

Abstract

The main intention of the thesis is to present several types of penalization techniques and to apply them in economic analyses. We focus on penalized least squares, with a main topic being the lasso. The penalization methods are commonly employed to data sets with a relatively large number of the variables as compared to the sample size. These methods simplify the model by shrinkage of the estimates of the coefficient of the irrelevant variables towards zero or they put these estimates equal to zero, i.e. they produce a sparse solution. Namely, we present the following methods: ridge regression, best subset selection problem, lasso and elastic net. We discuss several applications of the lasso in the current economic and finance research and hence present the lasso in more details. In the practical part of the thesis, we analyze a real economic data using the elastic net, the ridge regression, the lasso and the ordinary least squares method. We use the mean squared error as the measure of performance of the respective method. The penalized least squares methods surpass the ordinary least squares method, with the elastic net being the best performing method.

Keywords

penalized least squares, lasso, elastic net, ridge regression, penalization techniques in economics