This thesis focuses on a problem which decision vector has limited number of non-zero elements. This limitation is ensured by adding cardinality constraint, but solving the mixed-integer reformulation of the problem is difficult. This mixed-integer problem is relaxed and then regularized or the exact penalty function is added. These two apporaches are described and applied on the portfolio theory. For this special type of problems we show relations between these two approaches. Basic summary of the theory of risk measures is used in numerical study, in which we compare penalization functions for few types of problems.