

ECO220 Exercise set 11

1a) Given your estimates of α , β and σ^2 in question 13 of Exercise set 9/10 what would the variance of the prediction of Y be for $X = 20$, what would the variance be if it were a forecast.

1b) Test the hypothesis that the true predicted Y is greater than 42.

1c) Test the hypothesis that the true forecasted Y is greater than 42.

2a) Show that the prediction and forecast of Y given X based upon the OLS estimate of γ for the model used in exercises 1 through 4 of Exercise set 9/10 is unbiased.

2b) Derive the variance of the prediction and forecast of Y given X for the model used in exercises 1 through 4 of Exercise set 9/10.

2c) Based upon you estimates of γ and σ^2 in question 5 construct a 95% confidence interval for the prediction and forecast of Y when X is 2.5.

3. Calculate the correlation coefficient R^2 and F test for the model in question 13 of Exercise set 9/10.

4. Calculate the correlation coefficient R^2 and F test for the model in question 4 of Exercise set 9/10.

TABLE K.2
Estimated earnings equations for women by education group, Ontario 1970

	1	2	3	4	5	6	7	8	9
Constant	5.3733	5.6501	6.4842	4.4261	4.9081	4.0990	2.6787	3.1750	3.4360
D_1	-0.0072 (0.000)	0.5005 (6.537)	0.1419 (5.200)	0.1283 (8.421)	0.1418 (9.794)	0.0314 (0.085)	2.7455 (26.63)	0.9476 (4.841)	0.5059 (3.317)
D_2	-0.9187 (3.182)	-0.1903 (0.358)	-0.2298 (7.341)	-0.0593 (0.838)	-0.1305 (3.781)	0.0296 (0.030)	-	-0.1285 (0.298)	0.1378 (0.094)
D_3	-3.5439 (9.278)	0.2139 (0.079)	-0.3682 (8.065)	-0.3651 (11.18)	-0.2827 (7.080)	-0.1731 (0.463)	-	-0.2146 (0.932)	0.1378 (0.094)
AGE	0.1063 (9.839)	0.0561 (6.553)	0.0491 (31.37)	0.1541 (638.7)	0.1506 (460.5)	0.1937 (140.0)	0.1522 (2.456)	0.2086 (20.17)	0.2226 (21.04)
AGE ²	-0.00102 (9.069)	-0.00500 (4.617)	-0.00047 (25.61)	-0.00158 (463.5)	-0.00157 (340.8)	-0.00199 (100.3)	-0.00189 (2.395)	-0.00221 (14.03)	-0.00230 (15.94)
NC	-0.0562 (1.295)	-0.0327 (1.048)	-0.0586 (26.67)	-0.1269 (139.2)	-0.1935 (239.5)	-0.1951 (41.08)	-0.0200 (0.026)	-0.2048 (9.534)	-0.2267 (11.53)
R^2	0.2123	0.0899	0.0441	0.1748	0.1362	0.1939	0.6592	0.1782	0.1632
SEE	1.083	1.002	1.031	1.132	1.095	1.101	0.7042	1.125	1.150
F	3.864	4.395	16.25	164.4	123.5	36.97	8.221	8.376	8.661
NOBS	93.0	274.0	2120.0	4664.0	4707.0	929.0	22.0	197.0	228.0

TABLE K.1
Estimated earnings equations for men by education group, Ontario 1970

	1	2	3	4	5	6	7	8	9
Constant	6.3537	5.3645	5.8393	3.4977	4.1033	3.6587	4.1125	3.1584	3.6044
D_1	0.3529 (2.279)	0.0862 (0.648)	0.1251 (18.46)	0.0595 (4.943)	0.0351 (1.254)	0.0949 (2.657)	-0.6706 (3.294)	0.0193 (0.066)	-0.0046 (0.003)
D_2	-0.2594 (3.187)	-0.1349 (0.957)	-0.0918 (6.044)	-0.0363 (1.004)	-0.0345 (0.541)	0.1449 (2.653)	-1.5959 (11.59)	-0.3470 (6.310)	-0.0862 (0.332)
D_3	0.2420 (0.306)	0.6300 (12.00)	-0.4154 (91.35)	-0.3256 (40.24)	-0.4051 (32.43)	-0.2464 (3.244)	-1.5959 (11.59)	-0.4925 (2.161)	-0.3295 (1.558)
AGE	0.0831 (10.41)	0.1365 (112.2)	0.1295 (856.2)	0.2507 (4648.0)	0.2249 (2725.0)	0.2366 (822.5)	0.2619 (35.36)	0.2796 (494.1)	0.2554 (279.4)
AGE ²	-0.00092 (12.58)	-0.00144 (116.2)	-0.00144 (918.6)	-0.00277 (3628.0)	-0.00243 (2124.0)	-0.00247 (570.1)	-0.00293 (32.80)	-0.00296 (400.0)	-0.00258 (216.8)
R^2	0.1618	0.1780	0.1785	0.4539	0.4017	0.4682	0.3989	0.4146	0.3009
SEE	0.9759	0.9452	0.7850	0.8551	0.8395	0.7933	0.7128	0.8025	0.8691
F	6.29	28.68	234.8	1211.5	729.4	283.5	11.94	126.9	83.83
NOBS	169.0	668.0	5407.0	7295.0	5437.0	1616.0	77.0	902.0	980.0

SOURCE: See source to Table 4.