

التمرين: البيانات التالية توضح إجمالي الانفاق الاستهلاكي (ci) وإجمالي الدخل المتاح (yd) والثروة (W)

Ci	32	11	15	17	16	13	18	20	14	17	41	17	33	20	18
Yd	36	12	16	18	17	14	20	23	15	18	50	19	37	22	19
W	144	47	63	70	67	52	79	90	58	70	204	76	149	86	76

Dependent Variable: Ci Method: Least Squares Date: 02/22/26 Time: 11:39 Sample: 1 15 Included observations: 15					Dependent Variable: Ci Method: Least Squares Date: 02/22/26 Time: 11:48 Sample: 1 15 Included observations: 15				
Variable	Coefficient	Std. Error	t-Statistic	Prob.	Variable	Coefficient	Std. Error	t-Statistic	Prob.
YD	1.407312	0.724192	1.943287	0.0758	YD	0.803865	0.017380	46.25190	0.0000
W	-0.145742	0.174853	-0.833515	0.4208	C	2.126752	0.427095	4.979580	0.0003
C	1.541740	0.824260	1.870453	0.0860					
R-squared	0.994290	Mean dependent var	20.13333		R-squared	0.993960	Mean dependent var	20.13333	
Adjusted R-squared	0.993339	S.D. dependent var	8.433493		Adjusted R-squared	0.993495	S.D. dependent var	8.433493	
S.E. of regression	0.688313	Akaike info criterion	2.267710		S.E. of regression	0.680184	Akaike info criterion	2.190659	
Sum squared resid	5.685297	Schwarz criterion	2.409320		Sum squared resid	6.014451	Schwarz criterion	2.285065	
Log likelihood	-14.00783	Hannan-Quinn criter.	2.266202		Log likelihood	-14.42994	Hannan-Quinn criter.	2.189653	
F-statistic	1044.851	Durbin-Watson stat	1.974754		F-statistic	2139.239	Durbin-Watson stat	1.998103	
Prob(F-statistic)	0.000000				Prob(F-statistic)	0.000000			

Dependent Variable: Ci
Method: Least Squares
Date: 02/22/26 Time: 11:52
Sample: 1 15
Included observations: 15

Variable	Coefficient	Std. Error	t-Statistic	Prob.
W	0.193946	0.004678	41.45889	0.0000
C	2.923848	0.458952	6.370712	0.0000
R-squared	0.992494	Mean dependent var	20.13333	
Adjusted R-squared	0.991916	S.D. dependent var	8.433493	
S.E. of regression	0.758259	Akaike info criterion	2.407983	
Sum squared resid	7.474443	Schwarz criterion	2.502390	
Log likelihood	-16.05987	Hannan-Quinn criter.	2.406977	
F-statistic	1718.839	Durbin-Watson stat	2.059797	
Prob(F-statistic)	0.000000			

المطلوب:

✓ أكتب نماذج الانحدار البسيطة والمتعدد؛

✓ أحسب r_{dy, w_1} ؛

✓ هل هناك ازدواج خطي. علل إجابتك