

Exercises

- 7.1** The table gives data on government recurrent expenditure, G , investment, I , gross domestic product, Y , and population, P , for 30 countries in 1997 (source: 1999 International Monetary Fund *Yearbook*). G , I , and Y are measured in US\$ billion and P in million. A researcher investigating whether government expenditure tends to crowd out investment fits the regression (standard errors in parentheses):

$$\hat{I} = 18.10 - 1.07G + 0.36Y \quad R^2 = 0.99.$$

(7.79) (0.14) (0.02)

Country	I	G	Y	P	Country	I	G	Y	P
Australia	94.5	75.5	407.9	18.5	Netherlands	73.0	49.9	360.5	15.6
Austria	46.0	39.2	206.0	8.1	New Zealand	12.9	9.9	65.1	3.8
Canada	119.3	125.1	631.2	30.3	Norway	35.3	30.9	153.4	4.4
Czech Republic	16.0	10.5	52.0	10.3	Philippines	20.1	10.7	82.2	78.5
Denmark	34.2	42.9	169.3	5.3	Poland	28.7	23.4	135.6	38.7
Finland	20.2	25.0	121.5	5.1	Portugal	25.6	19.9	102.1	9.8
France	255.9	347.2	1409.2	58.6	Russia	84.7	94.0	436.0	147.1
Germany	422.5	406.7	2102.7	82.1	Singapore	35.6	9.0	95.9	3.7
Greece	24.0	17.7	119.9	10.5	Spain	109.5	86.0	532.0	39.3
Iceland	1.4	1.5	7.5	0.3	Sweden	31.2	58.8	227.8	8.9
Ireland	14.3	10.1	73.2	3.7	Switzerland	50.2	38.7	256.0	7.1
Italy	190.8	189.7	1145.4	57.5	Thailand	48.1	15.0	153.9	60.6
Japan	1105.9	376.3	3901.3	126.1	Turkey	50.2	23.3	189.1	62.5
Korea	154.9	49.3	442.5	46.0	UK	210.1	230.7	1256.0	58.2
Malaysia	41.6	10.8	97.3	21.0	USA	1517.7	1244.1	8110.9	267.9

She sorts the observations by increasing size of Y and runs the regression again for the 11 countries with smallest Y and the 11 countries with largest Y . RSS for these regressions is 321 and 28101, respectively. Perform a Goldfeld-Quandt test for heteroscedasticity.

- 7.2** The researcher saves the residuals from the full-sample regression in Exercise 7.1 and regresses their squares on G , Y , their squares, and their product. R^2 is 0.9878. Perform a White test for heteroscedasticity.