```
--------------------------------------------------------------------------------
> ------------------------------------------------
      name:  <unnamed>
       log:  C:\Users\sahlste1\OneDrive - Aalto University\jatko-opinnot\opetus\Applie
> d Microeconometrics 2\Assignment 2\assignment_2_lo
> g.log
  log type:  text
 opened on:  16 Nov 2023, 15:44:44

.
end of do-file

. do "C:\Users\sahlste1\AppData\Local\Temp\STD9d0_000000.tmp"

. use autor.dta, clear
(EOW SVCs, CPS, rulings research data set)

.
. * Here we use "reghdfe", but you could also use "reg", "areg", "xtreg" or even
. * the older alternative "xi: reg" (for the last, see "help xi")
.
. * 2 a) Table 5 column 1
. reghdfe lnths mico mppa mgfa lnemp, ///
>         absorb(state year state#c.year) vce(cluster state)
(MWFE estimator converged in 3 iterations)

HDFE Linear regression                            Number of obs   =        850
Absorbing 3 HDFE groups                           F(   4,     49) =       7.86
Statistics robust to heteroskedasticity           Prob > F        =     0.0001
                                                  R-squared       =     0.9886
                                                  Adj R-squared   =     0.9867
                                                  Within R-sq.    =     0.0872
Number of clusters (state)   =         50         Root MSE        =     0.1971

                                 (Std. err. adjusted for 50 clusters in state)
------------------------------------------------------------------------------
             |               Robust
       lnths | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
        mico |   .1483885   .0548035     2.71   0.009     .0382568    .2585202
        mppa |  -.0159165   .0565917    -0.28   0.780    -.1296417    .0978087
        mgfa |  -.1215924   .0655757    -1.85   0.070    -.2533717    .0101869
       lnemp |   1.552175    .413231     3.76   0.000     .7217565    2.382594
       _cons |  -13.03081   5.805547    -2.24   0.029     -24.6975   -1.364129
------------------------------------------------------------------------------

Absorbed degrees of freedom:
------------------------------------------------------+
  Absorbed FE | Categories  - Redundant  = Num. Coefs |
--------------+---------------------------------------|
        state |        50          50           0    *|
         year |        17           1          16     |
 state#c.year |        50           0          50    ?|
------------------------------------------------------+
? = number of redundant parameters may be higher
* = FE nested within cluster; treated as redundant for DoF computation

.
. * 2 e) Table 7
. reghdfe lnths admico_2 admico_1 admico0 admico1 admico2 admico3 mico4 ///
>         admppa_2 admppa_1 admppa0 admppa1 admppa2 admppa3 mppa4 ///
>         admgfa_2 admgfa_1 admgfa0 admgfa1 admgfa2 admgfa3 mgfa4 lnemp, ///
>         absorb(state year) vce(cluster state)
(MWFE estimator converged in 2 iterations)
```

```
HDFE Linear regression                            Number of obs   =        850
Absorbing 2 HDFE groups                           F(  22,     49) =       3.94
Statistics robust to heteroskedasticity           Prob > F        =     0.0000
                                                  R-squared       =     0.9732
                                                  Adj R-squared   =     0.9702
                                                  Within R-sq.    =     0.1551
Number of clusters (state)   =         50         Root MSE        =     0.2953

                                  (Std. err. adjusted for 50 clusters in state)
------------------------------------------------------------------------------
             |               Robust
       lnths | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
    admico_2 |   .0304686    .064458     0.47   0.639    -.0990645    .1600017
    admico_1 |   .0247429   .0628519     0.39   0.696    -.1015627    .1510484
     admico0 |   .1201128   .0881697     1.36   0.179    -.0570708    .2972964
     admico1 |   .1209861   .1059647     1.14   0.259    -.0919579    .3339301
     admico2 |   .1683294    .126315     1.33   0.189    -.0855101    .4221688
     admico3 |    .083704   .1343801     0.62   0.536    -.1863429    .3537509
       mico4 |   .1000648   .1694664     0.59   0.558    -.2404906    .4406202
    admppa_2 |   .1341538   .0835302     1.61   0.115    -.0337065     .302014
    admppa_1 |   .1138434   .0997291     1.14   0.259    -.0865696    .3142564
     admppa0 |   .1371354   .1027637     1.33   0.188    -.0693759    .3436467
     admppa1 |   .1938449   .1243894     1.56   0.126     -.056125    .4438147
     admppa2 |   .1324372   .1385362     0.96   0.344    -.1459618    .4108362
     admppa3 |   .0822747   .1512853     0.54   0.589    -.2217445     .386294
       mppa4 |   .1090413   .1559548     0.70   0.488    -.2043616    .4224443
    admgfa_2 |   .0144155   .1108336     0.13   0.897    -.2083128    .2371439
    admgfa_1 |   .0328045   .1117041     0.29   0.770    -.1916732    .2572822
     admgfa0 |  -.0085204   .1194763    -0.07   0.943     -.248617    .2315762
     admgfa1 |  -.0699729   .1274998    -0.55   0.586    -.3261934    .1862477
     admgfa2 |  -.0859414   .1419865    -0.61   0.548    -.3712739    .1993911
     admgfa3 |  -.0908932   .1448654    -0.63   0.533    -.3820112    .2002247
       mgfa4 |  -.0205015   .1967033    -0.10   0.917    -.4157916    .3747887
       lnemp |   2.029293   .4205138     4.83   0.000     1.184239    2.874348
       _cons |  -19.80843   5.895962    -3.36   0.002     -31.6568   -7.960047
------------------------------------------------------------------------------

Absorbed degrees of freedom:
-----------------------------------------------------+
 Absorbed FE | Categories  - Redundant  = Num. Coefs |
-------------+---------------------------------------|
       state |        50          50           0    *|
        year |        17           1          16     |
-----------------------------------------------------+
* = FE nested within cluster; treated as redundant for DoF computation

.
. reghdfe lnths admico_2 admico_1 admico0 admico1 admico2 admico3 mico4 ///
>         admppa_2 admppa_1 admppa0 admppa1 admppa2 admppa3 mppa4 ///
>         admgfa_2 admgfa_1 admgfa0 admgfa1 admgfa2 admgfa3 mgfa4 lnemp, ///
>         absorb(state year state#c.year) vce(cluster state)
(MWFE estimator converged in 3 iterations)

HDFE Linear regression                            Number of obs   =        850
Absorbing 3 HDFE groups                           F(  22,     49) =       5.80
Statistics robust to heteroskedasticity           Prob > F        =     0.0000
                                                  R-squared       =     0.9889
                                                  Adj R-squared   =     0.9868
                                                  Within R-sq.    =     0.1167
Number of clusters (state)   =         50         Root MSE        =     0.1964
```

```
                                 (Std. err. adjusted for 50 clusters in state)
------------------------------------------------------------------------------
             |               Robust
       lnths | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
    admico_2 |  -.0165746   .0508136    -0.33   0.746    -.1186884    .0855392
    admico_1 |  -.0013235   .0565786    -0.02   0.981    -.1150225    .1123755
     admico0 |   .1076673   .0773617     1.39   0.170    -.0477968    .2631314
     admico1 |    .146888   .0825019     1.78   0.081    -.0189058    .3126819
     admico2 |   .2280517   .1009775     2.26   0.028     .0251299    .4309736
     admico3 |   .1436414   .1039587     1.38   0.173    -.0652713    .3525542
       mico4 |   .1963525   .1206945     1.63   0.110    -.0461923    .4388973
    admppa_2 |   .0033158   .0558978     0.06   0.953    -.1090151    .1156468
    admppa_1 |   -.055947   .0602201    -0.93   0.357    -.1769638    .0650699
     admppa0 |  -.0528044   .0784672    -0.67   0.504    -.2104902    .1048814
     admppa1 |   -.015345   .0861662    -0.18   0.859    -.1885024    .1578124
     admppa2 |  -.0688863   .1063086    -0.65   0.520    -.2825214    .1447488
     admppa3 |  -.1293581   .1219628    -1.06   0.294    -.3744515    .1157353
       mppa4 |  -.1307881   .1249496    -1.05   0.300    -.3818837    .1203076
    admgfa_2 |   .0432939   .0707881     0.61   0.544    -.0989601    .1855478
    admgfa_1 |  -.0506417   .0792127    -0.64   0.526    -.2098256    .1085421
     admgfa0 |  -.0974202   .0868932    -1.12   0.268    -.2720385    .0771981
     admgfa1 |  -.1510218   .0723418    -2.09   0.042    -.2963981   -.0056456
     admgfa2 |  -.1782442   .0897952    -1.99   0.053    -.3586945     .002206
     admgfa3 |  -.1620822   .0842507    -1.92   0.060    -.3313903    .0072259
       mgfa4 |  -.0467481   .0928485    -0.50   0.617    -.2333342     .139838
       lnemp |   1.579583   .3902838     4.05   0.000     .7952781    2.363887
       _cons |  -13.38056   5.475943    -2.44   0.018    -24.38487   -2.376237
------------------------------------------------------------------------------

Absorbed degrees of freedom:
-----------------------------------------------------+
 Absorbed FE | Categories  - Redundant  = Num. Coefs |
-------------+---------------------------------------|
       state |        50          50           0    *|
        year |        17           1          16     |
state#c.year |        50           0          50    ?|
-----------------------------------------------------+
? = number of redundant parameters may be higher
* = FE nested within cluster; treated as redundant for DoF computation

.
. gen year2=year^2

.
. reghdfe lnths admico_2 admico_1 admico0 admico1 admico2 admico3 mico4 ///
>         admppa_2 admppa_1 admppa0 admppa1 admppa2 admppa3 mppa4 ///
>         admgfa_2 admgfa_1 admgfa0 admgfa1 admgfa2 admgfa3 mgfa4 lnemp, ///
>         absorb(state year state#c.year state#c.year2) vce(cluster state)
(MWFE estimator converged in 534 iterations)

HDFE Linear regression                            Number of obs   =        850
Absorbing 4 HDFE groups                           F(  22,     49) =       6.90
Statistics robust to heteroskedasticity           Prob > F        =     0.0000
                                                  R-squared       =     0.9907
                                                  Adj R-squared   =     0.9881
                                                  Within R-sq.    =     0.0883
Number of clusters (state)   =         50         Root MSE        =     0.1864

                                 (Std. err. adjusted for 50 clusters in state)
------------------------------------------------------------------------------
             |               Robust
       lnths | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
    admico_2 |  -.0146692   .0514965    -0.28   0.777    -.1181553    .0888169
    admico_1 |   .0003621   .0772804     0.00   0.996    -.1549387    .1556629
     admico0 |   .1082491   .0925964     1.17   0.248    -.0778304    .2943285
     admico1 |   .1456345   .1113385     1.31   0.197    -.0781086    .3693776
     admico2 |   .2236282   .1298888     1.72   0.091    -.0373932    .4846496
     admico3 |   .1444485   .1304999     1.11   0.274    -.1178009    .4066979
       mico4 |   .2222937   .1478259     1.50   0.139    -.0747736     .519361
    admppa_2 |    .019395   .0766178     0.25   0.801    -.1345742    .1733641
```

```
    admppa_1 |  -.0288243   .0891381    -0.32   0.748     -.207954    .1503054
     admppa0 |  -.0257239   .1113187    -0.23   0.818    -.2494273    .1979794
     admppa1 |   .0071008   .1261148     0.06   0.955    -.2463363    .2605379
     admppa2 |  -.0494616   .1486396    -0.33   0.741     -.348164    .2492409
     admppa3 |  -.1059069   .1687447    -0.63   0.533     -.445012    .2331982
       mppa4 |  -.0900127   .1747656    -0.52   0.609    -.4412174     .261192
    admgfa_2 |    .033827   .0632551     0.53   0.595    -.0932889    .1609428
    admgfa_1 |  -.0674006   .0968228    -0.70   0.490    -.2619733    .1271722
     admgfa0 |  -.1240696   .1020219    -1.22   0.230    -.3290903    .0809512
     admgfa1 |  -.1835537   .1274948    -1.44   0.156     -.439764    .0726566
     admgfa2 |  -.2225986   .1472665    -1.51   0.137    -.5185416    .0733445
     admgfa3 |  -.2118364   .1526251    -1.39   0.171    -.5185481    .0948753
       mgfa4 |  -.1167321   .1459625    -0.80   0.428    -.4100547    .1765905
       lnemp |   1.711407   .6140756     2.79   0.008     .4773759    2.945438
       _cons |   -15.2554   8.622826    -1.77   0.083    -32.58361     2.07282
------------------------------------------------------------------------------

Absorbed degrees of freedom:
-------------------------------------------------------+
   Absorbed FE | Categories  - Redundant  = Num. Coefs |
---------------+---------------------------------------|
         state |        50          50           0    *|
          year |        17           1          16     |
  state#c.year |        50           0          50    ?|
 state#c.year2 |        50           0          50    ?|
-------------------------------------------------------+
? = number of redundant parameters may be higher
* = FE nested within cluster; treated as redundant for DoF computation

.
. reghdfe lnths admico_2 admico_1 admico0 admico1 admico2 admico3 mico4 ///
>         admppa_2 admppa_1 admppa0 admppa1 admppa2 admppa3 mppa4 ///
>         admgfa_2 admgfa_1 admgfa0 admgfa1 admgfa2 admgfa3 mgfa4 lnemp, ///
>         absorb(state year state#c.year state#c.year2 region#year) ///
>         vce(cluster state)
(MWFE estimator converged in 362 iterations)

HDFE Linear regression                            Number of obs   =        850
Absorbing 5 HDFE groups                           F(  22,     49) =       2.64
Statistics robust to heteroskedasticity           Prob > F        =     0.0024
                                                  R-squared       =     0.9930
                                                  Adj R-squared   =     0.9886
                                                  Within R-sq.    =     0.1068
Number of clusters (state)   =         50         Root MSE        =     0.1823

                                 (Std. err. adjusted for 50 clusters in state)
------------------------------------------------------------------------------
             |               Robust
       lnths | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
    admico_2 |   .0391523   .0469895     0.83   0.409    -.0552767    .1335814
    admico_1 |    .053952   .0783867     0.69   0.495     -.103572    .2114761
     admico0 |   .1575124   .0897284     1.76   0.085    -.0228036    .3378284
     admico1 |   .2041372   .1148111     1.78   0.082    -.0265843    .4348588
     admico2 |   .2964209   .1311555     2.26   0.028     .0328541    .5599877
     admico3 |   .1922664   .1340621     1.43   0.158    -.0771414    .4616742
       mico4 |   .2554611   .1591165     1.61   0.115    -.0642954    .5752177
    admppa_2 |  -.0042549     .06415    -0.07   0.947    -.1331691    .1246593
    admppa_1 |  -.1097824   .0851232    -1.29   0.203    -.2808439    .0612792
     admppa0 |  -.1020945   .1055239    -0.97   0.338    -.3141526    .1099637
     admppa1 |  -.0592444   .1162405    -0.51   0.613    -.2928384    .1743496
     admppa2 |  -.1475355    .116896    -1.26   0.213    -.3824468    .0873758
     admppa3 |  -.1868288   .1398122    -1.34   0.188     -.467792    .0941343
       mppa4 |  -.1808092   .1431023    -1.26   0.212    -.4683841    .1067656
    admgfa_2 |  -.0514555   .0824252    -0.62   0.535    -.2170951    .1141842
    admgfa_1 |   -.102724   .0980145    -1.05   0.300    -.2996915    .0942436
     admgfa0 |  -.1415675   .1166565    -1.21   0.231    -.3759974    .0928625
     admgfa1 |  -.2969847   .1468374    -2.02   0.049    -.5920655   -.0019039
     admgfa2 |  -.3309171   .1755581    -1.88   0.065    -.6837144    .0218801
     admgfa3 |  -.3747668   .1894598    -1.98   0.054    -.7555006    .0059669
       mgfa4 |  -.3570537   .1701987    -2.10   0.041    -.6990807   -.0150267
       lnemp |   1.826044   .8918297     2.05   0.046      .033845    3.618243
```

```
       _cons |  -16.79908   12.50909    -1.34   0.185    -41.93704    8.338886
------------------------------------------------------------------------------

Absorbed degrees of freedom:
--------------------------------------------------------+
   Absorbed FE | Categories  - Redundant  = Num. Coefs |
---------------+----------------------------------------|
         state |        50          50           0    *|
          year |        17           1          16     |
  state#c.year |        50           0          50    ?|
 state#c.year2 |        50           0          50    ?|
   region#year |       153          17         136     |
--------------------------------------------------------+
? = number of redundant parameters may be higher
* = FE nested within cluster; treated as redundant for DoF computation

.
. * 2 f)
. reghdfe lnths mico, absorb(state year) vce(cluster state)
(MWFE estimator converged in 2 iterations)

HDFE Linear regression                            Number of obs   =        850
Absorbing 2 HDFE groups                           F(   1,     49) =       1.37
Statistics robust to heteroskedasticity           Prob > F        =     0.2477
                                                  R-squared       =     0.9686
                                                  Adj R-squared   =     0.9660
                                                  Within R-sq.    =     0.0099
Number of clusters (state)   =         50         Root MSE        =     0.3154

                                 (Std. err. adjusted for 50 clusters in state)
------------------------------------------------------------------------------
             |               Robust
       lnths | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
        mico |   .1120759   .0957921     1.17   0.248    -.0804255    .3045772
       _cons |   8.739007   .0587149   148.84   0.000     8.621015    8.856999
------------------------------------------------------------------------------

Absorbed degrees of freedom:
-----------------------------------------------------+
 Absorbed FE | Categories  - Redundant  = Num. Coefs |
-------------+---------------------------------------|
       state |        50          50           0    *|
        year |        17           1          16     |
-----------------------------------------------------+
* = FE nested within cluster; treated as redundant for DoF computation

.
. twowayfeweights lnths state year mico, type(feTR)
Under the common trends assumption, beta estimates a weighted sum of 521 ATTs.
397 ATTs receive a positive weight, and 124 receive a negative weight.
The sum of the positive weights is equal to 1.289804.
The sum of the negative weights is equal to -.28980404.
beta is compatible with a DGP where the average of those ATTs is equal to 0,
while their standard deviation is equal to .06799741.
beta is compatible with a DGP where those ATTs all are of a different sign than beta,
while their standard deviation is equal to .14995329.

.
. * 2 g)
```

```
. csdid lnths, ivar(state) time(year) gvar(max_first_treat)
Units always treated found. These will be ignored
..................................................
..................................................
............................................
Difference-in-difference with Multiple Time Periods

                                                      Number of obs = 731
Outcome model  : regression adjustment
Treatment model: none
------------------------------------------------------------------------------
             | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
g80          |
     t_79_80 |    .133368   .0835206     1.60   0.110    -.0303294    .2970653
     t_79_81 |  -.1306876   .2670399    -0.49   0.625    -.6540762     .392701
     t_79_82 |  -.1006916   .2977214    -0.34   0.735    -.6842148    .4828317
     t_79_83 |  -.1304026   .2232121    -0.58   0.559    -.5678902    .3070851
     t_79_84 |   .0083813   .1707604     0.05   0.961    -.3263029    .3430655
     t_79_85 |  -.0318767   .2000689    -0.16   0.873    -.4240046    .3602511
     t_79_86 |   .0157902   .2076368     0.08   0.939    -.3911705    .4227508
     t_79_87 |   .1579216   .2358268     0.67   0.503    -.3042904    .6201336
     t_79_88 |   .0257923   .2987484     0.09   0.931    -.5597438    .6113284
     t_79_89 |  -.0234588   .2984001    -0.08   0.937    -.6083123    .5613947
     t_79_90 |  -.0990273   .3787819    -0.26   0.794    -.8414263    .6433716
     t_79_91 |  -.0540039   .4540715    -0.12   0.905    -.9439677      .83596
     t_79_92 |   .0468633   .4597409     0.10   0.919    -.8542124     .947939
     t_79_93 |   .0873678   .4060401     0.22   0.830    -.7084561    .8831918
     t_79_94 |   .0454184   .3782775     0.12   0.904    -.6959918    .7868287
     t_79_95 |   .1293764   .3955953     0.33   0.744    -.6459762    .9047289
-------------+----------------------------------------------------------------
g81          |
     t_79_80 |  -.0794709   .0822483    -0.97   0.334    -.2406745    .0817327
     t_80_81 |  -.1124151   .0457853    -2.46   0.014    -.2021528   -.0226775
     t_80_82 |   .0935047   .0439094     2.13   0.033     .0074439    .1795655
     t_80_83 |   .3985317   .0824742     4.83   0.000     .2368853    .5601782
     t_80_84 |   .2431467   .0763448     3.18   0.001     .0935137    .3927797
     t_80_85 |   .2306808   .1122534     2.06   0.040     .0106682    .4506934
     t_80_86 |   .7247961   .1443384     5.02   0.000     .4418981    1.007694
     t_80_87 |   .3036159   .1598067     1.90   0.057    -.0095994    .6168312
     t_80_88 |   .4684744   .1901827     2.46   0.014     .0957231    .8412257
     t_80_89 |   .5289612   .1807006     2.93   0.003     .1747946    .8831278
     t_80_90 |   .4314476   .2419986     1.78   0.075    -.0428609    .9057562
     t_80_91 |   .4897596   .2605052     1.88   0.060    -.0208212     1.00034
     t_80_92 |   .6368446   .2719967     2.34   0.019     .1037409    1.169948
     t_80_93 |   .5001084   .2496914     2.00   0.045     .0107222    .9894945
     t_80_94 |   .4754453   .2786817     1.71   0.088    -.0707607    1.021651
     t_80_95 |   .4470894   .2915944     1.53   0.125    -.1244251    1.018604
-------------+----------------------------------------------------------------
g82          |
     t_79_80 |  -.0872458   .0836931    -1.04   0.297    -.2512812    .0767897
     t_80_81 |  -.1200827   .0578143    -2.08   0.038    -.2333967   -.0067687
     t_81_82 |   .0585138   .0495961     1.18   0.238    -.0386928    .1557203
     t_81_83 |  -.0065097   .0955772    -0.07   0.946    -.1938375    .1808182
     t_81_84 |   -.177256   .0748467    -2.37   0.018    -.3239529   -.0305592
     t_81_85 |  -.2864059    .126292    -2.27   0.023    -.5339336   -.0388781
     t_81_86 |  -.1815342   .1822962    -1.00   0.319    -.5388282    .1757597
     t_81_87 |  -.1549963   .2094513    -0.74   0.459    -.5655133    .2555207
     t_81_88 |  -.3446805   .2521789    -1.37   0.172     -.838942     .149581
     t_81_89 |  -.2781488   .2909126    -0.96   0.339    -.8483271    .2920294
     t_81_90 |  -.3680616   .3565587    -1.03   0.302    -1.066904    .3307807
     t_81_91 |  -.5283332   .4128662    -1.28   0.201    -1.337536    .2808697
     t_81_92 |  -.5367305   .4439742    -1.21   0.227    -1.406904     .333443
     t_81_93 |  -.5271564   .4092295    -1.29   0.198    -1.329231    .2749187
     t_81_94 |  -.5774323   .4656606    -1.24   0.215     -1.49011    .3352457
     t_81_95 |  -.6418967   .4724926    -1.36   0.174    -1.567965    .2841718
-------------+----------------------------------------------------------------
g83          |
     t_79_80 |  -.1094839   .1061783    -1.03   0.302    -.3175895    .0986217
     t_80_81 |   -.075623   .1078625    -0.70   0.483    -.2870296    .1357835
     t_81_82 |  -.0098954   .0632422    -0.16   0.876    -.1338477    .1140569
     t_82_83 |   .1170235   .0820758     1.43   0.154     -.043842    .2778891
```

t_82_84	.1370808	.0838819	1.63	0.102	-.0273247	.3014864
t_82_85	.0367229	.1212343	0.30	0.762	-.2008919	.2743376
t_82_86	.05981	.1519191	0.39	0.694	-.237946	.357566
t_82_87	.0440834	.1558321	0.28	0.777	-.261342	.3495087
t_82_88	-.0657743	.175498	-0.37	0.708	-.409744	.2781955
t_82_89	.0533333	.1805128	0.30	0.768	-.3004653	.4071319
t_82_90	-.0112597	.2386229	-0.05	0.962	-.4789519	.4564325
t_82_91	-.1021091	.2563148	-0.40	0.690	-.604477	.4002588
t_82_92	-.0703081	.2599632	-0.27	0.787	-.5798267	.4392105
t_82_93	-.0345904	.2386059	-0.14	0.885	-.5022494	.4330685
t_82_94	.0124173	.260065	0.05	0.962	-.4973008	.5221353
t_82_95	-.036062	.2762188	-0.13	0.896	-.5774409	.505317
g84						
t_79_80	-.0106753	.0893203	-0.12	0.905	-.1857398	.1643893
t_80_81	-.418755	.3586633	-1.17	0.243	-1.121722	.2842121
t_81_82	-.0214394	.1482977	-0.14	0.885	-.3120976	.2692187
t_82_83	.2049143	.182328	1.12	0.261	-.152442	.5622705
t_83_84	-.0978726	.1289446	-0.76	0.448	-.3505995	.1548542
t_83_85	.0281662	.1142226	0.25	0.805	-.195706	.2520384
t_83_86	.1434612	.1602441	0.90	0.371	-.1706115	.4575338
t_83_87	.054461	.1267667	0.43	0.667	-.1939972	.3029192
t_83_88	.3847563	.1800689	2.14	0.033	.0318278	.7376847
t_83_89	.598949	.2302887	2.60	0.009	.1475915	1.050306
t_83_90	.497245	.3519567	1.41	0.158	-.1925774	1.187067
t_83_91	.6033114	.3623649	1.66	0.096	-.1069108	1.313533
t_83_92	.4726792	.3922193	1.21	0.228	-.2960566	1.241415
t_83_93	.4788985	.3119484	1.54	0.125	-.132509	1.090306
t_83_94	.6206703	.2824939	2.20	0.028	.0669924	1.174348
t_83_95	.610145	.3084492	1.98	0.048	.0055957	1.214694
g85						
t_79_80	-.0537585	.0864728	-0.62	0.534	-.2232421	.1157251
t_80_81	.2432952	.1598499	1.52	0.128	-.0700049	.5565953
t_81_82	-.320027	.1591657	-2.01	0.044	-.6319861	-.0080679
t_82_83	.1336695	.1331912	1.00	0.316	-.1273804	.3947194
t_83_84	-.0767271	.0910863	-0.84	0.400	-.255253	.1017988
t_84_85	-.0351993	.0698342	-0.50	0.614	-.1720719	.1016732
t_84_86	.0440894	.1114362	0.40	0.692	-.1743216	.2625003
t_84_87	.3044782	.1888966	1.61	0.107	-.0657523	.6747087
t_84_88	-.1089358	.1825534	-0.60	0.551	-.4667339	.2488623
t_84_89	-.1078361	.1849961	-0.58	0.560	-.4704219	.2547497
t_84_90	-.130732	.2580952	-0.51	0.612	-.6365893	.3751252
t_84_91	-.1262723	.3188785	-0.40	0.692	-.7512627	.4987182
t_84_92	-.1915387	.3419603	-0.56	0.575	-.8617685	.4786911
t_84_93	-.159032	.3027644	-0.53	0.599	-.7524393	.4343754
t_84_94	-.2454727	.3283598	-0.75	0.455	-.8890461	.3981008
t_84_95	-.2805658	.3290887	-0.85	0.394	-.9255678	.3644362
g86						
t_79_80	-.1536245	.1021117	-1.50	0.132	-.3537598	.0465108
t_80_81	.0573874	.147504	0.39	0.697	-.2317151	.3464899
t_81_82	-.100668	.0954563	-1.05	0.292	-.287759	.086423
t_82_83	-.0898228	.2158398	-0.42	0.677	-.5128611	.3332155
t_83_84	.0285534	.0811141	0.35	0.725	-.1304274	.1875342
t_84_85	-.2275839	.0580132	-3.92	0.000	-.3412877	-.1138801
t_85_86	.1022017	.0703451	1.45	0.146	-.0356721	.2400754
t_85_87	.2082751	.0911181	2.29	0.022	.0296869	.3868633
t_85_88	.2867929	.1464373	1.96	0.050	-.000219	.5738048
t_85_89	.5423997	.1615528	3.36	0.001	.225762	.8590373
t_85_90	.5902553	.2282256	2.59	0.010	.1429413	1.037569
t_85_91	.4495402	.2364522	1.90	0.057	-.0138975	.9129779
t_85_92	.2451178	.2214323	1.11	0.268	-.1888816	.6791172
t_85_93	.4062521	.2932358	1.39	0.166	-.1684795	.9809838
t_85_94	.1759394	.3341608	0.53	0.599	-.4790038	.8308826
t_85_95	.1215072	.3369034	0.36	0.718	-.5388112	.7818257
g87						
t_79_80	-.0179193	.1452486	-0.12	0.902	-.3026013	.2667628
t_80_81	-.0643861	.0792967	-0.81	0.417	-.2198048	.0910326
t_81_82	-.0610651	.091373	-0.67	0.504	-.2401529	.1180228
t_82_83	-.0506939	.111504	-0.45	0.649	-.2692376	.1678499

```
     t_83_84 |   .1206055   .0761654     1.58   0.113    -.0286759    .2698869
     t_84_85 |  -.2113259   .1074505    -1.97   0.049     -.421925   -.0007268
     t_85_86 |   .1120997    .075142     1.49   0.136    -.0351758    .2593753
     t_86_87 |   .3933284   .1748834     2.25   0.025     .0505632    .7360937
     t_86_88 |   .3024016   .2036762     1.48   0.138    -.0967965    .7015996
     t_86_89 |   .3770596   .2217634     1.70   0.089    -.0575887    .8117079
     t_86_90 |   .2595008   .2213065     1.17   0.241    -.1742521    .6932536
     t_86_91 |   .3546167   .3304633     1.07   0.283    -.2930795    1.002313
     t_86_92 |   .6286563   .2964935     2.12   0.034     .0475397    1.209773
     t_86_93 |   .5703384   .2610806     2.18   0.029     .0586299    1.082047
     t_86_94 |   .5100288   .2726704     1.87   0.061    -.0243954    1.044453
     t_86_95 |   .4921224   .2911155     1.69   0.091    -.0784536    1.062698
-------------+----------------------------------------------------------------
g88          |
     t_79_80 |   .4134437   .2997278     1.38   0.168    -.1740119    1.000899
     t_80_81 |  -.2191151   .1775644    -1.23   0.217    -.5671349    .1289047
     t_81_82 |  -.0183145   .0289268    -0.63   0.527     -.07501     .0383811
     t_82_83 |  -.1997919   .0567743    -3.52   0.000    -.3110674   -.0885164
     t_83_84 |  -.1811205   .0738534    -2.45   0.014    -.3258704   -.0363705
     t_84_85 |   .0555445   .0482391     1.15   0.250    -.0390024    .1500914
     t_85_86 |   .1833922   .1193871     1.54   0.125    -.0506022    .4173865
     t_86_87 |  -.0500643   .1045066    -0.48   0.632    -.2548934    .1547649
     t_87_88 |  -.0294619   .0644864    -0.46   0.648     -.155853    .0969292
     t_87_89 |  -.0605045   .0794513    -0.76   0.446    -.2162261    .0952172
     t_87_90 |  -.3578305   .1487023    -2.41   0.016    -.6492815   -.0663794
     t_87_91 |   -.514034   .1790635    -2.87   0.004     -.864992   -.1630759
     t_87_92 |  -.2990003   .2802591    -1.07   0.286    -.8482981    .2502975
     t_87_93 |  -.0158352   .4616283    -0.03   0.973    -.9206101    .8889397
     t_87_94 |   -.070406   .4832086    -0.15   0.884    -1.017477    .8766654
     t_87_95 |   -.161074   .4460065    -0.36   0.718    -1.035231    .7130828
------------------------------------------------------------------------------
Control: Never Treated

See Callaway and Sant'Anna (2021) for details

.
. estat all
Pretrend Test. H0 All Pre-treatment are equal to 0
chi2(36) =   128.4966
p-value  =     0.0000
Average Treatment Effect on Treated
------------------------------------------------------------------------------
             | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
         ATT |   .0734889   .1580958     0.46   0.642    -.2363732    .3833511
------------------------------------------------------------------------------
ATT by group
------------------------------------------------------------------------------
             | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
    GAverage |   .0862526   .1509713     0.57   0.568    -.2096457     .382151
         G80 |   .0050082   .2690623     0.02   0.985    -.5223443    .5323607
         G81 |   .3906661   .1657113     2.36   0.018     .0658778    .7154543
         G82 |  -.3250449   .2596843    -1.25   0.211    -.8340168     .183927
         G83 |   .0107975   .1695767     0.06   0.949    -.3215668    .3431618
         G84 |   .3662392   .2070588     1.77   0.077    -.0395887    .7720671
         G85 |  -.0942743   .2241578    -0.42   0.674    -.5336156     .345067
         G86 |   .3128281    .195238     1.60   0.109    -.0698313    .6954875
         G87 |   .4320059   .2364496     1.83   0.068    -.0314268    .8954385
         G88 |  -.1885183   .2460901    -0.77   0.444     -.670846    .2938094
------------------------------------------------------------------------------
ATT by Calendar Period
------------------------------------------------------------------------------
             | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
    CAverage |   .0606271   .1319867     0.46   0.646    -.1980621    .3193162
         T80 |    .133368   .0835206     1.60   0.110    -.0303294    .2970653
         T81 |  -.1245968   .1816448    -0.69   0.493    -.4806141    .2314205
         T82 |   .0018298   .1298102     0.01   0.989    -.2525934    .2562531
         T83 |   .0863295   .0876011     0.99   0.324    -.0853655    .2580245
         T84 |   .0545882   .0770029     0.71   0.478    -.0963348    .2055112
         T85 |  -.0080221   .0874105    -0.09   0.927    -.1793436    .1632994
```

```
         T86 |   .0727508   .1120087     0.65   0.516    -.1467822    .2922837
         T87 |    .170803   .1208653     1.41   0.158    -.0660886    .4076945
         T88 |    .053661   .1401685     0.38   0.702    -.2210642    .3283863
         T89 |   .1397875   .1414628     0.99   0.323    -.1374746    .4170495
         T90 |   .0661112   .2031548     0.33   0.745    -.3320649    .4642873
         T91 |   .0378188   .2331495     0.16   0.871    -.4191457    .4947834
         T92 |   .0660551   .2410627     0.27   0.784     -.406419    .5385293
         T93 |   .1039108   .2134201     0.49   0.626     -.314385    .5222065
         T94 |   .0747555   .2391225     0.31   0.755     -.393916    .5434269
         T95 |   .0408825   .2512611     0.16   0.871    -.4515801    .5333452
------------------------------------------------------------------------------
ATT by Periods Before and After treatment
Event Study:Dynamic effects
------------------------------------------------------------------------------
             | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
     Pre_avg |   .0080327   .0517223     0.16   0.877    -.0933412    .1094066
    Post_avg |   .0637443   .1965283     0.32   0.746     -.321444    .4489327
         Tm8 |   .4134437   .2997278     1.38   0.168    -.1740119    1.000899
         Tm7 |  -.0754038   .1209161    -0.62   0.533     -.312395    .1615875
         Tm6 |  -.0819433   .0532673    -1.54   0.124    -.1863452    .0224586
         Tm5 |  -.0534739   .0577811    -0.93   0.355    -.1667228     .059775
         Tm4 |   .0376663   .0754829     0.50   0.618    -.1102775    .1856102
         Tm3 |  -.1382215   .0769653    -1.80   0.073    -.2890706    .0126276
         Tm2 |  -.0207356   .0577045    -0.36   0.719    -.1338343    .0923631
         Tm1 |  -.0170703   .0429734    -0.40   0.691    -.1012966     .067156
         Tp0 |   .0890255    .050997     1.75   0.081    -.0109267    .1889777
         Tp1 |   .1028248   .0668915     1.54   0.124    -.0282801    .2339297
         Tp2 |   .1371889   .0971342     1.41   0.158    -.0531905    .3275684
         Tp3 |   .0372885    .119237     0.31   0.754    -.1964118    .2709887
         Tp4 |   .1048707   .1382493     0.76   0.448     -.166093    .3758344
         Tp5 |   .1438646   .1687525     0.85   0.394    -.1868842    .4746134
         Tp6 |   .1209495   .1817635     0.67   0.506    -.2353005    .4771994
         Tp7 |   .1151811   .2088922     0.55   0.581      -.29424    .5246022
         Tp8 |   .0641386   .2220548     0.29   0.773    -.3710808    .4993581
         Tp9 |  -.0461539   .2399599    -0.19   0.847    -.5164667    .4241589
        Tp10 |  -.0491844    .251984    -0.20   0.845    -.5430639    .4446951
        Tp11 |   .0793962   .2699615     0.29   0.769    -.4497186     .608511
        Tp12 |  -.0614433   .2876468    -0.21   0.831    -.6252207    .5023341
        Tp13 |  -.1267225   .3943969    -0.32   0.748    -.8997262    .6462812
        Tp14 |   .1793088   .3569752     0.50   0.615    -.5203498    .8789674
        Tp15 |   .1293764   .3955953     0.33   0.744    -.6459762    .9047289
------------------------------------------------------------------------------


.
. * 2 h)
. reghdfe lnths admico_2 admico_1 admico0 admico1 admico2 admico3 mico4, ///
>         absorb(state year) vce(cluster state)
(MWFE estimator converged in 2 iterations)

HDFE Linear regression                            Number of obs   =        850
Absorbing 2 HDFE groups                           F(   7,     49) =       1.31
Statistics robust to heteroskedasticity           Prob > F        =     0.2669
                                                  R-squared       =     0.9686
                                                  Adj R-squared   =     0.9657
                                                  Within R-sq.    =     0.0105
Number of clusters (state)   =         50         Root MSE        =     0.3165

                                  (Std. err. adjusted for 50 clusters in state)
------------------------------------------------------------------------------
             |               Robust
       lnths | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
    admico_2 |  -.0132951   .0730721    -0.18   0.856    -.1601389    .1335487
    admico_1 |    -.00731    .073512    -0.10   0.921    -.1550378    .1404178
     admico0 |   .0923118   .1025076     0.90   0.372     -.113685    .2983085
     admico1 |   .1087604   .1128209     0.96   0.340    -.1179617    .3354826
     admico2 |   .1484062   .1300922     1.14   0.260    -.1130239    .4098363
     admico3 |   .0662208   .1380235     0.48   0.634    -.2111478    .3435895
       mico4 |   .0933605   .1718216     0.54   0.589     -.251928     .438649
       _cons |    8.74903   .0995802    87.86   0.000     8.548916    8.949144
------------------------------------------------------------------------------
```

```
Absorbed degrees of freedom:
-----------------------------------------------------+
 Absorbed FE | Categories  - Redundant  = Num. Coefs |
-------------+---------------------------------------|
       state |        50          50           0    *|
        year |        17           1          16     |
-----------------------------------------------------+
* = FE nested within cluster; treated as redundant for DoF computation

.
. * Plot of the treatment effects (not required in the assignment)
. coefplot, omitted keep(admico* mico4) rename(admico_*=- admico*="" mico*="") ///
>         graphr(c(white)) scheme(s2mono) ///
>         vertical yline(0) xline(2.5, lp(dash)) ///
>         msymbol(D) mfcolor(white) ///
>         ciopts(lwidth(*3) lcolor(*.6)) ///
>         ylabel(-0.2(0.1)0.4, gmin gmax angle(0)) ///
>         xlabel() ///
>         xtitle("Event time") title("Traditional event study") ///
>         name(eventstudy, replace)

.
. eventstudyinteract lnths ///
>         admico_2 admico_1 admico0 admico1 admico2 admico3 mico4, ///
>         absorb(state year) cohort(treated_first) control_cohort(nevertreated) ///
>         vce(cluster state)
(obs=714)

IW estimates for dynamic effects                      Number of obs =    850
Absorbing 2 HDFE groups                               F(66, 49)     =      .
                                                      Prob > F      =      .
                                                      R-squared     = 0.9740
                                                      Adj R-squared = 0.9692
                                                      Root MSE      = 0.3000
                                 (Std. err. adjusted for 50 clusters in state)
------------------------------------------------------------------------------
             |               Robust
       lnths | Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
    admico_2 |  -.0484229   .0581363    -0.83   0.409    -.1652523    .0684064
    admico_1 |  -.0496926   .0577656    -0.86   0.394     -.165777    .0663917
     admico0 |   .0589428   .0780253     0.76   0.454    -.0978549    .2157404
     admico1 |   .0598922   .0858939     0.70   0.489     -.112718    .2325025
     admico2 |   .0975168   .0976269     1.00   0.323    -.0986718    .2937054
     admico3 |   .0027087   .0944035     0.03   0.977    -.1870023    .1924197
       mico4 |   .0200896   .1009339     0.20   0.843    -.1827447    .2229239
------------------------------------------------------------------------------

.
. * Plot of the treatment effects (not required in the assignment)
. matrix C = e(b_iw)

. mata st_matrix("A",sqrt(st_matrix("e(V_iw)")))

. matrix C = C \ A

.
. coefplot matrix(C[1]), se(C[2]) rename(admico_*=- admico*="" mico*="") ///
>         graphr(c(white)) scheme(s2mono) ///
>         vertical yline(0) xline(2.5, lp(dash)) ///
>         msymbol(D) mfcolor(white) ///
>         ciopts(lwidth(*3) lcolor(*.6)) ///
>         ylabel(-0.2(0.1)0.4, gmin gmax angle(0)) ///
>         xlabel() ///
>         xtitle("Event time") title("eventstudyinteract") ///
>         name(eventstudyinteract, replace)
```

```
.
. ******************************************************************************
. ** QUESTION 3 **
.
. use smoking.dta, clear
(Tobacco Sales in 39 US States)

.
. tsset state year

Panel variable: state (strongly balanced)
 Time variable: year, 1970 to 2000
         Delta: 1 unit

.
. * 3 c) and d)
. * see "help synth" for information about the "nested" and "allopt" options
. synth cigsale lnincome(1980(1)1988) age15to24(1980(1)1988) ///
>         retprice(1980(1)1988) beer(1984(1)1988) cigsale(1988) cigsale(1980) ///
>         cigsale(1975), trunit(3) trperiod(1989) nested allopt fig
-------------------------------------------------------------------------------------
> --------------------------------------------------
Synthetic Control Method for Comparative Case Studies
-------------------------------------------------------------------------------------
> --------------------------------------------------

First Step: Data Setup
-------------------------------------------------------------------------------------
> --------------------------------------------------
-------------------------------------------------------------------------------------
> --------------------------------------------------
Data Setup successful
-------------------------------------------------------------------------------------
> --------------------------------------------------
                Treated Unit: California
               Control Units: Alabama, Arkansas, Colorado, Connecticut, Delaware, Geor
> gia, Idaho, Illinois, Indiana, Iowa, Kansas,
                              Kentucky, Louisiana, Maine, Minnesota, Mississippi, Miss
> ouri, Montana, Nebraska, Nevada, New Hampshire,
                              New Mexico, North Carolina, North Dakota, Ohio, Oklahoma
> , Pennsylvania, Rhode Island, South Carolina,
                              South Dakota, Tennessee, Texas, Utah, Vermont, Virginia,
>  West Virginia, Wisconsin, Wyoming
-------------------------------------------------------------------------------------
> --------------------------------------------------
          Dependent Variable: cigsale
  MSPE minimized for periods: 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1
> 981 1982 1983 1984 1985 1986 1987 1988
Results obtained for periods: 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1
> 981 1982 1983 1984 1985 1986 1987 1988 1989 1990
                              1991 1992 1993 1994 1995 1996 1997 1998 1999 2000
-------------------------------------------------------------------------------------
> --------------------------------------------------
                  Predictors: lnincome(1980(1)1988) age15to24(1980(1)1988) retprice(19
> 80(1)1988) beer(1984(1)1988) cigsale(1988)
                              cigsale(1980) cigsale(1975)
-------------------------------------------------------------------------------------
> --------------------------------------------------
Unless period is specified
predictors are averaged over: 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1
> 981 1982 1983 1984 1985 1986 1987 1988
-------------------------------------------------------------------------------------
> --------------------------------------------------
```

```
Second Step: Run Optimization
-------------------------------------------------------------------------------------
> -------------------------------------------------
Nested optimization requested
Starting nested optimization module
Optimization done
Allopt requested. This may take a while
Restarting nested optimization module (search method)
done
Restarting nested optimization module (equal method)
done
-------------------------------------------------------------------------------------
> -------------------------------------------------
Optimization done
-------------------------------------------------------------------------------------
> -------------------------------------------------

Third Step: Obtain Results
-------------------------------------------------------------------------------------
> -------------------------------------------------
Loss: Root Mean Squared Prediction Error

---------------------
   RMSPE |  1.755672
---------------------
-------------------------------------------------------------------------------------
> -------------------------------------------------
Unit Weights:

----------------------------
         Co_No | Unit_Weight
---------------+------------
       Alabama |           0
      Arkansas |           0
      Colorado |        .161
   Connecticut |        .068
      Delaware |           0
       Georgia |           0
         Idaho |           0
      Illinois |           0
       Indiana |           0
          Iowa |           0
        Kansas |           0
      Kentucky |           0
     Louisiana |           0
         Maine |           0
     Minnesota |           0
   Mississippi |           0
      Missouri |           0
       Montana |        .202
      Nebraska |           0
        Nevada |        .235
 New Hampshire |           0
    New Mexico |           0
North Carolina |           0
  North Dakota |           0
          Ohio |           0
      Oklahoma |           0
  Pennsylvania |           0
  Rhode Island |           0
South Carolina |           0
  South Dakota |           0
     Tennessee |           0
         Texas |           0
          Utah |        .334
       Vermont |           0
      Virginia |           0
 West Virginia |           0
     Wisconsin |           0
       Wyoming |           0
----------------------------
-------------------------------------------------------------------------------------
```

```
> ---------------------------------------------------
Predictor Balance:

------------------------------------------------------
                               |   Treated  Synthetic
-------------------------------+----------------------
         lnincome(1980(1)1988) |  10.07656   9.858768
        age15to24(1980(1)1988) |  .1735324   .1735219
         retprice(1980(1)1988) |  89.42222    89.4108
             beer(1984(1)1988) |     24.28    24.2278
                 cigsale(1988) |      90.1    91.6677
                 cigsale(1980) |     120.2   120.5017
                 cigsale(1975) |     127.1   127.1112
------------------------------------------------------
--------------------------------------------------------------------------------------
> ---------------------------------------------------

.
. * 3 e)
. version 16: table state if year==1995, c(mean cigsale)

------------------------------
      state no | mean(cigsale)
---------------+--------------
       Alabama |         102.6
      Arkansas |           113
    California |          56.4
      Colorado |          85.4
   Connecticut |          79.3
      Delaware |         127.2
       Georgia |         100.3
         Idaho |          78.2
      Illinois |          84.3
       Indiana |         135.4
          Iowa |            93
        Kansas |          90.1
      Kentucky |         175.3
     Louisiana |         105.7
         Maine |         102.3
     Minnesota |          84.1
   Mississippi |         107.5
      Missouri |           124
       Montana |          90.5
      Nebraska |          88.5
        Nevada |         100.9
 New Hampshire |         158.5
    New Mexico |            67
North Carolina |         124.9
  North Dakota |          80.6
          Ohio |         111.7
      Oklahoma |         109.5
  Pennsylvania |          95.4
  Rhode Island |          90.8
South Carolina |         109.2
  South Dakota |          98.6
     Tennessee |         125.4
         Texas |          75.2
          Utah |            52
       Vermont |         123.2
      Virginia |         106.7
 West Virginia |         115.2
     Wisconsin |          93.5
       Wyoming |           115
------------------------------
```

```
. table state if year ==1995, statistic(mean cigsale)

---------------------------
                 |     Mean
-----------------+---------
state no         |
  Alabama        |    102.6
  Arkansas       |      113
  California     |     56.4
  Colorado       |     85.4
  Connecticut    |     79.3
  Delaware       |    127.2
  Georgia        |    100.3
  Idaho          |     78.2
  Illinois       |     84.3
  Indiana        |    135.4
  Iowa           |       93
  Kansas         |     90.1
  Kentucky       |    175.3
  Louisiana      |    105.7
  Maine          |    102.3
  Minnesota      |     84.1
  Mississippi    |    107.5
  Missouri       |      124
  Montana        |     90.5
  Nebraska       |     88.5
  Nevada         |    100.9
  New Hampshire  |    158.5
  New Mexico     |       67
  North Carolina |    124.9
  North Dakota   |     80.6
  Ohio           |    111.7
  Oklahoma       |    109.5
  Pennsylvania   |     95.4
  Rhode Island   |     90.8
  South Carolina |    109.2
  South Dakota   |     98.6
  Tennessee      |    125.4
  Texas          |     75.2
  Utah           |       52
  Vermont        |    123.2
  Virginia       |    106.7
  West Virginia  |    115.2
  Wisconsin      |     93.5
  Wyoming        |      115
  Total          |  101.959
---------------------------

. display 56.4-(0.164*85.4+0.069*79.3+0.199*90.5+0.234*100.9+0.334*52)
-22.0654

.
. ********************************************************************************
. log close
      name:  <unnamed>
       log:  C:\Users\sahlste1\OneDrive - Aalto University\jatko-opinnot\opetus\Applie
> d Microeconometrics 2\Assignment 2\assignment_2_lo
> g.log
  log type:  text
 closed on:  16 Nov 2023, 15:45:30
------------------------------------------------------------------------------------
> --------------------------------------------------
```