
Project: "Regression Analyisis of US Macro Economic Variables"
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output: pdf_document

```{r setup, include=FALSE}
knitr::opts_chunk$set(echo = TRUE)
```install.packages("data.table")
   install.packages("AER")
   library(AER)
   data("USMacroG")
   str(USMacroG)
   View(USMacroG)
   A<- USMacroG[, c("consumption","dpi","cpi","government","unemp")]
   c<-diff(A)
   MacroDiff <- as.data.frame(c)
   attach(MacroDiff)
   cbind(MacroDiff)
   pairs(MacroDiff,pch=20,col='blue',cex=0.5)
   fitLm <-lm(consumption~dpi+cpi+government+unemp,data=MacroDiff)
   summary(fitLm)
   confint(fitLm)



###Results of this regression analysis
## A look at the datasets of all variables for this regression analysis
   consumption    dpi  cpi government unemp
[1,]      1058.9 1186.1 70.6      361.0   6.4
[2,]      1075.9 1178.1 71.4      366.4   5.6
[3,]      1131.0 1196.5 73.2      359.6   4.6
[4,]      1097.6 1210.0 74.9      382.5   4.2
[5,]      1122.8 1207.9 77.3      421.9   3.5
## Data after the differentials
   consumption  dpi cpi government unemp
[1,]        17.0 -8.0 0.8        5.4  -0.8
[2,]        55.1 18.4 1.8       -6.8  -1.0
[3,]       -33.4 13.5 1.7       22.9  -0.4
[4,]        25.2 -2.1 2.4       39.4  -0.7

 ##
   lm(formula = consumption ~ dpi + cpi + government + unemp, data = MacroDiff)
###
   Coefficients:
             ##  Estimate Std. Error t value Pr(>|t|)
## (Intercept)  14.752317   2.520168   5.854 1.97e-08 ***
## dpi           0.353044   0.047982   7.358 4.87e-12 ***
## cpi           0.726576   0.678754   1.070    0.286
## government   -0.002158   0.118142  -0.018    0.985
## unemp       -16.304368   3.855214  -4.229 3.58e-05 ***


## Summary of variables predicting changes in consumption.
## Changes in consumption  shows a positive relationship with the changes in dpi and shows a negative relatonship with the changes in unemployement.These certain two variables are  indicating the most predictive changes in consumption according to the linear regression model.


                 2.5 %     97.5 %
##(Intercept)   9.7825024 19.7221311
##dpi           0.2584219  0.4476652
##cpi          -0.6119382  2.0650912
##government   -0.2351363  0.2308197
##unemp       -23.9069164 -8.7018187


   ### $$$formula

  Y'i = b0 + b1X1i + b2X2i + ... + bkXki



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