of various discretionary restrictions on investment portfolios. The numerical implementation of the optimal investment portfolio problem indicates the usefulness of treating the diversification restrictions as an additional set of uncertain parameters that could be optimized when solving portfolio problems with uncertain parameter configurations.

Hence the presented dissertation thesis is a complete scientifically qualified work. The thesis comprises analysis, evaluation, and conclusion at the required level and *I recommend it for official defense*.

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February 19, 2020

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