EMI and inequality

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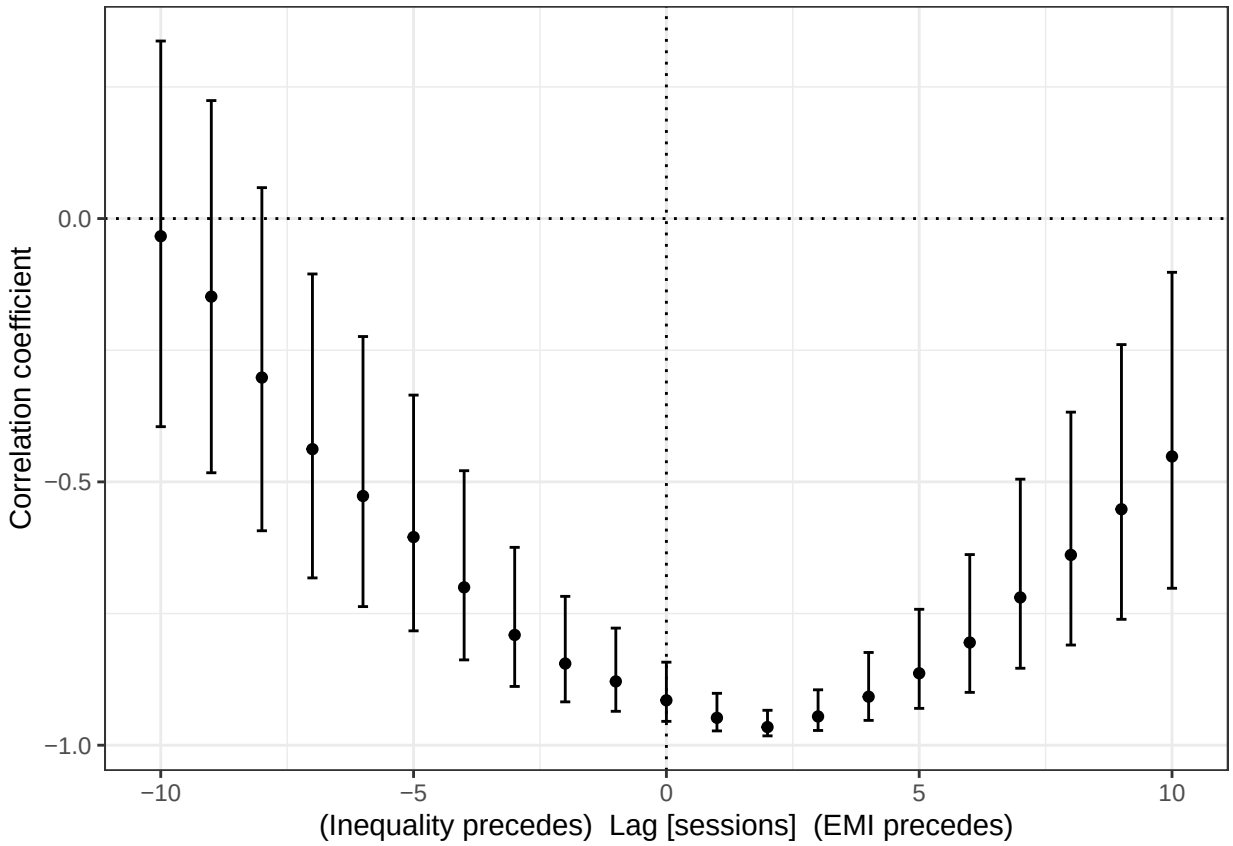
1: Cross-correlations between EMI and inequality

```
library(dplyr)
library(lmtest)
library(sandwich)
library(tseries)
library(ggplot2)
library(ggrepel)
library(stargazer)
library(car)
library(interactions)

source("Functions.R")
output_path <- "output"

df <- read.csv("data/emi_congressw2v_prod_variables_public_laws.csv")

df_avg <- df %>% rowwise() %>% mutate(Avg_pol=mean(c(House_party.mean.diff.d1, Senate_party.mean.diff.d
# Inequality data pre 1944 affected by high exemption levels: https://eml.berkeley.edu/~saez/pikettyqje
Ineq <- df_avg$share_ptinc_top1pct[df_avg$starting_year>=1944]
EMI <- df_avg$evidence_minus_intuition_score[df_avg$starting_year>=1944]
Pol <- df_avg$Avg_pol[df_avg$starting_year>=1944]

lagmax <- 10
lags <- seq(-1*lagmax, lagmax)

corrs <- crosscor(Ineq, EMI, lagmax)
plotdf <- data.frame(x=lags, y=corrs$corr,  yminus = corrs$low, yplus= corrs$high)

ggplot(plotdf, aes(x=x, y=y)) +
  geom_point()+ geom_vline(xintercept = 0, linetype="dotted")+ geom_hline(yintercept = 0, linetype="dot
  geom_errorbar(aes(ymin=yminus, ymax=yplus), width=.2) +
  xlab(" (Inequality precedes)  Lag [sessions]  (EMI precedes) ")+
  ylab("Correlation coefficient") + theme_bw()
```




```
ggsave(filename = file.path(output_path, "Ineqemi_corr.png"), width = 6.5, height = 3, dpi = 300)
ggsave(filename = file.path(output_path, "Ineqemi_corr.svg"), width = 6.5, height = 3, dpi = 300, devic
ggsave(filename = file.path(output_path, "Ineqemi_corr.pdf"), width = 6.5, height = 3, dpi = 300, devic

corrs$lag[abs(corrs$corr)==max(abs(corrs$corr))]
```

```
## [1] 2
```

```
cor.test(EMI, Ineq)
```

```
##
##  Pearson's product-moment correlation
##
## data:  EMI and Ineq
## t = -13.773, df = 37, p-value = 3.868e-16
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.9547229 -0.8423701
## sample estimates:
##        cor
## -0.9147603
```

```
cor.test(lag(EMI,1), Ineq)
```

```
##
##  Pearson's product-moment correlation
##
## data:  lag(EMI, 1) and Ineq
## t = -17.872, df = 36, p-value < 2.2e-16
```

```
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.9728511 -0.9015355
## sample estimates:
##       cor
## -0.9479997
```

```
cor.test(lag(EMI,2), Ineq)
```

```
##
##  Pearson's product-moment correlation
##
## data:  lag(EMI, 2) and Ineq
## t = -21.97, df = 35, p-value < 2.2e-16
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.9822895 -0.9337209
## sample estimates:
##       cor
## -0.9656031
```

```
plotdf <- data.frame(x=lag(EMI,1), y=Ineq, year=df$starting_year[df$starting_year>=1944])
ggplot(plotdf, aes(x,y, label=year)) + geom_point(col="red") + geom_path(col="red") + geom_text_repel(d
```

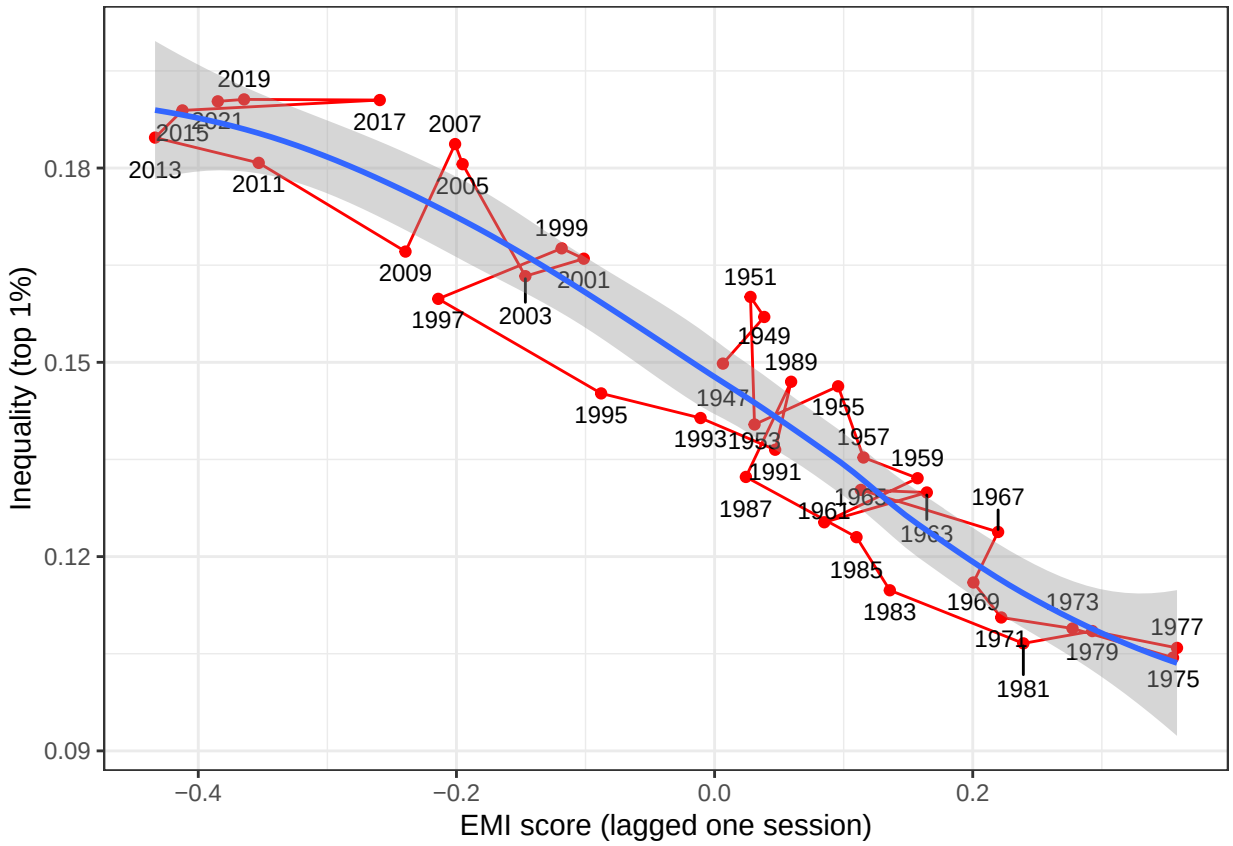
```
## Warning: Removed 1 rows containing non-finite values (`stat_smooth()`).
```

```
## Warning: The following aesthetics were dropped during statistical transformation: label
## i This can happen when ggplot fails to infer the correct grouping structure in
##   the data.
## i Did you forget to specify a `group` aesthetic or to convert a numerical
##   variable into a factor?
```

```
## Warning: Removed 1 rows containing missing values (`geom_point()`).
```

```
## Warning: Removed 1 row containing missing values (`geom_path()`).
```

```
## Warning: Removed 1 rows containing missing values (`geom_text_repel()`).
```




```
ggsave(filename = file.path(output_path, 'emilag_ineq_corr_1944.png'), width = 7, height = 5, dpi = 300)
```

```
## Warning: Removed 1 rows containing non-finite values (`stat_smooth()`).
```

```
## Warning: The following aesthetics were dropped during statistical transformation: label
## i This can happen when ggplot fails to infer the correct grouping structure in
##   the data.
## i Did you forget to specify a `group` aesthetic or to convert a numerical
##   variable into a factor?
```

```
## Warning: Removed 1 rows containing missing values (`geom_point()`).
```

```
## Warning: Removed 1 row containing missing values (`geom_path()`).
```

```
## Warning: Removed 1 rows containing missing values (`geom_text_repel()`).
```

```
ggsave(filename = file.path(output_path, 'emilag_ineq_corr_1944.svg'), width = 7, height = 5, dpi = 300)
```

```
## Warning: Removed 1 rows containing non-finite values (`stat_smooth()`).
```

```
## Warning: The following aesthetics were dropped during statistical transformation: label
## i This can happen when ggplot fails to infer the correct grouping structure in
##   the data.
## i Did you forget to specify a `group` aesthetic or to convert a numerical
##   variable into a factor?
```

```
## Warning: Removed 1 rows containing missing values (`geom_point()`).
```

```
## Warning: Removed 1 row containing missing values (`geom_path()`).
```

```
## Warning: Removed 1 rows containing missing values (`geom_text_repel()`).
```

```
ggsave(filename = file.path(output_path, 'emilag_ineq_corr_1944.pdf'), width = 7, height = 5, dpi = 300
```

```
## Warning: Removed 1 rows containing non-finite values (`stat_smooth()`).
```

```
## Warning: The following aesthetics were dropped during statistical transformation: label
## i This can happen when ggplot fails to infer the correct grouping structure in
##   the data.
## i Did you forget to specify a `group` aesthetic or to convert a numerical
##   variable into a factor?
```

```
## Warning: Removed 1 rows containing missing values (`geom_point()`).
```

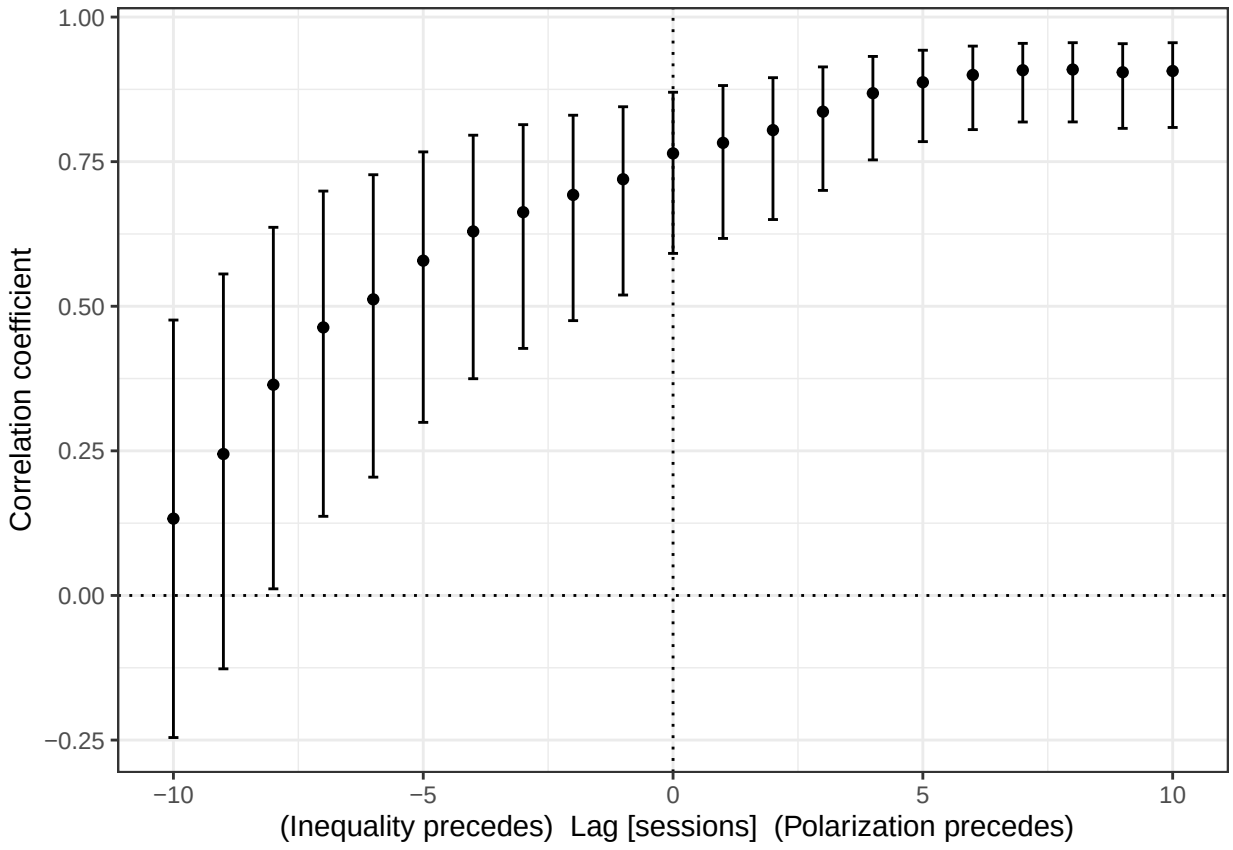
```
## Warning: Removed 1 row containing missing values (`geom_path()`).
```

```
## Warning: Removed 1 rows containing missing values (`geom_text_repel()`).
```

```
lagmax <- 10
lags <- seq(-1*lagmax, lagmax)
corrs <- crosscor(Ineq, Pol, lagmax)
corrs$lag[abs(corrs$corr)==max(abs(corrs$corr))]
```

```
## [1] 8
```

```
plotdf <- data.frame(x=lags, y=corrs$corr,  yminus = corrs$low, yplus= corrs$high)

ggplot(plotdf, aes(x=x, y=y)) +
  geom_point()+ geom_vline(xintercept = 0, linetype="dotted")+ geom_hline(yintercept = 0, linetype="dot
  geom_errorbar(aes(ymin=yminus, ymax=yplus), width=.2) +
  xlab(" (Inequality precedes)  Lag [sessions]  (Polarization precedes)")+
  ylab("Correlation coefficient") + theme_bw()
```



```
ggsave(filename = file.path(output_path, "IneqPol_corr.png"), width = 6.5, height = 3, dpi = 300)
ggsave(filename = file.path(output_path, "IneqPol_corr.svg"), width = 6.5, height = 3, dpi = 300, devic
ggsave(filename = file.path(output_path, "IneqPol_corr.pdf"), width = 6.5, height = 3, dpi = 300, devic
```

2: Regression model of Inequality with EMI

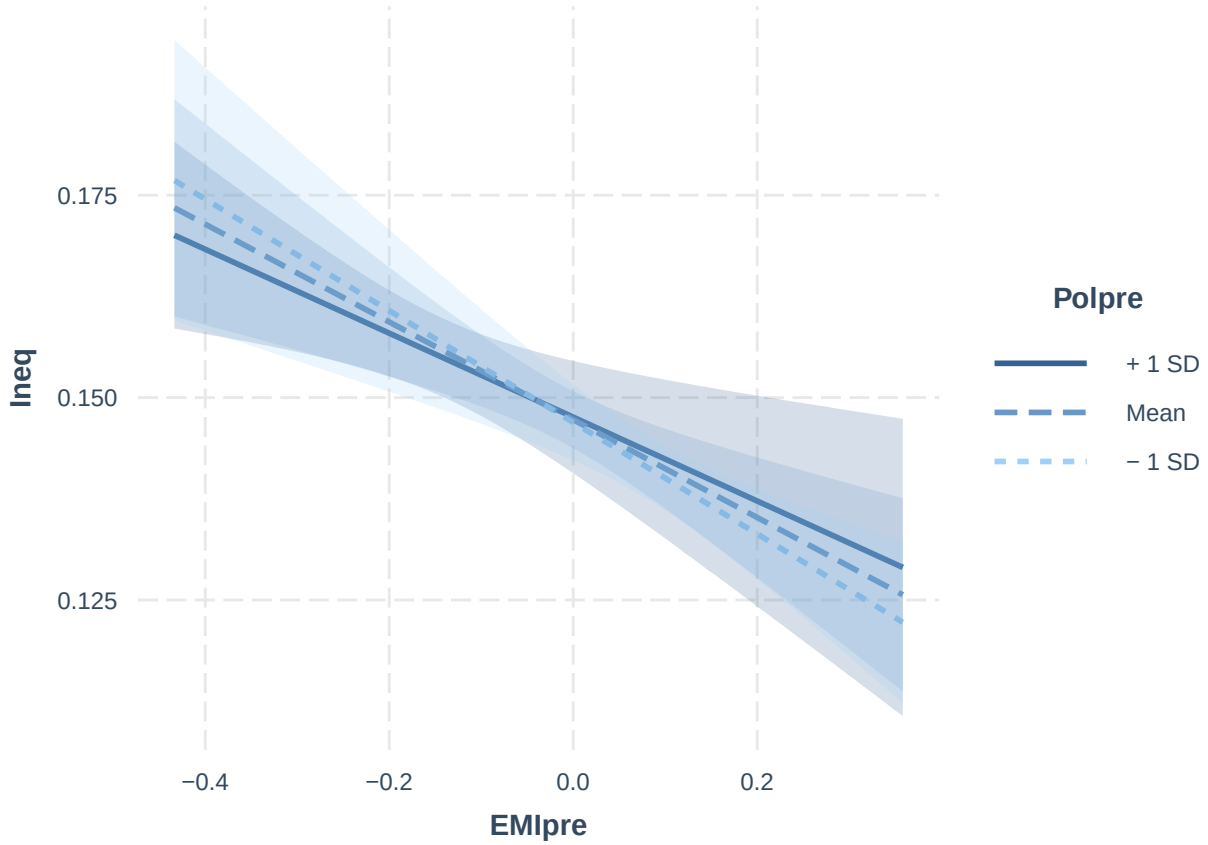
```
attach(df_avg)
EMIpre <- lag(EMI,1)
Polpre <- lag(Pol,1)
Ineqpre <- lag(Ineq,1)

model_ineq0 <- lm(Ineq ~ Ineqpre + Polpre)
model_ineq0_coefs <- coeftest(model_ineq0, vcov=vcovHAC(model_ineq0))
model_ineq0_coefs
```

```
##
## t test of coefficients:
##
##               Estimate Std. Error t value  Pr(>|t|)
## (Intercept) -0.0057512  0.0068134 -0.8441   0.40434
## Ineqpre      0.8654461  0.0791973 10.9277 7.913e-13 ***
## Polpre       0.0413892  0.0200901  2.0602   0.04688 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
model_ineq <- lm(Ineq ~ Ineqpre + Polpre + EMIpre)
vif(model_ineq)
```

```
##  Ineqpre   Polpre   EMIpre
## 5.888904 3.753980 9.675858
```

```
model_ineq <- lm(Ineq ~  Ineqpre + Polpre * EMIpre)
interact_plot(model =model_ineq, pred = EMIpre, modx = Polpre, interval=TRUE)
```




```
ggsave(filename = file.path(output_path, "Interaction-Ineq.pdf"), width = 6.5, height = 5, dpi = 300, d
```

```
model_ineq_coefs <- coeftest(model_ineq, vcov=vcovHAC(model_ineq))
model_ineq_coefs
```

```
##
## t test of coefficients:
##
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.063060   0.018149  3.4746 0.001452 **
## Ineqpre        0.568930   0.082249  6.9171 6.67e-08 ***
## Polpre         0.002966   0.021467  0.1382 0.890948
## EMIpre        -0.110543   0.031144 -3.5495 0.001184 **
## Polpre:EMIpre  0.078429   0.050244  1.5610 0.128075
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
adf.test(residuals(model_ineq))
```

```
##
##  Augmented Dickey-Fuller Test
##
## data:  residuals(model_ineq)
## Dickey-Fuller = -3.9479, Lag order = 3, p-value = 0.02232
## alternative hypothesis: stationary
```

```
kpss.test(residuals(model_ineq))
```

```
## Warning in kpss.test(residuals(model_ineq)): p-value greater than printed
```

```
## p-value
```

```
##
##  KPSS Test for Level Stationarity
##
## data:  residuals(model_ineq)
## KPSS Level = 0.089453, Truncation lag parameter = 3, p-value = 0.1
```

```
jarque.bera.test(residuals(model_ineq))
```

```
##
##  Jarque Bera Test
##
## data:  residuals(model_ineq)
## X-squared = 0.39239, df = 2, p-value = 0.8219
```

```
stargazer(model_ineq0, model_ineq,type = "latex", digits = 2, df = F,
          se=list(model_ineq0_coefs[,2], model_ineq_coefs[,2]),
          p=list(model_ineq0_coefs[,4], model_ineq_coefs[,4]),
          out="output/EMI-Ineq-LM.tex")
```

```
##
## % Table created by stargazer v.5.2.3 by Marek Hlavac, Social Policy Institute. E-mail: marek.hlavac a
## % Date and time: Tue, Mar 26, 2024 - 19:02:28
## \begin{table}[!htbp] \centering
##   \caption{}
##   \label{}
## \begin{tabular}{@{\extracolsep{5pt}}lcc}
## \\[-1.8ex]\hline
## \hline \\[-1.8ex]
##  & \multicolumn{2}{c}{\textit{Dependent variable:}} \\
## \cline{2-3}
## \\[-1.8ex] & \multicolumn{2}{c}{Ineq} \\
## \\[-1.8ex] & (1) & (2)\\
## \hline \\[-1.8ex]
##  Ineqpre & 0.87$^{***}$ & 0.57$^{***}$ \\
##   & (0.08) & (0.08) \\
##   & & \\
##  Polpre & 0.04$^{**}$ & 0.003 \\
##   & (0.02) & (0.02) \\
##   & & \\
##  EMIpre &  & $-$0.11$^{***}$ \\
##   &  & (0.03) \\
##   & & \\
##  Polpre:EMIpre &  & 0.08 \\
##   &  & (0.05) \\
##   & & \\
##  Constant & $-$0.01 & 0.06$^{***}$ \\
##   & (0.01) & (0.02) \\
##   & & \\
## \hline \\[-1.8ex]
## Observations & 38 & 38 \\
## R$^{2}$ & 0.92 & 0.95 \\
## Adjusted R$^{2}$ & 0.92 & 0.95 \\
## Residual Std. Error & 0.01 & 0.01 \\
## F Statistic & 212.40$^{***}$ & 160.28$^{***}$ \\
```

```
## \hline
## \hline \\[-1.8ex]
## \textit{Note:}  & \multicolumn{2}{r}{$^{*}$p$<$0.1; $^{**}$p$<$0.05; $^{***}$p$<$0.01} \\
## \end{tabular}
## \end{table}
```

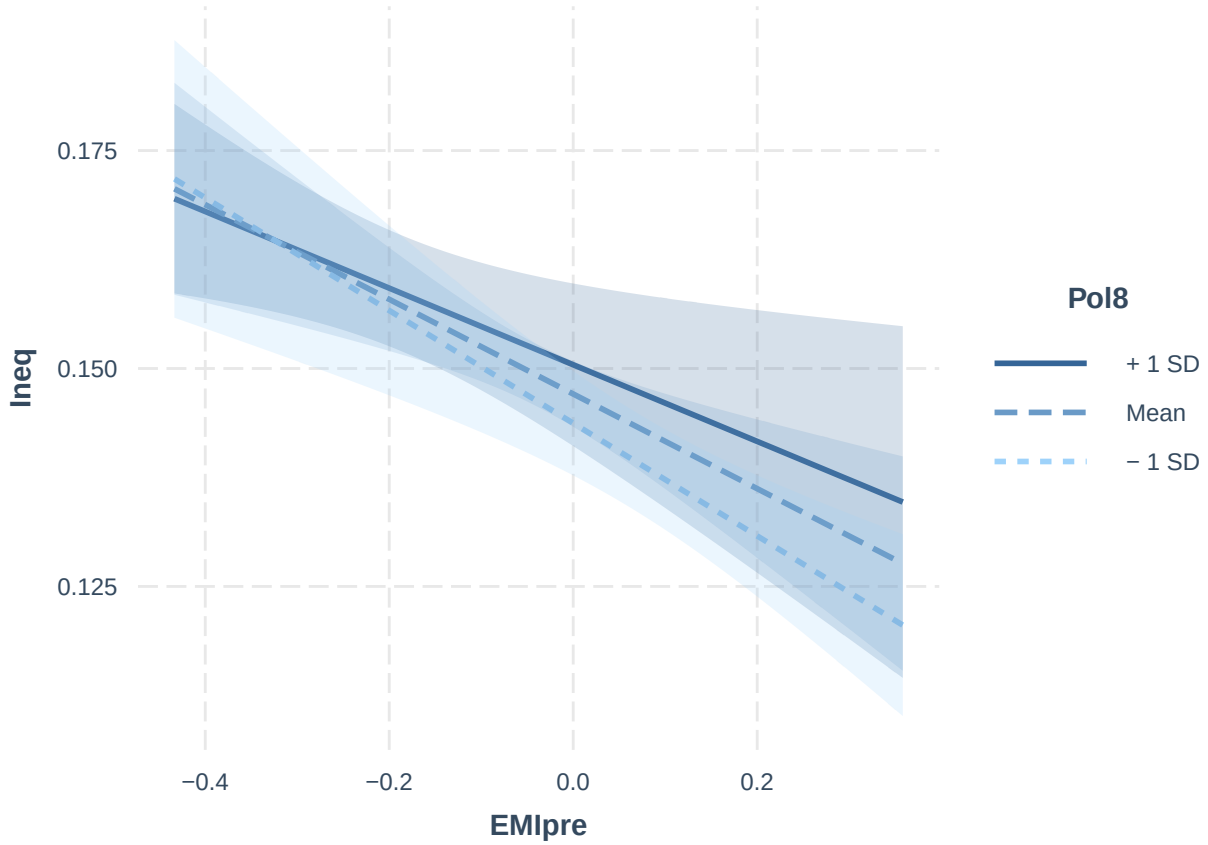
```
stargazer(model_ineq0, model_ineq, type = "text", digits = 2, df = F,
          se=list(model_ineq0_coefs[,2], model_ineq_coefs[,2]),
          p=list(model_ineq0_coefs[,4], model_ineq_coefs[,4]),
          out="output/EMI-Ineq-LM.txt")
```

```
##
## ================================================
##                         Dependent variable:
##                     ---------------------------
##                                Ineq
##                           (1)            (2)
## ------------------------------------------------
## Ineqpre                 0.87***        0.57***
##                          (0.08)         (0.08)
##
## Polpre                   0.04**         0.003
##                          (0.02)         (0.02)
##
## EMIpre                                 -0.11***
##                                         (0.03)
##
## Polpre:EMIpre                           0.08
##                                         (0.05)
##
## Constant                 -0.01          0.06***
##                          (0.01)         (0.02)
##
## ------------------------------------------------
## Observations               38             38
## R2                        0.92           0.95
## Adjusted R2               0.92           0.95
## Residual Std. Error       0.01           0.01
## F Statistic            212.40***      160.28***
## ================================================
## Note:                *p<0.1; **p<0.05; ***p<0.01
```

```
Pol8 <- lag(Pol,8)

#Alternative specification: lag 8 for polarization
model_ineq8 <- lm(Ineq ~ EMIpre +  Pol8 + Ineqpre, data = df_avg)
vif(model_ineq8)
```

```
##    EMIpre      Pol8   Ineqpre
## 10.019747  6.879265  8.647445
```

```
model_ineq8 <- lm(Ineq ~ EMIpre *  Pol8 + Ineqpre, data = df_avg)
interact_plot(model =model_ineq8, pred = EMIpre, modx = Pol8, interval=TRUE)
```




```
ggsave(filename = file.path(output_path, "Interaction-Ineq8.pdf"), width = 6.5, height = 5, dpi = 300, c

model_ineq8_coefs <- coeftest(model_ineq8, vcov=vcovHAC(model_ineq8))
model_ineq8_coefs
```

```
##
## t test of coefficients:
##
##              Estimate Std. Error t value  Pr(>|t|)
## (Intercept)  0.044949   0.019532  2.3014   0.02964 *
## EMIpre      -0.137167   0.042891 -3.1981   0.00362 **
## Pol8         0.044708   0.035145  1.2721   0.21459
## Ineqpre      0.522568   0.094906  5.5062 8.882e-06 ***
## EMIpre:Pol8  0.138031   0.075353  1.8318   0.07846 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
adf.test(residuals(model_ineq8))
```

```
## Warning in adf.test(residuals(model_ineq8)): p-value smaller than printed
## p-value
```

```
##
##  Augmented Dickey-Fuller Test
##
## data:  residuals(model_ineq8)
## Dickey-Fuller = -4.7964, Lag order = 3, p-value = 0.01
## alternative hypothesis: stationary
```

```r
kpss.test(residuals(model_ineq8))
```

```
## Warning in kpss.test(residuals(model_ineq8)): p-value greater than printed
## p-value
```

```
##
##  KPSS Test for Level Stationarity
##
## data:  residuals(model_ineq8)
## KPSS Level = 0.045498, Truncation lag parameter = 2, p-value = 0.1
```

```r
jarque.bera.test(residuals(model_ineq8))
```

```
##
##  Jarque Bera Test
##
## data:  residuals(model_ineq8)
## X-squared = 0.66938, df = 2, p-value = 0.7156
```

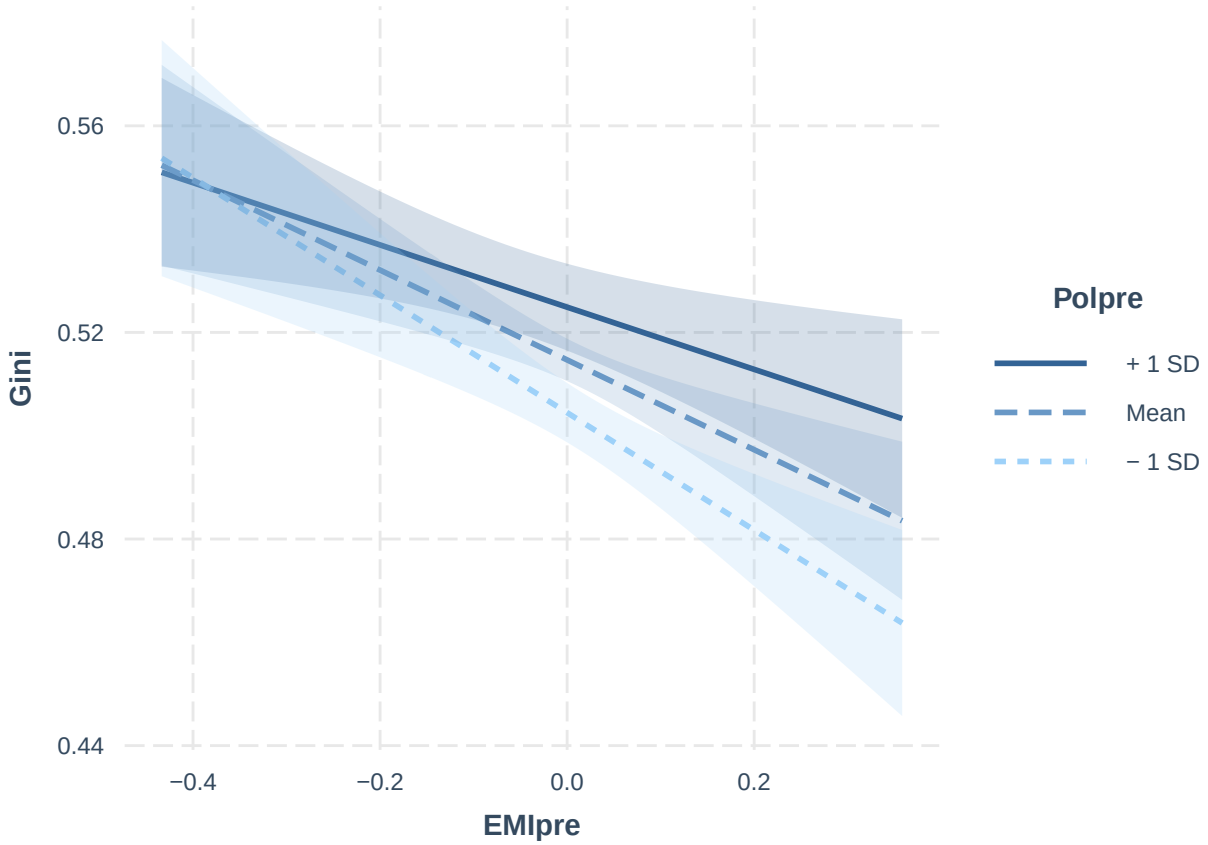
```r
#Alternative specification: Gini index
Gini <- df_avg$income_gini[df_avg$starting_year>=1944]
Ginipre <- lag(Gini,1)

model_gini0 <- lm(Gini ~ Ginipre)
model_gini0_coefs <- coeftest(model_gini0, vcov=vcovHAC(model_gini0))
model_gini0_coefs
```

```
##
## t test of coefficients:
##
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.0016359  0.0165623 -0.0988   0.9219
## Ginipre      1.0068806  0.0308740 32.6126   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```r
model_gini <- lm(Gini ~ EMIpre + Polpre +  Ginipre, data = df_avg)
vif(model_gini)
```

```
##    EMIpre    Polpre   Ginipre
## 13.169869  4.146633 14.594855
```

```r
model_gini <- lm(Gini ~ EMIpre * Polpre +  Ginipre, data = df_avg)
interact_plot(model =model_gini, pred = EMIpre, modx = Polpre, interval=TRUE)
```




```
ggsave(filename = file.path(output_path, "Interaction-Ineq-Gini.pdf"), width = 6.5, height = 5, dpi = 3
```

```
model_gini_coefs <- coeftest(model_gini, vcov=vcovHAC(model_gini))
model_gini_coefs
```

```
##
## t test of coefficients:
##
##                Estimate Std. Error t value  Pr(>|t|)
## (Intercept)    0.222570   0.041890  5.3132 7.322e-06 ***
## EMIpre        -0.243669   0.047437 -5.1366 1.233e-05 ***
## Polpre         0.093638   0.034097  2.7462  0.009686 **
## Ginipre        0.456910   0.095611  4.7788 3.534e-05 ***
## EMIpre:Polpre  0.245032   0.061471  3.9861  0.000350 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
adf.test(residuals(model_gini))
```

```
## Warning in adf.test(residuals(model_gini)): p-value smaller than printed p-value
```

```
##
##  Augmented Dickey-Fuller Test
##
## data:  residuals(model_gini)
## Dickey-Fuller = -5.1129, Lag order = 3, p-value = 0.01
## alternative hypothesis: stationary
```

```r
kpss.test(residuals(model_gini))
```

```
## Warning in kpss.test(residuals(model_gini)): p-value greater than printed
## p-value
```

```
##
##  KPSS Test for Level Stationarity
##
## data:  residuals(model_gini)
## KPSS Level = 0.046794, Truncation lag parameter = 3, p-value = 0.1
```

```r
jarque.bera.test(residuals(model_gini))
```

```
##
##  Jarque Bera Test
##
## data:  residuals(model_gini)
## X-squared = 2.1417, df = 2, p-value = 0.3427
```

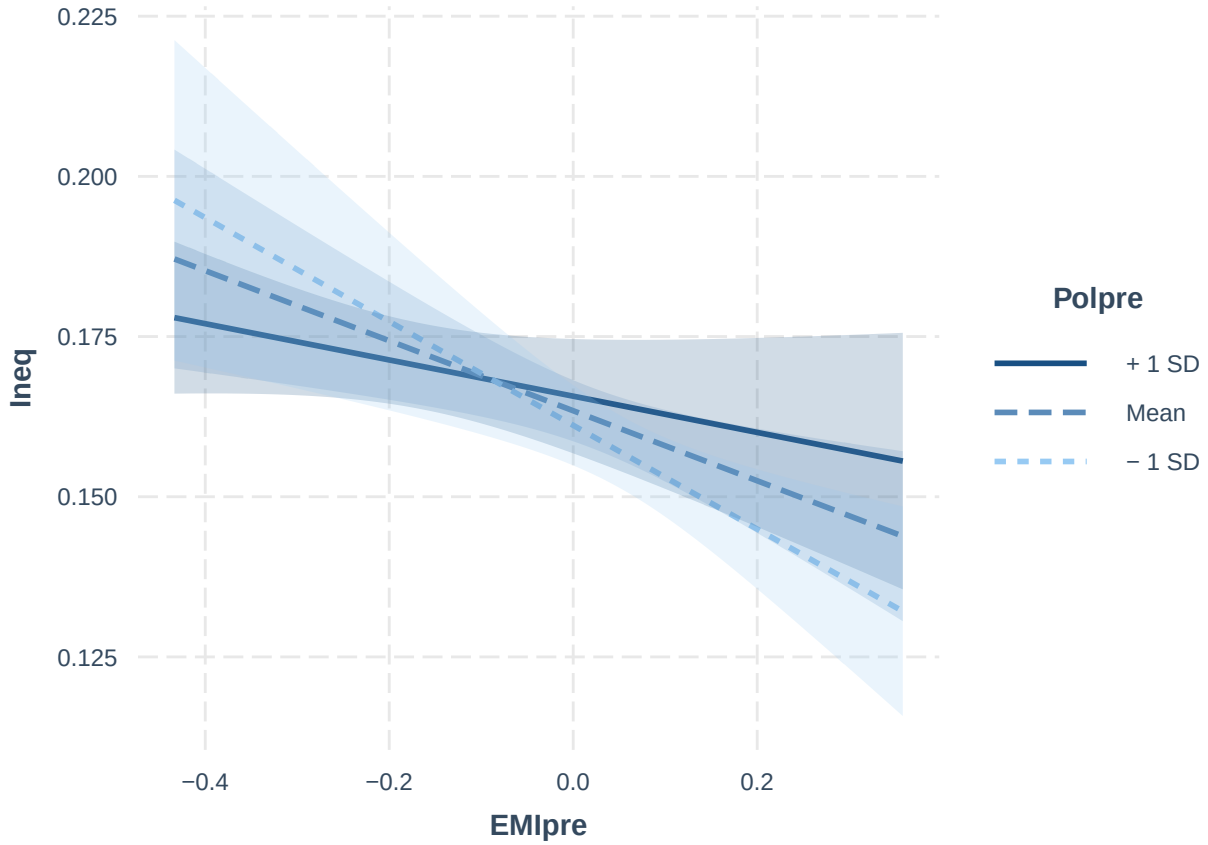
```r
# Alternative specification: data since 1912

Ineq <- df_avg$share_ptinc_top1pct[df_avg$starting_year>=1912]
EMI <- df_avg$evidence_minus_intuition_score[df_avg$starting_year>=1912]
Pol <- df_avg$Avg_pol[df_avg$starting_year>=1912]
EMIpre <- lag(EMI,1)
Polpre <- lag(Pol,1)
Ineqpre <- lag(Ineq,1)

model_ineq0 <- lm(Ineq ~ Ineqpre)
model_ineq0_coefs <- coeftest(model_ineq0, vcov=vcovHAC(model_ineq0))
model_ineq0_coefs
```

```
##
## t test of coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 0.0152078  0.0093595  1.6249   0.1102
## Ineqpre     0.9038172  0.0655700 13.7840   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```r
model_ineq <- lm(Ineq ~ Ineqpre + Polpre + EMIpre)
vif(model_ineq)
```

```
##  Ineqpre   Polpre   EMIpre
## 1.677983 2.319184 3.175158
```

```r
model_ineq <- lm(Ineq ~  Ineqpre + Polpre * EMIpre)
interact_plot(model =model_ineq, pred = EMIpre, modx = Polpre, interval=TRUE)
```




```
ggsave(filename = file.path(output_path, "Interaction-Ineq-1912.pdf"), width = 6.5, height = 5, dpi = 3
```

```
model_ineq_coefs <- coeftest(model_ineq, vcov=vcovHAC(model_ineq))
model_ineq_coefs
```

```
##
## t test of coefficients:
##
##                Estimate Std. Error t value  Pr(>|t|)
## (Intercept)    0.036626   0.026120  1.4022 0.1671544
## Ineqpre        0.699608   0.095582  7.3194 2.126e-09 ***
## Polpre         0.022486   0.035323  0.6366 0.5273669
## EMIpre        -0.220348   0.049950 -4.4114 5.623e-05 ***
## Polpre:EMIpre  0.260720   0.073074  3.5679 0.0008163 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
adf.test(residuals(model_ineq))
```

```
## Warning in adf.test(residuals(model_ineq)): p-value smaller than printed p-value
```

```
##
##  Augmented Dickey-Fuller Test
##
## data:  residuals(model_ineq)
## Dickey-Fuller = -4.2435, Lag order = 3, p-value = 0.01
## alternative hypothesis: stationary
```

```r
kpss.test(residuals(model_ineq))
```

```
##
##  KPSS Test for Level Stationarity
##
## data:  residuals(model_ineq)
## KPSS Level = 0.36456, Truncation lag parameter = 3, p-value = 0.09243
```

```r
jarque.bera.test(residuals(model_ineq))
```

```
##
##  Jarque Bera Test
##
## data:  residuals(model_ineq)
## X-squared = 9.7886, df = 2, p-value = 0.007489
```

```r
stargazer(model_gini, model_ineq, model_ineq8, type = "latex", digits = 2, df = F,
          se=list(model_gini_coefs[,2], model_ineq_coefs[,2], model_ineq8_coefs[,2]),
          p=list(model_gini_coefs[,4], model_ineq_coefs[,4], model_ineq8_coefs[,4]),
          out="output/EMI-Ineq-extra-LM.tex")
```

```
##
## % Table created by stargazer v.5.2.3 by Marek Hlavac, Social Policy Institute. E-mail: marek.hlavac a
## % Date and time: Tue, Mar 26, 2024 - 19:02:29
## \begin{table}[!htbp] \centering
##   \caption{}
##   \label{}
## \begin{tabular}{@{\extracolsep{5pt}}lccc}
## \\[-1.8ex]\hline
## \hline \\[-1.8ex]
##  & \multicolumn{3}{c}{\textit{Dependent variable:}} \\
## \cline{2-4}
## \\[-1.8ex] & Gini & \multicolumn{2}{c}{Ineq} \\
## \\[-1.8ex] & (1) & (2) & (3)\\
## \hline \\[-1.8ex]
##  Ineqpre &  & 0.70$^{***}$ & 0.52$^{***}$ \\
##   &  & (0.10) & (0.09) \\
##   & & & \\
##  EMIpre:Pol8 &  &  & 0.14$^{*}$ \\
##   &  &  & (0.08) \\
##   & & & \\
##  EMIpre & $-$0.24$^{***}$ & $-$0.22$^{***}$ & $-$0.14$^{***}$ \\
##   & (0.05) & (0.05) & (0.04) \\
##   & & & \\
##  Polpre:EMIpre &  & 0.26$^{***}$ &  \\
##   &  & (0.07) &  \\
##   & & & \\
##  Polpre & 0.09$^{***}$ & 0.02 &  \\
##   & (0.03) & (0.04) &  \\
##   & & & \\
##  Ginipre & 0.46$^{***}$ &  &  \\
##   & (0.10) &  &  \\
##   & & & \\
##  EMIpre:Polpre & 0.25$^{***}$ &  &  \\
##   & (0.06) &  &  \\
```

```
##   & & & \\
##  Pol8 &  &  & 0.04 \\
##   &  &  & (0.04) \\
##   & & & \\
##  Constant & 0.22$^{***}$ & 0.04 & 0.04$^{**}$ \\
##   & (0.04) & (0.03) & (0.02) \\
##   & & & \\
## \hline \\[-1.8ex]
## Observations & 38 & 54 & 31 \\
## R$^{2}$ & 0.97 & 0.87 & 0.97 \\
## Adjusted R$^{2}$ & 0.97 & 0.86 & 0.96 \\
## Residual Std. Error & 0.01 & 0.01 & 0.01 \\
## F Statistic & 315.53$^{***}$ & 81.45$^{***}$ & 195.75$^{***}$ \\
## \hline
## \hline \\[-1.8ex]
## \textit{Note:}  & \multicolumn{3}{r}{$^{*}$p$<$0.1; $^{**}$p$<$0.05; $^{***}$p$<$0.01} \\
## \end{tabular}
## \end{table}
```

```
stargazer(model_gini, model_ineq, model_ineq8, type = "text", digits = 2, df = F,
          se=list(model_gini_coefs[,2], model_ineq_coefs[,2], model_ineq8_coefs[,2]),
          p=list(model_gini_coefs[,4], model_ineq_coefs[,4], model_ineq8_coefs[,4]),
          out="output/EMI-Ineq-extra-LM.txt")
```

```
##
## ================================================
##                          Dependent variable:
##                     ----------------------------
##                        Gini           Ineq
##                         (1)       (2)       (3)
## ------------------------------------------------
## Ineqpre                          0.70***   0.52***
##                                   (0.10)   (0.09)
##
## EMIpre:Pol8                                 0.14*
##                                            (0.08)
##
## EMIpre                -0.24***  -0.22*** -0.14***
##                        (0.05)    (0.05)   (0.04)
##
## Polpre:EMIpre                    0.26***
##                                   (0.07)
##
## Polpre                0.09***     0.02
##                        (0.03)    (0.04)
##
## Ginipre               0.46***
##                        (0.10)
##
## EMIpre:Polpre         0.25***
##                        (0.06)
##
## Pol8                                        0.04
##                                            (0.04)
##
```

```
## Constant             0.22***     0.04    0.04**
##                       (0.04)    (0.03)   (0.02)
##
## ------------------------------------------------
## Observations            38        54       31
## R2                     0.97      0.87     0.97
## Adjusted R2            0.97      0.86     0.96
## Residual Std. Error    0.01      0.01     0.01
## F Statistic         315.53***  81.45*** 195.75***
## ================================================
## Note:                 *p<0.1; **p<0.05; ***p<0.01
```

```r
set.seed(1985)
library(boot)
bootf <- function(df, indices)
{
  model_ineq <- lm(Ineq ~  Ineqpre + Polpre * EMIpre, data=df, subset=indices)
  return(model_ineq$coefficients[4])
}
boots <- boot(df_avg, bootf, R=10000)
quantile(boots$t, p=c(0.025, 0.5, 0.975))  # to verify, we perform a bootstrapping test, hight part of
```

```
##       2.5%        50%      97.5%
## -0.3390118 -0.2178495 -0.1307149
```