Bi-response spline nonparametric regression is a regression method used for data patterns in which the form of the regression curve does not follow a parametric pattern with a spline estimator for cases where the data contains two responses and the two responses correlate with each other. The penalty function serves to obtain smooth or smooth curve estimation results, so in this study, we will examine the biresponse spline regression model, which considers the penalty function in its estimation criteria. The data in this study are IHSG and JII data for response variables and inflation data and IDJ for predictor variables. This study aims to obtain an estimated form of the biresponse spline regression model with a penalty function and the JCI and JII data models using a biresponse spline regression with a penalty function. The biresponse spline model on the JCI response variable is optimal at lambda 0.01, order one and 2-knot points with a GCV value for the inflation predictor of 4314.374 for =1.8 and =2.1. The GCV value for the IDJ predictor is 4730.954 for =26500 and =28000. The biresponse spline model on the JII response variable is optimal at lambda 0.01, order one and 2-knot points with the GCV value for the predictor of inflation at lambda 0.01 of 47,274 for =2.2 and =2.4. The GCV value for IDJ predictors at lambda 0.02 was 72,296 for =26600 and =27000. From the model obtained, it can conclude that the JCI is not sufficiently affected by changes in inflation and IDJ values. JII is immensely affected by changes in inflation and IDJ values.