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Übung zur Empirischen Wirtschaftsforschung

Übungsblatt 4

Please examine below OLS estimation results for the log earnings of Egyptian wage workers and answer the below questions:

Y	Net basic income per 3 months in EGP
XYR	Years of experience in the labor market
HRS	Average number of work hours per day
ILLITERATE	1 if cannot read or write, 0 otherwise (Reference Group)
READ&WRITE	1 if can read and write but without any certificate, 0 otherwise
PRIMARY	1 if has primary certificate, 0 otherwise
PREPARATORY	1 if has preparatory certificate, 0 otherwise
VOCATIONALSECONDARY	1 if has vocational secondary certificate, 0 otherwise
GENERALSECONDARY	1 if has general secondary certificate, 0 otherwise
DIPLOMA	1 if has diploma, 0 otherwise
UNIVERSITY	1 if has university certificate, 0 otherwise
PRIVATE	1 if respondent works in private sector, 0 if works in the government
URBAN	1 if respondent living in Urban area, 0 if lives in Rural area

Quelle: ELMPS 2012.

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Exercise 1

```
============================================================ Estimation 1
Dependent Variable: LOG(Y)                Method: Least Squares
Sample: 1 49186 IF F=1 AND URBAN=0   Included observations: 518
============================================================
       Variable       CoefficientStd. Errort-Statistic  Prob.
============================================================
          C             6.740309   0.251638   26.78573   0.0000
       LOG(HRS)         0.081144   0.095847   0.846602   0.3976
         XYR            0.046066   0.009970   4.620637   0.0000
        XYR^2          -0.000550   0.000295  -1.868122   0.0623
      READWRITE         0.031345   0.300457   0.104326   0.9170
       PRIMARY          0.584218   0.218945   2.668337   0.0079
     PREPARATORY        0.144014   0.242033   0.595016   0.5521
 VOCATIONALSECONDARY    0.254740   0.144515   1.762726   0.0786
   GENERALSECONDARY     0.105573   0.206338   0.511652   0.6091
       DIPLOMA          0.496282   0.182526   2.718976   0.0068
         UNI            0.372901   0.149920   2.487342   0.0132
       PRIVATE         -0.444199   0.086973  -5.107328   0.0000
============================================================
R-squared               0.284621    Mean dependent var 7.572090
Adjusted R-squared      0.269070    S.D. dependent var 0.703945
S.E. of regression      0.601834    Akaike info criteri1.845224
Sum squared resid       183.2754    Schwarz criterion  1.943679
Log likelihood         -465.9130    F-statistic        18.30160
Durbin-Watson stat      2.042764    Prob(F-statistic)  0.000000
============================================================

============================================================ Estimation 2
Dependent Variable: LOG(Y)                Method: Least Squares
Sample: 1 49186 IF F=1 AND URBAN=1   Included observations: 1078
============================================================
       Variable       CoefficientStd. Errort-Statistic  Prob.
============================================================
          C             6.078282   0.203447   29.87644   0.0000
       LOG(HRS)         0.254663   0.084911   2.999154   0.0028
         XYR            0.044186   0.006241   7.079753   0.0000
        XYR^2          -0.000444   0.000167  -2.654622   0.0081
      READWRITE         0.366954   0.211815   1.732421   0.0835
       PRIMARY          0.541037   0.181676   2.978028   0.0030
     PREPARATORY        0.379477   0.167753   2.262111   0.0239
 VOCATIONALSECONDARY    0.524068   0.105685   4.958775   0.0000
   GENERALSECONDARY     0.691597   0.158696   4.357983   0.0000
       DIPLOMA          0.571374   0.121763   4.692500   0.0000
         UNI            0.936606   0.103566   9.043588   0.0000
       PRIVATE          0.051445   0.053611   0.959605   0.3375
============================================================
R-squared               0.269906    Mean dependent var 7.830539
Adjusted R-squared      0.262373    S.D. dependent var 0.693979
S.E. of regression      0.596026    Akaike info criteri1.814003
Sum squared resid       378.6927    Schwarz criterion  1.869471
Log likelihood         -965.7475    F-statistic         5.82608
Durbin-Watson stat 1.862573         Prob(F-statistic)  0.000000
```

What is the difference between the first and second estimation?

Please comment on the number of observations for both estimations. What does the difference show?

What is the average income level for each group?

Analyze the statistical and economic significance of the coefficients and the estimation quality for both models.

Compare the influence of coefficients between both models. What are possible economic reasons behind such differences?

Exercise 2

```
============================================================ Estimation 1
Dependent Variable: LOG(Y)                Method: Least Squares
Sample: 1 49186 IF F=0 AND URBAN=0  Included observations: 2498
============================================================
       Variable       CoefficientStd. Errort-Statistic  Prob.
============================================================
          C             6.937705   0.108023   64.22425   0.0000
       LOG(HRS)         0.131421   0.042827   3.068651   0.0022
         XYR            0.024157   0.003943   6.127273   0.0000
        XYR^2          -0.000289   8.83E-05  -3.273665   0.0011
      READWRITE         0.000924   0.063576   0.014538   0.9884
       PRIMARY          0.037790   0.050789   0.744047   0.4569
     PREPARATORY        0.233069   0.065897   3.536861   0.0004
 VOCATIONALSECONDARY    0.315025   0.042382   7.432936   0.0000
   GENERALSECONDARY     0.366254   0.091241   4.014132   0.0001
       DIPLOMA          0.400487   0.074616   5.367306   0.0000
         UNI            0.525190   0.049078   10.70115   0.0000
       PRIVATE          0.105135   0.029238   3.595876   0.0003
============================================================
R-squared               0.076519    Mean dependent var 7.833199
Adjusted R-squared      0.072433    S.D. dependent var 0.634945
S.E. of regression      0.611517    Akaike info criteri1.859045
Sum squared resid       929.6484    Schwarz criterion  1.887019
Log likelihood         -2309.948    F-statistic        18.72633
Durbin-Watson stat      1.549272    Prob(F-statistic)  0.000000
============================================================

============================================================ Estimation 2
Dependent Variable: LOG(Y)                Method: Least Squares
Sample: 1 49186 IF F=0 AND URBAN=1  Included observations: 2617
============================================================
       Variable       CoefficientStd. Errort-Statistic  Prob.
============================================================
          C             6.691618   0.119568   55.96489   0.0000
       LOG(HRS)         0.232518   0.047452   4.900040   0.0000
         XYR            0.029446   0.003934   7.484143   0.0000
        XYR^2          -0.000317   9.22E-05  -3.442777   0.0006
      READWRITE         0.211815   0.083251   2.544307   0.0110
       PRIMARY          0.156389   0.059725   2.618490   0.0089
     PREPARATORY        0.242375   0.066809   3.627881   0.0003
 VOCATIONALSECONDARY    0.364090   0.050056   7.273592   0.0000
   GENERALSECONDARY     0.369975   0.083778   4.416158   0.0000
       DIPLOMA          0.503389   0.069282   7.265849   0.0000
         UNI            0.781010   0.052001   15.01921   0.0000
       PRIVATE          0.057203   0.029440   1.943050   0.0521
============================================================
R-squared               0.148009    Mean dependent var 8.025592
Adjusted R-squared      0.144412    S.D. dependent var 0.682074
S.E. of regression      0.630905    Akaike info criteri1.921251
Sum squared resid       1036.897    Schwarz criterion  1.948167
Log likelihood         -2501.958    F-statistic        41.14049
Durbin-Watson stat      1.517792    Prob(F-statistic)  0.000000
```

Comment on the difference between both models in terms of groups and number of observations.

Analyze the economic and statistical significance of the coefficients, in addition to the estimation quality of both models.

Compare the influence of the coefficients for both models. How is this comparison different to the comparison made for Exercise 1, and what does this difference mean economically?

How can the estimation quality of the models in Exercise 2 be improved?