Microeconometrics: Replication Paper

Win Supanwanid

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Abstract

This submission material contains all the relevant answers for this Take Home Exam. The file .ipynb will be similar while executable in Python.

Contents

Appendices

A Tables

A.1 Table I

Outcome variable	Birth cohort	Mean	Quarter-of-birth effect			F-test [P-value]
			I	II	III	
Total years of education[1]	1930-1939	12.79222	-.1242856	-.0859973	-.0148872	25.12
			(.0166581)	(.0167512)	(.0159604)	[0.0000]
	1940-1949	13.56001	-.0854568	-.0352745	-.0188388	17.36
			(.0125193)	(.0125985)	(.012602)	[0.0000]
High school graduate[2]	1930-1939	.774068	-.0191356	-.0198344	-.0038982	46.60
			(.0021296)	(.0021415)	(.0020404)	[0.0000]
	1940-1949	.8636907	-.0145416	-.0121225	-.0019522	51.26
			(.0014337)	(.0014428)	(.0014432)	[0.0000]
Years of educ. for high school graduates[3]	1930-1939	14.00601	-.0296008	.0050956	.0165048	3.79
			(.0142548)	(.0143257)	(.0136098)	[0.0099]
	1940-1949	14.28134	-.0093476	.0200636	.0079357	2.58
			(.0110349)	(.0110922)	(.0110816)	[0.0515]
College graduates[4]	1930-1939	.2356244	-.005028	.0027638	.0018581	5.00
			(.0021646)	(.0021767)	(.0020739)	[0.0018]
	1940-1949	.2995881	-.0027701	.0044954	-.0000155	5.01
			(.0019175)	(.0019297)	(.0019302)	[0.0018]
Completed master's degree[5]	1930-1939	.0898285	-.0010254	.0019429	-.0009199	1.72
			(.0014583)	(.0014665)	(.0013972)	[0.1615]
	1940-1949	.1101511	.0000612	.0038261	.0010261	3.76
			(.0013121)	(.0013204)	(.0013207)	[0.0103]
Completed doctoral degree[6]	1930-1939	.0349964	.0015652	.0024837	.0004057	2.88
			(.0009373)	(.0009426)	(.0008981)	(0.0343)
	1940-1949	.0360273	-.0017901	.0009889	-.0005075	4.48
			(.0007809)	(.0007858)	(.0007861)	[0.0038]

Table 1: The Effect of Quarter of Birth on Various Educational Outcome Variables
[1] From Table I.do line 117, 118, 120, 122
[2] From Table I.do line 132, 133, 200, 202
[3] From Table I.do line 135, 136, 139, 141
[4] From Table I.do line 213, 214, 274, 276
[5] From Table I.do line 290, 291, 350, 352
[6] From Table I.do line 367, 368, 427, 429

A.2 Table II

Date of Birth	Type of state law		Column (1) - (2)
	School-leaving age: 16 (1)	School-leaving age: 17 or 18 (2)	
	Percent enrolled April 1, 1960		
1. Jan 1-Mar 31, 1994	84.89115[1]	85.7213[2]	-0.8301
(age 16)	(0.38272)	(0.77054)	(0.86035)
2. Apr 1-Dec 31, 1994	85.7225[3]	85.99152[4]	-0.2690
(age 15)	(0.21789)	(0.44417)	(0.49473)
3. Within-state diff.	-0.83135[1]	-0.27022[2]	-0.5611
(row 1 - row 2)	(0.44044)	(0.88931)	(0.9924)

Table 2: Percentage of Age Group Enrolled in School By Birthday and Legal Dropout Age
[1] From Table II.do line 61
[2] From Table II.do line 69
[3] From Table II.do line 60
[4] From Table II.do line 68

The result of this table will not be the same as in the paper since the author doesn't provide data for this session. I only used the available data to approximate the result of this table. Results in the last column were manually calculated e.g. $-0.5611 = (-0.8301) - (-0.2690)$

A.3 Table III

PANEL A: WALD ESTIMATES FOR 1970 CENSUS - MEN BORN 1920-1929			
	(1) Born in 1st quarter of year	(2) Born in 2nd, 3rd, or 4th quarter of year	(3) Difference (std. error) (1)-(2)
ln (wkly. wage)[1]	5.148471	5.15745	-.0089789 (.0030117)
Education[2]	11.3996	11.52515	-.1255553 (.0155391)
Wald est. of return to education[3]			.0715133 (.0218682)
OLS return to education[4]			.0801112 (.0003549)
PANEL B: WALD ESTIMATES FOR 1980 CENSUS - MEN BORN 1930-1939			
	(1) Born in 1st quarter of year	(2) Born in 2nd, 3rd, or 4th quarter of year	(3) Difference (std. error) (1)-(2)
ln (wkly. wage)[1]	5.891596	5.902695	-.0110989 (.0027388)
Education[2]	12.68807	12.79688	-.1088179 (.0132376)
Wald est. of return to education[3]			.101995 (.0239489)
OLS return to education[4]			.070851 (.0003386)

Table 3: Wald Estimates
[1] From Table III.do line 52, 53, 57
[2] From Table III.do line 54, 55, 58
[3] From Table III.do line 61
[4] From Table III.do line 63
[5] From Table III.do line 66, 67, 71
[6] From Table III.do line 68, 69, 72
[7] From Table III.do line 75
[8] From Table III.do line 77

A.4 Table IV

Independent Variables	(1) OLS	(2) TSLS	(3) OLS	(4) TSLS	(5) OLS	(6) TSLS	(7) OLS	(8) TSLS
Years of education	0.0802***	0.0769***	0.0802***	0.131***	0.0701***	0.0669***	0.0701***	0.101**
	(0.000355)	(0.0150)	(0.000355)	(0.0334)	(0.000355)	(0.0151)	(0.000355)	(0.0334)
Race(1 = black)					-0.298***	-0.306***	-0.298***	-0.227**
					(0.00434)	(0.0353)	(0.00434)	(0.0776)
SMSA (1 = center city)					-0.134***	-0.136***	-0.134***	-0.116***
					(0.00256)	(0.00924)	(0.00256)	(0.0198)
Married (1 = married)					0.293***	0.294***	0.293***	0.280***
					(0.00374)	(0.00719)	(0.00374)	(0.0141)
Age			0.145*	0.141*			0.116	0.117
			(0.0676)	(0.0704)			(0.0652)	(0.0661)
Age-squared			-0.00154*	-0.00136			-0.00125	-0.00118
			(0.000748)	(0.000787)			(0.000721)	(0.000736)
Observations	247199	247199	247199	247199	247199	247199	247199	247199

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: OLS and TSLS Estimates of the Return to Education for Men Born 1920-1929: 1970 Census
Yes-No Dummies are not kept in the shown figure.

A.5 Table V

Independent Variables	(1) OLS	(2) TSLS	(3) OLS	(4) TSLS	(5) OLS	(6) TSLS	(7) OLS	(8) TSLS
Years of education	0.0711***	0.0891***	0.0711***	0.0760**	0.0632***	0.0806***	0.0632***	0.0600*
	(0.000339)	(0.0161)	(0.000339)	(0.0290)	(0.000339)	(0.0164)	(0.000339)	(0.0290)
Race(1 = black)					-0.257***	-0.230***	-0.257***	-0.263***
					(0.00404)	(0.0261)	(0.00404)	(0.0458)
SMSA (1 = center city)					-0.176***	-0.158***	-0.176***	-0.180***
					(0.00287)	(0.0174)	(0.00287)	(0.0305)
Married (1 = married)					0.248***	0.244***	0.248***	0.249***
					(0.00317)	(0.00487)	(0.00317)	(0.00726)
Age			-0.0772	-0.0801			-0.0760	-0.0741
			(0.0621)	(0.0645)			(0.0604)	(0.0626)
Age-squared			0.000787	0.000831			0.000770	0.000743
			(0.000688)	(0.000734)			(0.000669)	(0.000712)
Observations	329509	329509	329509	329509	329509	329509	329509	329509

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: OLS and TSLS Estimates of the Return to Education for Men Born 1930-1939: 1980 Census
Yes-No Dummies are not kept in the shown figure.

A.6 Table VI

Independent Variables	(1) OLS	(2) TSLS	(3) OLS	(4) TSLS	(5) OLS	(6) TSLS	(7) OLS	(8) TSLS
Years of education	0.0573***	0.0553***	0.0573***	0.0948***	0.0520***	0.0393**	0.0521***	0.0779**
	(0.000298)	(0.0138)	(0.000298)	(0.0223)	(0.000297)	(0.0145)	(0.000297)	(0.0239)
Race(1 = black)					-0.211***	-0.227***	-0.211***	-0.179***
					(0.00322)	(0.0183)	(0.00322)	(0.0299)
SMSA (1 = center city)					-0.142***	-0.154***	-0.142***	-0.118***
					(0.00229)	(0.0135)	(0.00229)	(0.0220)
Married (1 = married)					0.245***	0.244***	0.244***	0.245***
					(0.00220)	(0.00223)	(0.00220)	(0.00229)
Age			0.180***	0.133**			0.152***	0.121*
			(0.0389)	(0.0486)			(0.0379)	(0.0474)
Age-squared			-0.00234***	-0.00158*			-0.00195***	-0.00146*
			(0.000559)	(0.000725)			(0.000545)	(0.000709)
Observations	486926	486926	486926	486926	486926	486926	486926	486926

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6: OLS and TSLS Estimates of the Return to Education for Men Born 1940-1949: 1980 Census
Yes-No Dummies are not kept in the shown figure.

A.7 Table VII

Independent Variables	(1) OLS	(2) TSLS	(3) OLS	(4) TSLS	(5) OLS	(6) TSLS	(7) OLS	(8) TSLS
Years of education	0.0673***	0.0928***	0.0673***	0.0907***	0.0628***	0.0831***	0.0628***	0.0811***
	(0.000346)	(0.00930)	(0.000346)	(0.0107)	(0.000344)	(0.00949)	(0.000344)	(0.0109)
Race(1 = black)					-0.255***	-0.233***	-0.255***	-0.235***
					(0.00435)	(0.0109)	(0.00435)	(0.0122)
SMSA (1 = center city)					-0.171***	-0.151***	-0.170***	-0.153***
					(0.00289)	(0.00948)	(0.00289)	(0.0107)
Married (1 = married)					0.249***	0.244***	0.249***	0.244***
					(0.00316)	(0.00399)	(0.00316)	(0.00420)
Age			-0.0757	-0.0880			-0.0778	-0.0876
			(0.0617)	(0.0624)			(0.0603)	(0.0609)
Age-squared			0.000752	0.000942			0.000789	0.000938
			(0.000684)	(0.000694)			(0.000669)	(0.000677)
Observations	329509	329509	329509	329509	329509	329509	329509	329509

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7: OLS and TSLS Estimates of the Return to Education for Men Born 1930-1939: 1980 Census
Yes-No Dummies are not kept in the shown figure.

A.8 Table VIII

Independent Variables	(1) OLS	(2) TSLS	(3) OLS	(4) TSLS	(5) OLS	(6) TSLS	(7) OLS	(8) TSLS
Years of education	0.0672***	0.0635***	0.0671***	0.0567**	0.0576***	0.0461*	0.0576***	0.0393*
	(0.00134)	(0.0185)	(0.00134)	(0.0199)	(0.00135)	(0.0187)	(0.00135)	(0.0199)
SMSA (1 = center city)					-0.189***	-0.205***	-0.188***	-0.215***
					(0.0142)	(0.0307)	(0.0142)	(0.0324)
Married (1 = married)					0.222***	0.227***	0.222***	0.231***
					(0.0100)	(0.0136)	(0.0100)	(0.0140)
Age			-0.310	-0.326			-0.298	-0.323
			(0.254)	(0.256)			(0.247)	(0.249)
Age-squared			0.00333	0.00347			0.00323	0.00346
			(0.00282)	(0.00283)			(0.00275)	(0.00276)
Observations	26913	26913	26913	26913	26913	26913	26913	26913

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8: OLS and TSLS Estimates of the Return to Education for Black Men Born 1930-1939: 1980 Census
Yes-No Dummies are not kept in the shown figure.