Linear Regression

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Contents

Research Question

Is it important?

Literature, Theory, Hypotheses

Jensen, Nathan M. "Democratic governance and multinational corporations: Political regimes and inflows of foreign direct investment." *International Organization* 57.03 (2003): 587-616.

- Regime type
- Size of economy
- Conflict and stability
- Trade

Data

```
require(foreign)
jensen <- read.dta("~/sample-stats/workshops-tutorials/linear-regression/bookreplicationPANEL.dta")
colnames(jensen)
```

```
  [1] "var254"   "country"  "year"     "birthrat" "capitale" "centralg"
  [7] "consumer" "currenta" "expendit" "var1"     "var2"     "var3"
 [13] "exportdu" "exportso" "var4"     "fertilit" "foodpric" "foreignd"
 [19] "var5"     "fuelexpo" "var6"     "gdpgrowt" "gdpperca" "gdppppcu"
 [25] "generalg" "var7"     "grossdom" "var8"     "var9"     "var10"
 [31] "grossfor" "hightech" "illitera" "importdu" "importso" "var11"
 [37] "industry" "var12"    "inflatio" "var13"    "laborfor" "lifeexpe"
 [43] "manufact" "var14"    "var15"    "var16"    "marketca" "military"
 [49] "var17"    "official" "var18"    "oresandm" "overallb" "populati"
 [55] "var19"    "var20"    "var21"    "portfoli" "var22"    "var23"
 [61] "privatei" "privatiz" "publicsp" "pupiltea" "railways" "realeffe"
 [67] "realinte" "research" "roadsgoo" "roadsnor" "roadspav" "schoolen"
 [73] "var24"    "var25"    "var26"    "var27"    "scientis" "services"
 [79] "var28"    "shortter" "socialse" "stockstr" "var29"    "subsidie"
 [85] "taxreven" "taxesong" "taxesoni" "var30"    "var31"    "telephon"
 [91] "totalcon" "var32"    "totaldeb" "var33"    "tradeofg" "var34"
 [97] "var35"    "unemploy" "var36"    "var37"    "urbanpop" "var38"
[103] "date"     "totalspe" "totaledu" "totalhea" "var39"    "housing"
[109] "economic" "percente" "var40"    "var41"    "var42"    "var43"
[115] "var44"    "bureaucr" "enforcea" "national" "communic" "gini"
[121] "countryc" "ifs"      "var45"    "reg_eap"  "reg_eca"  "reg_mena"
[127] "reg_sa"   "reg_we"   "reg_na"   "reg_ssa"  "reg_lac"  "oilexpor"
[133] "transiti" "regime"   "resource" "lgdppc"   "ts"       "d1"
[139] "d2"       "d3"       "code"     "var249"   "market"   "fed"
[145] "polityco" "cent"     "g"        "yg"       "world"    "n"
[151] "Lbud"     "Lcent"    "loginf"   "Lloginf"  "fedreg"   "trend"
[157] "Fbud"     "Fcent"    "Finfl"    "worinf"   "idcode"   "mycode"
[163] "wbcode"   "slexgdp"  "slrevgdp" "fedgdp"   "regfed"   "revgdp"
[169] "count1"   "system"   "yrsoffc"  "finittrm" "yrcurnt"  "multpl"
```

```
[175] "defmin"   "percent1" "percentl" "prtyin"   "execme"   "execrlc"
[181] "eft"      "exect"    "execrurl" "execreg"  "execrel"  "execage"
[187] "allhouse" "nonchief" "herfgov"  "numgov"   "govfrac"  "govme"
[193] "govseat"  "govrlc"   "leftleg"  "govt"     "govrurl"  "govreg"
[199] "govrel"   "govage"   "govoth"   "govothst" "herfopp"  "oppfrac"
[205] "numopp"   "oppme"    "oppseat"  "opprlc"   "oppt"     "opprurl"
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[217] "numul"    "herftot"  "frac"     "oppmajh"  "oppmajs"  "dateleg"
[223] "dateexec" "maj"      "partyage" "legelec"  "exelec"   "execspec"
[229] "govspec"  "coalspec" "liec"     "eiec"     "mdmh"     "mdms"
[235] "ssh"      "pluralty" "pr"       "housesys" "sensys"   "thresh"
[241] "dhondt"   "cl"       "select"   "fraud"    "tenlong"  "tenshort"
[247] "tensys"   "ipcoh"    "checks1"  "checks1a" "checks2"  "checks2a"
[253] "polariz"  "polariz2" "stabs"    "stabs2"   "stabns"   "stabns2"
[259] "auton"    "muni"     "state"    "author"   "stconst"  "cntrycd"
[265] "ACLP"     "aclpyr"   "m"        "reg"      "ager"     "inst"
[271] "instlag"  "tti"      "ttilag"   "ttilead"  "inst2"    "flagi"
[277] "agei"     "typeii"   "incumb"   "flagc"    "flage"    "flagr2k"
[283] "flagr96"  "flag4126" "stra"     "trd"      "tra"      "odwp"
[289] "region2"  "oecd"     "aclp"     "civillib" "freedoms" "politica"
[295] "uu"       "signed"   "under"    "type"     "signed2"  "under2"
[301] "type2"    "number"   "mres"     "countryy" "_merge"   "reserves"
[307] "Fuu"      "Luu"      "Fvar5"    "Lreg"     "Llgdppc"  "Lgdpgrow"
[313] "Loverall" "Ltotalde" "Loilexpo" "Ltransit" "Lmarket"  "Linflat"
[319] "Lvar9"    "Lreserve" "wooha9"
```

```
# Outcome: FDI Inflows (millions of USD)
summary(jensen$foreignd)
```

```
     Min.   1st Qu.    Median      Mean   3rd Qu.      Max.      NA's
-406.4000    0.1852    2.8300    5.6240    7.8350  255.2000      2611
```

```
# Main Explanatory: Regime
summary(jensen$regime)
```

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
  0.000   3.000   6.000   9.686  18.000  20.000    2255
```

```
# Controls: GDP, Trade, Military Expenditures
summary(jensen$gdpperca)
```

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
    230    1310    3000    5076    6470   30450    2841
```

```
summary(jensen$tradeofg)
```

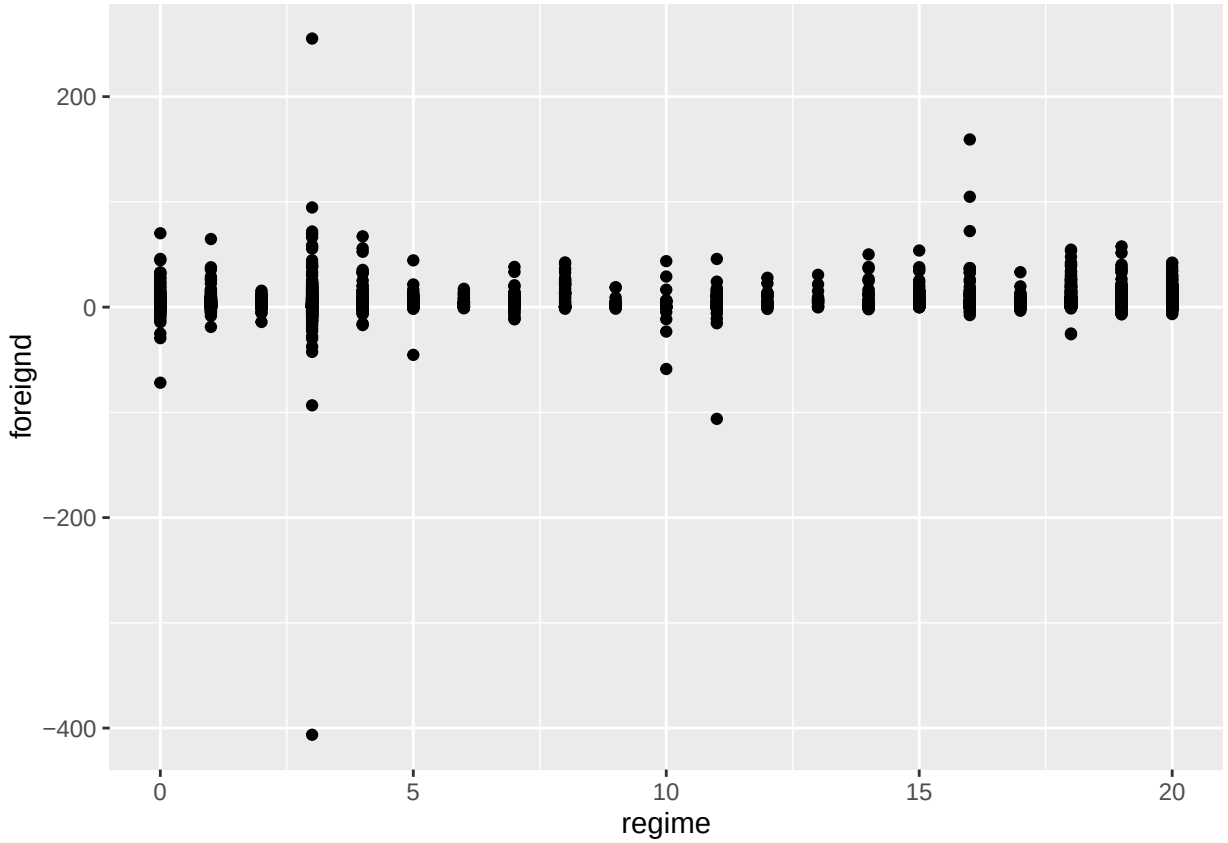
```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
  2.383  42.220  63.440  74.490  97.860 439.600    2178
```

```
summary(jensen$military)
```

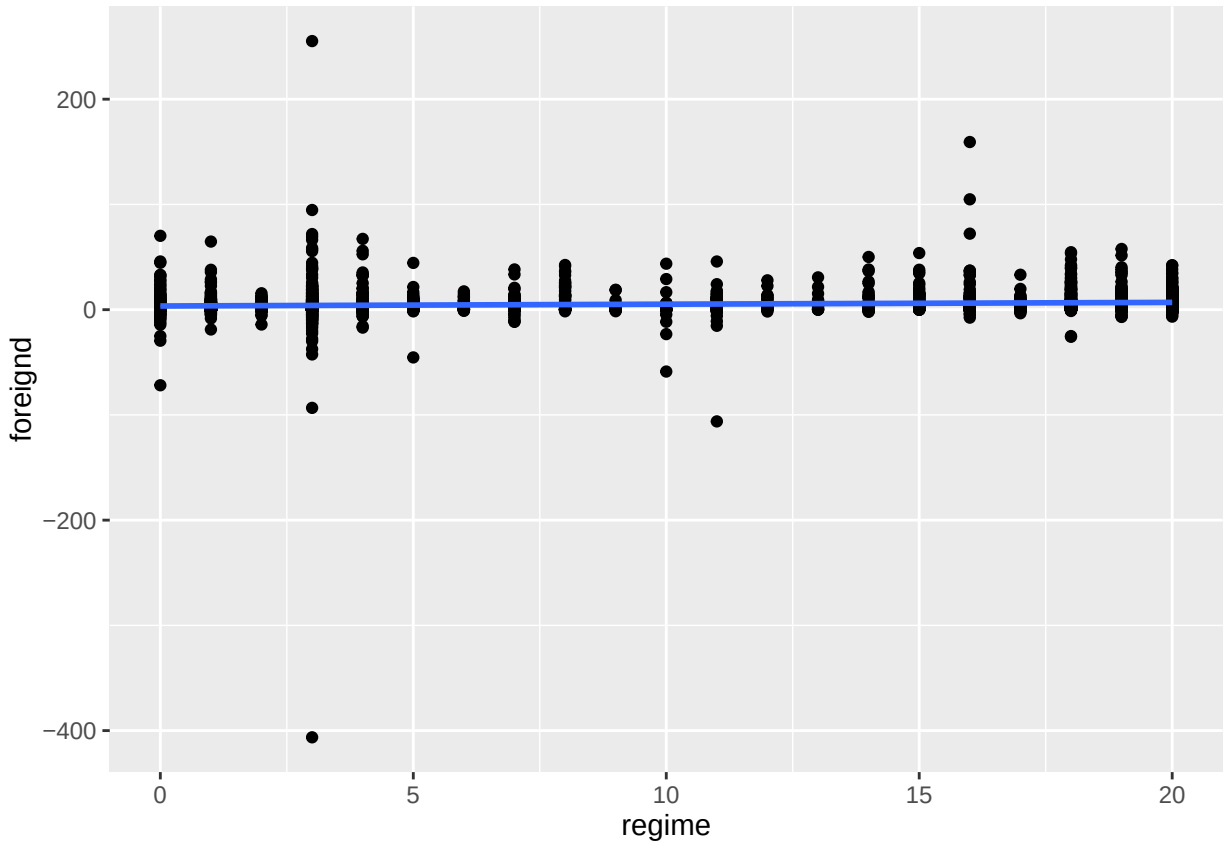
```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
   0.00    5.60    9.40   13.12   16.30  134.00    4837
```

Bivariate Association

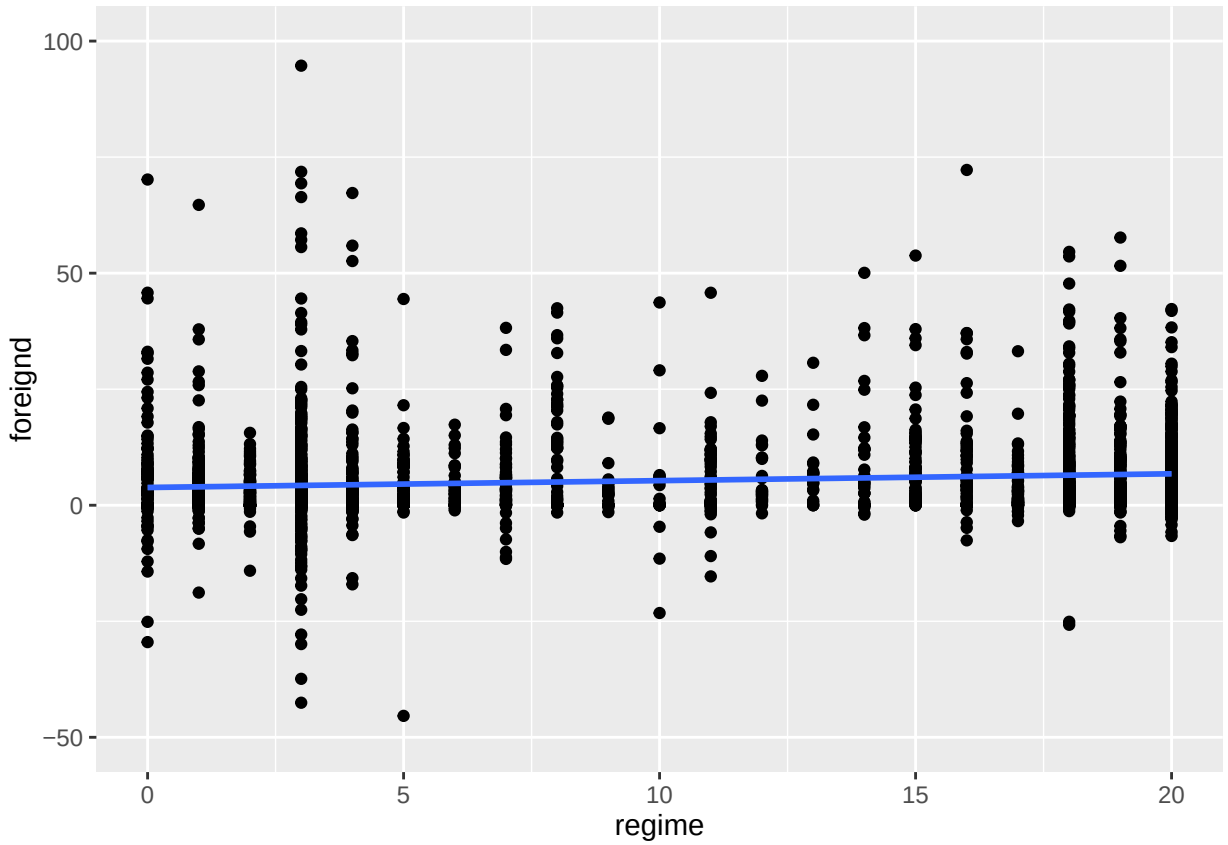
```
require(ggplot2)
ggplot(data = jensen, aes(x = regime, y = foreignd)) + geom_point()
```




```
ggplot(data = jensen, aes(x = regime, y = foreignd)) + geom_point() + stat_smooth(method = "lm")
```




```
ggplot(data = jensen, aes(x = regime, y = foreignd)) + geom_point() + stat_smooth(method = "lm") +
    scale_y_continuous(limits = c(-50, 100))
```




```
lm1 <- lm(foreignd ~ regime, data = jensen)
require(stargazer)
stargazer(lm1, header = F)
```

Table 1:

	Dependent variable:
	foreignd
regime	0.171***
	(0.033)
Constant	3.481***
	(0.432)
Observations	2,878
R^2	0.009
Adjusted R^2	0.009
Residual Std. Error	13.706 (df = 2876)
F Statistic	26.837*** (df = 1; 2876)
Note:	*p<0.1; **p<0.05; ***p<0.01

Linear Regression

Coefficient

Standard Error and P-values

Model Fit