Disciplina "Econometrie"

Aplicație modelul de regresie liniară simplă

Distribuția ratei inflației (%) și a ratei șomajului (%) în țările Uniunii Europene, în anul 2021, se prezintă astfel:

Tara tiei ului Belgium 3.2 5.9 Bulgaria 2.8 5.5 Czechia 3.3 2.5 Denmark 1.9 5.2 Germany 3.2 3.4 Estonia 4.5 5.9 Ireland 2.4 5.7 Greece 0.6 16.7 Spain 3.0 14.8 France 2.1 8.1 Croatia 2.7 7.2 Italy 1.9 9.6 Cyprus 2.3 7.4 Latvia 3.2 7.3 Lithuania 4.6 7.3 Luxembourg 3.5 5.9 Hungary 5.2 3.8 Malta 0.7 3.8 Netherlands 2.8 4.5 Austria 2.8 5.7 Poland 5.2 3.3 Portugal 0.9 6.8 Romania 4.1 <t< th=""><th></th><th>Rata_infla</th><th>Rata_somaj</th></t<>		Rata_infla	Rata_somaj
Belgium 3.2 5.9 Bulgaria 2.8 5.5 Czechia 3.3 2.5 Denmark 1.9 5.2 Germany 3.2 3.4 Estonia 4.5 5.9 Ireland 2.4 5.7 Greece 0.6 16.7 Spain 3.0 14.8 France 2.1 8.1 Croatia 2.7 7.2 Italy 1.9 9.6 Cyprus 2.3 7.4 Latvia 3.2 7.3 Lithuania 4.6 7.3 Luxembourg 3.5 5.9 Hungary 5.2 3.8 Malta 0.7 3.8 Netherlands 2.8 4.5 Austria 2.8 5.7 Poland 5.2 3.3 Portugal 0.9 6.8 Romania 4.1 5.5 Slovenia 2.0 4.7 Slovakia 2.8 6.4 Finland <th>Tara</th> <th></th> <th>_</th>	Tara		_
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Croatia 2.7 7.2 Italy 1.9 9.6 Cyprus 2.3 7.4 Latvia 3.2 7.3 Lithuania 4.6 7.3 Luxembourg 3.5 5.9 Hungary 5.2 3.8 Malta 0.7 3.8 Netherlands 2.8 4.5 Austria 2.8 5.7 Poland 5.2 3.3 Portugal 0.9 6.8 Romania 4.1 5.5 Slovenia 2.0 4.7 Slovakia 2.8 6.4 Finland 2.1 7.4	Spain	3.0	14.8
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Malta 0.7 3.8 Netherlands 2.8 4.5 Austria 2.8 5.7 Poland 5.2 3.3 Portugal 0.9 6.8 Romania 4.1 5.5 Slovenia 2.0 4.7 Slovakia 2.8 6.4 Finland 2.1 7.4	Luxembourg	3.5	5.9
Netherlands 2.8 4.5 Austria 2.8 5.7 Poland 5.2 3.3 Portugal 0.9 6.8 Romania 4.1 5.5 Slovenia 2.0 4.7 Slovakia 2.8 6.4 Finland 2.1 7.4	Hungary	5.2	3.8
Austria 2.8 5.7 Poland 5.2 3.3 Portugal 0.9 6.8 Romania 4.1 5.5 Slovenia 2.0 4.7 Slovakia 2.8 6.4 Finland 2.1 7.4	Malta	0.7	3.8
Poland 5.2 3.3 Portugal 0.9 6.8 Romania 4.1 5.5 Slovenia 2.0 4.7 Slovakia 2.8 6.4 Finland 2.1 7.4	Netherlands	2.8	4.5
Portugal 0.9 6.8 Romania 4.1 5.5 Slovenia 2.0 4.7 Slovakia 2.8 6.4 Finland 2.1 7.4	Austria	2.8	5.7
Romania 4.1 5.5 Slovenia 2.0 4.7 Slovakia 2.8 6.4 Finland 2.1 7.4	Poland	5.2	3.3
Slovenia 2.0 4.7 Slovakia 2.8 6.4 Finland 2.1 7.4	Portugal	0.9	6.8
Slovakia 2.8 6.4 Finland 2.1 7.4	Romania	4.1	5.5
Finland 2.1 7.4	Slovenia	2.0	4.7
	Slovakia	2.8	6.4
Sweden 2.7 8.1	Finland	2.1	7.4
	Sweden	2.7	8.1

^{*}Sursa: https://ec.europa.eu/eurostat/web/main/data/database

În urma prelucrării datelor, s-au obținut următoarele rezultate:

Coefficients^a

		Unstandardize	d Coefficients	Standardized Coefficients		
Model		В	Std. Error	Beta	t	Sig.
1	(Constant)	3.786	.515		7.349	.000
	rata_somaj	144	.071	378	-2.038	.052

a. Dependent Variable: rata_inflatiei

ANOVA^a

N	Model		Sum of Squares	df	Mean Square	F	Sig.
1	1	Regression	5.287	1	5.287	4.155	.052 ^b
		Residual	31.813	25	1.273		
	Total	37.100	26				

a. Dependent Variable: rata_inflatiei

Model Summary

M	lodel	R	R Square	Adjusted R Square	Std. Error of the Estimate
1		.378ª	.143	.108	1.12806

a. Predictors: (Constant), rata_somaj

Correlations

		rata_inflatiei	rata_somaj
rata_inflatiei	Pearson Correlation	1	378
	Sig. (2-tailed)		.052
	N	27	27
rata_somaj	Pearson Correlation	378	1
	Sig. (2-tailed)	.052	
	N	27	27

Se cere:

- 1. Să se scrie ecuația estimată a legăturii dintre variabile și să se interpreteze panta dreptei de regresie.
- 2. Pe baza rezultatelor din tabelul *Coefficients*, să se aprecieze intensitatea legăturii dintre variabile.

b. Predictors: (Constant), rata_somaj

- 3. Să se precizeze cu cât scade, în medie, rata inflației dacă rata șomajului crește cu 3%.
- 4. Să se estimeze cât ar trebui să fie rata șomajului pentru a avea o rată a inflației de 4%.
- 5. Să se testeze dacă influența ratei șomajului asupra ratei inflației este semnificativă statistic (pentru un risc de 0.10).
- 6. Pe baza rezultatelor din tabelul *Model summary,* să se estimeze valoarea coeficientului de corelație.
- 7. Să se testeze semnificația statistică a ordonatei la origine (pentru un risc de 10%).
- 8. Să se testeze semnificația coeficientului de corelație, folosind statistica test t Student (pentru un risc de 0.10).
- 9. Să se testeze semnificația raportului de corelație (pentru un risc de 0.05).
- 10. Să se testeze dacă modelul de regresie este corect specificat (pentru un risc de 0.05).