

a)

Dep. variable: LOGW

Sample size: 3010

	Coeff	SE	t-stat
Constant	4.611	0.0679	67.91
EDUC	0.082	0.0035	23.31
EXPER	0.084	0.0068	12.38
EXPER ²	-0.002	0.003	-6.80
SHSA	0.151	0.0158	9.52
SOUTH1	-0.175	0.0146	-11.96

when educ ↑ 1 year we have:

$$\log(\text{wage}^{\text{new}}) = \log(\text{wage}^{\text{old}}) + 0.08$$

$$\text{wage}^{\text{new}} = \text{wage}^{\text{old}} \exp(0.08)$$

$$\text{wage}^{\text{new}} = \text{wage}^{\text{old}} \times 1.082$$

the wage increases by about 8%.



- c) age:
- related to exper (only older people can have very long experience)
 - exogenous (people cannot influence their age)

d)

Dep variable: EDUC

Sample size: 3010

	Coeff	SE	t-stat
Constant	-5.652	3.976	-1.421
AGE	0.990	0.279	3.551
AGE ²	-0.017	0.005	-3.518
SMSA	0.530	0.102	5.217
SOUTH1	-0.425	0.091	-4.667
NEARC	0.265	0.099	2.670
DADED	0.190	0.016	12.199
HOMED	0.235	0.017	13.773

sign.
Condition that instruments and endogenous variable are related

e) First run 1st stage regressions for $EXPER$ and $EXPER^2$
→ store predicted series ($-FIT$)

perform 2nd stage

Dep. variable: $LOGW$	
Sample size: 3010	
	Coeff
C	4.417
EDUC_FIT	0.100
EXPER_FIT	0.073
EXPER ² _FIT	-0.002
SMSA	0.135
SOUTH	-0.159

positive effect 10%

- f)
- 1) calculate 2SLS residuals
(! use actual X variables, not fitted)
 - 2) regress 2SLS residuals on all instruments

f)

Dep. variable: 2SLS residuals

Sample size: 3010

	Coeff	SE	t-value
Constant	0.126	0.657	0.192
SMSA	-0.003	0.017	-0.200
SOUTH1	0.002	0.015	0.148
AGE	-0.009	0.046	-0.203
AGE ²	0.000	0.001	0.199
NEARL	0.014	0.016	0.825
MOHEB	0.004	0.003	1.462
DADED	-0.004	0.003	-1.592
R ²	0.00123		

$$\text{Sargan test stat} = \overset{n}{\uparrow} 3010 \times \overset{R^2}{\uparrow} 0.00123 = 3.70 < 5.99$$

$$\chi^2(2) = \chi^2(2) \text{ dist with c.v. } 5.99$$

not reject H₀

→ instruments seem to be valid