

ECONOMETRIC ANALYSIS ON THE INFLUENCE OF DIFFERENT FACTORS OVER THE SHARE OF TURNOVER IN TOURISM

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Abstract:

Romanian tourism in our country is the economic sector which has a valuable development potential, yet sufficiently unexploited. Tourism development would increase the GDP as well as the profit obtained from the tourism entrepreneurs. Economic phenomena are complex and are influenced by several factors, leading to the development of more complex models. In this paper we present econometric modeling share turnover of Romanian tourism, for the period 1992 - 2006, depending on the share of the staff engaged in tourism, the number of tourist establishments, number of beds and number of tourists accommodated, and this analysis is done with a regression model of Cobb - Douglas function. Based on the data from the sample we build an econometric model, estimate and test model parameters, we calculate the correlation report and the determination report, classical hypothesis testing model analyzed using SPSS.

Keywords: econometrics, non-linear multiple regression, autocorrelation, correlation report, determination report

JEL classification: C01, C13, C51, C87

1. PROBLEM PRESENTATION

Romania has a huge tourism potential, unexploited. In a market economy, the development of Romanian tourism has a particular importance, since it would contribute to the growth of PIB and profits obtained by entrepreneurs in tourism.

Due to the complexity of economic phenomena, there are situations in which a result or a phenomenon can be explained by several factors which led to the development of multiple non-linear models. These factors which appear in the econometric model are independent variables, and the rest of the influences is taken from residual variable. As with simple models, there are several types of multiple models that show linearizable and polynomial models.

The best known model in this category is Cobb-Douglas. This function expresses the relationship between input and output for a company or the national economy. There are many expressions of the production function, based on the number of factors taken into account and the way they are expressed.

2. STATISTICAL DATA AND DEFINING THE MODEL

The model of the share turnover in Romanian tourism, for the period 1992 - 2006, is built based on data provided by Romania's official statistics. In our analysis we took the variables: the share of turnover, the share of the staff employed in tourism, the number of tourist establishments and the number of tourists accommodated.

Further econometric analysis show the share of turnover in Romanian tourism, for the period 1992 - 2006, depending on the share of the staff engaged in tourism, the number of tourist establishments, number of beds and number of tourists accommodated.

Econometric modeling of the share turnover of Romanian tourism in the period 1992 - 2006, can be done using a regression model of Cobb-Douglas function.

Table no. 1. Evolution of share turnover, the share of staff employed in tourism, the number of tourist establishments and the number of tourists accommodated in Romanian tourism, for the period 1992 – 2006

Data	Share turnover	Share staff employed in tourism	Number of tourist	Number of places	Number of accommodated tourists
1992	65.30	42.30	3277	302533.0	8015.00
1993	69.10	45.40	2682	293036.0	7566.00
1994	77.00	59.60	2840	292479.0	7005.00
1995	79.90	63.70	2905	289539.0	7070.00
1996	73.30	71.30	2965	288206.0	6595.00
1997	69.90	73.20	3049	287943.0	5727.00
1998	71.90	75.10	3127	287268.0	5552.00
1999	73.40	76.60	3250	282806.0	5109.00
2000	74.70	81.70	3121	280005.0	4920.00
2001	74.00	82.60	3266	277047.0	4875.00
2002	76.10	84.20	3338	272596.0	4847.00
2003	79.10	86.00	3569	273614.0	5057.00
2004	77.80	85.10	3900	275941.0	5639.00
2005	78.80	85.60	4226	282661.0	5805.00
2006	81.10	86.70	4710	287158.0	6216.00

Source : www.insse.ro

The estimated equation of the non-linear multiple regression model, such as power functions, takes the following form:

$$Y_{X_1, X_2, X_3, X_4} = \alpha X_1^{\beta_1} X_2^{\beta_2} X_3^{\beta_3} X_4^{\beta_4} e^{\varepsilon},$$

where:

- Y is dependent variable (LN_CIFRA - Share turnover);
- X_1 is independent variable (LN_PONPE - Share staff employed in tourism)
- X_2 is independent variable (LN_UNIT - Number of tourists)
- X_3 is independent variable (LN_LOCUR - Number of places)
- X_4 is independent variable (LN_TURIT - Number of accommodated tourists);
- ε is the aleatory or residual variable the error.

The regression equation is:

- α is the regression coefficient that shows the average value of dependent variable Y when $X_1 = X_2 = X_3 = X_4 = 1$;
- $\beta_1, \beta_2, \beta_3, \beta_4$ is the elasticity of the dependent variable.

To check the intensity of links between each independent variable and dependent variable we build the matrix of the correlations.

For each estimated correlation coefficient, SPSS program calculated a level of significance (sig.) t test to check whether links exist between variables. It can be noticed that most simple correlation coefficients between independent variables and dependent variable are significant because the level of significance is less than 0,05. The relationship between share turnover and the share of staff employed in tourism is the largest, and the correlation coefficient is equal to 0,686.

Table no. 2. Matrix correlations

		LN_CIFRA	LN_PONPE	LN_UNIT	LN_LOCUR	LN_TURIT
Pearson Correlation	LN_CIFRA	1.000	.686	.523	-.554	-.336
	LN_PONPE	.686	1.000	.579	-.840	-.844
	LN_UNIT	.523	.579	1.000	-.351	-.285
	LN_LOCUR	-.554	-.840	-.351	1.000	.889
	LN_TURIT	-.336	-.844	-.285	.889	1.000
Sig. (1-tailed)	LN_CIFRA	.	.002	.023	.016	.111
	LN_PONPE	.002	.	.012	.000	.000
	LN_UNIT	.023	.012	.	.100	.152
	LN_LOCUR	.016	.000	.100	.	.000
	LN_TURIT	.111	.000	.152	.000	.
N	LN_CIFRA	15	15	15	15	15
	LN_PONPE	15	15	15	15	15
	LN_UNIT	15	15	15	15	15
	LN_LOCUR	15	15	15	15	15
	LN_TURIT	15	15	15	15	15

3. ESTIMATING MODEL PARAMETERS

Determination of parameters for the non-linear multiple regression model using the method of the least squares is made by liniarization model with logarithm function.

If we logarithm the equation $Y_{X_1, X_2, X_3, X_4} = \alpha X_1^{\beta_1} X_2^{\beta_2} X_3^{\beta_3} X_4^{\beta_4} e^\epsilon$, we obtain model liniarization:

$$\ln Y_{X_1, X_2, X_3, X_4} = \ln \alpha + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 .$$

Estimated liniarization multiple parameters model will lead to estimations of the initial model parameters, with one exception. For parameter α , estimation is obtained indirectly, since the model liniarization estimated a value for the parameter $\ln \alpha$. Applying the reverse, ie, exponential function, the estimated value in the model liniarization we obtain an estimation for the parameter α . Estimated point parameter of the linear regression model are presented in table 3, the second column.

Table no. 3. Estimated regression model

		Coefficients ^a									
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B				Part
		B	Std. Error	Beta			Lower Bound	Upper Bound			
1	(Constant)	17.753	8.906		1.993	.074	-2.091	37.597			
	LN_PONPE	.333	.104	1.263	3.217	.009	.102	.564	.686	.713	.487
	LN_UNIT	-.0301	.083	-.076	-.363	.724	-.215	.155	.523	-.114	-.055
	LN_LOCUR	-1.499	.748	-.712	-2.003	.073	-3.166	.169	-.554	-.535	-.303
	LN_TURIT	.484	.139	1.341	3.472	.006	.173	.795	-.336	.739	.526

a. Dependent Variable: LN_CIFRA

The equation estimated is :

$$\ln Y_{X_1, X_2, X_3, X_4} = 17,753 + 0,333 \ln X_1 - 0,0301 \ln X_2 - 1,499 \ln X_3 + 0,484 \ln X_4$$

or

$$Y_{X_1, X_2, X_3, X_4} = e^{17,753} X_1^{0,333} X_2^{-0,0301} X_3^{-1,499} X_4^{0,484}$$

To an increase of the percentage share of staff employed in tourism, the share of turnover will increase on average by 0,333 percent. At one percent increase in the number of tourist establishments, the share of turnover will decrease on average by - 0,0301 percent. At a one percent increase in the number of places of accommodation in tourist establishments, the share of turnover will decrease on average by - 1,499 percent. To an increase of a percentage share of the tourists stayed, the share of turnover will increase on average 0,484 percent.

Estimation of the confidence interval is based on the selection of estimator distributions $\hat{\alpha}$ and $\hat{\beta}_i$, $i = \overline{1,4}$ of parameters α and β_i , $i = \overline{1,4}$.

In the estimation of confidence intervals the statistics of the Student are used:

$$\frac{\hat{\beta}_i - \beta_i}{\hat{\sigma}_{\beta_i}} \sim t(n-k).$$

Confidence intervals for regression coefficients β_i , $i = \overline{1,4}$ estimated for a sample are defined by the observed relation: $b_i \pm t_{\alpha/2} \cdot s_{\hat{\beta}_i}$. Analogous to parameter α , we determine the range: $a \pm t_{\alpha/2} \cdot s_{\hat{\alpha}}$.

The value of regression coefficients and the average errors are obtained by selecting the coefficients in Table SPSS. The value $t_{\alpha/2}$ read in the Student table, for 10 degrees of freedom and $\alpha = 0,5$. For our example we: $t_{\alpha/2,15} = 2,228$.

Conform to this table we have the confidence for the regression coefficient β_1 is (0,102;0,564), for the regression coefficient β_2 is (-0,215;0,155), for the regression coefficient β_3 is (-3,166;0,169), for the regression coefficient β_4 is (0,173;0,795), and for the coefficient α is (-2,091;37,597). With probability a coefficient of regression 0,95 the parameter β_i , $i = \overline{1,4}$ and respectively α of our model is covered by the (0,102;0,564), (-0,215;0,155), (-3,166;0,169), (0,173;0,795) and respectively (-2,091;37,597).

4. TESTING THE MODEL PARAMETERS

Stages of testing:

1. Formulation of hypothesis

Testing significance of regression coefficient β_i , $i = \overline{1,4}$ departing from the formulation following assumptions:

H_0 : $\beta_i = 0$ (link between the two variables is not significant)

H_1 : $\beta_i \neq 0$ (link between the two variables is significant)

2. Choice and calculation of test statistics: $t = \frac{\hat{\beta}_i - \beta_i}{\hat{\sigma}_{\beta_i}}$

3. Decision rule:

For a risk $\alpha = 0,5$, if

$Sig. > \alpha$: accept hypothesis H_0

$Sig. < \alpha$: hypothesis H_0 is rejected, with a confidence 95%

4. Statistical Decision

For a threshold of significance, we read from Student table the theoretical value of the test $t_{\alpha/2; n-2} = 2,228$ which will be compared with the value calculated from the observed sample.

To test the significance of regression coefficient β_1 we use the statistics defined by t :

$$t_{calc1} = \frac{b_1}{s_{\hat{\beta}_1}} = \frac{0,333}{0,104} = 3,201$$

which is a statistic that follows a law student division of 10 degrees of

freedom. For a risk $\alpha = 0,05$, if $t_{calc1} > t_{\alpha/2; n-5}$ ($3,201 > 2,228$) hypothesis H_0 is rejected, ie regression coefficient β_1 is considered significantly different by 0.

Decision may be taken on the basis of the $Sig.$, which SPSS is found in the table of coefficient column 5, so:

$Sig. > \alpha$: accept hypothesis H_0

$Sig. < \alpha$: hypothesis H_0 is rejected, with a confidence 95%

So, for the example given we have $Sig. = 0,009$, which is less than $\alpha = 0,05$. This can be interpreted as follows; a probability of 0,95 rejects the null hypothesis, ie there is a link between share turnover and staff share in tourism.

To test the significance of regression coefficient β_2 we use the statistics defined by t :

$$t_{calc2} = \frac{b_2}{s_{\beta_2}} = \frac{-0,301}{0,083} = -0,363 \text{ which is a statistic that follows a law student division of } 10 \text{ degrees}$$

of freedom. For a risk $\alpha = 0,05$, if $t_{calc2} < t_{\alpha/2, n-5}$ ($-0,363 < 2,228$) we accept the hypothesis H_0 , that is the regression coefficient β_2 is equal to 0. For β_2 we $Sig. = 0,724$, is greater than $\alpha = 0,05$. This can be interpreted as follows; with a probability of 0,95 null hypothesis is accepted, that is, there is no significant relation between share turnover and number of tourist establishments.

To test the significance of regression coefficient β_3 we use the statistics defined by t :

$$t_{calc3} = \frac{b_3}{s_{\beta_3}} = \frac{-1,499}{0,748} = -2,003 \text{ which is a statistic that follows a law student division of } 10 \text{ degrees}$$

of freedom. For a risk $\alpha = 0,05$, if $t_{calc3} < t_{\alpha/2, n-5}$ ($-2,003 < 2,228$) hypothesis H_0 is rejected, ie the regression coefficient β_3 is considered significantly different from 0. For β_3 we have $Sig. = 0,006$, is less than $\alpha = 0,05$. This can be interpreted as follows; with a probability of 0,95 null hypothesis is accepted, ie there is no significant relation between share turnover and number of places of accommodation units turistice.

To test the significance of regression coefficient β_4 we use the statistics defined by t :

$$t_{calc4} = \frac{b_4}{s_{\beta_4}} = \frac{0,484}{0,139} = 3,472 \text{ which is a statistic that follows a law student division of } 10 \text{ degrees of}$$

freedom. For a risk $\alpha = 0,05$, if $t_{calc4} > t_{\alpha/2, n-5}$ ($3,472 > 2,228$) we accept the hypothesis H_0 , that is the regression coefficient β_4 is equal to 0. For β_4 we have $Sig. = 0,724$, which is greater than $\alpha = 0,05$. This can be interpreted as follows; a probability of 0,95 rejects the null hypothesis, ie there is a link between share turnover and number of tourists accommodated.

5. REGRESSION MODEL TESTING

The F test is used to test the model and multiple linear regression and is defined by the relationship:

$$F = \frac{n-k}{k-1} \frac{\hat{\eta}^2}{1-\hat{\eta}^2}$$

where: n - the number of values observed, k - number of model parameters estimated by regression and $\hat{\eta}$ - estimator of the correlation, in assumptions:

H_0 : $\ln \alpha = \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$ (liniarizat regression model is not significant)

H_1 : not all coefficients are simultaneously zero, ie the model is statistically significant

Table no. 4. Model summary**Model Summary^b**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.878 ^a	.771	.679	3.424E-02	.771	8.397	4	10	.003	1.658

a. Predictors: (Constant), LN_TURIT, LN_UNIT, LN_LOCUR, LN_PONPE

b. Dependent Variable: LN_CIFRA

Estimation for the report determination calculated is presented in the SPSS Model Summary table (Table 4), $R^2 = 0,771$. The estimated value of determination report shows that 77,1% of the share of turnover in tourism is explained by the share of staff employed in tourism, the number of tourist establishments and the number of tourists accommodated.

Using Table 4, we obtain:

$$F_{calc.} = \frac{15-5}{1} \cdot \frac{R^2}{1-R^2} = \frac{0,771}{1-0,771} \cdot 10 = 8,396$$

or the value $F_{calc.}$ using SPSS from Model Summary table. If $F_{calc.} > F_{\alpha,1,10}$ ($8,396 > 4,965$) then hypothesis H_0 is rejected, with a confidence of 95%.

Decision may be taken on the basis of the *Sig.*, which is found in SPSS in Model Summary table, as follows:

$Sig.F > \alpha$: accepts hypothesis H_0

$Sig.F < \alpha$: hypothesis H_0 is rejected, with a confidence of 95%

So for example we have $Sig.F = 0003$, which is less than $\alpha = 0,05$. This can be interpreted as follows; a probability of 0,95 rejects the null hypothesis, ie there is a link between the share of turnover from tourism and the share of staff employed in tourism, the number of tourist establishments and the number of tourists accommodated.

In the ANOVA table are shown estimations of the two components of variation, corresponding degrees of freedom, estimations of the explained and residual variations, calculated value of the Fischer report and significance of the test.

Table no. 5. Table ANOVA**ANOVA^a**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.0393817866	4	.0098454467	8.397	.003 ^a
	Residual	.0117256542	10	.0011725654		
	Total	.0511074408	14			

a. Predictors: (Constant), LN_TURIT, LN_UNIT, LN_LOCUR, LN_PONPE

b. Dependent Variable: LN_CIFRA

Sig. value for test F is less than 0,05, therefore the model explains the dependence of the constructed variables through a linear relation, which is considered significant.

6. CORRELATION REPORT AND DETERMINATION REPORT

Correlation report is an indicator of the intensity of the connections that can be applied in both linear regression and simple non-linear or multiple regression. From Table 4 we have $R = 0,878$. High value of the correlation shows that there is a strong link between the value and the volume transactions. From Table 4 we have $R^2 = 0,771$. The estimated value of determination report shows that 77,1% of the share of turnover in tourism is explained by the share of staff employed in tourism, the number of tourist establishments and the number of tourists accommodated.

Regression model assumptions concern residual variable and the independent variable. The most important assumptions are:

- normality of errors: $\varepsilon_i \sqcup N(0, \sigma^2)$, ie residual variable follows a law of normal distribution of zero mean and variation σ^2 ;
- homoscedasticity: $V(\varepsilon_i) = M(\varepsilon_i^2) = \sigma^2$, ie variant error is constant in the conditional distributions of the type $Y_i | X = x_i$;
- ancorelation errors: $\text{cov}(\varepsilon_i, \varepsilon_j) = 0$, ie the errors do not affect each other;
- lack of correlations between the independent variable and the variable error : $\text{cov}(\varepsilon_i, x_i) = 0$.

$$M(\varepsilon_i) = 0$$

Table no. 6. Results of hypothesis testing
One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Unstandardized Residual	.000	14	1.000	1.066E-15	-1.6E-02	1.60E-02

In table 6 we have the calculated value of the test 0,000 less than 0,05 and significance test $\text{Sig.} = 1$, which allows the decision of acceptance of null hypothesis for this test, ie the assumption that the average error does not differ significantly from zero. ($\text{Test Value} = 0$)

Jarque - Bera test is built on the estimator parameters form a distribution: $S = \frac{\mu_3}{\sigma^3}$ (S is asymmetry - *skewness*, $S = 0$ for a normal split, positive or negative in case of asymmetry) and $K = \frac{\mu_4}{\mu_2^2}$ (K is boltirea - *kurtosis*, $K = 3$ for a normal distribution).

Estimators for those two parameters have the following relations :

$$\hat{S} = \frac{\sqrt{\left(\frac{\sum_i \varepsilon_i^3}{n-2}\right)^2}}{\left(\frac{\sum_i \varepsilon_i^2}{n-2}\right)^3}, \text{ respectively } \hat{K} = \frac{\sum_i \varepsilon_i^4}{\left(\frac{\sum_i \varepsilon_i^2}{n-2}\right)^3}.$$

Jarque - Bera test takes the following expression :

$$JB = \frac{n}{6} \left(\hat{S}^2 + \frac{(\hat{K} - 3)^2}{4} \right) \sqcup \chi^2(2)$$

From Table 7 we have the calculated value of the test Jarque - Bera

$$JB_{calc} = \frac{15}{6} \left(0,225^2 + \frac{0,380^2}{4} \right) = 0,2168125$$

In chi-square table we have $\chi^2(2) = 5,99$. We can notice that the value calculated $JB_{calc} = 0,2168125$ is much smaller than the theoretical value, thus the decision to accept the null hypothesis with a probability of 0,95. is taken.

Table no. 7. Error estimate distribution shape parameters

Statistics		
Unstandardized Residual		
N	Valid	15
	Missing	0
Mean		1.07E-15
Std. Error of Mean		7.47E-03
Median		-2.5E-03
Mode		-.05377 ^a
Std. Deviation		2.89E-02
Variance		8.38E-04
Skewness		-.225
Std. Error of Skewness		.580
Kurtosis		-.380
Std. Error of Kurtosis		1.121
Range		.10052
Minimum		-.05377
Maximum		.04674
Sum		.00000
Percentiles	25	-1.4E-02
	50	-2.5E-03
	75	1.99E-02

a. Multiple modes exist. The smallest value is shown

The hypothesis homoscedasticity H_0 implies a variation of the errors in the conditional distributions of the $Y|X = x_i$. This complies with the relationship: $V(\epsilon_i) = \sigma^2$. When the assumption is violated, the model is called heteroscedastic.

To test homoscedasticity we use the correlation test between the nonparameters $\hat{\epsilon}_i$ and X_i .

Testing phases are:

- regression

$$\ln Y_{X_1, X_2, X_3, X_4} = \ln \alpha + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4$$

is performed, notwithstanding the assumption of homoscedasticity;

- $\hat{\epsilon}_i$ errors are estimated at sample;
- determine the ranks of absolute values and errors estimated for the independent variable ;
- determine the correlation coefficient of Spearman ranking between $|\hat{\epsilon}_i|$ and X_i ;
- to test the correlation coefficient using the Student ;test
- if it supports the hypothesis that the coefficient of correlation is not significant, it accepts and assumes homoscedasticity as well, otherwise the model is heteroscedastic.

Relations used in this approach are :

- estimator of correlation coefficient :

$$\hat{\theta} = 1 - 6 \frac{\sum d_i^2}{n(n^2 - 1)},$$

where d_i differences between mean ranks for the two variables, and n is the sample volume ;

- test Student:

$$t = \frac{\hat{\theta}\sqrt{n-2}}{\sqrt{1-\hat{\theta}^2}} \sim t(n-2).$$

Sperman values of correlation coefficient non-parametric in Table 8 are close to zero. This shows, together with the appropriate level of significance, there are no links between variable error and independent variables, ie the model is homoscedastic.

Table no. 8. Results of testing Spearman correlation coefficient between $|\hat{\varepsilon}_i|$ and X_i

Correlations

		LN_PONPE	LN_UNIT	LN_LOCUR	LN_TURIT	
Spearman's rho	LN_PONPE	Correlation Coefficient	1.000	.818**	-.850**	-.639*
		Sig. (2-tailed)	.	.000	.000	.010
		N	15	15	15	15
LN_UNIT		Correlation Coefficient	.818**	1.000	-.632*	-.375
		Sig. (2-tailed)	.000	.	.011	.168
		N	15	15	15	15
LN_LOCUR		Correlation Coefficient	-.850**	-.632*	1.000	.893**
		Sig. (2-tailed)	.000	.011	.	.000
		N	15	15	15	15
LN_TURIT		Correlation Coefficient	-.639*	-.375	.893**	1.000
		Sig. (2-tailed)	.010	.168	.000	.
		N	15	15	15	15

** . Correlation is significant at the .01 level (2-tailed).

* . Correlation is significant at the .05 level (2-tailed).

To test autocorrelation errors we use Runs test. This test is based on the idea that residual values are variable in sequence or the sets of positive or negative, called runs, which succeed in a specific order or randomly.

Table no. 9. Results Runs test

Runs Test

	Unstandardized Residual
Test Value ^a	-.0025128
Cases < Test Value	7
Cases >= Test Value	8
Total Cases	15
Number of Runs	8
Z	.000
Asymp. Sig. (2-tailed)	1.000

a. Median

Stages of testing:

1. Formulating hypothesis:

$H_0 : \rho = 0$ (no autocorrelation of errors)

$H_1 : \rho \neq 0$ (assumption is violated)

2. Choice and calculation of test statistics : $Z = 0$.

3. Decision rule

For a risk $\alpha = 0,5$, if

$Sig. > \alpha$: accept hypothesis H_0

$Sig. < \alpha$: hypothesis H_0 is rejected, with a confidence of 95%

4. Statistical decision

From table 9 we have $Sig . = 1$, which is much greater than $\alpha = 0,05$, null hypothesis is accepted, ie errors are not autocorrelated between them.

6. CONCLUSIONS

In this paper we analyzed the influence of staff share in tourism, the number of tourist establishments, number of beds and number of tourists accommodated share of turnover in Romanian tourism, for the period 1992 to 2006. Using the database provided by a Romanian official statistics, www.insse.ro, and analyzing these data using a regression model of Cobb - Douglas function, we see that the share of turnover of Romanian tourism is influenced significantly by the staff share tourism, the number of tourist establishments and the number of tourists accommodated and less by the number of places.

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