Trabalho_Final_ML

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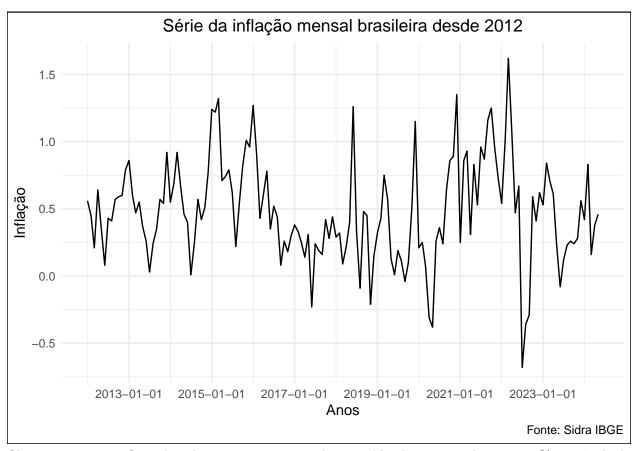
Pacotes necessários:

[1] 149

```
library(tidyverse)
## -- Attaching packages -----
                                   ----- tidyverse 1.3.1 --
## v ggplot2 3.4.4 v purrr
                                1.0.1
## v tibble 3.2.1 v dplyr 1.1.2
## v tidyr 1.2.0 v stringr 1.4.0
## v readr 2.1.2 v forcats 0.5.1
## -- Conflicts ----- tidyverse conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()
                     masks stats::lag()
library(sidrar)
library(readr)
library(rbcb)
  1)
  a) Baixando e modelando a base de dados
inf <- get_sidra(1737, variable = 63, period = "201201-202405")</pre>
## Considering all categories once 'classific' was set to 'all' (default)
inf <- inf %>% select("Mês (Código)", "Valor")
colnames(inf) <- c("date", "inf")</pre>
inf$date <- as.Date(paste0(str_sub(inf$date, end = 4),"-",</pre>
str_sub(inf$date, start = 5),"-01"))
dim(inf)
```

```
head(inf)
##
           date inf
## 2 2012-01-01 0.56
## 3 2012-02-01 0.45
## 4 2012-03-01 0.21
## 5 2012-04-01 0.64
## 6 2012-05-01 0.36
## 7 2012-06-01 0.08
tail(inf)
             date inf
## 145 2023-12-01 0.56
## 146 2024-01-01 0.42
## 147 2024-02-01 0.83
## 148 2024-03-01 0.16
## 149 2024-04-01 0.38
## 150 2024-05-01 0.46
  2) Gerando estatísticas descritivas:
mean(inf$inf)
## [1] 0.4787248
median(inf$inf)
## [1] 0.44
min(inf$inf)
## [1] -0.68
max(inf$inf)
## [1] 1.62
sd(inf$inf)
## [1] 0.3780288
Gerando o gráfico da série histórica da inflação:
ggplot(data = inf) +
  geom_line(aes(x = date, y = inf)) +
  labs(x = "Anos", y = "Inflação",title = "Série da inflação mensal brasileira desde 2012", caption = "
  theme_minimal() +
  scale_y_continuous(breaks = seq(-1, 2, by = 0.5)) +
  scale_x_date(date_breaks = "2 years") +
```

theme(plot.title = element_text(hjust = 0.5), plot.subtitle = element_text(hjust = 0.5), plot.backgrou



Observamos que a inflação brasileira variou em torno de sua média de aproximadamente 0.5% ao mês desde jan 2012 até maio 2024, tendo seu período de maior volatilidade ao longo de 2022.

3)

Baixando as variáveis:

3.1) ipca

```
index <- list(433)
ipca <- get_series(index, start_date = "2011-12-01", end_date = "2024-04-30", as = c("data.frame"))
colnames(ipca)[2] <- "ipca"</pre>
```

3.2) igpm

```
index <- list(189)
igpm <- get_series(index, start_date = "2011-12-01", end_date = "2024-04-30", as = "data.frame")
colnames(igpm)[2] <- "igpm"</pre>
```

3.3) ipca15

```
index <- list(7478)
ipca15 <- get_series(index, start_date = "2011-12-01", end_date = "2024-04-30", as = "data.frame")
colnames(ipca15)[2] <- "ipca15"</pre>
```

3.4) bm_broad

```
index <- list(1833)</pre>
bm_broad <- get_series(index, start_date = "2011-10-01", end_date = "2024-03-31", as = "data.frame")</pre>
colnames(bm broad)[2] <- "bm broad old"</pre>
bm_broad$bm_broad <- rep(NA, nrow(bm_broad))</pre>
for (t in 2:nrow(bm_broad)) {
bm_broad$bm_broad[t] <- ((bm_broad$bm_broad_old[t] - bm_broad$bm_broad_old[t-1])/bm_broad$bm_broad_old[
bm_broad <- bm_broad[-1, ]</pre>
bm_broad <- bm_broad %>% select(date, bm_broad)
3.5) \text{ m1}
index <- list(27788)</pre>
m1 <- get_series(index, start_date = "2011-10-01", end_date = "2024-03-01", as = "data.frame")
# coluna a partir da qual computaremos a variação percentual
colnames(m1)[2] <- "m1 old"</pre>
# coluna que receberá o resultado da variação percentual
m1$m1 <- rep(NA, nrow(m1))
# calculamos a variação percentual a partir da segunda linha
for (t in 2:nrow(m1)) {
m1$m1[t] \leftarrow ((m1$m1_old[t] - m1$m1_old[t-1])/m1$m1_old[t-1])*100
m1 \leftarrow m1[-1,]
m1 <- m1 %>% select(date, m1)
3.6) icbr
index <- list(27574)</pre>
icbr <- get_series(index, start_date = "2011-11-01", end_date = "2024-04-30", as = "data.frame")
# coluna a partir da qual computaremos a variação percentual
colnames(icbr)[2] <- "icbr_old"</pre>
# coluna que receberá o resultado da variação percentual
icbr$icbr <- rep(NA, nrow(icbr))</pre>
# calculamos a variação percentual a partir da segunda linha
for (t in 2:nrow(icbr)) {
icbr$icbr[t] <- ((icbr$icbr_old[t] - icbr$icbr_old[t-1])/icbr$icbr_old[t-1])*100
}
icbr <- icbr[-1, ]
icbr <- icbr %>% select(date, icbr)
3.7) ibcbr
index <- list(24363)
ibcbr <- get_series(index, start_date = "2011-09-01", end_date = "2024-02-29", as = "data.frame")</pre>
```

```
# coluna a partir da qual computaremos a variação percentual
colnames(ibcbr)[2] <- "ibcbr_old"</pre>
# coluna que receberá o resultado da variação percentual
ibcbr$ibcbr <- rep(NA, nrow(ibcbr))</pre>
# calculamos a variação percentual a partir da segunda linha
for (t in 2:nrow(ibcbr)) {
ibcbr\$ibcbr[t] \leftarrow ((ibcbr\$ibcbr\_old[t] - ibcbr\$ibcbr\_old[t-1]) / ibcbr\$ibcbr\_old[t-1]) *100 
}
ibcbr <- ibcbr[-1, ]</pre>
ibcbr <- ibcbr %>% select(date, ibcbr)
3.8) pimpf
index <- list(21859)
pimpf <- get_series(index, start_date = "2011-10-01", end_date = "2024-03-31", as = "data.frame")</pre>
# coluna a partir da qual computaremos a variação percentual
colnames(pimpf)[2] <- "pimpf_old"</pre>
pimpf$pimpf <- rep(NA, nrow(pimpf))</pre>
for (t in 2:nrow(pimpf)) {
pimpf pimpf [t] \leftarrow ((pimpf pimpf old [t] - pimpf pimpf old [t-1]) / pimpf pimpf old [t-1]) * 100 
}
pimpf <- pimpf[-1, ]</pre>
pimpf <- pimpf %>% select(date, pimpf)
3.9) tcu
index <- list(24352)
tcu <- get_series(index, start_date = "2011-11-01", end_date = "2024-04-30", as = "data.frame")
# coluna a partir da qual computaremos a variação percentual
colnames(tcu)[2] <- "tcu old"</pre>
tcu$tcu <- rep(NA, nrow(tcu))</pre>
for (t in 2:nrow(tcu)) {
tcu$tcu[t] <- (tcu$tcu_old[t] - tcu$tcu_old[t-1])</pre>
tcu <- tcu[-1,]
tcu <- tcu %>% select(date, tcu)
3.10) aggreg_wage
index <- list(22078)
aggreg_wage <- get_series(index, start_date = "2011-10-01", end_date = "2024-03-01", as = "data.frame")
# coluna a partir da qual computaremos a variação percentual
colnames(aggreg_wage)[2] <- "aggreg_wage_old"</pre>
# coluna que receberá o resultado da variação percentual
```

```
aggreg_wage$aggreg_wage <- rep(NA, nrow(aggreg_wage))</pre>
# calculamos a variação percentual a partir da segunda linha
for (t in 2:nrow(aggreg_wage)) {
aggreg_wage$aggreg_wage[t] <- ((aggreg_wage$aggreg_wage_old[t] - aggreg_wage$aggreg_wage_old[t-1])/aggr
aggreg_wage <- aggreg_wage[-1, ]</pre>
aggreg_wage <- aggreg_wage %>% select(date, aggreg_wage)
3.11) elec
index <- list(1406)</pre>
elec <- get_series(index, start_date = "2011-10-01", end_date = "2024-03-31", as = "data.frame")
colnames(elec)[2] <- "elec_old"</pre>
elec$elec <- rep(NA, nrow(elec))</pre>
for (t in 2:nrow(elec)) {
    elec 
elec <- elec[-1, ]
elec <- elec %>% select(date, elec)
3.12) confidence
index <- list(4393)
confidence <- get_series(index, start_date = "2011-11-01", end_date = "2024-04-30", as = "data.frame")</pre>
colnames(confidence)[2] <- "confidence_old"</pre>
confidence$confidence <- rep(NA, nrow(confidence))</pre>
for (t in 2:nrow(confidence)) {
    confidence$confidence[t] <- ((confidence$confidence_old[t] - confidence$confidence_old[t-1]) / confid
}
confidence <- confidence[-1, ]</pre>
confidence <- confidence %>% select(date, confidence)
3.13) brl usd
index <- list(3695)</pre>
brl_usd <- get_series(index, start_date = "2011-11-01", end_date = "2024-04-30", as = "data.frame")
colnames(brl_usd)[2] <- "brl_usd_old"</pre>
brl_usd$brl_usd <- rep(NA, nrow(brl_usd))</pre>
for (t in 2:nrow(brl usd)) {
    brl_usd\brl_usd[t] <- ((brl_usd\brl_usd_old[t] - brl_usd\brl_usd_old[t-1]) / brl_usd\brl_usd_old[t-1]
}
```

```
brl_usd <- brl_usd[-1, ]</pre>
brl_usd <- brl_usd %>% select(date, brl_usd)
3.14) selic
index <- list(4390)</pre>
selic <- get_series(index, start_date = "2011-12-01", end_date = "2024-04-30", as = "data.frame")</pre>
colnames(selic)[2] <- "selic"</pre>
3.15) saving
index <- list(1835)</pre>
saving <- get_series(index, start_date = "2011-10-01", end_date = "2024-03-31", as = "data.frame")</pre>
colnames(saving)[2] <- "saving old"</pre>
saving$saving <- rep(NA, nrow(saving))</pre>
for (t in 2:nrow(saving)) {
  saving\$saving[t] \leftarrow ((saving\$saving\_old[t] - saving\$saving\_old[t-1]) / saving\$saving\_old[t-1]) * 100
}
saving <- saving[-1, ]</pre>
saving <- saving %>% select(date, saving)
3.16) cred
index <- list(20539)</pre>
cred <- get_series(index, start_date = "2011-10-01", end_date = "2024-03-31", as = "data.frame")</pre>
colnames(cred)[2] <- "cred old"</pre>
cred$cred <- rep(NA, nrow(cred))</pre>
for (t in 2:nrow(cred)) {
  \label{eq:cred_cred_cold_t} $$\operatorname{cred}_{-1} : -(\operatorname{cred}_{-1} - \operatorname{cred}_{-1}) / \operatorname{cred}_{-1}) * 100$$
cred <- cred[-1, ]</pre>
cred <- cred %>% select(date, cred)
3.17) net debt gdp
index <- list(4513)
net_debt_gdp <- get_series(index, start_date = "2011-10-01", end_date = "2024-03-31", as = "data.frame"</pre>
colnames(net_debt_gdp)[2] <- "net_debt_gdp_old"</pre>
net_debt_gdp$net_debt_gdp <- rep(NA, nrow(net_debt_gdp))</pre>
for (t in 2:nrow(net_debt_gdp)) {
net_debt_gdp$net_debt_gdp[t] <- (net_debt_gdp$net_debt_gdp_old[t] - net_debt_gdp$net_debt_gdp_old[t-1]</pre>
}
net_debt_gdp <- net_debt_gdp[-1, ]</pre>
net_debt_gdp <- net_debt_gdp %>% select(date, net_debt_gdp)
```

```
3.18) primary
index <- list(4649)
primary <- get_series(index, start_date = "2011-10-01", end_date = "2024-03-31", as = "data.frame")</pre>
colnames(primary)[2] <- "primary_old"</pre>
primary$primary <- rep(NA, nrow(primary))</pre>
for (t in 2:nrow(primary)) {
  primary$primary[t] <- (primary$primary_old[t] - primary$primary_old[t-1])</pre>
primary <- primary[-1, ]</pre>
primary <- primary %>% select(date, primary)
3.19) current account
index <- list(22701)</pre>
current_account <- get_series(index, start_date = "2011-10-01", end_date = "2024-03-01", as = "data.fra
colnames(current_account)[2] <- "current_account_old"</pre>
current_account$current_account <- rep(NA, nrow(current_account))</pre>
for (t in 2:nrow(current_account)) {
  current_account$current_account[t] <- (current_account$current_account_old[t] - current_account$current_account</pre>
}
current_account <- current_account[-1, ]</pre>
current_account <- current_account %>% select(date, current_account)
3.20) trade balance
index <- list(22704)
trade_balance <- get_series(index, start_date = "2011-10-01", end_date = "2024-03-31", as = "data.frame
colnames(trade_balance)[2] <- "trade_balance_old"</pre>
trade_balance$trade_balance <- rep(NA, nrow(trade_balance))</pre>
for (t in 2:nrow(trade_balance)) {
  trade_balance$trade_balance[t] <- ((trade_balance$trade_balance_old[t] - trade_balance$trade_balance_
trade_balance <- trade_balance[-1, ]</pre>
trade_balance <- trade_balance %>% select(date, trade_balance)
3.21) imports
index <- list(22709)</pre>
imports <- get_series(index, start_date = "2011-10-01", end_date = "2024-03-31", as = "data.frame")</pre>
colnames(imports)[2] <- "imports old"</pre>
```

imports\$imports <- rep(NA, nrow(imports))</pre>

```
for (t in 2:nrow(imports)) {
  imports$imports[t] <- ((imports$imports_old[t] - imports$imports_old[t-1]) / imports$imports_old[t-1]}

imports <- imports[-1, ]
imports <- imports %>% select(date, imports)
```

4) Retiramos a variável de salário médio por conta de falta de dados recentes

```
X = cbind(ipca,
igpm,
ipca15,
bm_broad,
m1,
icbr,
ibcbr,
pimpf,
tcu,
'aggreg_wage',
elec,
confidence,
brl_usd,
selic,
saving,
cred,
net_debt_gdp,
primary,
current_account,
trade_balance,
imports)
print(X)
```

```
##
            date ipca
                            date igpm
                                             date ipca15
                                                              date
                                                                      bm broad
## 2
      2011-12-01 0.50 2011-12-01 -0.12 2011-12-01
                                                   0.56 2011-11-01
                                                                   0.19196047
      2012-01-01 0.56 2012-01-01 0.25 2012-01-01
                                                   0.65 2011-12-01
                                                                   0.82774563
      2012-02-01 0.45 2012-02-01 -0.06 2012-02-01
## 4
                                                   0.53 2012-01-01
                                                                    1.46996853
## 5
      2012-03-01 0.21 2012-03-01 0.43 2012-03-01
                                                   0.25 2012-02-01 0.12063843
## 6
      2012-04-01 0.64 2012-04-01 0.85 2012-04-01
                                                   0.43 2012-03-01
                                                                   1.19837492
## 7
      2012-05-01 0.36 2012-05-01 1.02 2012-05-01
                                                   0.51 2012-04-01 0.85801558
      2012-06-01 0.08 2012-06-01 0.66 2012-06-01
## 8
                                                   0.18 2012-05-01
                                                                    0.37675927
## 9
      2012-07-01 0.43 2012-07-01 1.34 2012-07-01
                                                   0.33 2012-06-01
                                                                    1.02782992
## 10 2012-08-01 0.41 2012-08-01
                                  1.43 2012-08-01
                                                   0.39 2012-07-01
                                                                    0.60619146
## 11
      2012-09-01 0.57 2012-09-01
                                  0.97 2012-09-01
                                                   0.48 2012-08-01
                                                                    0.37923260
## 12
      2012-10-01
                 0.59 2012-10-01
                                  0.02 2012-10-01
                                                   0.65 2012-09-01
                                                                    1.28519844
## 13
      2012-11-01 0.60 2012-11-01 -0.03 2012-11-01
                                                   0.54 2012-10-01
                                                                    1.24713023
## 14 2012-12-01 0.79 2012-12-01 0.68 2012-12-01
                                                    0.69 2012-11-01
                                                                    0.54858463
## 15 2013-01-01 0.86 2013-01-01 0.34 2013-01-01
                                                   0.88 2012-12-01 -0.60340224
## 16
      2013-02-01 0.60 2013-02-01
                                  0.29 2013-02-01
                                                   0.68 2013-01-01
                                                                    1.08474727
## 17
      2013-03-01 0.47 2013-03-01
                                 0.21 2013-03-01
                                                   0.49 2013-02-01
                                                                    0.18270082
## 18 2013-04-01 0.55 2013-04-01 0.15 2013-04-01
                                                   0.51 2013-03-01 0.76281025
## 19 2013-05-01 0.37 2013-05-01 0.00 2013-05-01 0.46 2013-04-01 0.71046044
```

```
2013-06-01 0.26 2013-06-01 0.75 2013-06-01
                                                      0.38 2013-05-01 0.23192304
                                                      0.07 2013-06-01
## 21
      2013-07-01
                  0.03 2013-07-01
                                    0.26 2013-07-01
                                                                       0.71865314
                                    0.15 2013-08-01
      2013-08-01
                  0.24 2013-08-01
                                                      0.16 2013-07-01
                                                                       0.72594713
## 23
      2013-09-01
                  0.35 2013-09-01
                                    1.50 2013-09-01
                                                      0.27 2013-08-01
                                                                       0.50373721
##
  24
       2013-10-01
                  0.57 2013-10-01
                                    0.86 2013-10-01
                                                      0.48 2013-09-01
                                                                       0.63753624
                  0.54 2013-11-01
##
  25
      2013-11-01
                                    0.29 2013-11-01
                                                      0.57 2013-10-01
                                                                       0.48239420
## 26
       2013-12-01
                  0.92 2013-12-01
                                    0.60 2013-12-01
                                                      0.75 2013-11-01 -0.09243554
       2014-01-01
## 27
                  0.55 2014-01-01
                                    0.48 2014-01-01
                                                      0.67 2013-12-01
                                                                       0.07352534
## 28
       2014-02-01
                  0.69 2014-02-01
                                    0.38 2014-02-01
                                                      0.70 2014-01-01
                                                                       1.97055206
## 29
       2014-03-01
                  0.92 2014-03-01
                                    1.67 2014-03-01
                                                      0.73 2014-02-01 -0.13819716
  30
       2014-04-01
                  0.67 2014-04-01
                                   0.78 2014-04-01
                                                      0.78 2014-03-01
                                                                       0.82795816
                  0.46 2014-05-01 -0.13 2014-05-01
##
  31
       2014-05-01
                                                      0.58 2014-04-01
                                                                       0.60673267
##
  32
       2014-06-01
                  0.40 2014-06-01 -0.74 2014-06-01
                                                      0.47 2014-05-01
                                                                       0.75218729
                  0.01 2014-07-01 -0.61 2014-07-01
##
  33
       2014-07-01
                                                      0.17 2014-06-01
                                                                       1.88342320
                  0.25 2014-08-01 -0.27 2014-08-01
                                                      0.14 2014-07-01
##
  34
       2014-08-01
                                                                       1.48754566
## 35
       2014-09-01
                  0.57 2014-09-01
                                   0.20 2014-09-01
                                                      0.39 2014-08-01
                                                                        0.22339327
                  0.42 2014-10-01
                                    0.28 2014-10-01
                                                      0.48 2014-09-01
## 36
       2014-10-01
                                                                       1.96853406
  37
       2014-11-01
                  0.51 2014-11-01
                                    0.98 2014-11-01
                                                      0.38 2014-10-01
                                                                       0.77631142
##
                  0.78 2014-12-01
##
      2014-12-01
                                    0.62 2014-12-01
                                                      0.79 2014-11-01
                                                                       1.06696373
  38
##
  39
       2015-01-01
                  1.24 2015-01-01
                                    0.76 2015-01-01
                                                      0.89 2014-12-01
                                                                       1.02052197
##
  40
      2015-02-01
                  1.22 2015-02-01
                                    0.27 2015-02-01
                                                      1.33 2015-01-01
                                                                       1.15943946
      2015-03-01
                  1.32 2015-03-01
                                                      1.24 2015-02-01
## 41
                                    0.98 2015-03-01
                                                                       1.47563490
                  0.71 2015-04-01
      2015-04-01
                                    1.17 2015-04-01
                                                      1.07 2015-03-01
                                                                       2.02809125
## 42
       2015-05-01
                  0.74 2015-05-01
## 43
                                    0.41 2015-05-01
                                                      0.60 2015-04-01 -0.12196174
## 44
      2015-06-01
                  0.79 2015-06-01
                                    0.67 2015-06-01
                                                      0.99 2015-05-01
                                                                       1.78740323
## 45
      2015-07-01
                  0.62 2015-07-01
                                    0.69 2015-07-01
                                                      0.59 2015-06-01
                                                                       1.11827763
       2015-08-01
                  0.22 2015-08-01
                                    0.28 2015-08-01
                                                      0.43 2015-07-01
## 46
                                                                       2.13109101
##
  47
       2015-09-01
                  0.54 2015-09-01
                                    0.95 2015-09-01
                                                      0.39 2015-08-01
                                                                       1.47729312
                  0.82 2015-10-01
                                                      0.66 2015-09-01
##
  48
      2015-10-01
                                    1.89 2015-10-01
                                                                       1.23806234
                                    1.52 2015-11-01
                                                                       0.90687576
## 49
       2015-11-01
                  1.01 2015-11-01
                                                      0.85 2015-10-01
## 50
       2015-12-01
                  0.96 2015-12-01
                                    0.49 2015-12-01
                                                      1.18 2015-11-01
                                                                       0.86847498
## 51
       2016-01-01
                  1.27 2016-01-01
                                    1.14 2016-01-01
                                                      0.92 2015-12-01
                                                                       2.18426389
## 52
       2016-02-01
                  0.90 2016-02-01
                                    1.29 2016-02-01
                                                      1.42 2016-01-01
                                                                       1.39592161
## 53
                  0.43 2016-03-01
      2016-03-01
                                    0.51 2016-03-01
                                                      0.43 2016-02-01
                                                                       0.85337320
       2016-04-01
                  0.61 2016-04-01
                                    0.33 2016-04-01
                                                      0.51 2016-03-01 -0.17309551
##
  54
      2016-05-01
                                                      0.86 2016-04-01
                  0.78 2016-05-01
## 55
                                    0.82 2016-05-01
                                                                       0.84141354
## 56
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         153.3195259 2018-08-01
                                   1.7189847
## 84
        -148.8008721 2018-09-01 -24.3341745
## 85
         -28.4810127 2018-10-01
                                  14.1647848
## 86
        -154.7891723 2018-11-01
                                   4 3493920
## 87
        -464.5130641 2018-12-01 -22.8615727
## 88
        -302.9453929 2019-01-01
                                  27.8948864
## 89
         -69.1337015 2019-02-01 -21.9557298
## 90
        -122.7504421 2019-03-01
                                   3.6872327
## 91
         118.0612711 2019-04-01
                                   5.1317243
```

```
## 92
         -26.3577270 2019-05-01
                                   9.6691232
## 93
        -128.6446469 2019-06-01 -11.7705878
        3237.8727634 2019-07-01
## 94
                                 33.8392833
## 95
         -62.7743530 2019-08-01
                                 -7.1779957
## 96
         -56.9120000 2019-09-01
                                  -1.4645113
         519.2536205 2019-10-01
## 97
                                   4.9636283
## 98
         -77.4323149 2019-11-01 -16.1860060
        -157.1011027 2019-12-01 -10.6566106
## 99
## 100 -1505.6305258 2020-01-01 27.4178621
## 101
         -67.3022809 2020-02-01 -18.0183898
## 102
         -93.0950694 2020-03-01
                                   9.4935095
## 103 -2494.2815249 2020-04-01 -21.6545087
## 104
         -65.2336334 2020-05-01
                                12.8907320
## 105
         298.8814515 2020-06-01 -18.7635154
## 106
          -6.2023891 2020-07-01
                                 10.9199031
## 107
         -23.1897363 2020-08-01
                                  -3.0629120
## 108
         -26.9453554 2020-09-01
                                 10.4653839
## 109
         -29.2234761 2020-10-01
                                  1.4409470
        -132.2980262 2020-11-01 12.1505452
## 110
## 111
         652.6885667 2020-12-01
                                 29.6819654
## 112
           3.9449944 2021-01-01 -13.7383209
         -46.1343592 2021-02-01
                                 -4.8591200
## 113
          -4.7944609 2021-03-01 48.7657434
## 114
        -416.3746970 2021-04-01 -30.5175384
## 115
## 116
         -26.2675476 2021-05-01
                                   9.2224958
## 117
           1.0745098 2021-06-01 14.6091032
         -21.2403973 2021-07-01 -10.6571057
## 118
## 119
         -20.5078943 2021-08-01
                                 11.5762788
## 120
         -93.1087906 2021-09-01
                                   1.3779654
## 121
        -599.2805755 2021-10-01
                                  -2.5451642
## 122
         358.7896254 2021-11-01
                                   7.3847343
## 123
         -93.6381124 2021-12-01
                                  -4.9941258
## 124
        1118.9447701 2022-01-01
                                  -2.7004212
        -116.7392295 2022-02-01
## 125
                                  -5.4470931
## 126
         310.4491154 2022-03-01
                                  17.1943973
## 127
          31.7061489 2022-04-01
                                  -5.1112005
## 128
        -103.2868052 2022-05-01
                                  18.6072754
## 129 -2755.0638298 2022-06-01
                                  -3.0290268
         -70.1958522 2022-07-01
## 130
                                   1.0222126
        -228.6190579 2022-08-01
## 131
                                   9.8595820
         -13.9058450 2022-09-01
## 132
                                 -1.5185557
## 133
          51.2043512 2022-10-01
                                 -9.3515276
## 134
        -230.9031346 2022-11-01
                                 -7.2065443
## 135
        -131.9937190 2022-12-01
                                   1.8601473
## 136
         131.8865031 2023-01-01
                                 -8.2587955
        -106.5083670 2023-02-01 -14.1375979
## 137
## 138
        6197.0528455 2023-03-01
                                 25.2571981
## 139
         -31.6688992 2023-04-01 -13.1284940
## 140
          44.5347189 2023-05-01
                                 13.9897675
## 141
         -24.4051899 2023-06-01
                                  -8.1040416
## 142
         -23.6116815 2023-07-01
                                   1.6465043
## 143
          36.5414002 2023-08-01
                                   8.1508941
## 144
         -13.1416965 2023-09-01
                                 -9.9346778
## 145
          -3.3929850 2023-10-01
                                   3.7386399
```

```
## 146
        -22.5622407 2023-11-01 -3.5293642
## 147
        11.3099225 2023-12-01
                              1.3442374
                                5.6344756
## 148
       -78.1770251 2024-01-01
## 149 -158.1932773 2024-02-01 -10.6683073
## 150 -352.7527076 2024-03-01 13.6886626
 5)
preditores_adicionais <- read_csv2("preditores_adicionais.csv")</pre>
## i Using "','" as decimal and "'.'" as grouping mark. Use 'read_delim()' for more control.
## Rows: 149 Columns: 3
## -- Column specification ------
## Delimiter: ";"
## chr (1): date
## dbl (2): expec, ibovespa
## i Use 'spec()' to retrieve the full column specification for this data.
## i Specify the column types or set 'show_col_types = FALSE' to quiet this message.
print(preditores_adicionais)
## # A tibble: 149 x 3
##
     date
                expec ibovespa
##
     <chr>
                <dbl>
                       <dbl>
## 1 01/01/2012 0.59
                       11.1
## 2 01/02/2012 0.55
                        4.34
## 3 01/03/2012 0.45
                        -1.98
## 4 01/04/2012 0.51
                        -4.17
## 5 01/05/2012 0.48
                      -11.9
## 6 01/06/2012 0.23
                        -0.25
## 7 01/07/2012 0.2
                         3.21
## 8 01/08/2012 0.33
                        1.72
## 9 01/09/2012 0.44
                         3.7
## 10 01/10/2012 0.51
                        -3.56
## # i 139 more rows
X = cbind(preditores_adicionais, X)
print(X)
##
            date expec ibovespa
                                      date ipca
                                                      date igpm
      01/01/2012 0.590 11.13 2011-12-01 0.50 2011-12-01 -0.12 2011-12-01
## 2
## 3
      01/02/2012 0.550
                          4.34 2012-01-01 0.56 2012-01-01 0.25 2012-01-01
## 4
      01/03/2012 0.450 -1.98 2012-02-01 0.45 2012-02-01 -0.06 2012-02-01
## 5
      01/04/2012 0.510 -4.17 2012-03-01 0.21 2012-03-01 0.43 2012-03-01
      01/05/2012 0.480 -11.86 2012-04-01 0.64 2012-04-01 0.85 2012-04-01
## 6
      01/06/2012 \quad 0.230 \quad -0.25 \ 2012-05-01 \quad 0.36 \ 2012-05-01 \quad 1.02 \ 2012-05-01
## 7
     01/07/2012 0.200 3.21 2012-06-01 0.08 2012-06-01 0.66 2012-06-01
## 8
## 9 01/08/2012 0.330 1.72 2012-07-01 0.43 2012-07-01 1.34 2012-07-01
## 10 01/09/2012 0.440 3.70 2012-08-01 0.41 2012-08-01 1.43 2012-08-01
```

```
01/10/2012 0.510
                             -3.56 2012-09-01 0.57 2012-09-01 0.97 2012-09-01
## 12
       01/11/2012
                   0.500
                              0.71 2012-10-01
                                               0.59 2012-10-01 0.02 2012-10-01
## 13
       01/12/2012
                   0.540
                              6.05 2012-11-01
                                               0.60 2012-11-01 -0.03 2012-11-01
       01/01/2013
                   0.780
                             -1.95 2012-12-01
                                               0.79 2012-12-01
                                                                 0.68 2012-12-01
##
  14
##
  15
       01/02/2013
                   0.410
                             -3.91 2013-01-01
                                               0.86 2013-01-01
                                                                 0.34 2013-01-01
  16
       01/03/2013
                   0.450
##
                             -1.87 2013-02-01
                                               0.60 2013-02-01
                                                                 0.29 2013-02-01
       01/04/2013
                   0.420
## 17
                             -0.78 2013-03-01
                                               0.47 2013-03-01
                                                                 0.21 2013-03-01
                   0.330
       01/05/2013
## 18
                             -4.30 2013-04-01
                                               0.55 2013-04-01
                                                                 0.15 2013-04-01
##
  19
       01/06/2013
                   0.320
                            -11.31 2013-05-01
                                               0.37 2013-05-01
                                                                 0.00 2013-05-01
                   0.200
##
  20
       01/07/2013
                              1.64 2013-06-01
                                               0.26 2013-06-01
                                                                 0.75 2013-06-01
##
  21
       01/08/2013
                   0.290
                              3.68 2013-07-01
                                               0.03 2013-07-01
                                                                 0.26 2013-07-01
       01/09/2013
                   0.450
##
  22
                              4.65 2013-08-01
                                               0.24 2013-08-01
                                                                 0.15 2013-08-01
##
  23
       01/10/2013
                   0.570
                              3.66 2013-09-01
                                               0.35 2013-09-01
                                                                 1.50 2013-09-01
##
  24
       01/11/2013
                   0.670
                             -3.27 2013-10-01
                                               0.57 2013-10-01
                                                                 0.86 2013-10-01
## 25
       01/12/2013
                   0.710
                             -1.86 2013-11-01
                                               0.54 2013-11-01
                                                                 0.29 2013-11-01
##
  26
       01/01/2014
                   0.740
                             -7.51 2013-12-01
                                               0.92 2013-12-01
                                                                 0.60 2013-12-01
       01/02/2014
                   0.650
                                               0.55 2014-01-01
##
  27
                             -1.14 2014-01-01
                                                                 0.48 2014-01-01
##
  28
       01/03/2014
                   0.560
                              7.05 2014-02-01
                                               0.69 2014-02-01
                                                                 0.38 2014-02-01
       01/04/2014
                   0.690
##
  29
                              2.40 2014-03-01
                                               0.92 2014-03-01
                                                                 1.67 2014-03-01
##
  30
       01/05/2014
                   0.470
                             -0.75 2014-04-01
                                               0.67 2014-04-01
                                                                 0.78 2014-04-01
       01/06/2014
##
  31
                   0.340
                              3.76 2014-05-01
                                               0.46 2014-05-01 -0.13 2014-05-01
  32
       01/07/2014
                   0.240
                              5.00 2014-06-01
                                               0.40 2014-06-01 -0.74 2014-06-01
##
                                               0.01 2014-07-01 -0.61 2014-07-01
       01/08/2014
                   0.250
                              9.78 2014-07-01
## 33
       01/09/2014
                   0.400
                            -11.70 2014-08-01
                                               0.25 2014-08-01 -0.27 2014-08-01
##
  34
                   0.500
## 35
       01/10/2014
                              0.95 2014-09-01
                                               0.57 2014-09-01 0.20 2014-09-01
  36
       01/11/2014
                   0.590
                              0.18 2014-10-01
                                               0.42 2014-10-01
                                                                 0.28 2014-10-01
       01/12/2014
                   0.750
                             -8.62 2014-11-01
                                               0.51 2014-11-01
                                                                 0.98 2014-11-01
##
  37
##
   38
       01/01/2015
                   1.050
                             -6.20 2014-12-01
                                               0.78 2014-12-01
                                                                 0.62 2014-12-01
       01/02/2015
                   1.020
                                               1.24 2015-01-01
##
  39
                              9.97 2015-01-01
                                                                 0.76 2015-01-01
## 40
       01/03/2015
                   1.140
                             -0.84 2015-02-01
                                               1.22 2015-02-01
                                                                 0.27 2015-02-01
## 41
       01/04/2015
                   0.650
                              9.93 2015-03-01
                                               1.32 2015-03-01
                                                                 0.98 2015-03-01
##
  42
       01/05/2015
                   0.500
                             -6.17 2015-04-01
                                               0.71 2015-04-01
                                                                 1.17 2015-04-01
##
  43
       01/06/2015
                   0.550
                              0.61 2015-05-01
                                               0.74 2015-05-01
                                                                 0.41 2015-05-01
       01/07/2015
                   0.450
##
                             -4.17 2015-06-01
                                               0.79 2015-06-01
                                                                 0.67 2015-06-01
  44
       01/08/2015
                   0.300
                             -8.33 2015-07-01
                                               0.62 2015-07-01
                                                                 0.69 2015-07-01
##
  45
                                               0.22 2015-08-01
       01/09/2015
                   0.410
##
  46
                             -3.36 2015-08-01
                                                                 0.28 2015-08-01
##
  47
       01/10/2015
                   0.650
                              1.80 2015-09-01
                                               0.54 2015-09-01
                                                                 0.95 2015-09-01
       01/11/2015
                   0.620
                             -1.63 2015-10-01
                                               0.82 2015-10-01
                                                                 1.89 2015-10-01
## 48
       01/12/2015
                   0.900
                             -3.93 2015-11-01
                                               1.01 2015-11-01
                                                                 1.52 2015-11-01
## 49
       01/01/2016
                   0.860
                                               0.96 2015-12-01
                                                                 0.49 2015-12-01
## 50
                             -6.79 2015-12-01
       01/02/2016
                   0.910
## 51
                              5.91 2016-01-01
                                               1.27 2016-01-01
                                                                 1.14 2016-01-01
       01/03/2016
                   0.540
                             16.97 2016-02-01
                                               0.90 2016-02-01
                                                                 1.29 2016-02-01
## 52
##
  53
       01/04/2016
                   0.600
                              7.70 2016-03-01
                                               0.43 2016-03-01
                                                                 0.51 2016-03-01
##
       01/05/2016
                   0.520
                            -10.09 2016-04-01
                                               0.61 2016-04-01
                                                                 0.33 2016-04-01
  54
       01/06/2016
## 55
                   0.330
                              6.30 2016-05-01
                                               0.78 2016-05-01
                                                                 0.82 2016-05-01
       01/07/2016
                   0.400
## 56
                             11.22 2016-06-01
                                               0.35 2016-06-01
                                                                 1.69 2016-06-01
## 57
       01/08/2016
                   0.320
                              1.03 2016-07-01
                                               0.52 2016-07-01
                                                                 0.18 2016-07-01
                   0.350
## 58
       01/09/2016
                              0.80 2016-08-01
                                               0.44 2016-08-01
                                                                 0.15 2016-08-01
                                                                 0.20 2016-09-01
##
  59
       01/10/2016
                   0.390
                             11.23 2016-09-01
                                               0.08 2016-09-01
##
   60
       01/11/2016
                   0.390
                             -4.65 2016-10-01
                                               0.26 2016-10-01
                                                                 0.16 2016-10-01
                   0.520
                                               0.18 2016-11-01 -0.03 2016-11-01
##
  61
       01/12/2016
                             -2.71 2016-11-01
## 62
       01/01/2017
                   0.580
                              7.38 2016-12-01
                                               0.30 2016-12-01 0.54 2016-12-01
## 63
       01/02/2017
                   0.500
                              3.08 2017-01-01 0.38 2017-01-01 0.64 2017-01-01
## 64
       01/03/2017 0.270
                             -2.52 2017-02-01 0.33 2017-02-01 0.08 2017-02-01
```

```
01/04/2017 0.310
                             0.64 2017-03-01 0.25 2017-03-01 0.01 2017-03-01
## 66
                   0.500
                            -4.12 2017-04-01 0.14 2017-04-01 -1.10 2017-04-01
       01/05/2017
##
  67
       01/06/2017
                   0.000
                             0.30 2017-05-01 0.31 2017-05-01 -0.93 2017-05-01
       01/07/2017
                   0.190
                             4.80 2017-06-01 -0.23 2017-06-01 -0.67 2017-06-01
##
  68
##
   69
       01/08/2017
                   0.470
                             7.46 2017-07-01
                                              0.24 2017-07-01 -0.72 2017-07-01
       01/09/2017
                   0.260
                             4.88 2017-08-01
                                              0.19 2017-08-01 0.10 2017-08-01
##
  70
       01/10/2017
                   0.380
  71
                             0.02 2017-09-01
                                              0.16 2017-09-01
                                                                0.47 2017-09-01
       01/11/2017
## 72
                   0.410
                            -3.15 2017-10-01
                                              0.42 2017-10-01
                                                                0.20 2017-10-01
##
  73
       01/12/2017
                   0.370
                             6.16 2017-11-01
                                              0.28 2017-11-01
                                                                0.52 2017-11-01
## 74
       01/01/2018
                   0.370
                            11.14 2017-12-01
                                              0.44 2017-12-01
                                                                0.89 2017-12-01
  75
       01/02/2018
                   0.420
                             0.52 2018-01-01
                                              0.29 2018-01-01
                                                                0.76 2018-01-01
       01/03/2018
                   0.220
                                              0.32 2018-02-01
##
  76
                             0.01 2018-02-01
                                                                0.07 2018-02-01
##
   77
       01/04/2018
                   0.330
                             0.88 2018-03-01
                                              0.09 2018-03-01
                                                                0.64 2018-03-01
                           -10.87 2018-04-01
                                                                0.57 2018-04-01
## 78
       01/05/2018
                   0.330
                                              0.22 2018-04-01
       01/06/2018
                   0.530
                                              0.40 2018-05-01
## 79
                            -5.20 2018-05-01
                                                                1.38 2018-05-01
## 80
       01/07/2018
                   0.350
                             8.88 2018-06-01
                                              1.26 2018-06-01
                                                                1.87 2018-06-01
       01/08/2018
                   0.050
##
                            -3.21 2018-07-01
                                              0.33 2018-07-01
                                                                0.51 2018-07-01
  81
##
   82
       01/09/2018
                   0.240
                             3.48 2018-08-01 -0.09 2018-08-01
                                                                0.70 2018-08-01
       01/10/2018
                   0.410
##
  83
                            10.19 2018-09-01 0.48 2018-09-01
                                                                1.52 2018-09-01
##
  84
       01/11/2018
                   0.150
                             2.38 2018-10-01 0.45 2018-10-01
                                                               0.89 2018-10-01
##
  85
       01/12/2018
                   0.120
                            -1.81 2018-11-01 -0.21 2018-11-01 -0.49 2018-11-01
       01/01/2019
                   0.370
                            10.82 2018-12-01 0.15 2018-12-01 -1.08 2018-12-01
##
  86
       01/02/2019
                   0.350
                            -1.86 2019-01-01 0.32 2019-01-01 0.01 2019-01-01
## 87
       01/03/2019
                   0.380
                            -0.18 2019-02-01
                                              0.43 2019-02-01
## 88
                                                                0.88 2019-02-01
       01/04/2019
## 89
                  0.450
                             0.98 2019-03-01 0.75 2019-03-01
                                                               1.26 2019-03-01
## 90
       01/05/2019
                   0.300
                             0.70 2019-04-01
                                              0.57 2019-04-01
                                                                0.92 2019-04-01
       01/06/2019
                   0.110
                             4.06 2019-05-01
                                              0.13 2019-05-01
                                                                0.45 2019-05-01
## 91
##
  92
       01/07/2019
                   0.200
                             0.84 2019-06-01
                                              0.01 2019-06-01
                                                                0.80 2019-06-01
       01/08/2019
                   0.180
                                              0.19 2019-07-01 0.40 2019-07-01
## 93
                            -0.67 2019-07-01
## 94
       01/09/2019
                   0.150
                             3.57 2019-08-01 0.11 2019-08-01 -0.67 2019-08-01
## 95
       01/10/2019
                   0.150
                             2.36 2019-09-01 -0.04 2019-09-01 -0.01 2019-09-01
## 96
       01/11/2019
                   0.360
                             0.95 2019-10-01 0.10 2019-10-01 0.68 2019-10-01
## 97
       01/12/2019
                   0.700
                             6.85 2019-11-01
                                              0.51 2019-11-01
                                                               0.30 2019-11-01
## 98
       01/01/2020
                   0.380
                                              1.15 2019-12-01
                                                                2.09 2019-12-01
                            -1.63 2019-12-01
       01/02/2020
                   0.210
                            -8.43 2020-01-01
                                              0.21 2020-01-01
                                                                0.48 2020-01-01
## 99
## 100 01/03/2020
                   0.140
                           -29.90 2020-02-01 0.25 2020-02-01 -0.04 2020-02-01
## 101 01/04/2020
                   0.060
                            10.25 2020-03-01 0.07 2020-03-01 1.24 2020-03-01
## 102 01/05/2020 -0.350
                             8.57 2020-04-01 -0.31 2020-04-01
                                                                0.80 2020-04-01
## 103 01/06/2020
                   0.170
                             8.76 2020-05-01 -0.38 2020-05-01
                                                                0.28 2020-05-01
## 104 01/07/2020
                   0.390
                             8.27 2020-06-01
                                              0.26 2020-06-01
                                                                1.56 2020-06-01
## 105 01/08/2020
                   0.080
                            -3.44 2020-07-01
                                              0.36 2020-07-01
                                                                2.23 2020-07-01
## 106 01/09/2020
                   0.270
                            -4.80 2020-08-01
                                              0.24 2020-08-01
                                                                2.74 2020-08-01
## 107 01/10/2020
                   0.450
                            -0.69 2020-09-01
                                              0.64 2020-09-01
                                                                4.34 2020-09-01
## 108 01/11/2020
                   0.400
                            15.90 2020-10-01
                                              0.86 2020-10-01
                                                                3.23 2020-10-01
## 109 01/12/2020
                   1.190
                             9.30 2020-11-01
                                              0.89 2020-11-01
                                                                3.28 2020-11-01
## 110 01/01/2021
                   0.230
                            -3.32 2020-12-01
                                              1.35 2020-12-01
                                                                0.96 2020-12-01
## 111 01/02/2021
                   0.560
                            -4.37 2021-01-01
                                              0.25 2021-01-01
                                                                2.58 2021-01-01
                   0.850
## 112 01/03/2021
                             6.00 2021-02-01
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## 134
                4116.3 2022-11-01
                                   -230.9031346 2022-11-01
                                                             -7.2065443
## 135
               -6438.1 2022-12-01 -131.9937190 2022-12-01
                                                              1.8601473
## 136
               -1433.7 2023-01-01
                                     131.8865031 2023-01-01 -8.2587955
```

```
## 137
               4608.6 2023-02-01 -106.5083670 2023-02-01 -14.1375979
## 138
               5052.2 2023-03-01 6197.0528455 2023-03-01 25.2571981
## 139
               -944.8 2023-04-01
                                    -31.6688992 2023-04-01 -13.1284940
               1340.4 2023-05-01
## 140
                                     44.5347189 2023-05-01 13.9897675
## 141
               -1935.3 2023-06-01
                                    -24.4051899 2023-06-01 -8.1040416
## 142
              -4381.2 2023-07-01
                                    -23.6116815 2023-07-01
                                                            1.6465043
## 143
               3229.0 2023-08-01
                                    36.5414002 2023-08-01
                                                             8.1508941
                                    -13.1416965 2023-09-01 -9.9346778
## 144
               1818.3 2023-09-01
## 145
               -373.0 2023-10-01
                                    -3.3929850 2023-10-01
                                                             3.7386399
## 146
              -1906.9 2023-11-01
                                    -22.5622407 2023-11-01 -3.5293642
## 147
               -5357.5 2023-12-01
                                    11.3099225 2023-12-01
                                                             1.3442374
## 148
               2415.2 2024-01-01
                                    -78.1770251 2024-01-01
                                                             5.6344756
## 149
                808.4 2024-02-01 -158.1932773 2024-02-01 -10.6683073
## 150
               -248.1 2024-03-01 -352.7527076 2024-03-01 13.6886626
```

6) Acrescentando defasagens aos preditores:

```
X = X \% > \%
  select(-date)
nomes <- colnames(X)
X <- as.matrix(X)</pre>
X \leftarrow \text{embed}(X, 2)
nomes <- pasteO(rep(nomes, 2),"-",rep(1:2, each = ncol(X)/2))</pre>
colnames(X) <- nomes</pre>
X <- as.data.frame(X)</pre>
X <- X %>% select(-`expec-2`)
X <- X %>% rename(expec = `expec-1`)
print(colnames(X))
                                                        "ipca-1"
                                 "ibovespa-1"
##
    [1] "expec"
    [4] "igpm-1"
                                 "ipca15-1"
##
                                                        "bm broad-1"
```

```
"icbr-1"
                                                  "ibcbr-1"
   [7] "m1-1"
                             "tcu-1"
                                                  "\"aggreg_wage\"-1"
## [10] "pimpf-1"
## [13] "elec-1"
                             "confidence-1"
                                                  "brl usd-1"
## [16] "selic-1"
                             "saving-1"
                                                  "cred-1"
## [19] "net_debt_gdp-1"
                             "primary-1"
                                                  "current_account-1"
## [22] "trade balance-1"
                             "imports-1"
                                                  "ibovespa-2"
## [25] "ipca-2"
                             "igpm-2"
                                                  "ipca15-2"
## [28] "bm_broad-2"
                             "m1-2"
                                                  "icbr-2"
## [31] "ibcbr-2"
                             "pimpf-2"
                                                  "tcu-2"
## [34] "\"aggreg_wage\"-2"
                             "elec-2"
                                                  "confidence-2"
## [37] "brl_usd-2"
                             "selic-2"
                                                  "saving-2"
## [40] "cred-2"
                             "net_debt_gdp-2"
                                                  "primary-2"
## [43] "current_account-2" "trade_balance-2"
                                                  "imports-2"
  7)
```

 $\dim(X)$

```
## [1] 148 45
```

8)

```
y = inf$inf
y_lags = embed(y, 3)[, -1]
colnames(y_lags) = c("y(-1)", "y(-2)")
```

```
X <- X[-1, ]
X <- cbind(y_lags,X)
print(X)</pre>
```

```
##
       y(-1) y(-2)
                      expec ibovespa-1 ipca-1 igpm-1 ipca15-1
                                                                   bm_broad-1
## 2
        0.45
              0.56
                      0.450
                                  -1.98
                                           0.45
                                                  -0.06
                                                             0.53
                                                                   1.46996853
## 3
        0.21
               0.45
                     0.510
                                  -4.17
                                           0.21
                                                  0.43
                                                             0.25
                                                                   0.12063843
##
        0.64
               0.21
                      0.480
                                 -11.86
                                           0.64
                                                   0.85
                                                             0.43
                                                                   1.19837492
   4
        0.36
               0.64
                      0.230
                                  -0.25
                                           0.36
                                                   1.02
                                                             0.51
                                                                   0.85801558
## 5
        0.08
               0.36
                      0.200
                                           0.08
                                                             0.18
                                                                   0.37675927
## 6
                                   3.21
                                                   0.66
## 7
        0.43
               0.08
                      0.330
                                   1.72
                                           0.43
                                                   1.34
                                                             0.33
                                                                   1.02782992
        0.41
               0.43
                                                             0.39
                                                                   0.60619146
## 8
                      0.440
                                   3.70
                                           0.41
                                                   1.43
## 9
        0.57
               0.41
                      0.510
                                  -3.56
                                           0.57
                                                   0.97
                                                             0.48
                                                                   0.37923260
        0.59
               0.57
## 10
                      0.500
                                   0.71
                                           0.59
                                                   0.02
                                                             0.65
                                                                   1.28519844
        0.60
               0.59
## 11
                      0.540
                                   6.05
                                           0.60
                                                  -0.03
                                                             0.54
                                                                   1.24713023
        0.79
##
   12
               0.60
                      0.780
                                  -1.95
                                           0.79
                                                   0.68
                                                             0.69
                                                                   0.54858463
## 13
        0.86
               0.79
                                  -3.91
                                           0.86
                                                             0.88 -0.60340224
                      0.410
                                                   0.34
## 14
        0.60
               0.86
                      0.450
                                  -1.87
                                           0.60
                                                   0.29
                                                             0.68
                                                                   1.08474727
## 15
        0.47
               0.60
                      0.420
                                  -0.78
                                           0.47
                                                   0.21
                                                             0.49
                                                                   0.18270082
##
        0.55
               0.47
                      0.330
                                  -4.30
                                           0.55
                                                             0.51
                                                                   0.76281025
   16
                                                   0.15
##
   17
        0.37
               0.55
                      0.320
                                 -11.31
                                           0.37
                                                   0.00
                                                             0.46
                                                                   0.71046044
##
  18
        0.26
               0.37
                      0.200
                                   1.64
                                           0.26
                                                   0.75
                                                             0.38
                                                                   0.23192304
##
   19
        0.03
               0.26
                     0.290
                                   3.68
                                           0.03
                                                   0.26
                                                             0.07
                                                                   0.71865314
                                                             0.16
##
        0.24
               0.03
                                   4.65
                                                                   0.72594713
  20
                     0.450
                                           0.24
                                                   0.15
## 21
        0.35
               0.24
                      0.570
                                   3.66
                                           0.35
                                                   1.50
                                                             0.27
                                                                   0.50373721
               0.35
## 22
        0.57
                      0.670
                                  -3.27
                                           0.57
                                                   0.86
                                                             0.48
                                                                   0.63753624
##
  23
        0.54
               0.57
                      0.710
                                  -1.86
                                           0.54
                                                   0.29
                                                             0.57
                                                                   0.48239420
##
        0.92
               0.54
                      0.740
                                           0.92
                                                   0.60
                                                             0.75 -0.09243554
  24
                                  -7.51
        0.55
               0.92
##
   25
                      0.650
                                  -1.14
                                           0.55
                                                   0.48
                                                             0.67
                                                                   0.07352534
        0.69
               0.55
                      0.560
                                   7.05
                                           0.69
                                                  0.38
                                                             0.70
                                                                   1.97055206
##
   26
        0.92
               0.69
##
   27
                      0.690
                                   2.40
                                           0.92
                                                   1.67
                                                             0.73 -0.13819716
        0.67
               0.92
##
  28
                      0.470
                                  -0.75
                                           0.67
                                                   0.78
                                                             0.78
                                                                   0.82795816
##
  29
        0.46
               0.67
                      0.340
                                   3.76
                                           0.46
                                                  -0.13
                                                             0.58
                                                                   0.60673267
        0.40
               0.46
                                   5.00
                                           0.40
                                                 -0.74
                                                             0.47
                                                                   0.75218729
## 30
                      0.240
##
   31
        0.01
               0.40
                      0.250
                                   9.78
                                           0.01
                                                 -0.61
                                                             0.17
                                                                   1.88342320
        0.25
##
   32
               0.01
                      0.400
                                 -11.70
                                           0.25
                                                 -0.27
                                                             0.14
                                                                   1.48754566
##
   33
        0.57
               0.25
                      0.500
                                   0.95
                                           0.57
                                                  0.20
                                                             0.39
                                                                   0.22339327
##
   34
        0.42
               0.57
                      0.590
                                   0.18
                                           0.42
                                                   0.28
                                                             0.48
                                                                   1.96853406
##
   35
        0.51
               0.42
                     0.750
                                  -8.62
                                           0.51
                                                   0.98
                                                             0.38
                                                                   0.77631142
## 36
        0.78
               0.51
                      1.050
                                  -6.20
                                           0.78
                                                   0.62
                                                             0.79
                                                                   1.06696373
## 37
        1.24
               0.78
                                           1.24
                                                   0.76
                                                             0.89
                                                                   1.02052197
                     1.020
                                   9.97
## 38
        1.22
               1.24
                      1.140
                                  -0.84
                                           1.22
                                                   0.27
                                                             1.33
                                                                   1.15943946
                      0.650
## 39
        1.32
               1.22
                                   9.93
                                           1.32
                                                   0.98
                                                             1.24
                                                                   1.47563490
##
        0.71
               1.32
                     0.500
                                  -6.17
                                           0.71
                                                             1.07
  40
                                                   1.17
                                                                   2.02809125
        0.74
              0.71
                                           0.74
## 41
                     0.550
                                   0.61
                                                   0.41
                                                             0.60 -0.12196174
```

	42	0.79	0.74	0.450	-4.17	0.79	0.67	0.99	1.78740323
##	43	0.62	0.79	0.300	-8.33	0.62	0.69	0.59	1.11827763
##	44	0.22	0.62	0.410	-3.36	0.22	0.28	0.43	2.13109101
##	45	0.54	0.22	0.650	1.80	0.54	0.95	0.39	1.47729312
##	46	0.82	0.54	0.620	-1.63	0.82	1.89	0.66	1.23806234
##	47	1.01	0.82	0.900	-3.93	1.01	1.52	0.85	0.90687576
##	48	0.96	1.01	0.860	-6.79	0.96	0.49	1.18	0.86847498
##	49	1.27	0.96	0.910	5.91	1.27	1.14	0.92	2.18426389
##	50	0.90	1.27	0.540	16.97	0.90	1.29	1.42	1.39592161
##	51	0.43	0.90	0.600	7.70	0.43	0.51	0.43	0.85337320
##	52	0.61	0.43	0.520	-10.09	0.61	0.33	0.51	-0.17309551
##	53	0.78	0.61	0.330	6.30	0.78	0.82	0.86	0.84141354
##	54	0.35	0.78	0.400	11.22	0.35	1.69	0.40	1.56075161
##	55	0.52	0.35	0.320	1.03	0.52	0.18	0.54	0.85162277
##	56	0.44	0.52	0.350	0.80	0.44	0.15	0.45	2.27423367
##	57	0.08	0.44	0.390	11.23	0.08	0.20	0.23	1.22769960
##	58	0.26	0.08	0.390	-4.65	0.26	0.16	0.19	1.54177609
##	59	0.18	0.26	0.520	-2.71	0.18	-0.03	0.26	0.07789160
##	60	0.30	0.18	0.580	7.38	0.30	0.54	0.19	1.53695415
##	61	0.38	0.30	0.500	3.08	0.38	0.64	0.31	-0.19782394
##	62	0.33	0.38	0.270	-2.52	0.33	0.08	0.54	1.05273965
##	63	0.25	0.33	0.310	0.64	0.25	0.01	0.15	1.20586526
##	64	0.14	0.25	0.500	-4.12	0.14	-1.10	0.21	1.03263251
##	65	0.31	0.14	0.000	0.30	0.31	-0.93	0.24	0.84552756
##	66	-0.23	0.31	0.190	4.80	-0.23	-0.67	0.16	1.22319232
##	67	0.24	-0.23	0.470	7.46	0.24	-0.72	-0.18	1.31228568
##	68	0.19	0.24	0.260	4.88	0.19	0.10	0.35	1.27465143
##	69	0.16	0.19	0.380	0.02	0.16	0.47	0.11	1.01432364
##	70	0.42	0.16	0.410	-3.15	0.42	0.20	0.34	0.56582783
	71	0.28	0.42	0.370	6.16	0.28	0.52	0.32	0.45162549
	72	0.44	0.28	0.370	11.14	0.44	0.89	0.35	0.45772224
	73	0.29	0.44	0.420	0.52	0.29	0.76	0.39	0.37152025
	74	0.32	0.29	0.220	0.01	0.32	0.07	0.38	0.68240513
	75	0.09	0.32	0.330	0.88	0.09	0.64	0.10	0.62266938
	76	0.22	0.09	0.330	-10.87	0.22	0.57	0.21	0.55411112
	77	0.40	0.22	0.530	-5.20	0.40	1.38	0.14	0.76113097
	78	1.26	0.40	0.350	8.88	1.26	1.87	1.11	0.88951407
	79	0.33	1.26	0.050	-3.21	0.33	0.51	0.64	0.42032018
	80	-0.09	0.33	0.240	3.48	-0.09	0.70	0.13	0.96489399
	81		-0.09	0.410	10.19	0.48	1.52		-0.06170365
	82	0.45	0.48	0.150	2.38	0.45	0.89	0.58	0.78859072
	83	-0.21	0.45	0.120	-1.81	-0.21	-0.49	0.19	0.31601615
	84		-0.21	0.370	10.82	0.15	-1.08	-0.16	0.58919697
	85	0.32	0.15	0.350	-1.86	0.32	0.01	0.30	0.41659107
	86	0.43	0.32	0.380	-0.18	0.43	0.88	0.34	0.53779762
	87	0.75	0.43	0.450	0.98	0.75	1.26	0.54	0.50195679
	88	0.57	0.75	0.300	0.70	0.57	0.92	0.72	1.31556145
	89	0.13	0.57	0.110	4.06	0.13	0.45	0.35	0.71028792
	90	0.01	0.13	0.200	0.84	0.01	0.80		-0.01218789
	91	0.19	0.01	0.180	-0.67	0.19	0.40	0.09	0.47985497
	92	0.13	0.19	0.150	3.57	0.13	-0.67	0.03	0.63940824
	93	-0.04	0.13	0.150	2.36	-0.04	-0.01	0.00	0.86831138
	94		-0.04	0.360	0.95	0.10	0.68		-0.63456596
	95	0.51	0.10	0.700	6.85	0.10	0.30		-0.22265399
π#	90	0.01	0.10	0.700	0.00	0.51	0.50	0.14	0.22200033

```
1.15 0.51 0.380
## 96
                                -1.63
                                         1.15
                                                 2.09
                                                          1.05 0.55074309
## 97
        0.21
              1.15
                    0.210
                                -8.43
                                         0.21
                                                0.48
                                                          0.71 -1.07032062
## 98
        0.25
              0.21
                    0.140
                               -29.90
                                         0.25
                                                -0.04
                                                          0.22 0.72895760
        0.07
              0.25
                                                          0.02 0.45137694
## 99
                     0.060
                                10.25
                                         0.07
                                                 1.24
## 100 -0.31
              0.07 -0.350
                                 8.57
                                        -0.31
                                                 0.80
                                                         -0.01 -0.24642640
## 101 -0.38 -0.31
                    0.170
                                        -0.38
                                                0.28
                                                         -0.59
                                                               1.56539350
                                 8.76
## 102
        0.26 - 0.38
                     0.390
                                         0.26
                                                          0.02
                                                                2.72275184
                                 8.27
                                                 1.56
## 103
        0.36
              0.26
                                                          0.30
                                                                3.69230419
                     0.080
                                -3.44
                                         0.36
                                                 2.23
## 104
        0.24
              0.36
                     0.270
                                 -4.80
                                         0.24
                                                 2.74
                                                          0.23
                                                                1.86086177
## 105
        0.64
              0.24
                     0.450
                                -0.69
                                         0.64
                                                          0.45
                                                 4.34
                                                                2.04700078
## 106
        0.86
              0.64
                     0.400
                                15.90
                                         0.86
                                                 3.23
                                                          0.94
                                                                1.93363132
## 107
        0.89
              0.86
                     1.190
                                 9.30
                                         0.89
                                                3.28
                                                          0.81
                                                                0.75594732
## 108
        1.35
              0.89
                     0.230
                                -3.32
                                         1.35
                                                0.96
                                                          1.06
                                                                0.14615341
## 109
        0.25
              1.35
                                -4.37
                                         0.25
                                                 2.58
                                                          0.78
                                                                1.01260155
                     0.560
## 110
        0.86
              0.25
                     0.850
                                 6.00
                                         0.86
                                                 2.53
                                                          0.48
                                                                0.78783149
## 111
        0.93
              0.86
                     0.450
                                 1.94
                                         0.93
                                                 2.94
                                                          0.93
                                                                0.39491893
## 112
        0.31
              0.93
                     0.455
                                         0.31
                                                 1.51
                                                          0.60 -0.54858662
                                 6.16
        0.83
## 113
              0.31
                     0.550
                                 0.46
                                         0.83
                                                 4.10
                                                          0.44 -0.07124556
## 114
        0.53
              0.83
                     0.580
                                 -3.94
                                         0.53
                                                 0.60
                                                          0.83 0.42538994
## 115
        0.96
              0.53
                    0.450
                                 -2.48
                                         0.96
                                                0.78
                                                          0.72
                                                                1.03568227
## 116
        0.87
              0.96
                     0.770
                                -6.57
                                         0.87
                                                 0.66
                                                          0.89
                                                                1.03537163
## 117
        1.16
              0.87
                     0.560
                                -6.74
                                         1.16
                                                -0.64
                                                          1.14
                                                                0.44358930
        1.25
                                                                0.90287551
## 118
              1.16
                     0.750
                                -1.53
                                         1.25
                                                0.64
                                                          1.20
## 119
        0.95
              1.25
                     0.720
                                         0.95
                                                 0.02
                                                          1.17
                                                                0.65494271
                                 2.85
                     0.450
## 120
        0.73
              0.95
                                                               0.13906080
                                 6.98
                                         0.73
                                                0.87
                                                          0.78
## 121
        0.54
              0.73
                     0.850
                                 0.89
                                         0.54
                                                1.82
                                                          0.58 -0.06858192
## 122
        1.01
              0.54
                     0.900
                                 6.06
                                         1.01
                                                1.83
                                                          0.99
                                                                0.64037333
## 123
        1.62
              1.01
                     0.900
                                                1.74
                                                                0.31019759
                               -10.10
                                         1.62
                                                          0.95
        1.06
## 124
              1.62
                    0.310
                                 3.22
                                         1.06
                                                1.41
                                                          1.73
                                                                0.37734934
        0.47
## 125
              1.06
                    0.600
                               -11.50
                                         0.47
                                                0.52
                                                          0.59
                                                                1.15026429
## 126
       0.67
              0.47 - 0.280
                                 4.69
                                         0.67
                                                0.59
                                                          0.69
                                                                0.66661561
## 127 -0.68
              0.67 - 0.194
                                 0.19
                                        -0.68
                                                0.21
                                                          0.13
                                                                1.05905870
## 128 -0.36 -0.68
                    0.170
                                 0.47
                                        -0.36
                                               -0.70
                                                         -0.73
                                                                0.68123036
## 129 -0.29 -0.36
                     0.340
                                 5.45
                                        -0.29
                                               -0.95
                                                         -0.37
                                                                0.62754522
        0.59 - 0.29
## 130
                     0.400
                                 -3.06
                                         0.59
                                               -0.97
                                                          0.16
                                                                0.40374834
## 131
        0.41
             0.59
                     0.640
                                -2.45
                                         0.41
                                               -0.56
                                                          0.53
                                                                0.51381180
## 132
        0.62
              0.41
                     0.530
                                 3.37
                                         0.62
                                                0.45
                                                          0.52 -0.04354646
## 133
        0.53
              0.62
                     0.800
                                -7.49
                                         0.53
                                                0.21
                                                          0.55 -0.55844107
## 134
        0.84
              0.53
                     0.650
                                 -2.91
                                         0.84
                                               -0.06
                                                          0.76
                                                                0.83802085
## 135
        0.71
              0.84
                     0.590
                                 2.50
                                         0.71
                                                0.05
                                                          0.69
                                                                0.81508953
## 136
        0.61
              0.71
                     0.440
                                 3.74
                                         0.61
                                               -0.95
                                                          0.57
                                                                1.11502991
## 137
        0.23
              0.61
                     0.300
                                 9.00
                                         0.23
                                               -1.84
                                                          0.51
                                                                0.86748171
       -0.08
              0.23
                     0.260
                                                                1.32663871
  138
                                 3.26
                                        -0.08
                                               -1.93
                                                          0.04
        0.12 -0.08
                                                         -0.07
## 139
                     0.300
                                -5.09
                                         0.12
                                               -0.72
                                                                1.01154138
        0.23
              0.12
                                         0.23
                                               -0.14
                                                          0.28
                                                                1.32351877
## 140
                     0.410
                                 0.71
        0.26
              0.23
                                         0.26
                                                          0.35
## 141
                     0.380
                                -2.94
                                                0.37
                                                                1.13871710
        0.24
## 142
              0.26
                     0.300
                                12.54
                                         0.24
                                                0.50
                                                          0.21
                                                                0.85287260
## 143
        0.28
              0.24
                     0.460
                                 5.38
                                         0.28
                                                0.59
                                                          0.33
                                                                0.88304173
## 144
        0.56
              0.28
                     0.400
                                 -4.79
                                         0.56
                                                0.74
                                                          0.40
                                                                0.65668677
        0.42
## 145
              0.56
                     0.480
                                 0.99
                                         0.42
                                                0.07
                                                          0.31
                                                                1.65050400
## 146
        0.83
              0.42
                     0.350
                                 -0.71
                                         0.83
                                               -0.52
                                                          0.78
                                                                1.32774898
## 147
        0.16
              0.83
                    0.350
                                 -1.70
                                         0.16
                                               -0.47
                                                          0.36
                                                               1.01823747
## 148
        0.38
              0.16
                     0.390
                                 -3.04
                                         0.38
                                                0.31
                                                          0.21 0.45239355
##
              m1-1
                         icbr-1
                                      ibcbr-1
                                                   pimpf-1 tcu-1 "aggreg_wage"-1
```

```
## 2
       -3.87886904 -2.42837177
                                 -1.86085853
                                               -7.2645740
                                                             1.3
                                                                      aggreg_wage
## 3
       -2.89641693
                    2.14861235
                                  -4.23041011
                                                1.2572534
                                                            -1.0
                                                                      aggreg_wage
       -1.18158140 -0.26292726
## 4
                                   1.50742463
                                               10.9837631
                                                            -0.1
                                                                      aggreg_wage
                                               -6.9707401
## 5
        0.31240341
                     1.58172232
                                   8.12707795
                                                             1.0
                                                                      aggreg_wage
##
  6
        0.27921314 -0.31141869
                                  -4.44140758
                                               10.4532840
                                                            -0.2
                                                                      aggreg_wage
  7
##
        1.67179007
                    7.42797640
                                   3.36789417
                                               -4.1038526
                                                             0.2
                                                                      aggreg_wage
## 8
        2.15639408
                     0.74313409
                                  -1.57719978
                                                6.3755459
                                                             1.2
                                                                      aggreg_wage
       -0.91303702
## 9
                     1.77998717
                                   3.64070846
                                                6.7323481
                                                             0.0
                                                                      aggreg_wage
##
  10
        3.28540082 -1.04773909
                                   1.66146752
                                               -7.3076923
                                                             1.0
                                                                      aggreg_wage
##
  11
        0.42944075
                     1.05883290
                                  -5.54332600
                                                8.1327801
                                                             0.0
                                                                      aggreg_wage
##
  12
        0.83435871
                     1.42587049
                                   4.31497175
                                               -6.2164236
                                                             0.1
                                                                      aggreg_wage
##
   13
       12.06026614 -2.05048544
                                  -2.41012795 -12.0294599
                                                            -3.6
                                                                      aggreg_wage
##
   14
       -3.91509836 -3.25905955
                                  -3.21193202
                                                2,4186047
                                                             1.3
                                                                      aggreg_wage
##
       -3.22903292 -1.54918033
                                               -6.8119891
  15
                                  -0.14334862
                                                            -0.6
                                                                      aggreg_wage
## 16
                                                            -0.2
        0.10218389 -1.74839730
                                  -2.28251507
                                               11.0136452
                                                                      aggreg_wage
## 17
        0.06764038
                     0.15252945
                                   8.71896577
                                                4.2142230
                                                             0.9
                                                                      aggreg_wage
##
  18
        0.13640080
                                                             0.4
                     4.94119638
                                                3.0328559
                                   1.20262144
                                                                      aggreg_wage
##
   19
        2.09983940
                     2.08820447
                                               -3.1071137
                                                             0.0
                                  -1.84257961
                                                                      aggreg_wage
##
                                  -1.46908794
  20
        1.53434479
                     4.01990207
                                                6.2447257
                                                             0.7
                                                                      aggreg_wage
##
  21
       -1.02958943 -2.14106750
                                   5.01138952
                                                3.7331215
                                                             0.1
                                                                      aggreg_wage
##
  22
        2.05176848 -2.80083792
                                  -0.21034641
                                               -4.2879020
                                                             1.1
                                                                      aggreg_wage
##
  23
                                                             0.9
       -0.28155618
                     3.15293742
                                  -2.99058033
                                                4.9600000
                                                                      aggreg_wage
## 24
                                                            -1.1
        1.24005756
                     2.80120715
                                   3.14388538
                                               -5.7164634
                                                                      aggreg_wage
  25
                                                            -3.0
##
       10.14107057
                     1.89687618
                                  -2.70572745 -15.1172191
                                                                      aggreg_wage
                                  -1.36680425
##
  26
       -4.51687630
                     3.78222649
                                                2.7619048
                                                             1.0
                                                                      aggreg_wage
##
  27
       -3.40545128
                     0.12100505
                                  -2.09233724
                                               -0.3707136
                                                            -0.5
                                                                      aggreg_wage
##
   28
       -0.16549601 -2.75131523
                                                5.4883721
                                                            -0.7
                                   0.56754484
                                                                      aggreg_wage
##
   29
        0.61274111 -1.83492945
                                   3.83195151
                                               -1.3227513
                                                             0.5
                                                                      aggreg_wage
##
   30
       -1.91133588 -0.54364015
                                 -0.89914782
                                                5.8981233
                                                            -0.2
                                                                      aggreg_wage
        0.47348563 -1.68476226
##
   31
                                  -0.37240165
                                               -6.666667
                                                            -1.0
                                                                      aggreg_wage
## 32
        0.49129666 -1.08910891
                                  -4.25445154
                                                10.0361664
                                                             0.7
                                                                      aggreg_wage
##
   33
       -0.75018729
                     1.94040194
                                   6.36712095
                                                1.8077239
                                                             0.6
                                                                      aggreg_wage
##
   34
        3.14617570
                     5.20432057
                                  -1.05438772
                                               -0.6456820
                                                             0.1
                                                                      aggreg_wage
##
   35
        0.33813638
                    4.08529581
                                  -0.10116679
                                                3.4118603
                                                             1.1
                                                                      aggreg_wage
##
   36
        0.67605796 -0.29661309
                                   1.06670267
                                               -8.6410055
                                                            -2.2
                                                                      aggreg_wage
##
   37
        9.32630700 -4.77376505
                                                            -2.8
                                  -3.19305277 -12.1238177
                                                                      aggreg_wage
##
   38
       -5.06850538
                    4.59168846
                                   0.38642009
                                                0.4892368
                                                             1.0
                                                                      aggreg_wage
##
  39
       -2.82325969
                     8.14809669
                                               -4.9659202
                                                            -1.3
                                  -4.57107506
                                                                      aggreg_wage
##
   40
       -1.58293769 -2.39578650
                                                            -0.9
                                  -1.58467190
                                               12.6024590
                                                                      aggreg_wage
##
                                                            -0.4
   41
       -1.48721450
                     1.14503817
                                   9.47815268
                                               -5.8234759
                                                                      aggreg_wage
##
   42
       -1.54297209
                     0.89134678
                                  -4.71988234
                                                4.7342995
                                                            -0.7
                                                                      aggreg_wage
##
   43
       -0.62628881
                                                            -0.8
                     3.39201651
                                  -1.82430536
                                               -0.5535055
                                                                      aggreg_wage
##
   44
        0.42629841
                     4.78388324
                                  -0.92195540
                                                3.1539889
                                                             0.8
                                                                      aggreg_wage
##
   45
                                                             0.4
       -1.84675621
                     9.29761905
                                   3.33982543
                                                2.2482014
                                                                      aggreg_wage
##
   46
       -0.49742826
                     0.76789021
                                  -1.62641351
                                               -3.3421284
                                                             0.8
                                                                      aggreg_wage
## 47
        1.46314822 -4.79922175
                                  -1.96551479
                                                3.0937216
                                                             0.3
                                                                      aggreg_wage
##
   48
       -0.08937879
                     1.13539597
                                   1.54892878
                                               -9.9735216
                                                            -0.4
                                                                      aggreg_wage
##
   49
        9.53582379
                     2.94134157
                                  -3.03635068 -11.7647059
                                                            -4.0
                                                                      aggreg_wage
##
   50
       -4.08529364 -1.55406511
                                   0.21317260
                                               -1.222222
                                                             1.1
                                                                      aggreg_wage
##
   51
       -2.40626788 -5.61094494
                                  -5.94880070
                                               -0.5624297
                                                            -0.9
                                                                      aggreg_wage
##
   52
                                                             0.6
       -1.55929699 -3.33900593
                                   1.98876930
                                               10.2941176
                                                                      aggreg_wage
##
  53
       -0.11843184
                    0.92884896
                                   7.24172211
                                               -0.8205128
                                                            -0.1
                                                                      aggreg_wage
## 54
       -0.10737951
                     0.43909774
                                  -3.03051911
                                                3.9296794
                                                             0.3
                                                                      aggreg_wage
## 55
       -1.14788420 -4.91675650
                                  -1.80895654
                                                1.5920398
                                                             0.1
                                                                      aggreg_wage
```

```
## 56
        1.47061738 -1.99030043
                                   1.28061110
                                                2.2526934
                                                             0.4
                                                                      aggreg_wage
## 57
                                                             1.5
       -0.64539381
                    1.74795964
                                   1.05737947
                                                3.8314176
                                                                      aggreg_wage
##
  58
        2.19652210 -0.16421398
                                   1.07558352
                                               -2.4907749
                                                            -0.2
                                                                      aggreg_wage
##
  59
        0.84142417
                                  -3.10554510
                                                             1.0
                     5.49756437
                                               -0.5676443
                                                                      aggreg_wage
##
   60
       -0.12071934
                     2.12880787
                                  -0.85917071
                                               -4.0913416
                                                            -2.2
                                                                      aggreg_wage
                                                            -0.8
##
   61
        9.39723505 -2.98279608
                                  -0.27128862 -10.7142857
                                                                      aggreg_wage
##
   62
       -4.64658129 -3.40737154
                                   0.70273538
                                                0.888889
                                                             0.5
                                                                      aggreg_wage
## 63
       -2.58996052 -2.21177945
                                  -3.52667517
                                               -2.6431718
                                                            -0.4
                                                                      aggreg_wage
##
   64
       -0.97611716
                     0.05125905
                                   0.70000778
                                               12.6696833
                                                             0.1
                                                                      aggreg_wage
##
  65
        1.02918402
                    2.49119436
                                   9.66247007
                                               -7.2289157
                                                             0.6
                                                                      aggreg_wage
##
   66
       -0.38284541 -0.18745314
                                  -5.73320186
                                               13.6363636
                                                            -0.4
                                                                      aggreg_wage
##
   67
        0.81235775 -1.35845749
                                   1.68858338
                                               -1.8095238
                                                             0.4
                                                                      aggreg_wage
##
   68
        1.41032653 -2.11969283
                                  -0.81557678
                                                4.0737148
                                                             0.2
                                                                      aggreg_wage
                    2.14614537
                                                4.9394222
##
   69
       -1.41202713
                                   2.60760056
                                                             0.7
                                                                      aggreg_wage
##
  70
        1.58944154
                     3.16110194
                                   1.24178760
                                               -3.8188277
                                                             1.1
                                                                      aggreg_wage
##
  71
       -0.09141441
                     5.31011568
                                  -3.78663624
                                                2.4007387
                                                             0.6
                                                                      aggreg_wage
##
  72
        0.94023678 -0.87642419
                                   0.92647495
                                               -4.7790803
                                                            -0.7
                                                                      aggreg_wage
                                  -0.71968862 -10.6060606
##
   73
       10.79017408
                     0.91364574
                                                            -2.6
                                                                      aggreg_wage
##
       -4.67303828
   74
                     0.33878505
                                   0.51039278
                                                1.5889831
                                                             1.9
                                                                      aggreg_wage
##
   75
       -1.98677574 -1.56595646
                                  -2.69355314
                                               -6.1522419
                                                            -0.1
                                                                      aggreg_wage
##
  76
        0.20788541
                    3.98604294
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                                               11.6666667
                                                             0 4
                                                                      aggreg_wage
##
  77
        0.62671631
                     9.15088438
                                   8.95109197
                                                0.2985075
                                                             0.4
                                                                      aggreg_wage
## 78
                                                            -0.3
       -0.05857130
                     3.13151313
                                  -1.75748165
                                               -2.3809524
                                                                      aggreg_wage
   79
##
        0.84195186 -0.44965392
                                  -4.88540843
                                                7.8252033
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  80
                                   3.53501020
##
        1.53192225
                     0.83231831
                                                5.1837889
                                                             0.9
                                                                      aggreg_wage
##
   81
        0.14670141
                     5.99456412
                                   3.00576348
                                                2.5985663
                                                             1.7
                                                                      aggreg_wage
##
  82
        2.50604526 -6.10665274
                                                             0.2
                                   1.66442383
                                               -7.6855895
                                                                      aggreg_wage
##
   83
       -1.14352408 -2.43261012
                                  -5.32255817
                                                5.5818354
                                                            -0.6
                                                                      aggreg_wage
##
   84
                    0.41986316
        0.08680447
                                   3.00956586
                                               -6.5412186
                                                            -1.6
                                                                      aggreg_wage
##
   85
        9.18591450 -3.52036339
                                  -1.56439746 -12.9434324
                                                            -3.0
                                                                      aggreg_wage
##
  86
       -4.99752137
                     0.25145792
                                  -0.98693759
                                                3.5242291
                                                             1.4
                                                                      aggreg_wage
##
   87
       -2.45193646
                     2.56697620
                                  -2.04485488
                                               -1.9148936
                                                            -0.5
                                                                      aggreg_wage
##
   88
        0.39623950
                    1.52973620
                                   0.26187804
                                                2.3861171
                                                            -0.1
                                                                      aggreg_wage
##
   89
        0.56059018 -1.97816840
                                   3.82835821
                                                2.8601695
                                                             1.3
                                                                      aggreg_wage
                                                9.1658084
##
   90
       -1.56957553 -4.91974695
                                                            -0.3
                                   0.48156400
                                                                      aggreg_wage
##
  91
        0.66959161 -0.75332673
                                  -0.18597997
                                               -5.6603774
                                                             0.4
                                                                      aggreg_wage
##
  92
        0.80620751
                    0.27702366
                                  -3.08155368
                                                8.9000000
                                                             1.0
                                                                      aggreg_wage
## 93
       -0.58280691
                     5.22680811
                                                             0.6
                                   5.93759243
                                                2.9384757
                                                                      aggreg_wage
## 94
        2.33050705
                     2.20530323
                                  -0.84455922
                                               -4.6387154
                                                             1.0
                                                                      aggreg_wage
##
  95
        0.66682486
                     4.94220396
                                  -2.56229762
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                                                            -0.2
                                                                      aggreg_wage
##
   96
        1.51632722
                     0.62172615
                                   3.35211675
                                               -9.3722370
                                                            -1.3
                                                                      aggreg_wage
##
  97
       10.63354630
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                                  -2.83098001 -12.4878049
                                                            -2.0
                                                                      aggreg_wage
##
   98
       -5.75980483 -0.45288109
                                  -1.05028415
                                                4.0133779
                                                             1.6
                                                                      aggreg_wage
##
  99
        0.11711548 -4.30742426
                                  -2.56633951
                                               -1.5005359
                                                            -1.4
                                                                      aggreg_wage
##
  100
        1.82817197
                     1.56281610
                                   0.33577078
                                               -1.1969532 -17.7
                                                                      aggreg_wage
## 101
        7.77970895 12.30516409
                                   1.22703949 -22.6872247
                                                             3.4
                                                                      aggreg_wage
##
   102
        7.86898620 -4.85544519 -12.98853952
                                               18.0911681
                                                             6.2
                                                                      aggreg_wage
   103
##
        6.26515134
                     7.08393531
                                   0.95406957
                                               10.1326900
                                                             5.7
                                                                      aggreg_wage
##
  104
        3.60838674
                     9.38764852
                                   5.31905996
                                               16.1007667
                                                             3.7
                                                                      aggreg_wage
##
   105
        2.44804084
                     0.53712103
                                   7.95680140
                                                3.2075472
                                                             3.8
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##
   106
        3.60471084
                     5.54038545
                                  -0.15446855
                                                1.5539305
                                                             2.4
                                                                      aggreg_wage
##
   107
        2.42301898
                     0.11623983
                                   1.04611758
                                                2.0702070
                                                             0.1
                                                                      aggreg_wage
##
  108
        0.79888939 -1.35580524
                                   1.96850394
                                               -7.3192240
                                                            -1.6
                                                                      aggreg_wage
## 109
        6.11091527 10.55509150
                                 -1.18690119
                                               -7.6117983
                                                            -2.1
                                                                      aggreg_wage
```

```
## 110 -4.44266853 7.03001580
                                  0.82489146
                                              -1.6477858
                                                            0.4
                                                                     aggreg_wage
## 111 -1.88702771
                   5.31686186
                                 -5.84182575
                                               -3.4554974
                                                           -1.3
                                                                     aggreg_wage
## 112 -0.36117133
                    1.21260130
                                  2.31707317
                                                8.7852495
                                                           -1.6
                                                                     aggreg_wage
## 113
       0.63188436
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                                              -5.5832502
                                                            1.7
                    1.10475617
                                                                     aggreg_wage
## 114 -0.07272637 -3.55196951
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                                                8.7645195
                                                            1.5
                                                                     aggreg_wage
        2.17129722
## 115
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                                              -0.5825243
                                                            0.7
                                                                     aggreg_wage
## 116
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## 122 -0.89244105
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## 8	3 1.11	-32419.28	-760.3	-28.4810127	14.1647848

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                           0.34
                                    0.88 -0.60340224 12.06026614 -2.05048544
## 14
## 15
            -1.87
                    0.60
                           0.29
                                    0.68
                                          1.08474727 -3.91509836 -3.25905955
## 16
            -0.78
                    0.47
                           0.21
                                    0.49
                                          0.18270082 -3.22903292 -1.54918033
            -4.30
## 17
                    0.55
                           0.15
                                    0.51
                                          0.76281025
                                                      0.10218389 -1.74839730
## 18
           -11.31
                    0.37
                           0.00
                                    0.46
                                          0.71046044
                                                      0.06764038 0.15252945
## 19
             1.64
                    0.26
                           0.75
                                    0.38
                                          0.23192304
                                                      0.13640080
                                                                  4.94119638
## 20
             3.68
                    0.03
                           0.26
                                    0.07
                                          0.71865314
                                                      2.09983940
                                                                   2.08820447
## 21
             4.65
                    0.24
                           0.15
                                    0.16
                                          0.72594713 1.53434479
                                                                  4.01990207
## 22
             3.66
                    0.35
                           1.50
                                    0.27
                                          0.50373721 -1.02958943 -2.14106750
## 23
            -3.27
                           0.86
                                                      2.05176848 -2.80083792
                    0.57
                                    0.48
                                          0.63753624
## 24
            -1.86
                    0.54
                           0.29
                                    0.57
                                          0.48239420 -0.28155618
                                                                  3.15293742
## 25
            -7.51
                    0.92
                           0.60
                                    0.75 -0.09243554 1.24005756
                                                                  2.80120715
## 26
            -1.14
                    0.55
                           0.48
                                          0.07352534 10.14107057
                                                                   1.89687618
## 27
            7.05
                    0.69
                           0.38
                                    0.70
                                          1.97055206 -4.51687630 3.78222649
## 28
             2.40
                    0.92
                           1.67
                                    0.73 -0.13819716 -3.40545128 0.12100505
## 29
            -0.75
                    0.67
                                          0.82795816 -0.16549601 -2.75131523
                           0.78
                                    0.78
## 30
             3.76
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                                          0.46
                                    0.58
## 31
             5.00
                    0.40
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                                    0.47
                                          0.75218729 -1.91133588 -0.54364015
## 32
             9.78
                    0.01
                          -0.61
                                    0.17
                                          1.88342320
                                                      0.47348563 -1.68476226
           -11.70
                          -0.27
## 33
                    0.25
                                    0.14
                                          1.48754566 0.49129666 -1.08910891
## 34
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                           0.20
                    0.57
                                    0.39
                                          0.22339327 -0.75018729 1.94040194
                           0.28
## 35
             0.18
                    0.42
                                    0.48
                                          1.96853406 3.14617570 5.20432057
## 36
            -8.62
                    0.51
                           0.98
                                    0.38
                                          0.77631142
                                                      0.33813638 4.08529581
            -6.20
                    0.78
                           0.62
                                    0.79
                                          1.06696373 0.67605796 -0.29661309
## 37
## 38
            9.97
                    1.24
                           0.76
                                    0.89
                                          1.02052197 9.32630700 -4.77376505
## 39
            -0.84
                    1.22
                           0.27
                                    1.33
                                          1.15943946 -5.06850538 4.59168846
                                    1.24
## 40
             9.93
                    1.32
                           0.98
                                          1.47563490 -2.82325969 8.14809669
## 41
            -6.17
                    0.71
                           1.17
                                    1.07
                                          2.02809125 -1.58293769 -2.39578650
## 42
            0.61
                    0.74
                           0.41
                                    0.60 -0.12196174 -1.48721450 1.14503817
## 43
            -4.17
                    0.79
                           0.67
                                    0.99
                                          1.78740323 -1.54297209 0.89134678
```

```
## 44
            -8.33
                    0.62
                            0.69
                                     0.59
                                           1.11827763 -0.62628881
                                                                    3.39201651
## 45
            -3.36
                    0.22
                                           2.13109101 0.42629841
                            0.28
                                     0.43
                                                                    4.78388324
                                           1.47729312 -1.84675621
## 46
             1.80
                    0.54
                            0.95
                                     0.39
                                                                    9.29761905
            -1.63
                            1.89
                                     0.66
                                           1.23806234 -0.49742826
                                                                    0.76789021
## 47
                    0.82
## 48
            -3.93
                    1.01
                            1.52
                                     0.85
                                           0.90687576
                                                        1.46314822 -4.79922175
            -6.79
                                           0.86847498 -0.08937879
##
  49
                    0.96
                            0.49
                                     1.18
                                                                   1.13539597
             5.91
                                                       9.53582379 2.94134157
## 50
                    1.27
                            1.14
                                     0.92
                                           2.18426389
            16.97
## 51
                    0.90
                            1.29
                                     1.42
                                           1.39592161 -4.08529364 -1.55406511
## 52
             7.70
                    0.43
                            0.51
                                     0.43
                                           0.85337320 -2.40626788 -5.61094494
           -10.09
## 53
                    0.61
                            0.33
                                     0.51 -0.17309551 -1.55929699 -3.33900593
## 54
             6.30
                    0.78
                            0.82
                                     0.86
                                           0.84141354 -0.11843184 0.92884896
            11.22
                                           1.56075161 -0.10737951 0.43909774
## 55
                    0.35
                            1.69
                                     0.40
## 56
             1.03
                    0.52
                            0.18
                                     0.54
                                           0.85162277 -1.14788420 -4.91675650
## 57
             0.80
                    0.44
                            0.15
                                     0.45
                                           2.27423367 1.47061738 -1.99030043
            11.23
                    0.08
                            0.20
                                     0.23
                                           1.22769960 -0.64539381 1.74795964
## 58
## 59
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                    0.26
                            0.16
                                     0.19
                                           1.54177609
                                                        2.19652210 -0.16421398
                                           0.07789160 0.84142417 5.49756437
## 60
            -2.71
                    0.18
                           -0.03
                                     0.26
## 61
             7.38
                    0.30
                            0.54
                                     0.19
                                           1.53695415 -0.12071934 2.12880787
             3.08
                                     0.31 -0.19782394 9.39723505 -2.98279608
## 62
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                            0.64
## 63
            -2.52
                    0.33
                            0.08
                                     0.54
                                           1.05273965 -4.64658129 -3.40737154
## 64
             0.64
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                            0.01
                                     0.15
                                           1.20586526 -2.58996052 -2.21177945
            -4.12
                    0.14
                           -1.10
                                     0.21
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## 65
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             0.30
                    0.31
## 66
                                     0.24
                                           0.84552756 1.02918402 2.49119436
             4.80
                   -0.23
## 67
                           -0.67
                                     0.16
                                           1.22319232 -0.38284541 -0.18745314
             7.46
## 68
                    0.24
                           -0.72
                                    -0.18
                                           ## 69
             4.88
                    0.19
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                                     0.35
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                                           1.01432364 -1.41202713
                                                                   2.14614537
##
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                            0.47
                                     0.11
## 71
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                    0.42
                            0.20
                                     0.34
                                           0.56582783
                                                       1.58944154
                                                                    3.16110194
             6.16
                    0.28
                            0.52
                                     0.32
                                           0.45162549 -0.09141441
## 72
                                                                   5.31011568
## 73
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                            0.89
                                     0.35
                                           0.45772224 0.94023678 -0.87642419
## 74
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                                     0.39
                                           0.37152025 10.79017408 0.91364574
## 75
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                                     0.38
                                           0.68240513 -4.67303828
                                                                   0.33878505
## 76
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                            0.64
                                     0.10
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           -10.87
                            0.57
                                     0.21
                                                       0.20788541 3.98604294
## 77
                    0.22
                                           0.55411112
  78
            -5.20
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                                                        0.62671631
                                                                    9.15088438
##
                                     0.14
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## 79
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                            1.87
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## 80
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                    0.33
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                                     0.64
                                           0.42032018
                                                       0.84195186 -0.44965392
## 81
             3.48
                   -0.09
                            0.70
                                     0.13
                                           0.96489399
                                                        1.53192225 0.83231831
            10.19
                    0.48
                            1.52
                                     0.09 -0.06170365
                                                        0.14670141 5.99456412
## 82
                                                       2.50604526 -6.10665274
             2.38
                    0.45
                                           0.78859072
## 83
                            0.89
                                     0.58
            -1.81
                   -0.21
## 84
                           -0.49
                                     0.19
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            10.82
                    0.15
                           -1.08
                                    -0.16
                                           0.58919697
                                                       0.08680447 0.41986316
## 85
## 86
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                            0.01
                                     0.30
                                           0.41659107
                                                       9.18591450 -3.52036339
## 87
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                    0.43
                            0.88
                                     0.34
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## 88
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                            1.26
                                     0.54
                                           0.50195679 -2.45193646 2.56697620
             0.70
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                            0.92
                                     0.72
                                           1.31556145
                                                       0.39623950 1.52973620
## 89
## 90
             4.06
                    0.13
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                                     0.35
                                           0.71028792
                                                        0.56059018 -1.97816840
             0.84
                            0.80
## 91
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                                     0.06 -0.01218789 -1.56957553 -4.91974695
## 92
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                                     0.09
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## 93
             3.57
                    0.11
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                                           0.63940824
                                                        0.80620751
                                                                   0.27702366
             2.36
                                           0.86831138 -0.58280691
## 94
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                           -0.01
                                     0.09
                                                                    5.22680811
## 95
             0.95
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                            0.68
                                     0.09 -0.63456596
                                                       2.33050705
                                                                    2.20530323
## 96
             6.85
                    0.51
                            0.30
                                     0.14 -0.22265399
                                                        0.66682486
                                                                    4.94220396
## 97
            -1.63
                    1.15
                            2.09
                                     1.05
                                          0.55074309 1.51632722 0.62172615
```

```
0.21
## 98
            -8.43
                            0.48
                                     0.71 -1.07032062 10.63354630 0.98277708
## 99
           -29.90
                    0.25
                           -0.04
                                     0.22
                                          0.72895760 -5.75980483 -0.45288109
## 100
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                            1.24
                                           0.45137694
                                                        0.11711548 -4.30742426
## 101
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                            0.80
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                                                        1.82817197
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## 102
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                            0.28
                                    -0.59
                                           1.56539350
                                                        7.77970895 12.30516409
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                                     0.02
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                                                        7.86898620 -4.85544519
## 103
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                                                                    7.08393531
## 104
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            -4.80
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## 105
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                                                                    9.38764852
## 106
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                            4.34
                                     0.45
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                                                        2.44804084
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## 107
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                                                                    5.54038545
## 108
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## 109
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                                     1.06
                                           0.14615341
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## 110
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                                     0.78
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                                                        6.11091527 10.55509150
             6.00
                            2.53
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                                                                    7.03001580
## 111
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                                           0.78783149 -4.44266853
## 112
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                    0.93
                            2.94
                                           0.39491893 -1.88702771
                                     0.93
                                                                    5.31686186
## 113
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                                     0.60 -0.54858662 -0.36117133
                                                                    1.21260130
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                                                        0.63188436
## 114
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                                     0.44 -0.07124556
                                                                    1.10475617
## 115
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                            0.60
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## 116
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                            0.78
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                                                        2.17129722
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## 117
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                                                                    3.39898441
## 118
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                                     1.14
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                                                                    2.32775996
## 119
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                    1.25
                            0.64
                                           0.90287551 -1.57579714 11.28526646
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## 120
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                    0.95
                            0.02
                                           0.65494271 -1.58696176 -0.33403964
                                     1.17
             6.98
                    0.73
                            0.87
                                           0.13906080 -0.78251988 -0.71283860
## 121
                                     0.78
             0.89
## 122
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                                     0.58 -0.06858192 3.62262287 2.99274486
## 123
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                            1.83
                                     0.99
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## 124
           -10.10
                    1.62
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                                     0.95
                                           0.31019759 -0.94476518 4.37837438
## 125
             3.22
                    1.06
                            1.41
                                     1.73
                                           0.37734934
                                                        0.34866423 -1.12425896
## 126
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                    0.47
                            0.52
                                     0.59
                                           1.15026429
                                                        1.15879113 3.22002723
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## 127
             4.69
                            0.59
                                     0.69
                                           0.66661561 -0.41943515 -0.94651825
## 128
             0.19
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## 129
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## 130
             5.45
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## 131
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                                     0.16
## 132
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                           -0.56
                                     0.53
                                           0.51381180 -0.82373659 1.25975869
## 133
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                    0.62
                            0.45
                                     0.52 -0.04354646 -0.02911452 -2.18528624
## 134
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                            0.21
                                     0.55 -0.55844107 5.62750093 -2.58214761
## 135
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                    0.84
                           -0.06
                                     0.76
                                           0.83802085 -3.56546502 -1.56303360
## 136
             2.50
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                            0.05
                                     0.69
                                           0.81508953 -1.19693925 -2.84479078
## 137
             3.74
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                          -0.95
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                                     0.57
## 138
             9.00
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                                           0.23
                                     0.51
## 139
             3.26
                   -0.08
                          -1.93
                                     0.04
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            -5.09
## 140
                    0.12
                           -0.72
                                    -0.07
                                           1.01154138
                                                        0.75492063
                                                                    1.83780630
## 141
             0.71
                    0.23
                           -0.14
                                     0.28
                                           1.32351877
                                                        6.18178159
                                                                    2.85877972
            -2.94
                            0.37
## 142
                    0.26
                                     0.35
                                           1.13871710 -0.49983753
                                                                    3.72897404
            12.54
## 143
                    0.24
                            0.50
                                     0.21
                                           0.85287260 -1.05837111
                                                                    0.98531425
## 144
             5.38
                    0.28
                            0.59
                                     0.33
                                           0.88304173 -0.22575951 -5.09118945
            -4.79
                            0.74
## 145
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                                     0.40
                                           0.65668677
                                                        0.39688771 -3.98330485
                                                                    0.78770021
## 146
             0.99
                    0.42
                            0.07
                                     0.31
                                           1.65050400
                                                        6.89789159
## 147
            -0.71
                    0.83
                           -0.52
                                     0.78
                                           1.32774898 -4.33303935
                                                                    4.26086201
##
            -1.70
                                                                    2.55143119
  148
                    0.16
                          -0.47
                                     0.36
                                           1.01823747 -0.49963319
##
            ibcbr-2
                         pimpf-2 tcu-2 "aggreg_wage"-2
                                                             elec-2
                                                                     confidence-2
## 2
        -0.10561893
                     -8.1548600
                                  -2.4
                                           aggreg_wage 1.02837659
                                                                      0.101156983
## 3
        -1.86085853
                     -7.2645740
                                   1.3
                                           aggreg_wage -1.18937456
                                                                      7.484368092
```

```
aggreg_wage 1.64164716 -3.384651545
## 4
        -4.23041011
                      1.2572534
                                  -1.0
## 5
         1.50742463 10.9837631
                                  -0.1
                                            aggreg_wage 4.66654020
                                                                       0.346673154
                     -6.9707401
                                            aggreg_wage -1.62338503
                                                                      -1.175828838
## 6
         8.12707795
                                   1.0
## 7
        -4.44140758
                     10.4532840
                                  -0.2
                                            aggreg_wage -3.12138120
                                                                      -0.429316161
                                            aggreg_wage -0.76609617
## 8
         3.36789417
                      -4.1038526
                                   0.2
                                                                      -1.102556206
## 9
                                   1.2
                                            aggreg_wage -1.67268944
        -1.57719978
                      6.3755459
                                                                      -2.653213752
## 10
                                   0.0
         3.64070846
                       6.7323481
                                            aggreg_wage 3.51644068
                                                                       1.273192578
                                            aggreg_wage 1.29639591
## 11
         1.66146752
                     -7.3076923
                                   1.0
                                                                       1.952113210
## 12
        -5.54332600
                       8.1327801
                                   0.0
                                            aggreg_wage 0.35579629
                                                                      -1.047217747
## 13
         4.31497175
                     -6.2164236
                                   0.1
                                            aggreg_wage
                                                        2.24362366
                                                                       1.327572171
## 14
        -2.41012795 -12.0294599
                                  -3.6
                                            aggreg_wage -2.27460925
                                                                      -0.778691057
## 15
        -3.21193202
                                   1.3
                       2.4186047
                                            aggreg_wage 1.59406858
                                                                       3.301152289
                                            aggreg_wage -0.94091276
## 16
        -0.14334862
                     -6.8119891
                                  -0.6
                                                                      -3.551401869
## 17
                                  -0.2
        -2.28251507
                      11.0136452
                                            aggreg_wage 1.14718729
                                                                      -2.713178295
## 18
         8.71896577
                       4.2142230
                                   0.9
                                                                      -6.201002442
                                            aggreg_wage 0.55148015
## 19
         1.20262144
                       3.0328559
                                   0.4
                                            aggreg_wage -0.79939980
                                                                      -0.637117216
## 20
                                   0.0
        -1.84257961
                     -3.1071137
                                                                      -5.729453944
                                            aggreg_wage -1.86986569
## 21
        -1.46908794
                       6.2447257
                                   0.7
                                                        0.18603168
                                                                      -2.698749360
                                            aggreg_wage
## 22
                      3.7331215
                                   0.1
         5.01138952
                                            aggreg_wage 2.42718447
                                                                       2.781118461
                                            aggreg_wage -0.22790252
## 23
        -0.21034641
                      -4.2879020
                                   1.1
                                                                       1.828287260
## 24
        -2.99058033
                       4.9600000
                                   0.9
                                            aggreg_wage 2.24269955
                                                                      -0.883366849
## 25
                     -5.7164634
                                  -1.1
                                                                      -1.043402652
         3.14388538
                                            aggreg_wage 1.34809211
## 26
                                  -3.0
                                            aggreg_wage -0.91182365
        -2.70572745 -15.1172191
                                                                      -3.536647873
## 27
                                   1.0
        -1.36680425
                       2.7619048
                                            aggreg_wage 1.83031651
                                                                       3.529679672
## 28
        -2.09233724
                     -0.3707136
                                  -0.5
                                            aggreg_wage 3.40863952
                                                                      -7.779162695
## 29
         0.56754484
                      5.4883721
                                  -0.7
                                            aggreg_wage -3.32268984
                                                                      -4.396565432
## 30
         3.83195151
                     -1.3227513
                                   0.5
                                            aggreg_wage -1.68119397
                                                                      -8.956340956
## 31
        -0.89914782
                      5.8981233
                                  -0.2
                                            aggreg_wage -1.24267529
                                                                      -1.927292656
## 32
                     -6.666667
                                  -1.0
        -0.37240165
                                            aggreg_wage -3.51406650
                                                                       2.030362299
                                            aggreg_wage 0.37374755
## 33
        -4.25445154
                     10.0361664
                                   0.7
                                                                       0.903696942
## 34
         6.36712095
                       1.8077239
                                   0.6
                                            aggreg_wage
                                                         1.80632213
                                                                       7.580966166
## 35
        -1.05438772
                     -0.6456820
                                   0.1
                                                         0.89232445
                                                                      -2.606794484
                                            aggreg_wage
## 36
        -0.10116679
                       3.4118603
                                   1.1
                                                         3.09808459
                                                                       0.146779485
                                            aggreg_wage
## 37
         1.06670267
                                  -2.2
                      -8.6410055
                                                         2.12219451
                                                                      -2.620915596
                                            aggreg_wage
                                            aggreg_wage -2.71788235
## 38
        -3.19305277 -12.1238177
                                  -2.8
                                                                      -0.230190350
## 39
                                   1.0
                                            aggreg_wage 2.30935288
         0.38642009
                      0.4892368
                                                                       0.177478037
## 40
        -4.57107506
                     -4.9659202
                                  -1.3
                                            aggreg_wage -0.09568674
                                                                      -5.341482859
## 41
        -1.58467190
                     12.6024590
                                  -0.9
                                            aggreg_wage -2.35762175
                                                                      -4.959760434
                                            aggreg_wage -0.40745492
## 42
         9.47815268
                      -5.8234759
                                  -0.4
                                                                      -9.639621898
## 43
                                  -0.7
                                            aggreg_wage -3.52299417
        -4.71988234
                       4.7342995
                                                                      -1.296720061
        -1.82430536
                                  -0.8
## 44
                     -0.5535055
                                            aggreg_wage -2.45536883
                                                                      -6.657098697
## 45
        -0.92195540
                      3.1539889
                                   0.8
                                            aggreg_wage -1.20223272
                                                                       0.130100532
                                   0.4
                                            aggreg_wage 2.83300739
## 46
         3.33982543
                      2.2482014
                                                                       1.027639972
## 47
        -1.62641351
                     -3.3421284
                                   0.8
                                            aggreg_wage -0.04490346
                                                                       3.788144511
## 48
                                   0.3
                                            aggreg_wage 3.79208287
        -1.96551479
                       3.0937216
                                                                      -3.627351583
## 49
                     -9.9735216
                                  -0.4
         1.54892878
                                            aggreg_wage -0.13239300
                                                                       1.893629456
                                            aggreg_wage -1.41491396
## 50
        -3.03635068 -11.7647059
                                  -4.0
                                                                       2.145233452
## 51
         0.21317260
                     -1.2222222
                                   1.1
                                            aggreg_wage -0.69562969
                                                                       6.951931716
## 52
        -5.94880070
                     -0.5624297
                                  -0.9
                                                        0.84893623
                                                                      -6.216528405
                                            aggreg_wage
## 53
         1.98876930
                     10.2941176
                                   0.6
                                                         1.85400367
                                                                      -1.825103572
                                            aggreg_wage
## 54
                                  -0.1
                                                        2.08898466
         7.24172211
                     -0.8205128
                                                                       3.615419708
                                            aggreg_wage
## 55
        -3.03051911
                      3.9296794
                                   0.3
                                            aggreg_wage -4.02294569
                                                                       7.925151348
## 56
        -1.80895654
                      1.5920398
                                   0.1
                                            aggreg_wage -2.84354058
                                                                      -0.387557369
## 57
         1.28061110
                      2.2526934
                                   0.4
                                            aggreg_wage -0.78561917
                                                                       2.436776902
```

```
aggreg_wage 1.17836532
## 58
         1.05737947
                       3.8314176
                                   1.5
                                                                       6.896551724
## 59
                                  -0.2
         1.07558352
                      -2.4907749
                                                                      -0.906965872
                                            aggreg_wage
                                                         1.72706532
                                            aggreg_wage -0.38336159
                                                                       4.076240800
##
  60
        -3.10554510
                      -0.5676443
                                   1.0
## 61
        -0.85917071
                      -4.0913416
                                  -2.2
                                                                       0.389845875
                                            aggreg_wage
                                                         1.45557359
##
  62
        -0.27128862 -10.7142857
                                  -0.8
                                            aggreg_wage 0.06967023
                                                                      -7.658267859
## 63
                                   0.5
         0.70273538
                       0.888889
                                            aggreg_wage 1.51620639
                                                                      11.295843521
## 64
                                  -0.4
                                            aggreg_wage -1.35385710
        -3.52667517
                      -2.6431718
                                                                      -3.884007030
## 65
         0.70000778
                      12.6696833
                                   0.1
                                            aggreg_wage 4.40313112
                                                                      -0.338270251
## 66
         9.66247007
                      -7.2289157
                                   0.6
                                            aggreg_wage -2.75242934
                                                                      -5.063755619
## 67
        -5.73320186
                      13.6363636
                                  -0.4
                                            aggreg_wage -3.23357849
                                                                      -3.314329887
##
  68
         1.68858338
                      -1.8095238
                                   0.4
                                            aggreg_wage -0.10745643
                                                                       4.717169698
  69
                       4.0737148
                                   0.2
##
        -0.81557678
                                            aggreg_wage -1.92580154
                                                                      -3.149456003
                                            aggreg_wage 1.30016051
##
  70
         2.60760056
                       4.9394222
                                   0.7
                                                                      -1.783602680
## 71
         1.24178760
                      -3.8188277
                                   1.1
                                            aggreg_wage
                                                         3.01853906
                                                                       3.150396308
## 72
                       2.4007387
                                   0.6
        -3.78663624
                                            aggreg_wage
                                                         0.83826809
                                                                       1.118568233
## 73
         0.92647495
                      -4.7790803
                                  -0.7
                                                         1.24822046
                                                                       5.290496345
                                            aggreg_wage
## 74
                                  -2.6
        -0.71968862 -10.6060606
                                            aggreg_wage -0.55489994
                                                                       6.851818016
## 75
         0.51039278
                       1.5889831
                                   1.9
                                                         1.13366662
                                                                       3.086525308
                                            aggreg_wage
## 76
        -2.69355314
                                  -0.1
                      -6.1522419
                                            aggreg_wage -2.21195856
                                                                      -4.088911006
                                            aggreg_wage 4.94779034
## 77
        -1.64876721
                      11.6666667
                                   0.4
                                                                       -4.929090280
## 78
         8.95109197
                       0.2985075
                                   0.4
                                            aggreg_wage -1.00226239
                                                                       3.238129889
## 79
        -1.75748165
                      -2.3809524
                                  -0.3
                                            aggreg_wage -3.51885981
                                                                      -8.370044053
## 80
                                  -0.5
                                            aggreg_wage -2.69974276
        -4.88540843
                       7.8252033
                                                                      -0.500000000
## 81
                                   0.9
         3.53501020
                       5.1837889
                                            aggreg_wage 0.79836662
                                                                       0.869733282
                                                         1.40490288
                                                                       2.308871431
## 82
         3.00576348
                       2.5985663
                                   1.7
                                            aggreg_wage
                                            aggreg_wage -0.02560885
##
  83
         1.66442383
                      -7.6855895
                                   0.2
                                                                       1.048787340
## 84
                                  -0.6
        -5.32255817
                       5.5818354
                                            aggreg_wage
                                                         3.47088809
                                                                       6.106940969
                                            aggreg_wage 0.03465861
##
   85
         3.00956586
                      -6.5412186
                                  -1.6
                                                                      11.615720524
## 86
                                  -3.0
        -1.56439746 -12.9434324
                                            aggreg_wage -1.31904573
                                                                       0.657276995
## 87
        -0.98693759
                       3.5242291
                                   1.4
                                            aggreg_wage 4.44388715
                                                                       8.356654229
## 88
        -2.04485488
                      -1.9148936
                                  -0.5
                                            aggreg_wage -1.15974740
                                                                      -9.943324485
##
  89
         0.26187804
                       2.3861171
                                  -0.1
                                            aggreg_wage -0.03886891
                                                                      -3.043097268
                                            aggreg_wage -3.46310878
##
  90
         3.82835821
                       2.8601695
                                   1.3
                                                                      -3.861638321
                                  -0.3
## 91
         0.48156400
                       9.1658084
                                            aggreg_wage 1.90821438
                                                                      -8.230065806
                                            aggreg_wage -5.03940120
## 92
        -0.18597997
                      -5.6603774
                                   0.4
                                                                       3.296703297
## 93
                                   1.0
        -3.08155368
                       8.9000000
                                            aggreg_wage -0.24713197
                                                                       3.299675442
## 94
         5.93759243
                       2.9384757
                                   0.6
                                            aggreg_wage 0.77191884
                                                                      -2.085878862
## 95
        -0.84455922
                      -4.6387154
                                   1.0
                                                                      -0.329797665
                                                         1.60447182
                                            aggreg_wage
## 96
        -2.56229762
                       5.7998129
                                  -0.2
                                                         4.59986756
                                                                       6.099087820
                                            aggreg_wage
## 97
                                  -1.3
                                            aggreg_wage 1.76292978
         3.35211675
                      -9.3722370
                                                                       2.208361430
  98
                                  -2.0
##
        -2.83098001 -12.4878049
                                            aggreg_wage -2.36887443
                                                                       0.008246743
## 99
        -1.05028415
                       4.0133779
                                   1.6
                                            aggreg_wage 1.29160335
                                                                       8.674857755
                                            aggreg_wage -0.88315711
##
  100
        -2.56633951
                      -1.5005359
                                  -1.4
                                                                      -5.470824797
## 101
                      -1.1969532 -17.7
         0.33577078
                                            aggreg_wage 0.42720437 -10.122009953
## 102
         1.22703949 -22.6872247
                                   3.4
                                            aggreg_wage -9.41928584 -13.530409931
## 103 -12.98853952
                                   6.2
                                            aggreg_wage -3.05925290
                      18.0911681
                                                                       3.728568478
                                            aggreg_wage -0.98272617
## 104
         0.95406957
                      10.1326900
                                   5.7
                                                                       2.399681370
## 105
         5.31905996
                      16.1007667
                                   3.7
                                            aggreg_wage
                                                         5.87100562
                                                                      -0.213924543
## 106
         7.95680140
                       3.2075472
                                   3.8
                                                          3.62565687
                                                                       5.593451569
                                            aggreg_wage
## 107
        -0.15446855
                       1.5539305
                                   2.4
                                                         2.82860201
                                                                       -0.692137320
                                            aggreg_wage
## 108
         1.04611758
                       2.0702070
                                   0.1
                                                         6.37390960
                                                                       3.754297928
                                            aggreg_wage
## 109
         1.96850394
                      -7.3192240
                                  -1.6
                                            aggreg_wage -3.47824061
                                                                       0.053739364
## 110
        -1.18690119
                      -7.6117983
                                  -2.1
                                            aggreg_wage 1.76196568
                                                                       3.920866529
                                            aggreg_wage 2.21057375
## 111
         0.82489146
                      -1.6477858
                                   0.4
                                                                       0.120596089
```

```
## 112
        -5.84182575
                      -3.4554974
                                  -1.3
                                            aggreg_wage -3.68041213
                                                                      -2.865009034
## 113
                                            aggreg_wage 5.18948611
         2.31707317
                       8.7852495
                                   -1.6
                                                                      -7.041629761
                      -5.5832502
                                            aggreg_wage -2.29953505
## 114
         7.82926103
                                   1.7
                                                                        0.905192949
## 115
        -3.76511226
                       8.7645195
                                            aggreg_wage -4.38849427
                                   1.5
                                                                        1.340887630
                                            aggreg_wage -0.87286993
##
  116
        -1.15577889
                      -0.5825243
                                   0.7
                                                                       3.410361536
## 117
                                            aggreg_wage -0.58868634
         0.16704191
                       4.9804687
                                   0.4
                                                                       0.910073887
## 118
         3.73404872
                       1.2093023
                                   1.4
                                            aggreg_wage 1.78398149
                                                                        2.384141441
## 119
        -0.78982316
                      -2.0220588
                                   1.9
                                            aggreg_wage 2.55451256
                                                                       -4.613640328
                                            aggreg_wage 1.53505113
## 120
        -2.26151895
                      -1.8761726
                                   -0.4
                                                                       -0.018286550
## 121
        -0.51899373
                      -3.8240918
                                   -2.2
                                            aggreg_wage -1.70904054
                                                                        2.423411065
## 122
         1.21730309
                      -8.2504970
                                   -1.7
                                            aggreg_wage 2.50065681
                                                                       -3.258928571
## 123
                      -2.3835320
         1.31004367
                                   0.4
                                            aggreg_wage -0.89244105
                                                                       -3.968620212
## 124
        -7.05200678
                      -0.3329634
                                   -0.3
                                            aggreg_wage -1.60816307
                                                                        1.028351754
## 125
         3.89995439
                       9.5768374
                                   -0.3
                                            aggreg_wage 6.75045999
                                                                       -0.732496195
## 126
                      -3.8617886
                                            aggreg_wage -3.27483547
         9.46806175
                                   1.6
                                                                        1.456636320
## 127
        -4.19758038
                       8.5623679
                                   0.5
                                            aggreg_wage -2.68681586
                                                                       -2.144139038
## 128
                                   0.9
        -0.39070676
                      -0.8763389
                                            aggreg_wage -2.64209275
                                                                        1.911196911
## 129
        -0.60236744
                       5.2062868
                                   0.7
                                                         0.71814163
                                                                        1.117635916
                                            aggreg_wage
                       3.3613445
## 130
         4.84109647
                                                                        4.402397902
                                   -0.5
                                                          2.15361482
                                            aggreg_wage
## 131
         0.38983734
                      -4.6070461
                                   0.7
                                            aggreg_wage
                                                         0.44870730
                                                                        2.485196483
## 132
        -3.35431173
                       0.2840909
                                   -0.7
                                                         0.49397306
                                                                       2.241092533
                                            aggreg_wage
## 133
        -1.14305507
                      -4.2492918
                                   -1.4
                                            aggreg_wage
                                                         0.55269409
                                                                       5.180238034
## 134
                                   -3.5
        -1.21233357
                      -9.2702170
                                            aggreg_wage 1.11334612
                                                                        2.067730381
## 135
         0.86543236
                      -1.7391304
                                   1.1
                                            aggreg_wage -1.57529493
                                                                        2.711756261
## 136
        -4.38146142
                      -3.2079646
                                   -0.2
                                            aggreg_wage 1.24562269
                                                                       -1.056064606
## 137
         3.64077670
                      13.6000000
                                   1.7
                                            aggreg_wage 6.11666937
                                                                       -1.820750275
## 138
        12.41217799
                      -7.4446680
                                   0.0
                                            aggreg_wage -1.81344883
                                                                       -2.302158273
##
  139
        -6.09217172
                      13.8043478
                                   0.2
                                            aggreg_wage -3.83201515
                                                                        2.495499918
## 140
        -1.25042017
                                   0.6
                      -2.5787966
                                            aggreg_wage -1.19309626
                                                                       -0.646603337
                                            aggreg_wage -1.51699883
## 141
        -0.85097692
                       3.6274510
                                   0.6
                                                                        5.270769725
## 142
         3.26146663
                       5.2980132
                                   1.8
                                            aggreg_wage
                                                          3.37118777
                                                                        1.236452450
## 143
         0.59179467
                      -4.4923630
                                   -0.1
                                                          2.43672125
                                                                        0.082931242
                                            aggreg_wage
## 144
        -4.27022739
                       0.6585136
                                   0.3
                                                          3.53216269
                                                                       -2.267419962
                                            aggreg_wage
## 145
                      -3.9252336
         0.07595636
                                   -0.9
                                                          1.35076442
                                                                        2.867273008
                                            aggreg_wage
##
  146
        -0.47609191
                      -9.7276265
                                   -2.9
                                                         1.16563103
                                                                       -0.157350517
                                            aggreg_wage
##
  147
                                   0.8
        -0.06932890
                       0.9698276
                                            aggreg_wage -0.80272800
                                                                       3.729831144
##
   148
        -2.31719162
                      -1.4941302
                                   0.1
                                            aggreg_wage -1.12309170
                                                                      -4.123860512
##
          brl_usd-2 selic-2
                                                cred-2 net_debt_gdp-2 primary-2
                                saving-2
## 2
        -7.28494480
                        0.89
                              1.41913825
                                           2.280031359
                                                                 -0.29
                                                                           6270.66
## 3
                              0.56767291 -0.037808131
                                                                  0.53
                                                                        -24082.32
        -1.71987345
                        0.75
                              0.42343625
                                           0.386339659
##
         6.60774903
                        0.82
                                                                  0.15
                                                                          16501.74
## 5
         3.82651661
                        0.71
                              1.13086318
                                           1.855524635
                                                                 -0.89
                                                                           -927.65
## 6
         6.90038071
                        0.74
                              0.98082740
                                           1.331128975
                                                                 -0.76
                                                                          -3797.78
## 7
        -0.04946332
                        0.64
                              1.94675003
                                           1.684052625
                                                                 -0.73
                                                                          11586.72
## 8
         1.42029990
                        0.68
                              1.64377332
                                           1.544026991
                                                                  0.01
                                                                           -141.24
## 9
                        0.69
                              2.32110474
                                                                 -0.27
                                                                          -2775.31
        -0.62457305
                                           0.816179226
## 10
        -0.32406953
                        0.54
                              1.23631841
                                           1.230249789
                                                                  0.09
                                                                           2572.92
## 11
                                                                  0.02
         0.03940887
                        0.61
                              1.74285471
                                           1.108535380
                                                                           1406.02
                                           1.417347673
## 12
         3.74236754
                        0.55
                              1.14300414
                                                                 -0.18
                                                                         -10807.82
## 13
        -3.03303588
                        0.55
                              1.30266949
                                           1.518042988
                                                                 -0.36
                                                                          17913.77
## 14
                        0.60
        -2.70204122
                              2.35161351
                                           2.488141763
                                                                  0.11
                                                                         -27767.67
## 15
        -0.64396036
                        0.49
                              0.91137113 -0.091752106
                                                                 -0.02
                                                                          -7999.10
## 16
         1.93933870
                        0.55
                              0.94640049
                                          0.736719544
                                                                  0.42
                                                                          33282.74
## 17
        -0.60103318
                        0.61
                              1.62658387 1.823504561
                                                                 -0.19
                                                                          -6531.35
```

```
## 18
         6.51141872
                        0.60
                              0.95091358
                                           0.909947912
                                                                  -0.26
                                                                           -6828.32
## 19
         3.92230459
                        0.61
                               1.59976551
                                           1.557562694
                                                                  -0.63
                                                                            4647.38
##
  20
         3.37246050
                        0.72
                               2.17003961
                                           1.780328341
                                                                  -0.32
                                                                             252.40
                                                                  -0.39
                                                                            3141.77
##
  21
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                        0.71
                               2.19602806
                                           0.535279209
##
  22
        -6.00784181
                        0.71
                               1.32275210
                                           1.286654851
                                                                  -0.22
                                                                            2718.66
## 23
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                        0.81
                               1.68910972
                                           0.748446200
                                                                   0.93
                                                                            8616.00
## 24
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                              1.31840374
                                           0.272335097
                                                                   0.11
                                                                         -15236.28
## 25
         0.76151960
                        0.79
                               1.63583331
                                           1.637022073
                                                                  -1.04
                                                                         -23556.95
##
  26
         3.57386849
                        0.85
                               2.57273947
                                           2.436762172
                                                                  -0.08
                                                                           19338.02
##
  27
        -3.83394484
                        0.79
                               0.83334452
                                           0.070075250
                                                                  -0.49
                                                                           -9513.96
##
  28
        -3.01367514
                        0.77
                               0.83542732
                                           0.456312694
                                                                   0.35
                                                                           17791.08
##
  29
        -1.19342291
                        0.82
                              0.81951854
                                           0.977270759
                                                                   0.42
                                                                           -1449.35
         0.13420417
##
   30
                        0.87
                               0.31797931
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                                                                   0.00
                                                                         -13316.23
                        0.82
##
  31
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                              0.89311036
                                           0.962275745
                                                                   0.32
                                                                           27942.16
##
  32
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                               1.05838116
                                           0.951067096
                                                                   0.38
                                                                           -8945.88
##
   33
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                               1.19574466
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                                                                   0.12
                                                                            2614.66
##
   34
                        0.91
                               0.64691365
                                           0.947773879
                                                                   0.54
                                                                           9744.88
         9.44171505
##
   35
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                               0.76652353
                                           1.361106970
                                                                  -0.07
                                                                           11030.97
                        0.95
##
  36
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                        0.84
                              0.64698211
                                           0.789796207
                                                                   0.15
                                                                         -29219.63
##
   37
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                        0.96
                               0.94759471
                                           1.272569771
                                                                  -0.04
                                                                           11812.86
                        0.94
##
  38
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                              1.37861509
                                           2.058344740
                                                                   0.41
                                                                            4810.02
## 39
                                                                  -0.09
                                                                         -33957.05
         8.11511440
                        0.82 -0.20002398
                                           0.132992826
## 40
        11.45706641
                        1.04 -0.49843241
                                           0.398283087
                                                                  -0.20
                                                                           23362.46
## 41
        -6.68454200
                        0.95 -1.16039881
                                           1.223502993
                                                                  -0.71
                                                                           -2539.01
                                           0.002898439
## 42
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                        0.99 -0.32249768
                                                                   0.76
                                                                         -13205.65
##
  43
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                        1.07
                              0.09755894
                                           0.705570411
                                                                   0.04
                                                                           20345.42
                                                                   0.84
##
   44
         9.39746607
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                                           0.568948183
                                                                            2422.74
##
   45
         7.44680851
                              0.28276708
                                           0.293733020
                                                                  -0.32
                                                                             695.50
                        1.11
##
  46
         8.94380297
                        1.11 -0.48784974
                                           0.797825784
                                                                  -0.45
                                                                           -2708.67
## 47
        -2.86994613
                        1.11 -0.17931444 0.957478514
                                                                  -0.44
                                                                               8.35
## 48
        -0.21512622
                        1.06
                              0.12672313 -0.230491259
                                                                   1.04
                                                                            4211.86
##
  49
         1.41042624
                        1.16
                              0.43251183 0.625778789
                                                                   0.84
                                                                            8036.77
##
  50
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                              1.38596735
                                           1.348933704
                                                                   1.74
                                                                           52161.77
##
  51
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                        1.00 -1.21528513 -0.664266764
                                                                  -0.30
                                                                         -99641.57
   52
       -10.57300829
                        1.16 -0.41581346 -0.493621971
                                                                   0.94
##
                                                                           50952.80
                        1.06 -0.19847822 -0.671399533
## 53
        -3.03796757
                                                                   2.05
                                                                         -12396.43
## 54
         4.18236624
                        1.11 -0.65378021 -0.631722558
                                                                   0.54
                                                                         -20825.24
                        1.16 -0.39306297 0.221275521
                                                                           28307.04
## 55
       -10.71915426
                                                                   0.21
                               0.06770079 -0.556210900
                                                                           -8063.92
## 56
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                        1.11
                                                                   2.27
                              0.48809996 -0.430828178
## 57
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                        1.22
                                                                   0.58
                                                                            2754.66
##
  58
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                                                                   0.88
                                                                            9450.88
                              0.27568625 -0.114380418
##
  59
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                                                                   0.82
                                                                            4375.69
##
   60
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                                                                   0.25
                                                                         -66231.55
##
  61
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                        1.12
                              0.90937361 0.291802513
                                                                   0.11
                                                                           78729.73
## 62
        -4.05401258
                               2.54392446 0.103448708
                                                                   2.15
                                                                           31596.54
                        1.09
## 63
                        0.87 -1.05856328 -1.016515123
        -0.88600307
                                                                   0.32 - 107449.40
##
  64
         2.22996741
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                                                                   0.80
                                                                           60179.79
##
  65
         0.94702948
                        0.79 -0.17864681 0.240574394
                                                                   0.27
                                                                         -12420.79
##
  66
         1.41659891
                        0.93
                              0.34119241 -0.260188225
                                                                  -0.05
                                                                         -23955.15
##
   67
         1.98883784
                        0.81
                               0.57383045 -0.156565601
                                                                   0.52
                                                                           43644.62
                                                                   0.44
##
  68
        -5.36642883
                        0.80
                               1.45681094 0.410223851
                                                                         -11184.05
## 69
         0.52394492
                        0.80
                              0.87860042 -0.813827396
                                                                   1.24
                                                                           -3414.53
## 70
         0.66423010
                              0.83274759 -0.042348219
                                                                           -6608.82
                        0.64
                                                                   0.42
## 71
         3.43815116
                        0.64 1.01348254 -0.004112586
                                                                   0.66
                                                                           11730.42
```

```
## 72
        -0.46699020
                        0.57
                              0.16839968 0.159385567
                                                                  -0.22
                                                                          -26017.03
## 73
                                          0.385820800
         1.42287642
                        0.54
                               1.00300304
                                                                   0.32
                                                                            5666.76
        -4.40224950
##
  74
                              3.17369683
                                           0.808833507
                                                                   0.51
                                                                           31412.28
##
  75
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                        0.47 -0.30867618 -0.782635494
                                                                   0.06
                                                                          -79261.60
##
   76
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                               0.29133846 -0.216230322
                                                                   0.15
                                                                           64353.68
##
  77
                        0.52
                              0.95853397
                                           0.652959101
                                                                   0.25
                                                                            7721.74
         4.73338950
##
  78
         7.35239190
                        0.52
                               0.54024299
                                           0.307427709
                                                                  -0.61
                                                                          -28035.19
## 79
         3.17953110
                        0.52
                              0.70985865
                                           0.441187036
                                                                  -0.55
                                                                           11123.96
##
  80
        -2.61724424
                        0.54
                               1.14037479
                                           0.681583517
                                                                   0.04
                                                                            5267.15
##
  81
        10.13238154
                        0.57
                               0.87718530 -0.140051650
                                                                   0.59
                                                                          -10090.55
##
  82
        -3.17798147
                        0.47
                               1.16646053
                                           1.016383756
                                                                  -0.97
                                                                           13474.90
##
   83
        -7.14910199
                        0.54
                               1.46702139
                                           0.484571286
                                                                   0.99
                                                                            7745.63
##
   84
         3.91703209
                        0.49
                               0.05765773 -0.141467611
                                                                   1.11
                                                                          -32419.28
##
  85
         0.29771921
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                               0.47280863
                                           1.113861308
                                                                  -0.23
                                                                           23400.03
##
  86
        -5.75344587
                        0.54
                               2.23478931
                                           1.635126154
                                                                   0.57
                                                                           25531.04
##
  87
         2.37175800
                        0.49 -1.03823296 -0.857196061
                                                                   0.34
                                                                          -88030.35
##
  88
                        0.47 -0.14580916
                                           0.318806231
                                                                   0.00
                                                                           61828.17
         4.23232296
##
   89
         1.24740125
                               0.62496389
                                           0.788447113
                                                                  -0.07
                                                                            3698.45
##
  90
        -0.11661216
                              0.01730149 -0.013137794
                                                                   0.01
                                                                          -25266.32
                        0.54
##
  91
        -2.75373721
                        0.47
                               0.29724010
                                           0.569644041
                                                                   0.19
                                                                           19645.07
## 92
        -1.75644639
                        0.57
                              0.67651839
                                           0.315962630
                                                                   0.58
                                                                            -301.77
## 93
                                                                           -9943.24
         9.92482002
                        0.50
                               0.17960831 -0.164283436
                                                                   0.44
## 94
         0.62592136
                        0.46
                               0.53944978
                                           1.117048274
                                                                  -0.94
                                                                           10684.67
## 95
        -3.84984870
                        0.48
                               1.42584914
                                           1.073925137
                                                                   0.32
                                                                            7093.04
                              0.31845063
## 96
         5.49269389
                        0.38
                                           0.341605218
                                                                   0.47
                                                                          -29985.04
##
  97
        -4.57688119
                        0.37
                               0.62061034
                                           1.266511434
                                                                  -0.33
                                                                           24756.81
                                                                   0.92
                                                                           -1799.81
##
  98
         5.92541128
                        0.38
                              2.39098926
                                           1.541020607
##
   99
         5.36906463
                        0.29 -1.15878663 -0.305074525
                                                                  -1.51
                                                                          -69788.48
##
  100
        15.56212623
                        0.34 -0.15668592
                                           0.559956690
                                                                  -0.64
                                                                           77176.83
## 101
         4.39198938
                        0.28
                              1.74406974
                                           2.838947252
                                                                  -1.92
                                                                            2754.32
##
  102
        -0.01289990
                        0.24
                               3.85047331
                                           0.002483536
                                                                   0.96
                                                                           70647.23
##
  103
         0.91601084
                        0.21
                               4.44503188
                                           0.342356717
                                                                   2.13
                                                                           37135.51
##
   104
        -4.98045805
                        0.19
                               2.43836724
                                            0.751065502
                                                                   2.52
                                                                           57243.45
  105
         5.15117151
                        0.16
                              3.17594596
                                            1.304373268
                                                                   1.88 -107610.63
##
   106
                               1.34278223
                                                                   0.54
                                                                            6522.77
##
         3.09649588
                        0.16
                                            1.953014844
##
  107
         2.32442687
                        0.16
                              1.50130825
                                           2.107537261
                                                                   0.64
                                                                          -23035.07
  108
        -7.62579706
                        0.15
                               0.86088004
                                            1.510666058
                                                                  -0.14
                                                                          -67511.09
## 109
        -2.53231040
                                                                           21092.32
                        0.16
                               0.30009189
                                           2.025791521
                                                                   1.43
                               2.23608364
                                                                           33697.40
## 110
         5.37326071
                        0.15
                                            1.629495074
                                                                   0.78
## 111
         0.99172648
                        0.13 -1.66888879 -0.067611016
                                                                  -1.66 -110211.83
## 112
         3.02191840
                        0.20 -0.35122181
                                           0.680175624
                                                                  -0.20
                                                                           70144.40
                        0.21 -0.17408273
                                                                  -0.98
##
  113
        -5.15561641
                                           1.521940610
                                                                          -16750.95
##
  114
        -3.17231168
                        0.27
                              0.56015888
                                           0.497987940
                                                                  -0.83
                                                                          -19274.26
##
                        0.31
  115
        -4.39636058
                              0.21874864
                                            1.176327811
                                                                  -0.17
                                                                           39796.85
## 116
         2.38723608
                        0.36
                              0.97309831
                                           0.884085150
                                                                   0.90
                                                                           49966.67
## 117
         0.42374536
                        0.43
                              0.91924399
                                           1.368497271
                                                                  -0.67
                                                                          -55224.95
                                            1.744020666
## 118
         5.75767593
                        0.44 -0.26060999
                                                                  -0.58
                                                                          -27011.74
## 119
         3.74347282
                        0.49 - 0.44257119
                                            2.184369844
                                                                  -1.01
                                                                            3795.13
## 120
                        0.59 -0.38466688
        -0.40940026
                                            1.594749906
                                                                  -0.97
                                                                          -22465.89
##
   121
        -0.70115495
                        0.77 -0.82359319
                                            1.886523961
                                                                  -0.23
                                                                           20365.28
                                                                           14910.89
## 122
        -3.99827954
                        0.73
                              1.24231077
                                            1.843565696
                                                                   0.14
## 123
        -4.06959379
                        0.76 -1.39755945 -0.004357640
                                                                  -0.30 -101709.93
## 124
        -7.81505410
                        0.93 -0.02239488
                                           0.946119064
                                                                   0.63
                                                                           98362.22
## 125
         3.82715528
                        0.83 -0.95495447
                                           1.410617543
                                                                   1.22
                                                                            -841.35
```

```
## 126
        -3.86703263
                        1.03 -0.40801654 0.803642936
                                                                 -0.26 -34564.20
## 127
                                                                  0.51
        10.76708331
                        1.02 0.45521511
                                           1.136442206
                                                                          71869.03
        -0.94703479
## 128
                              0.24842027
                                           1.596020786
                                                                 -0.88
                                                                         -47387.20
## 129
                        1.17 -0.61039193
                                                                 -0.44
        -0.18119434
                                           0.714003227
                                                                          -6045.86
##
  130
         4.39517998
                        1.07 -1.52863835
                                           1.459571038
                                                                  0.46
                                                                          50719.65
## 131
        -2.76729560
                        1.02 0.04686551
                                           1.793288482
                                                                 -0.02
                                                                        -41024.97
## 132
         0.70580626
                        1.02 -0.48814772
                                           0.992364401
                                                                 -0.05
                                                                         -16348.82
## 133
        -1.44327949
                        1.12 -0.11581830
                                           1.282623442
                                                                 -0.16
                                                                          47183.81
## 134
        -2.26946004
                        1.12 1.28513343
                                           1.518887870
                                                                  0.31
                                                                          -8275.80
## 135
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                        0.92 -2.64038848
                                           0.166341867
                                                                 -0.92 -110826.09
## 136
        -2.44661238
                        1.17 -0.51482396 -0.016591666
                                                                  0.49
                                                                        125465.73
## 137
        -1.56895941
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                                           0.959626765
                                                                  0.27
                                                                         -12270.55
##
  138
         1.90396192
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                                           0.041082497
                                                                 -0.03
                                                                         -34506.97
## 139
        -5.43049477
                        1.07 -0.58877453
                                           0.514048704
                                                                  0.72
                                                                          70496.76
## 140
        -1.61250156
                        1.07
                              0.91812011
                                           0.465243930
                                                                   1.26
                                                                          -1273.68
## 141
         3.80518467
                              0.26109246
                                           0.078301557
                                                                   0.61
                                                                         -13089.23
## 142
         1.74140979
                        0.97 -0.38152084
                                           1.338368836
                                                                  0.39
                                                                         -12979.28
## 143
         0.99660475
                        1.00
                              0.01622266
                                           1.094113652
                                                                  0.24
                                                                          -4759.03
                                           0.397387700
## 144
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                        0.92 -0.68149699
                                                                  0.04
                                                                         -32869.52
## 145
        -1.90885327
                        0.89
                              0.21931563
                                           1.158208828
                                                                  0.29
                                                                          52068.20
## 146
         2.31784659
                        0.97
                              1.98210712
                                           1.610341710
                                                                  1.42
                                                                          92303.07
## 147
                        0.80 -1.51965982 -0.195543945
         0.60166771
                                                                 -0.78 -231719.15
                              0.10113107 0.345319297
## 148
         0.25889578
                        0.83
                                                                  0.88 150838.12
##
       current account-2 trade balance-2
                                             imports-2
## 2
                   1302.2
                              -82.8931954 -13.4834566
## 3
                  -5204.4
                              974.6429270
                                            -4.7859610
## 4
                                            -6.4635734
                   7018.3
                              -67.7014110
## 5
                  -1481.2
                               18.4329200
                                            15.7112372
## 6
                     -6.7
                               45.7639219
                                            -0.9447098
## 7
                    -15.2
                              -47.9379592
                                             8.3049993
## 8
                   -857.7
                              108.4859508
                                            -8.3993692
## 9
                   -904.5
                              -56.4333203
                                            -2.2135250
## 10
                   3767.4
                              -52.8656263
                                             5.5010607
## 11
                              151.7579842
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                                            -8.8057714
## 12
                  -2405.5
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## 13
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                               25.4645295
## 14
                    291.7
                              -32.6693321 -15.2500456
## 15
                  -4199.5
                              197.1644413
                                            14.0765504
## 16
                   7185.9
                              -38.4697244 -15.8025709
## 17
                   -550.1
                              -16.7166302
                                            13.6496906
## 18
                   -352.9
                               31.1013175
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## 19
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## 20
                   2801.2
                              -59.6902267 -10.5333459
## 21
                  -8111.6
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## 22
                   6404.9
                              -44.2322136 -10.9467702
## 23
                                            -6.5019225
                    974.1
                              -11.5374459
## 24
                  -2607.3
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## 25
                   1491.6
                              -55.6801585 -16.8193000
## 26
                   1089.4
                              -12.7159091
                                            -5.2807438
## 27
                  -9109.3
                              243.3624094
                                             8.7445223
## 28
                   5220.4
                                            -8.3954585
                              -17.7424451
## 29
                    606.3
                              -30.9758309
                                            -2.8225474
## 30
                   -654.4
                                6.2239833
                                             9.4791879
## 31
                   1484.1
                               -0.6202980
                                             4.5814468
```

```
## 32
                   2047.9
                               -53.2927061
                                            -9.7973708
## 33
                                            18.5934384
                  -5679.0
                                75.2099323
## 34
                   4383.2
                                -6.9519957 -10.0461072
## 35
                                79.9036305
                  -2029.6
                                              6.2278192
## 36
                  -1304.1
                                -0.5603017
                                             -4.7531100
## 37
                   -475.2
                                 9.8822000
                                            -7.3461183
## 38
                    348.1
                               -21.0734662
                                             -4.5959568
## 39
                  -2619.1
                                29.7040660
                                             -5.3560046
## 40
                   4636.3
                                -8.4163593
                                             -8.3306030
## 41
                   1600.1
                               -33.5091357
                                             10.8396654
## 42
                    194.3
                               -10.7590789 -11.7298953
## 43
                   2146.3
                               -58.1995442
                                            -3.7688238
## 44
                    303.7
                              -108.6145272
                                              7.3716845
                                              3.6449228
## 45
                  -2667.3
                             -1094.0225035
                               -34.1917227 -17.9153506
## 46
                   3594.2
## 47
                    -12.5
                                 7.0629972
                                              3.0075419
## 48
                  -2027.0
                                              6.2862351
                                80.6807912
## 49
                   1165.1
                                18.4061354 -10.1074075
## 50
                   3944.7
                              -233.7369755 -16.8779275
## 51
                  -6124.4
                              -124.6683512
                                             -5.8213153
## 52
                   4256.5
                              -150.3343292
                                              4.8306380
## 53
                   -207.8
                                95.4776710
                                             12.0651376
## 54
                    869.1
                               117.6402545
                                             -8.7824911
## 55
                   1965.3
                               108.3244752
                                              5.7466443
## 56
                  -4020.3
                              -116.3504162
                                             14.5180484
## 57
                  -1228.9
                              -378.6034718
                                             -7.8020244
                               -26.2531504
                                              9.3230032
## 58
                   2930.9
## 59
                   -337.2
                               -61.0499335
                                            -6.6676340
## 60
                  -1841.9
                              -406.6780405
                                            -4.8913799
## 61
                   2779.4
                              -224.8430422
                                              0.7261027
## 62
                  -4117.2
                               -86.4918200
                                              0.5005082
## 63
                  -1997.8
                              -380.3958530
                                              5.8325614
## 64
                   6454.3
                              -324.9579832 -10.6263551
## 65
                    414.8
                               140.6425103
                                            22.9925335
## 66
                   -931.1
                                -6.9202111 -15.4843046
## 67
                   2534.6
                                20.2061305
                                            13.2136467
## 68
                  -2038.6
                               -32.6562890
                                              3.3372017
## 69
                               -29.5550062
                                             -0.9767342
                  -3843.8
## 70
                   3098.1
                               -44.8441247
                                             11.5633417
## 71
                               -21.5800636
                                             -3.7665942
                   -367.7
## 72
                   -936.9
                                 2.5963489
                                              2.5616257
                                             -4.0757831
## 73
                  -1331.4
                              -256.5309081
## 74
                    329.1
                               -78.1239475
                                             -4.3301969
## 75
                  -4275.3
                               472.7097768
                                             13.4655995
## 76
                   1905.5
                               -36.6624101
                                              0.4880557
## 77
                   2648.1
                              -331.4728353
                                             -3.3959112
                    595.6
                               -36.7012011
## 78
                                              1.8890312
## 79
                    871.4
                                30.6199305
                                             -5.3041218
## 80
                   -680.1
                               -32.1412730
                                              7.8550437
## 81
                  -6014.7
                              -171.0107035
                                             28.2351729
## 82
                                              1.7189847
                   3644.2
                               153.3195259
## 83
                   2456.6
                              -148.8008721 -24.3341745
## 84
                   -760.3
                               -28.4810127
                                            14.1647848
## 85
                   -941.9
                              -154.7891723
                                              4.3493920
```

```
## 86
                  -2952.2
                             -464.5130641 -22.8615727
## 87
                  -2434.7
                             -302.9453929
                                           27.8948864
                              -69.1337015 -21.9557298
## 88
                   6591.4
## 89
                   -815.7
                             -122.7504421
                                             3.6872327
## 90
                    665.1
                              118.0612711
                                             5.1317243
## 91
                   -503.4
                              -26.3577270
                                             9.6691232
## 92
                    652.5
                             -128.6446469 -11.7705878
## 93
                  -8908.4
                             3237.8727634
                                            33.8392833
## 94
                   5443.9
                               -62.7743530
                                            -7.1779957
## 95
                   2432.1
                              -56.9120000
                                           -1.4645113
## 96
                  -5543.1
                              519.2536205
                                             4.9636283
## 97
                   5065.7
                              -77.4323149 -16.1860060
## 98
                  -1296.9
                             -157.1011027 -10.6566106
                            -1505.6305258
                                           27.4178621
## 99
                  -5348.0
                              -67.3022809 -18.0183898
## 100
                   5937.8
## 101
                   1551.8
                               -93.0950694
                                             9.4935095
## 102
                            -2494.2815249 -21.6545087
                   5762.9
## 103
                  -1798.5
                              -65.2336334
                                           12.8907320
## 104
                   2471.4
                              298.8814515 -18.7635154
## 105
                  -3582.4
                               -6.2023891
                                            10.9199031
## 106
                   1646.1
                              -23.1897363
                                            -3.0629120
## 107
                  -1268.3
                              -26.9453554
                                            10.4653839
## 108
                  -1079.0
                              -29.2234761
                                             1.4409470
## 109
                  -1447.2
                             -132.2980262
                                            12.1505452
## 110
                  -5974.4
                              652.6885667
                                            29.6819654
## 111
                    228.8
                                 3.9449944 -13.7383209
                                            -4.8591200
## 112
                   4249.8
                               -46.1343592
## 113
                  -4139.7
                               -4.7944609
                                            48.7657434
## 114
                  11958.1
                             -416.3746970 -30.5175384
## 115
                  -1406.6
                              -26.2675476
                                             9.2224958
## 116
                   -326.9
                                 1.0745098
                                            14.6091032
## 117
                  -5345.4
                               -21.2403973 -10.6571057
## 118
                   1457.6
                              -20.5078943
                                            11.5762788
## 119
                  -1411.9
                              -93.1087906
                                             1.3779654
## 120
                  -2381.6
                             -599.2805755
                                            -2.5451642
## 121
                  -2496.4
                              358.7896254
                                             7.3847343
## 122
                    767.5
                              -93.6381124
                                            -4.9941258
## 123
                             1118.9447701
                                            -2.7004212
                    380.2
                   5479.2
                                            -5.4470931
## 124
                             -116.7392295
## 125
                   -425.4
                              310.4491154
                                            17.1943973
## 126
                   3382.6
                               31.7061489
                                            -5.1112005
## 127
                                            18.6072754
                  -5344.8
                             -103.2868052
## 128
                   4532.1
                            -2755.0638298
                                            -3.0290268
## 129
                  -5928.9
                              -70.1958522
                                             1.0222126
## 130
                  -1493.0
                             -228.6190579
                                             9.8595820
## 131
                     41.6
                              -13.9058450
                                            -1.5185557
## 132
                   1909.9
                               51.2043512
                                            -9.3515276
## 133
                   4116.3
                             -230.9031346
                                            -7.2065443
## 134
                  -6438.1
                             -131.9937190
                                             1.8601473
## 135
                  -1433.7
                              131.8865031
                                            -8.2587955
## 136
                   4608.6
                             -106.5083670 -14.1375979
## 137
                   5052.2
                             6197.0528455
                                           25.2571981
                              -31.6688992 -13.1284940
## 138
                   -944.8
## 139
                   1340.4
                               44.5347189
                                           13.9897675
```

```
## 140
                 -1935.3
                             -24.4051899 -8.1040416
## 141
                 -4381.2
                             -23.6116815
                                            1.6465043
## 142
                  3229.0
                              36.5414002
                                            8.1508941
## 143
                  1818.3
                             -13.1416965 -9.9346778
## 144
                  -373.0
                              -3.3929850
                                            3.7386399
## 145
                 -1906.9
                             -22.5622407
                                          -3.5293642
## 146
                 -5357.5
                              11.3099225
                                            1.3442374
## 147
                  2415.2
                             -78.1770251
                                            5.6344756
## 148
                   808.4
                            -158.1932773 -10.6683073
  9)
```

```
y <- y[-c(1,2)]
dim(y)
```

NULL

```
print(y)
```

```
[1] 0.21 0.64 0.36 0.08 0.43 0.41 0.57 0.59 0.60 0.79 0.86 0.60
##
##
   [13] 0.47 0.55 0.37
                         0.26 0.03 0.24
                                           0.35
                                                0.57
                                                      0.54
                                                           0.92
                                                                 0.55
                                                                       0.69
##
   [25] 0.92 0.67 0.46 0.40
                               0.01
                                     0.25
                                           0.57
                                                0.42
                                                      0.51
                                                           0.78
                                                                 1.24
                                                                       1.22
   [37]
        1.32 0.71 0.74
                         0.79
                               0.62
                                                0.82
                                                      1.01
##
                                     0.22
                                           0.54
                                                           0.96
                                                                 1.27
                                                                       0.90
##
   [49] 0.43 0.61 0.78
                         0.35
                               0.52
                                     0.44
                                           0.08
                                                0.26
                                                      0.18
                                                           0.30
                                                                 0.38
   [61] 0.25 0.14 0.31 -0.23
##
                              0.24
                                    0.19
                                           0.16
                                                0.42 0.28
                                                           0.44
                                                                 0.29
                                                                      0.32
   [73] 0.09 0.22 0.40 1.26 0.33 -0.09
                                           0.48
                                                0.45 - 0.21
                                                           0.15
                                                                 0.32
##
   [85] 0.75 0.57 0.13 0.01
                               0.19
                                     0.11 - 0.04
                                                0.10
                                                      0.51
                                                           1.15
                                                                 0.21
                                                                       0.25
##
   [97] 0.07 -0.31 -0.38 0.26 0.36
                                     0.24
                                           0.64
                                                0.86
                                                      0.89
                                                           1.35
                                                                 0.25
                                                                       0.86
## [109] 0.93 0.31 0.83 0.53 0.96 0.87
                                           1.16
                                                1.25
                                                      0.95
                                                           0.73
                                                                 0.54
                                                                      1.01
## [121]
        1.62 1.06 0.47 0.67 -0.68 -0.36 -0.29
                                                0.59
                                                      0.41
                                                           0.62
                                                                 0.53 0.84
## [133] 0.71 0.61 0.23 -0.08 0.12 0.23 0.26
                                                0.24
                                                      0.28
                                                           0.56 0.42 0.83
## [145] 0.16 0.38 0.46
```