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# Übung zur Empirischen Wirtschaftsforschung

## Übungsblatt 3

Please examine the following estimations for the log earnings of workers using the SOEP 2012 data and answer the questions below.

| | |
|---|---|
| Y | Bruttomonatseinkommen in € |
| F | Geschlecht, Dummyvariable, 1 für Frauen, 0 für Männer |
| OHNE | kein Schulabschluss (Referenzgruppe) |
| HAUPT | Hauptschulabschluss |
| REAL | Realschulabschluss |
| FACHSCHU | Fachhochschulreife |
| ABI | Abitur |
| KEINBERUF | kein Berufsabschluss (Referenzgruppe) |
| LEHRE | Lehre |
| MEISTER | Meister |
| UNI | Universitätsabschluss |
| XYR | Berufserfahrung (in Years) |
| STUND | Tatsächliche Arbeitszeit pro Woche (in Hours) |
| PSAMPLE | Stichprobenart (1: Deutsche (West), 2: Ausländer (West), 3: Deutsche (Ost), 4: Zuwanderer 1984-93, 5: Ergänzung 1998, 6: Ergänzung 2000, 7: Hocheinkommensbezieher 2002: 8: H Ergänzung 2006, 10: J Aufstockung 2011, 11: K Aufstockung 2012) |

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## Estimation 1

```
============================================================
Dependent Variable: LOG(Y)
Sample: 1 23353 IF PSAMPLE<=3
Included observations: 1508
============================================================
     Variable      CoefficientStd. Errort-Statistic  Prob.
============================================================
         C           7.110953   0.173358   41.01899   0.0000
        XYR          0.017095   0.001652   10.34977   0.0000
       HAUPT         0.227338   0.175778   1.293322   0.1961
       REAL          0.307454   0.174851   1.758374   0.0789
     FACHSCHU        0.663023   0.185904   3.566488   0.0004
        ABI          0.693863   0.178729   3.882217   0.0001
       LEHRE        -0.011533   0.047509  -0.242761   0.8082
      MEISTER        0.155557   0.074954   2.075354   0.0381
        UNI          0.195439   0.057047   3.425926   0.0006
         F          -0.455678   0.038058  -11.97318   0.0000
============================================================
R-squared            0.288393    Mean dependent var 7.671067
Adjusted R-squared   0.284118    S.D. dependent var 0.804808
S.E. of regression   0.680947    Akaike info criteri2.075943
Sum squared resid    694.6050    Schwarz criterion  2.111212
Log likelihood      -1555.261    Hannan-Quinn criter2.089079
F-statistic          67.45501    Durbin-Watson stat 1.852863
Prob(F-statistic)    0.000000
============================================================
```

Interpret the statistical and economic significance of the educational dummy variables.

How is the experience coefficient $XYR$ interpreted?

How is the $F$ coefficient interpreted? Please calculate the total earnings for a female $ABI$ graduate and a male $ABI$ graduate.

What additional variables should be included in the model based on economic theory? What is the expected sign of this variables?

## Estimation 2

Dependent Variable: LOG(Y)
Sample: 1 23353 IF PSAMPLE=1
Included observations: 859

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 3.273559 | 0.252263 | 12.97675 | 0.0000 |
| LOG(STUND) | 1.064255 | 0.039769 | 26.76081 | 0.0000 |
| HAUPT | 0.342383 | 0.219178 | 1.562122 | 0.1186 |
| REAL | 0.403988 | 0.218657 | 1.847589 | 0.0650 |
| FACHSCHU | 0.591498 | 0.226731 | 2.608806 | 0.0092 |
| ABI | 0.522211 | 0.222355 | 2.348547 | 0.0191 |
| LEHRE | 0.304828 | 0.046319 | 6.581118 | 0.0000 |
| MEISTER | 0.526034 | 0.079115 | 6.648938 | 0.0000 |
| UNI | 0.575317 | 0.064700 | 8.892137 | 0.0000 |
| F | -0.259492 | 0.041593 | -6.238908 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.636947 | Mean dependent var | 7.703801 |
| Adjusted R-squared | 0.633098 | S.D. dependent var | 0.867824 |
| S.E. of regression | 0.525662 | Akaike info criteri | 1.563256 |
| Sum squared resid | 234.5959 | Schwarz criterion | 1.618620 |
| Log likelihood | -661.4183 | F-statistic | 165.5002 |
| Durbin-Watson stat | 2.041404 | Prob(F-statistic) | 0.000000 |

Dependent Variable: LOG(Y)
Sample: 1 23353 IF PSAMPLE=3
Included observations: 542

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 2.471825 | 0.567586 | 4.354983 | 0.0000 |
| LOG(STUND) | 1.155669 | 0.053967 | 21.41428 | 0.0000 |
| HAUPT | 0.391928 | 0.543642 | 0.720931 | 0.4713 |
| REAL | 0.573500 | 0.537567 | 1.066844 | 0.2865 |
| FACHSCHU | 0.590584 | 0.548857 | 1.076025 | 0.2824 |
| ABI | 0.801848 | 0.540371 | 1.483884 | 0.1384 |
| LEHRE | 0.173651 | 0.064389 | 2.696896 | 0.0072 |
| MEISTER | 0.305568 | 0.095057 | 3.214561 | 0.0014 |
| UNI | 0.409436 | 0.060586 | 6.757879 | 0.0000 |
| F | -0.116087 | 0.047954 | -2.420799 | 0.0158 |

| | | | |
|---|---|---|---|
| R-squared | 0.536560 | Mean dependent var | 7.508584 |
| Adjusted R-squared | 0.528720 | S.D. dependent var | 0.779645 |
| S.E. of regression | 0.535225 | Akaike info criteri | 1.606018 |
| Sum squared resid | 152.3997 | Schwarz criterion | 1.685266 |
| Log likelihood | -425.2308 | F-statistic | 68.43752 |
| Durbin-Watson stat | 1.465260 | Prob(F-statistic) | 0.000000 |

What is the difference between the first and second estimation in terms of groups?

How is the $log(STUND)$ coefficient interpreted? Pleased interpret it for both groups.

Analyze the effect of the education dummies for each estimation group and then compare the results between both models. What does the difference mean economically?

Analyze the influence of gender on income for both estimations. What does the difference between both estimations show?

Please comment on the estimation quality for both models. Based on the $R^2$ results for Estimation 1 and Estimation 2, what conclusion can you give about the coefficients importance?