P1.1

Reduced Form Regressions

	Dependent variable:					
	lwage76	ed76		experience	`experience2/100`	ed76
	(1)	(2)	(3)	(4)	(5)	(6)
experience	0.053***	−0.410***				−0.413***
	(0.007)	(0.034)				(0.034)
`experience2/100`	−0.219***	0.073				0.093
	(0.034)	(0.165)				(0.165)
black	−0.264***	−1.006***	−1.468***	1.468***	0.282***	−1.006***
	(0.018)	(0.090)	(0.115)	(0.115)	(0.024)	(0.090)
reg76r	−0.143***	−0.291***	−0.460***	0.460***	0.112***	−0.267***
	(0.016)	(0.079)	(0.102)	(0.102)	(0.022)	(0.079)
smsa76r	0.185***	0.404***	0.835***	−0.835***	−0.176***	0.400***
	(0.018)	(0.085)	(0.109)	(0.109)	(0.023)	(0.085)
nearc4	0.045***	0.337***	0.347***	−0.347***	−0.073***	
	(0.017)	(0.083)	(0.107)	(0.107)	(0.022)	
age76			1.061***	−0.061	−0.555***	
			(0.301)	(0.301)	(0.063)	
`age2/100`			−1.876***	1.876***	1.313***	
			(0.523)	(0.523)	(0.110)	
nearc4a						0.430***
						(0.087)
nearc4b						0.123
						(0.106)
Constant	5.957***	16.659***	−1.870	−4.130	6.099***	16.657***
	(0.036)	(0.176)	(4.298)	(4.298)	(0.902)	(0.176)

P1.2

Instrumental Variable Wage Regressions

	Dependent variable:				
	OLS	lwage76 instrumental variable			
	OLS	IV(a)	IV(b)	2SLS(a)	2SLS(b)
	(1)	(2)	(3)	(4)	(5)
ed76	0.074***	0.132***	0.133***	0.161***	0.160***
	(0.004)	(0.049)	(0.051)	(0.041)	(0.041)
experience	0.084***	0.107***	0.056**	0.119***	0.047*
	(0.007)	(0.021)	(0.026)	(0.018)	(0.025)
`experience2/100`	-0.224***	-0.228***	-0.080	-0.231***	-0.032
	(0.032)	(0.033)	(0.134)	(0.035)	(0.128)
black	-0.190***	-0.131**	-0.103	-0.102**	-0.064
	(0.018)	(0.053)	(0.077)	(0.045)	(0.063)
reg76r	-0.125***	-0.105***	-0.098***	-0.095***	-0.086***
	(0.015)	(0.023)	(0.029)	(0.022)	(0.026)
smsa76r	0.161***	0.131***	0.108**	0.116***	0.083**
	(0.016)	(0.030)	(0.050)	(0.027)	(0.041)
Constant	4.734***	3.753***	4.066***	3.268***	3.748***
	(0.068)	(0.829)	(0.608)	(0.687)	(0.483)
Observations	3,010	3,010	3,010	3,010	3,010
R2	0.291	0.225	0.176	0.145	0.051

Note: *p<0.1; **p<0.05; ***p<0.01

[1] "Sargan Test for TSLS(a)"
Statistic: 0.8205896
P-value: 0.3650078
[1] "Sargan Test for TSLS(b)"
Statistic: 0.5237882
P-value: 0.4692302

P2

2.

$S \xrightarrow{d} z'(I_\ell - Q(Q'Q)^{-1}Q')z$ & $z \sim N(0, I_\ell)$ under H_0

$\Rightarrow S \sim \chi^2(f)$ with $f = \text{trace}(I_\ell - Q(Q'Q)^{-1}Q')$

$= \ell - \text{trace}(Q(Q'Q)^{-1}Q')$

↓ by trace(AB) = trace(BA)

$= \ell - \text{trace}(Q'Q(Q'Q)^{-1})$

↳ k by k matrix

$= \ell - k$

$\Rightarrow S \sim \chi^2(\ell - k)$ #