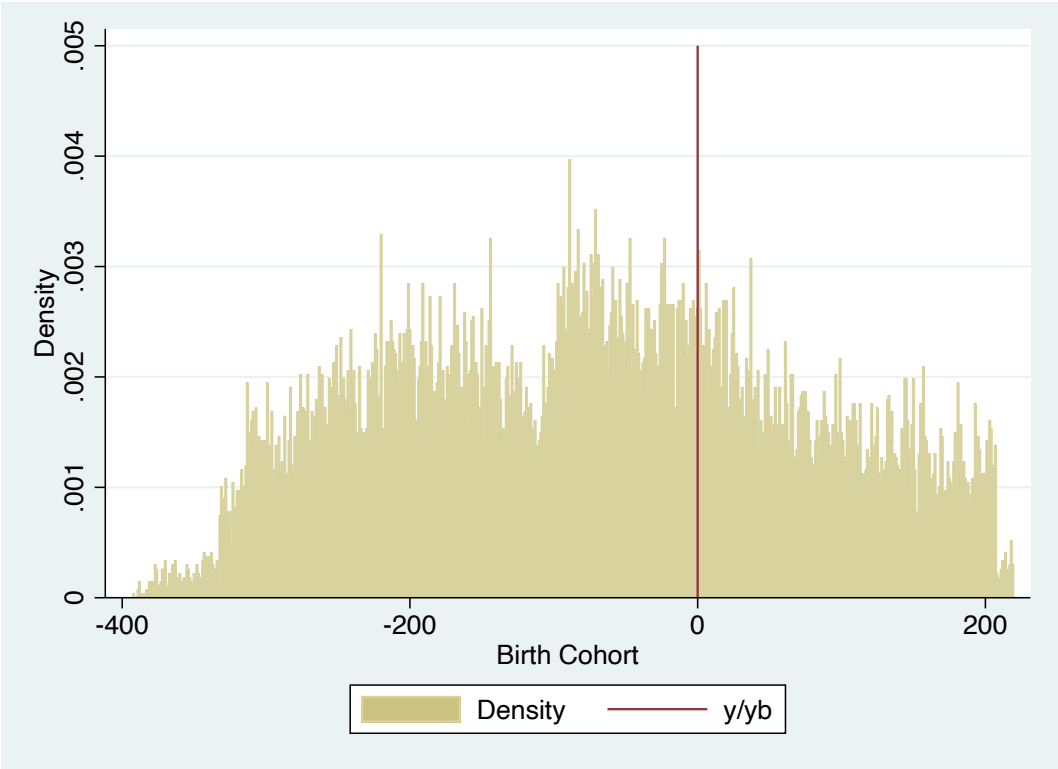
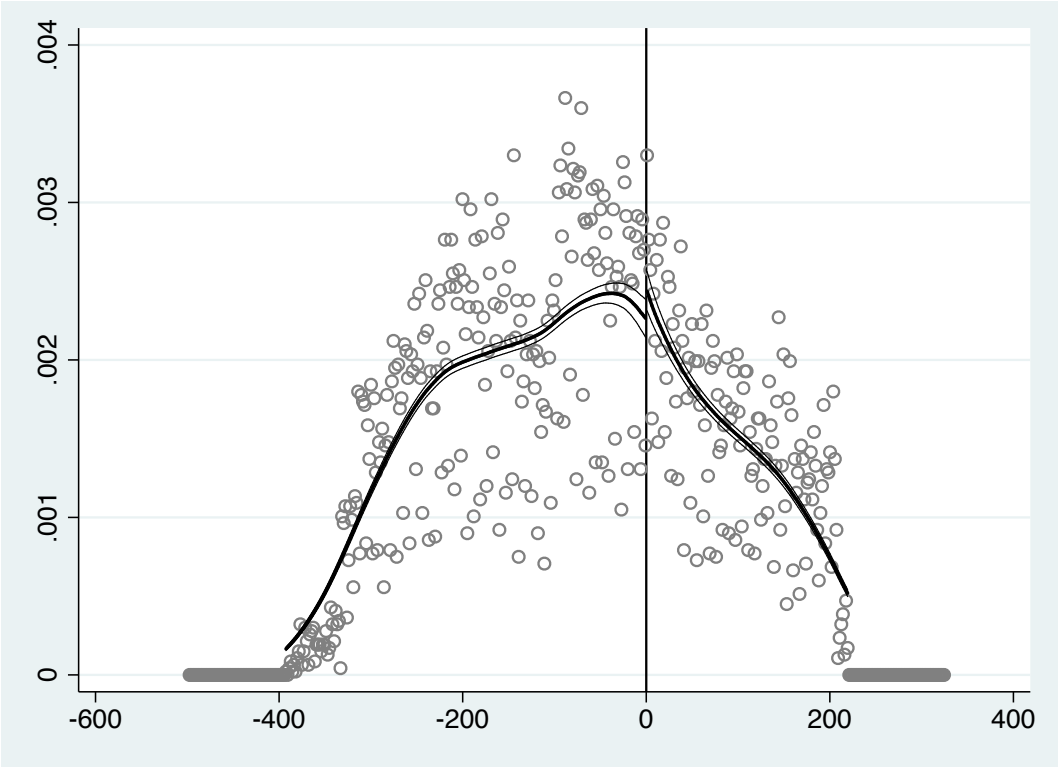
ECO 3211 PS4
119020339
Ouyang Yingrun

3 Validity test pf RDD
b. Density test of x: histogram



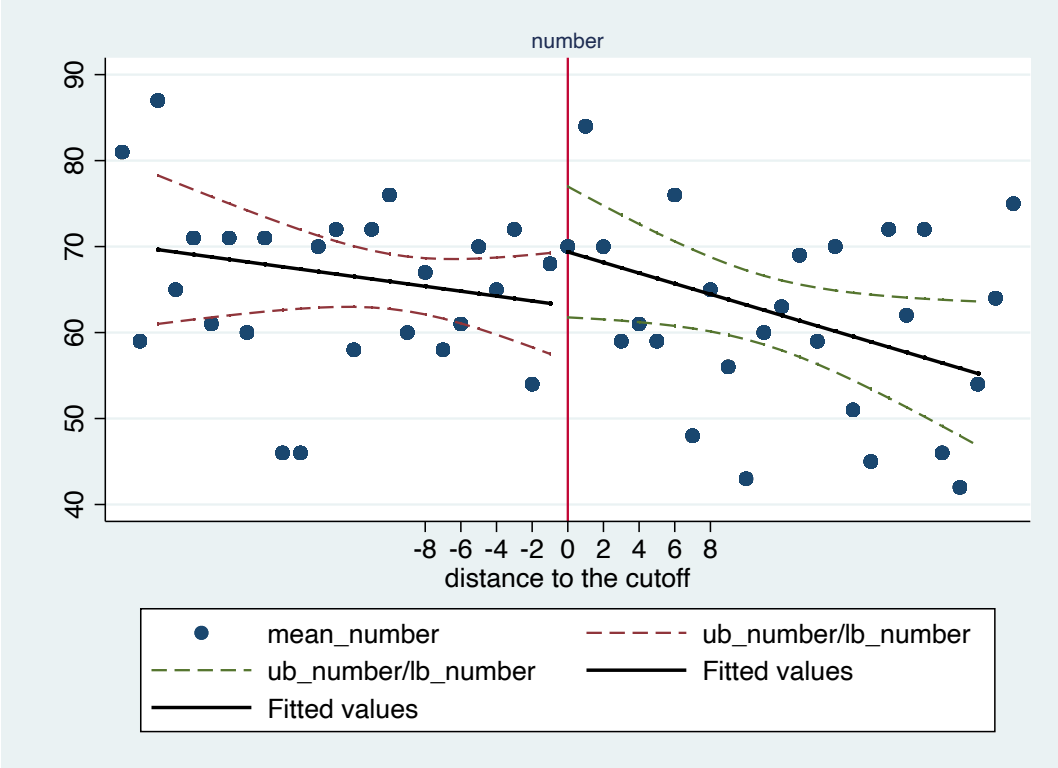
Density test: DCdensity



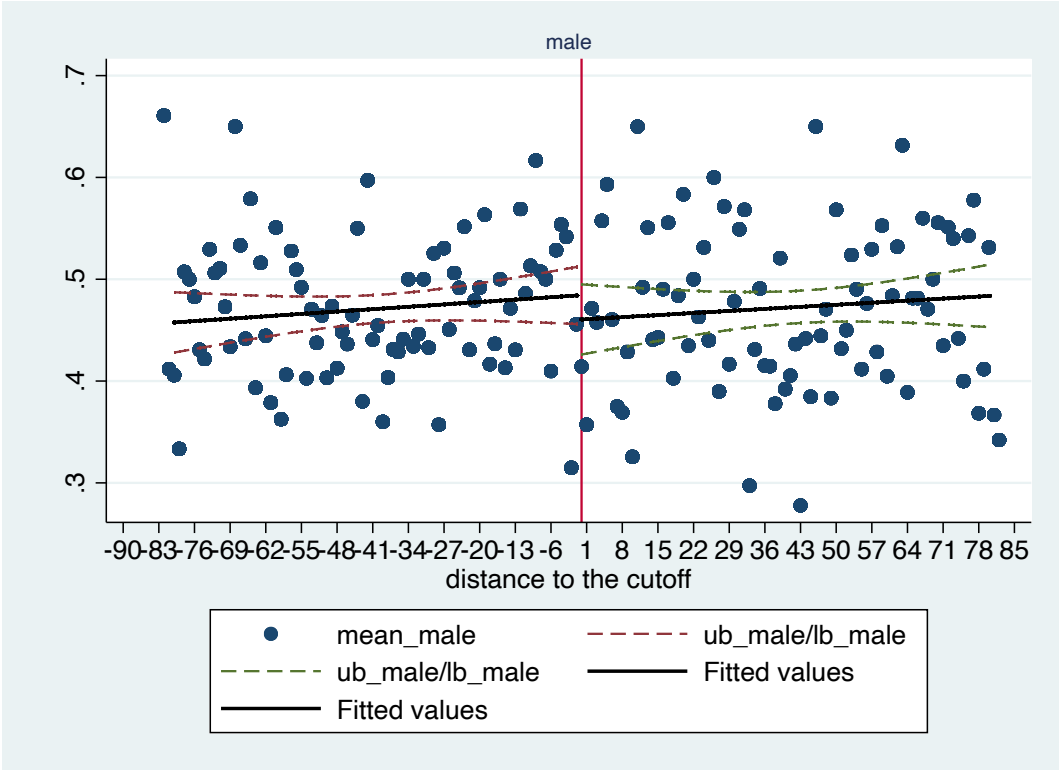
Density test of x: regression
//First stage

```
. reg number d x dx if abs(x)<=bw_reduce_number_CCT, cluster(x) //rectangle kernal weight

Linear regression                               Number of obs     =      2,957
                                                F(3, 46)          =       2.08
                                                Prob > F          =     0.1162
                                                R-squared         =     0.1460
                                                Root MSE          =     9.2997

                                   (Std. Err. adjusted for 47 clusters in x)
------------------------------------------------------------------------------
             |               Robust
      number |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           d |    6.270595   5.064493     1.24   0.222    -3.9237     16.46489
           x |   -.2843127   .3010447    -0.94   0.350   -.8902844    .3216589
          dx |   -.3304623    .430194    -0.77   0.446   -1.196398    .5354734
       _cons |    63.10552   3.251581    19.41   0.000    56.56043    69.65062
------------------------------------------------------------------------------
```

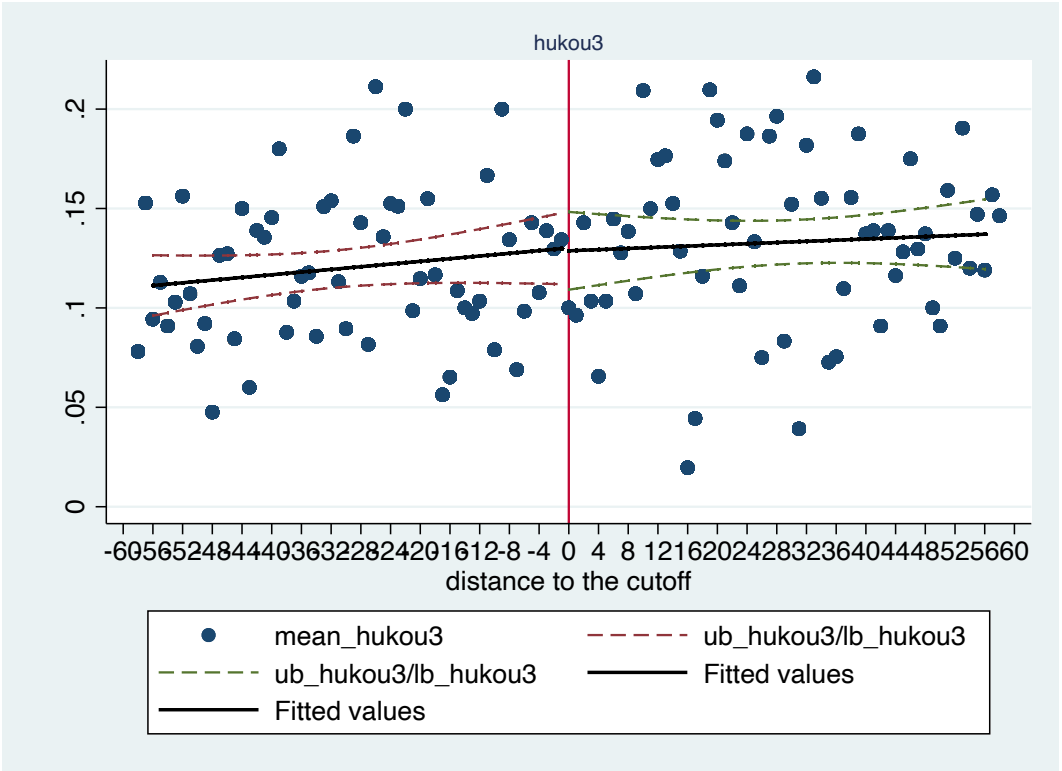
Density regression



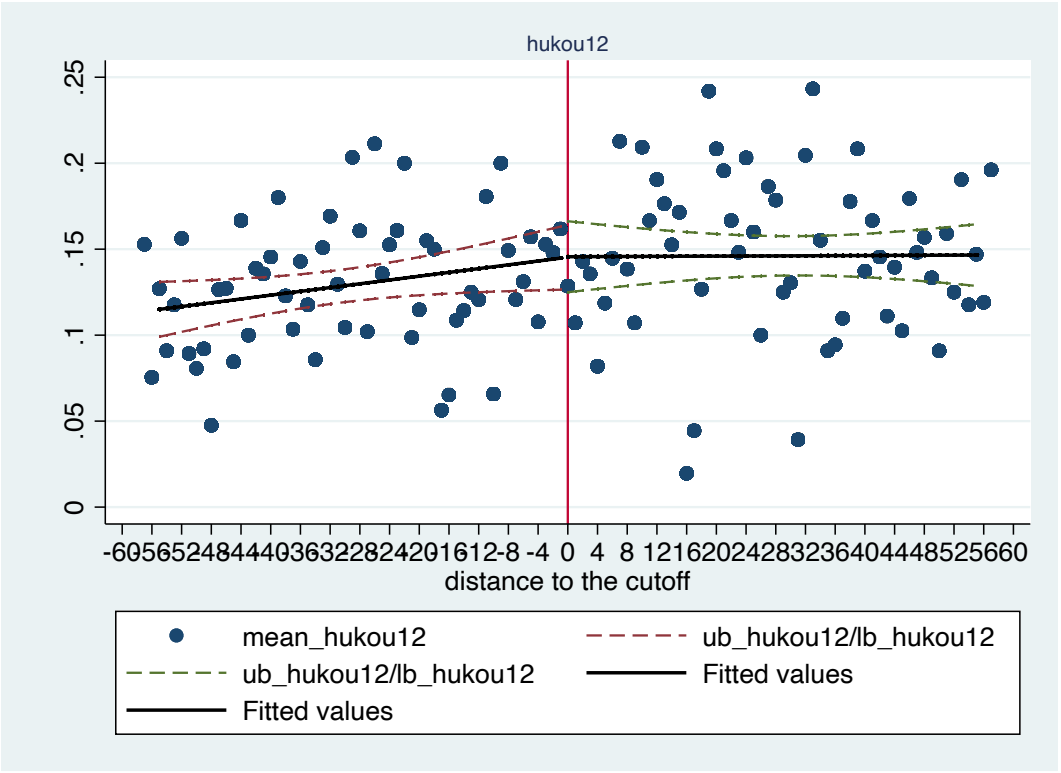
C. smoothness of predetermined characteristics: all predetermined characteristics showing a smoothness outcome except for father's education.
Gender



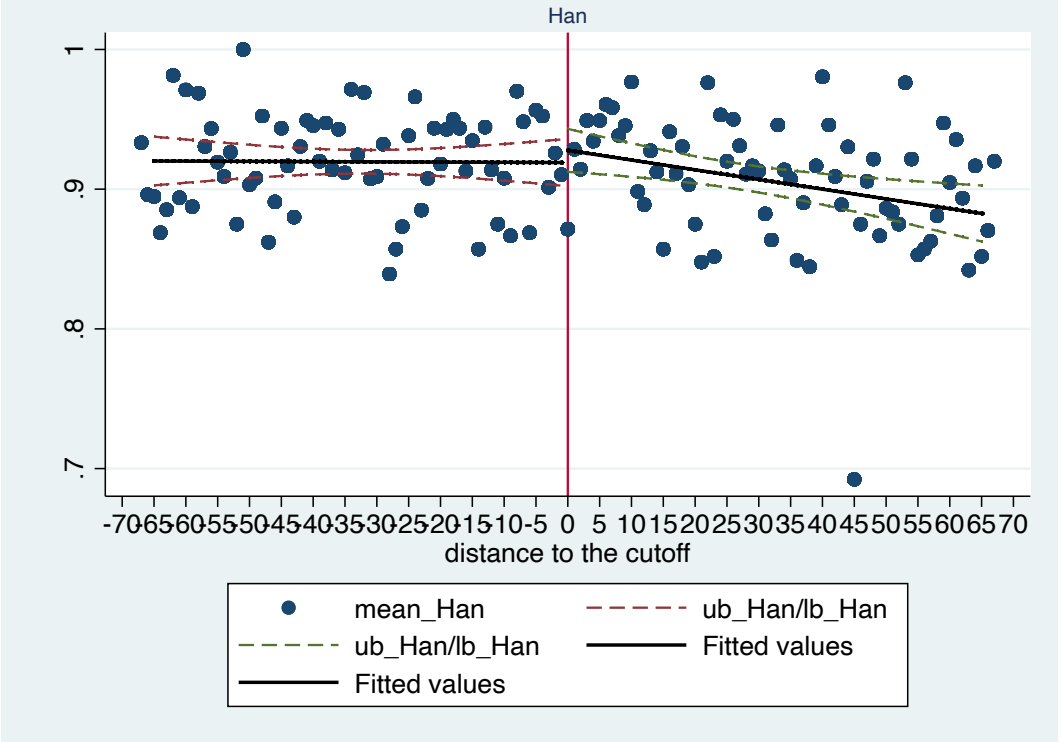
Whether had an urban Hukou at age 3



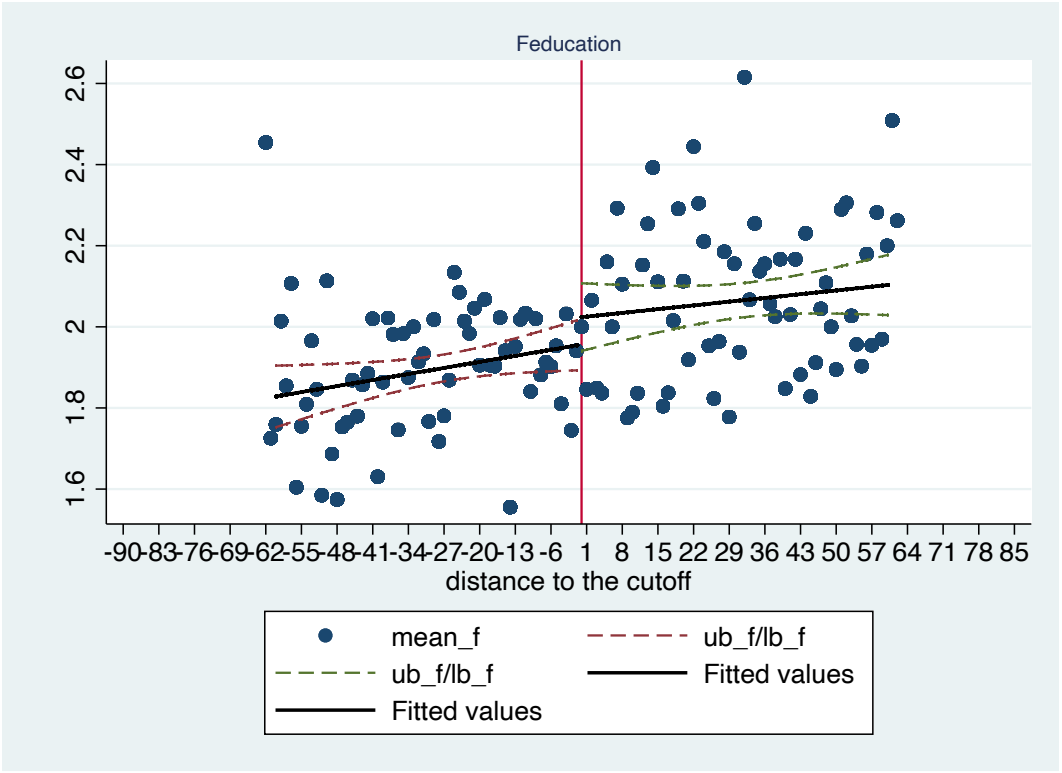
Whether had an urban Hukou at age 12



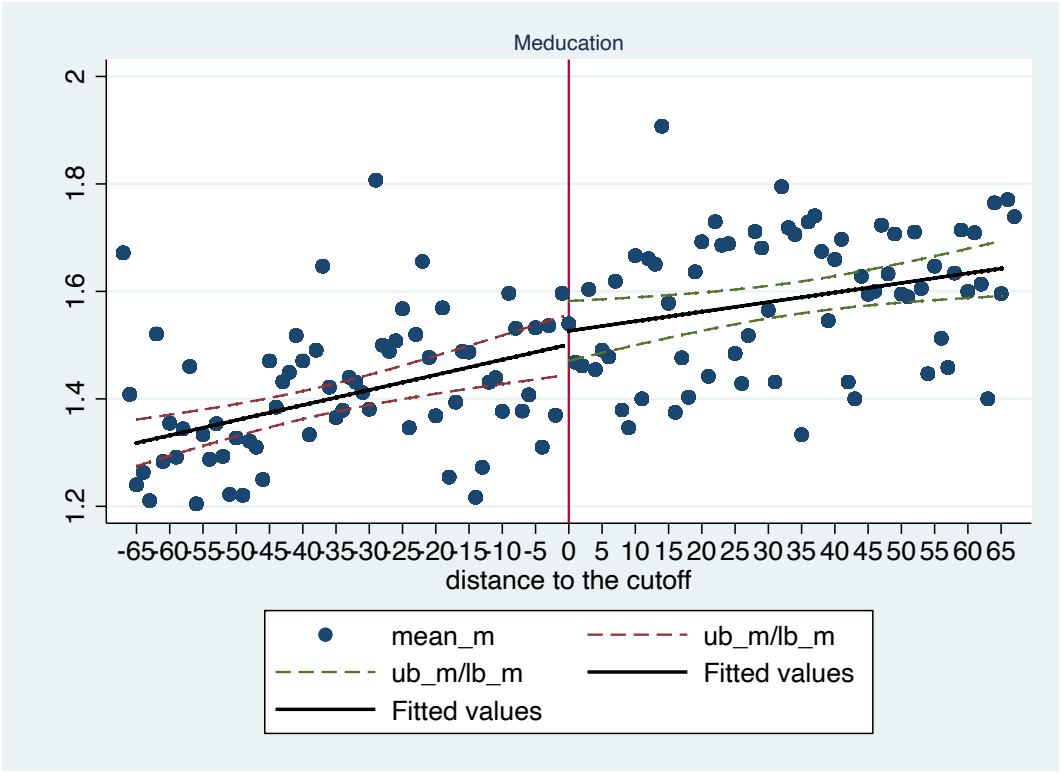
Han groups



Father's education



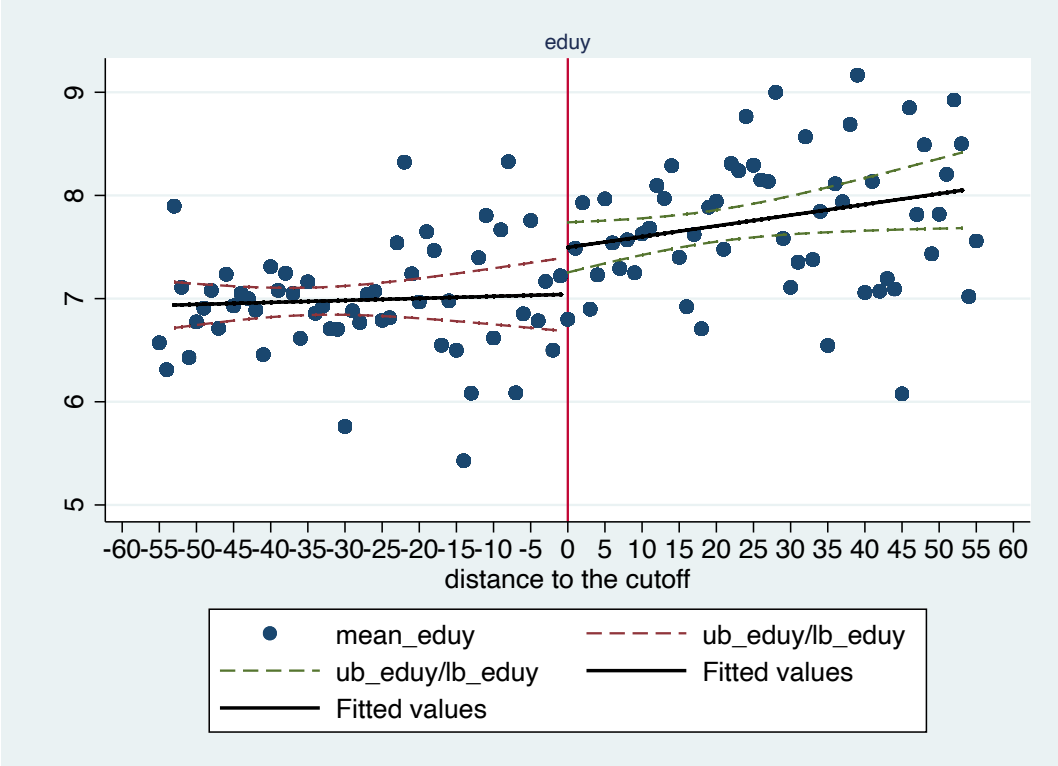
Mother's education



4. outcomes of nonparametric approach:

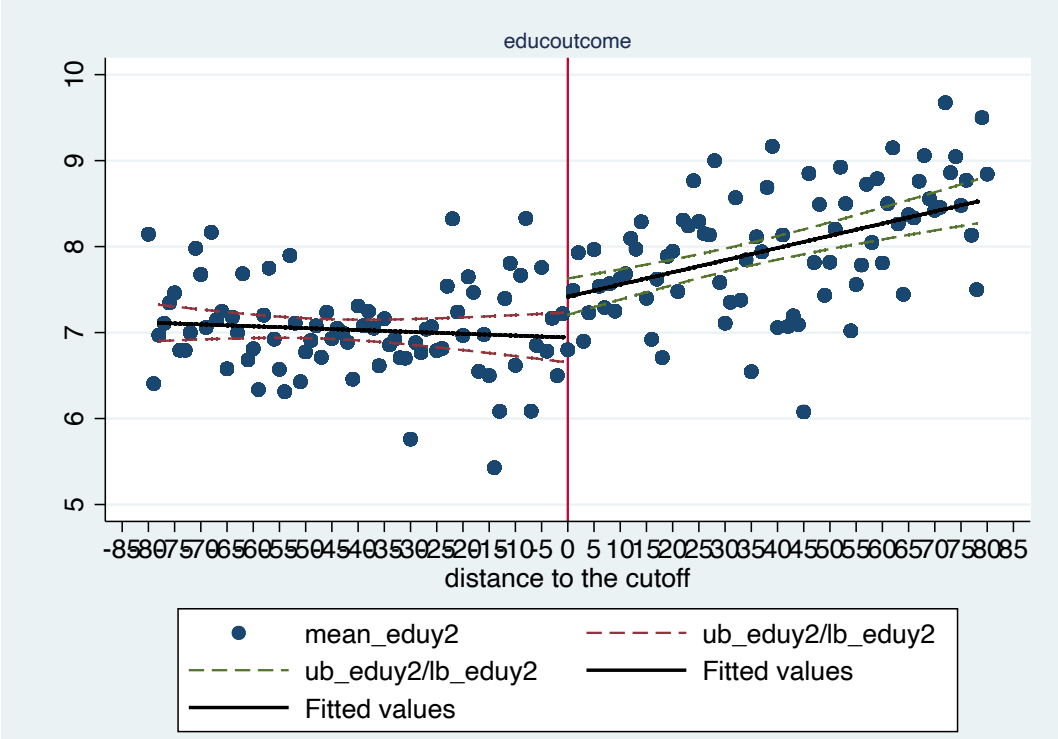
We mainly discuss the estimated coefficient of d which captures the impact of compulsory education on total years of schooling. Our results shown that compulsory education have a significant effect on years of schooling. Being covered by compulsory education would increase 0.455 years of schooling, and outcome is statistically significant at 5%.

```
. *reduce form
. reg eduy d x dx if abs(x)<=bw_reduce_eduy_CCT, cluster(x) //rectangle kernal weight

Linear regression                               Number of obs     =      6,339
                                                F(3, 106)         =      17.81
                                                Prob > F          =     0.0000
                                                R-squared         =     0.0084
                                                Root MSE          =      4.313

                                  (Std. Err. adjusted for 107 clusters in x)
------------------------------------------------------------------------------
             |               Robust
        eduy |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           d |   .4548502   .2214598     2.05   0.042     .0157846    .8939157
           x |   .0019569   .0049329     0.40   0.692     -.007823    .0117368
          dx |   .0084669   .0070344     1.20   0.231    -.0054794    .0224132
       _cons |   7.041691   .1834547    38.38   0.000     6.677974    7.405408
------------------------------------------------------------------------------
```



5. Check the robustness of your findings by varying the bandwidth choices

```
. reg eduy d x dx if abs(x)<=bw_reduce_eduy_IK, cluster(x) //rectangle kernal weight

Linear regression                               Number of obs     =      9,165
                                                F(3, 156)         =      41.09
                                                Prob > F          =     0.0000
                                                R-squared         =     0.0131
                                                Root MSE          =     4.3008

                                   (Std. Err. adjusted for 157 clusters in x)
------------------------------------------------------------------------------
             |               Robust
        eduy |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           d |   .4750621   .1829498     2.60   0.010     .1136837    .8364405
           x |  -.0021684   .0029036    -0.75   0.456    -.0079039    .0035671
          dx |   .0163413   .0038238     4.27   0.000     .0087882    .0238944
       _cons |   6.942969   .1479574    46.93   0.000     6.650711    7.235228
------------------------------------------------------------------------------
```




```
. // Choose CV
. reg eduy d x dx if abs(x)<=bw_reduce_eduy_CV, cluster(x) //rectangle kernal weight

Linear regression                               Number of obs     =      9,058
                                                F(3, 154)         =      43.45
                                                Prob > F          =     0.0000
                                                R-squared         =     0.0134
                                                Root MSE          =      4.296

                                   (Std. Err. adjusted for 155 clusters in x)
------------------------------------------------------------------------------
             |               Robust
        eduy |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           d |   .4601403   .1835669     2.51   0.013      .097506    .8227745
           x |  -.0023134   .0029917    -0.77   0.441    -.0082235    .0035968
          dx |   .0172928   .0038463     4.50   0.000     .0096945    .0248912
       _cons |   6.939137   .1496101    46.38   0.000     6.643584     7.23469
------------------------------------------------------------------------------
```

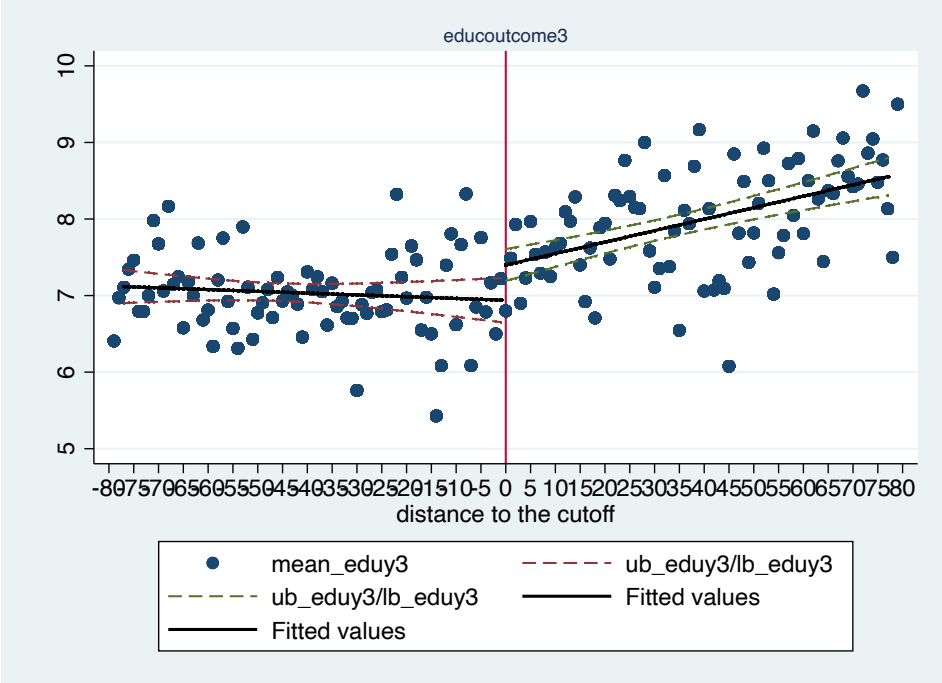
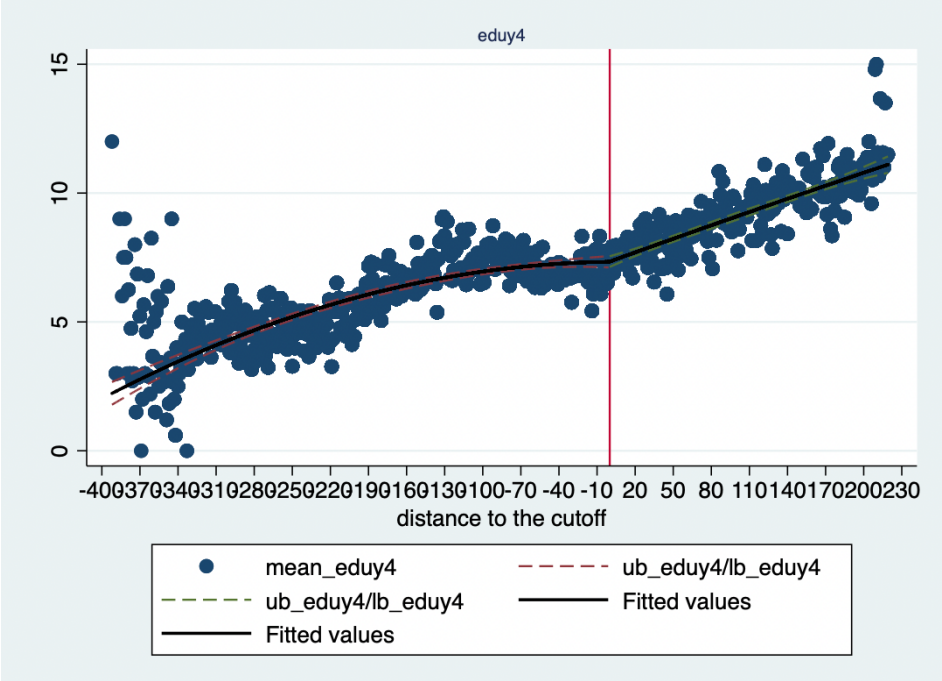


Table presents the outcome of varying bandwidth choice. We find that overall outcome of compulsory education impacts is consistent with the outcome of estimation equation shown in previous table.

Check the robustness of your findings by using the parametric estimation approach.



```
. reg eduy d x dx x2 dx2, cluster(x)

Linear regression                               Number of obs     =     26,694
                                                F(5, 607)         =     670.03
                                                Prob > F          =     0.0000
                                                R-squared         =     0.1270
                                                Root MSE          =     4.3696

                                   (Std. Err. adjusted for 608 clusters in x)
------------------------------------------------------------------------------
             |               Robust
        eduy |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
           d |   .0084778   .1541863     0.05   0.956    -.2943255    .3112811
           x |   .0006577   .0016607     0.40   0.692    -.0026037    .0039191
          dx |   .0171597   .0030164     5.69   0.000     .0112358    .0230837
          x2 |  -.0000316   4.83e-06    -6.53   0.000     -.000041   -.0000221
         dx2 |   .0000286   .0000132     2.16   0.031     2.59e-06    .0000546
       _cons |    7.33394   .1123944    65.25   0.000     7.113211    7.554669
------------------------------------------------------------------------------
```

Table presents the outcome of parametric approach regression. By using a parametric regression, we find that overall outcome of compulsory education impacts is economically smaller comparing with the outcome of estimation equation shown in previous table. Namely, the outcome is not quite consistent with non-parametric approach.