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Articles

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THE INFLUENCE OF THE MACROENVIRONMENT ON THE DEVELOPMENT OF THE PRICE OF SHARED AIRBNB ACCOMMODATION

Abstract
The shared economy occupies through shared accommodation a full-featured position in many economies of the world and the extent of its impact can be expressed in various ways. In addition, the price of accommodation appears to be a sufficiently objective, measurable, and comparable element to other statistical instruments of the economic environment. In the article, we use statistical methods of correlation and regression analysis to express the relationships between the dependent variable in the form of the price of shared accommodation in European Union countries and other economic indicators of the macroenvironment and the tourism industry, which thus represent an independent variable. The results signal that shared accommodation prices shows a higher degree of correlation with other indicators of the tourism sector than with other macroeconomic indicators in individual countries.

Key words: Shared Economy. Shared Accommodation Prices, Airbnb, Regression and Correlation

1 INTRODUCTION

Over the last decade, we have witnessed the growing popularity of the shared economy, literally on a global scale (Sundararajan, 2016). Peer-to-peer (P2P) shared accommodation platforms have experienced a particularly strong increase in users and thus occupy a significant place in the sharing economy (PwC, 2015). Both parties benefit from the P2P system of shared accommodation - users can offer their services for a reward, while the platform administrator ensures

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the functionality of the point of supply and demand (Botsman and Rogers, 2010) and receives a commission for it. One of the most popular and most frequently discussed examples of this mechanism is Airbnb (Guttentag, 2015), with more than 2.9 million hosts and more than 7 million seats offered in 100,000 cities, respectively. in 220 countries (Deane, 2020). Similar shared accommodation services are offered by competitors such as Houseswap, OneFineStay, Windmu, Couchsourfing and others. (Dredge and Gyimóthy, 2015).

Platforms such as Airbnb allow individuals to take on the role of micro-entrepreneurs and act as hosts offering accommodation to tourism participants for a fee (Sundararajan, 2014). In fact, depending on the attractiveness of the offer, the location, the type of accommodation offered (dormitory, private room, or entire unit) and the length of the rental (in the order of days, weeks or even months), Airbnb hosts can generate significant revenue (Jung et al., 2016). The hosts thus have the opportunity for self-employment and its amount depends on the large demand for their supply. Demand can be influenced by changing the price of supply, the development of which should dynamically adapt to changes in the market (Singh, 2012).

2 BODY OF THE PAPER

But what should shared accommodation providers follow when pricing? How to analyze market developments and react flexibly to current market conditions by choosing the appropriate price change? Changes in the price level of the offer of shared accommodation may depend on the development of other statistical indicators, and it is this idea that encouraged us to carry out the research described below in the following sections of this paper.

2.1 Methodology

The aim of the paper is to use econometric models to evaluate and explicitly express the relationships between selected economic and social indicators and the average price of shared accommodation Airbnb in the capitals of the countries.

In the paper, we initially apply general methods of data acquisition, which are deduction, induction, analysis and synthesis. We then select the information obtained on the basis of their explanatory power, which leads to the creation of a relevant knowledge base, which can then be linked to the part with the contribution of the contribution.

In the part of the contribution, we initially summarize the data in a selected territorial unit of the International Integration Group of European Union countries (27 countries), excluding Bulgaria, for which we failed to collect data

on the dependent variable. The data (from 26 countries of the European Union) are then analyzed in the next part using econometric models (specifically through regression and correlation analysis) and at the end of the paper we deduce the conclusions of the research using deduction.

For the dependent variable "y" the average price of shared accommodation Airbnb in the capitals of the countries was determined and for the independent variable "x" selected macroeconomic indicators of countries (inflation and unemployment rate), indicator from the real estate market (building permits issued), indicators spheres of tourism (arrivals to tourist accommodation establishments, overnight stays in tourist accommodation establishments by residents / non-residents, net occupancy of beds and rooms in hotels and similar accommodation establishments (NACE Rev. 2, I, 55.1)) and to reflect the current situation we analyze also statistics on the increase in the number of people infected with pandemic coronavirus disease (number of coronavirus cases).

Data were collected for the other time period 01/11/2019 - 30/11/2020 to ensure the most up-to-date results.

For the purposes of the paper, two research questions (RQ) were identified:

RQ1: What freely accessible indicators can a regular shared accommodation provider apply when making real-time bid pricing decisions?

RQ2: What is the frequency of occurrence between the freely available pre-selected indicators and the average price of accommodation Airbnb?

Subsequently, within the research part of the paper we verify the validity of the following hypotheses:

H1: Country inflation affects the average price of Airbnb accommodation.

H2: The country's unemployment rate affects the average price of Airbnb accommodation.

H3: The number of building permits issued in the country affects the average price of Airbnb accommodation.

H4: Arrivals to tourist accommodation facilities in the country affect the average price of accommodation Airbnb.

H5: Overnight stays in tourist accommodation by residents / non-residents in the country affect the average price of Airbnb accommodation.

H6: The net occupancy rate of beds and rooms in hotels and similar accommodation establishments in the country affects the average price of accommodation Airbnb.

H7: Coronavirus cases in the country affect the average price of Airbnb accommodation.

The hypotheses are verified by the ANOVA test (example in the appendices in Scheme 1-A, section "ANOVA"). In this part of the output of

the econometric analysis we test the null hypothesis (H0), which states that the model by which we explain the dependencies (in the case of this paper it is a linear regression line) (example in the example in the appendices in Graph 1-B) is, respectively is not suitable, and we subsequently accept, respectively rejects the alternative hypothesis claiming the opposite. To evaluate the statement, the output parameter "Significance F" (equal to the value of P-value of the dependent variable) is used, whose value less than 0.05 (significance level) says that the model was chosen correctly, we reject H0 and accept an alternative hypothesis (in our case hypothesis stating the existence of a relationship between a dependent and an independent variable). A value greater than 0.05 indicates that the slope of the regression line may be zero and that there is insufficient evidence at the 95% confidence level that there is a significant linear relationship between the dependent and independent variables.

Within the paper, we further examine the degree of causal (causal) dependence of the monitored variables through regression and correlation analysis. The first part of the output (example in the appendices in Scheme 1-A, part "Regression Statistics") are the results of the correlation analysis. The value of the correlation coefficient (Multiple R) in our model (example in the appendices in Scheme 1-A, part "Regression Statistics") after rounding is equal to (□) the number 0.919 and it is a very strong positive relationship. The closer this value is to 1, the stronger the dependence of the positive relationship. Conversely, the closer this value is to -1, the stronger the dependence of the negative relationship. The value of the correlation coefficient approaching 0 means that the intensity of the relationship between the dependent and independent variables recedes, respectively until it expires. Individual intervals can be monitored in Tab. 1 below:

Table 1: Correlation coefficient dependence intervals (Multiple R)

Multiple R	Dependency rate
From + 0,70 to 1	Very strong positive relationship
From + 0,40 to + 0,69	Strong positive relationship
From + 0,30 to + 0,39	Slightly positive relationship
From + 0,20 to + 0,29	Weak positive relationship
From + 0,01 to + 0,19	No or negligible relationship
0	No relationship (zero correlation)
From – 0,01 to – 0,19	No or negligible relationship
From – 0,20 to – 0,29	Weak negative relationship
From – 0,30 to – 0,39	Moderately negative relationship
From – 0,40 to – 0,69	Strong negative relationship

From – 0,70 to – 1	Very strong negative relationship

Source: Vijalapuram, 2019

The "R Square" (R^2) value (example in the annexes in Scheme 1-A, section "Regression Statistics") represents the coefficient of determination. Its value (calculated as in the example Formula 2) is in our case (example in the appendices in Scheme 1-A, part "Regression Statistics") after rounding equal to (□) the number 0.845. This value, multiplied by 100, indicates that the regression line chosen by us explains the dependent variable to approximately 84.50%, and the other part (15.5%) of the unexplained variability below which the influence of other random factors and other unspecified factors can be imagined. influences. Again, this is an indicator whose value approaching 1 represents a result with a high degree of accuracy.

Formula 2: Calculation of the value of the coefficient of determination ("R Square" - R^2)

$$R^2 = \frac{regression\ sum\ of\ squares}{total\ sum\ of\ squares}$$

R^2 = (regression sum of squares)/(total sum of squares)
Source: Own processing according to Vijalapuram (2019)

The last, but equally important element of the regression analysis for our purposes is the "P-value" (example in the appendices in Scheme 1-A). We consider only the P-value of the independent variable, which provides the probability of obtaining the sample as close as possible to the sample used to derive the regression equation and to verify whether or not the slope of the regression line (example in the annexes in Graph 1-B) is actually zero. A P-value below 0.05 indicates that with 95% confidence, the slope of the regression line is not zero, and therefore there is a significant linear relationship between the dependent and independent variables. A P-value greater than 0.05 indicates that the slope of the regression line may be zero and that there is insufficient evidence at the 95% confidence level that there is a significant linear relationship between the dependent and independent variables.

In the main part of the paper, we present only those results (those countries) for which we accept the alternative hypothesis (asserting the existence of a relationship between the dependent variable and the independent variable) and the complex results of regression and correlation analysis are given in the appendices.

2.2 Results and Discussion

Perceiving shared accommodation as part of the tourism economy, it can then be assumed, based on the Novacká (2014) study, that the expenditures of tourism participants (in the study are referred to as tourist exports) reflected in the contribution to the economy indicators such as inflation or employment. Market equilibrium can be defined as a constantly renewing system of relations between territorial and time-varying demand at a certain price level, and the mismatch between supply and demand leads to inflationary pressures (Strážovská, 2016). Finding a match between supply and demand and the potential incidence of inflation encouraged us to take the first steps of our research, which were to examine the relationship between inflation and the average price of shared Airbnb accommodation in the 26 countries of the European Union.

Table 3: Regression results for variable inflation (*** p<.001, ** p<.01, * p<.05)

Country	Correlation coefficient (P-value)	R2	ANOVA (Significance F)
France	0,85086012***	0,72396294	0,000226372
Sweden	0,72265481***	0,52222998	0,00526301
Spain	0,70376612***	0,49528676	0,007262423
Czech Republic	0,69594727***	0,48434261	0,008241616
Romania	0,65996001***	0,43554721	0,014102989
Portugal	0,61869302***	0,38278105	0,024176636
Hungary	0,61277915***	0,37549828	0,02596799
Netherlands	0,59498517***	0,35400735	0,031949121
Finland	0,57992754***	0,33631596	0,037749552
Lithuania	0,55573628***	0,30884281	0,048615077

Source: Own processing

As can be seen above, in the countries listed in Tab. 3 we register the dependence between inflation and the average price of shared Airbnb accommodation. In this case, we assume that an increase in inflation in the country will lead to an increase in the average price of shared accommodation. Hypothesis H1 tested by us ("country inflation affects the average price of Airbnb accommodation") is in the countries listed in Tab. 3 is accepted because the ANOVA test results are in the range of less than 0.05, which means that the selected model was correct (and we reject H0 in these cases). In addition, the P-value for the locating constant (independent variable) is not only less than

0.05, but in all cases even less than 0.001 (marked as *** p <.001 in the table), which only emphasizes the significance of this coefficient.

The value of the correlation coefficient (Multiple R) ranges from 0.8509 to 0.5557, which indicates a very strong to strong positive relationship (Table 1). The last output of the econometric analysis for this case is the value of R Square (R2), which achieves the most relevant results only on the data summarized in France or Sweden. In other countries, the ratio of the weights of the regression line chosen by us explaining the dependent variable and the rest of the unexplained variability (below which the influence of other random factors and other unspecified influences can be imagined) is in favor of the latter - unexplained variability, as it is less than 0.5.

We continued our analysis outside the standard procedures and, assuming a delayed response by providers to changes in inflation (i.e. only after its publication), we analyzed the same data of the dependent and independent variable, but with the difference that the data of the independent variable were paired to the dependent variable with by one month (M + 1), while the data on the dependent variable remained unchanged. The results of the regression and correlation analysis (in the appendices in Table 3-C) indicate an even lower degree of dependence and thus conclude that if the provider responds to a change in price to a change in inflation in a given country, this change takes place in time with inflation. and thus, is performed in real time.

Another indicator examined is the country's unemployment rate, which can potentially have an impact on a set dependent variable (the average price of Airbnb shared accommodation in the capitals of the countries).

Table 4: Regression results for the unemployment rate variable (*** p<.001, ** p<.01, * p<.05)

Country	Correlation coefficient (P-value)	R2	ANOVA (Significance F)
Spain	0,87578733***	0,76700345	0,00018836
Sweden	0,67148757***	0,45089556	0,01196314
Netherlands	0,57220217***	0,32741533	0,04100541

Source: Own processing

In the next output (in Table 4) we can observe countries in which we assume that an increase in the unemployment rate will lead to a decrease in the average price of shared accommodation. Hypothesis H2 tested by us ("the country's unemployment rate affects the average price of Airbnb accommodation") is in

the countries listed in Tab. 4 is accepted because the ANOVA results are in the range of less than 0.05, which means that the selected model was correct (and we reject H0 in these cases). In addition, the P-value is not only less than 0.05 for the locating constant (independent variable) but is in all cases even less than 0.001 (marked as *** p <.001 in the table), which only emphasizes the significance this coefficient.

The value of the correlation coefficient (Multiple R) ranges from 0.87578733 to 0.57220217, which indicates a very strong to strong positive relationship (Table 1). The value of R Square (R2) achieves the most relevant results only on the data summarized in Spain. In other countries, most of the unexplained variability (the influence of random factors and other unspecified influences) is less than 0.5 and therefore does not show relevant results for our needs.

A necessary condition for the provision of shared accommodation is naturally the participation of the physical component of the accommodation itself and therefore it is more than appropriate to examine the dependence between the real estate market (in our case it is specifically the number of building permits issued) and the average price of shared accommodation.

Table 5: Regression results for the variable number of building permits issued (*** p<.001, ** p<.01, * p<.05)

Country	Correlation coefficient (P-value)	R2	ANOVA (Significance F)
Sweden	0,73763236***	0,5441015	0,00012207
Spain	0,64924502***	0,42151909	0,00016714

Source: Own processing

The data of the independent variable are recorded on a quarterly basis in some (specifically in our case in eight) countries and are therefore irrelevant for the purposes of our research. In the output of our analysis, it is possible in Tab. 5 monitor the countries in which we record the relationship between the number of building permits issued and the average price of shared Airbnb accommodation. In this case, we assume that an increase in the number of building permits issued in the country will lead to an increase in the average price of shared accommodation. Hypothesis H3 tested by us ("the number of building permits issued in the country affects the average price of Airbnb accommodation") is in the countries listed in Tab. 5 is accepted because the ANOVA results are in the range of less than 0.05, which means that the selected model was correct (and we reject H0 in these cases). In addition, the P-value

for the locating constant (independent variable) is not only less than 0.05, but in all cases even less than 0.001 (marked as *** p <.001 in the table), which only emphasizes the significance of this coefficient.

The value of the correlation coefficient (Multiple R) ranges from 0.7376 to 0.6492, which indicates a very strong to strong positive relationship (Table 1). The last output of the econometric analysis for this case is the value of R Square (R2), which achieves the most relevant results only on the data summarized in Sweden. In Spain, the value of this indicator is less than 0.5 and the independent variable does not sufficiently explain the changes in the dependent variable.

In the second half of the paper, we focus on examining the dependencies between statistical indicators of the accommodation services market and the average price of shared accommodation Airbnb in the capitals of selected countries. We will start with the statistics of arrivals to tourist accommodation facilities.

Table 6: Regression results for the variable arrivals to tourist accommodation establishments (*** p<.001, ** p<.01, * p<.05)

Country	Correlation coefficient (P-value)	R2	ANOVA (Significance F)
Germany	0,91898462***	0,84453273	5,7297E-11
Luxembourg	0,75549462***	0,57077212	7,7961E-13
Poland	0,74639572***	0,55710657	1,5478E-07
Latvia	0,72900858***	0,53145352	1,2229E-06
Portugal	0,72114691***	0,52005287	3,7196E-06
Romania	0,71487757***	0,51104994	4,1473E-08
Greece	0,70404098***	0,49567371	4,1881E-10
Slovakia	0,6812569***	0,46411097	4,6537E-06
Estonia	0,66344813***	0,44016342	1,6902E-06

Source: Own processing

In Tab. 6 summarize the countries where there is a relationship between arrivals to tourist accommodation facilities and the average price of shared Airbnb accommodation. In this case, we assume that an increase in the number of arrivals to tourist accommodation facilities in the country will lead to an increase in the average price of shared accommodation. Hypothesis H4 tested by us ("arrivals to tourist accommodation facilities in the country affect the average price of Airbnb accommodation") is in the countries listed in Tab. 6 is accepted because the ANOVA test results are in the range of less than 0.05,

which means that the selected model was correct (and we reject H0 in these cases). In addition, the P-value for the locating constant (independent variable) is not only less than 0.05, but in all cases even less than 0.001 (marked as *** p <.001 in the table), which only highlights the significance of this coefficient.

The value of the correlation coefficient (Multiple R) ranges from 0.9189 to 0.6634, which indicates a very strong to strong positive relationship (Table 1). The last output of the econometric analysis for this case is the R Square (R2) value, which achieves the most relevant results in Germany, Luxembourg, Poland, Latvia, Portugal and Romania. In other countries, most of the unexplained variability (the influence of random factors and other unspecified influences) is less than 0.5 and therefore does not show relevant results for our needs.

Another statistical data examined by us in the field of tourism is overnight stays in tourist accommodation facilities by residents / non-residents.

Table 7: Regression results for the overnight stay variable in tourist accommodation establishments by residents / non - residents (*** p<.001, ** p<.01, * p<.05)

Country	Correlation coefficient (P-value)	R2	ANOVA (Significance F)
Poland	0,95307772***	0,90835713	1,1854E-10
Estonia	0,91111911***	0,83013803	2,5612E-08
Latvia	0,90494919***	0,81893303	5,8026E-09
Germany	0,8746928***	0,76508749	6,1545E-11
Cyprus	0,86578877***	0,7495902	0,00011401
Belgium	0,86362069***	0,7458407	8,7123E-11
Sweden	0,86314908***	0,74502634	2,0488E-08
Luxembourg	0,79285756***	0,6286231	3,0997E-12
Lithuania	0,79041196***	0,62475107	1,8346E-07
Slovakia	0,77655339***	0,60303516	1,289E-07
Hungary	0,73339942***	0,53787471	0,01021497
Romania	0,73225662***	0,53619975	0,01039461
Spain	0,62276067***	0,38783086	0,0305433

Source: Own processing

In the next output of our analysis, in Tab. 7 monitor the countries in which we record the relationship between the number of overnight stays in tourist accommodation establishments by residents / non-residents and the

average price of shared Airbnb accommodation. In this case, we assume that the number of overnight stays in tourist accommodation establishments by residents / non-residents reflects the increasing level of activity in the sector and will be followed by an increase in the use of shared accommodation, respectively by increasing the average price of shared accommodation. Hypothesis H5 tested by us ("Overnight stays in tourist accommodation facilities by residents / non-residents in the country affect the average price of Airbnb accommodation") is in the countries listed in Tab. 7 is accepted because the ANOVA test results are in the range of less than 0.05, which means that the selected model was correct (and we reject H0 in these cases). In addition, the P-value for the locating constant (independent variable) is not only less than 0.05, but in all cases even less than 0.001 (marked as *** p <.001 in the table), which only emphasizes the significance of this coefficient.

The value of the correlation coefficient (Multiple R) ranges from 0.9530 to 0.6227, which indicates a very strong to strong positive relationship (Table 1). The last output of the econometric analysis for this case is the value of R Square (R2), which achieves the most relevant results in almost all (12) countries. In Spain alone, the value of this indicator is less than 0.5 and the independent variable does not sufficiently explain the changes in the dependent variable.

The last statistical indicator examined within the sphere of tourism is the Net occupancy rate of beds and rooms in hotels and similar accommodation establishments. Specifically, we re-examine the relationship between the net occupancy rate of beds and rooms in hotels and similar accommodation and the average price of Airbnb shared accommodation in the capitals of selected countries.

Table 8: Regression results for the variable net occupancy rate of beds and rooms in hotels and similar accommodation establishments (NACE Rev. 2, I, 55.1) (*** p<.001, ** p<.01, * p<.05)

Country	Correlation coefficient (P-value)	R2	ANOVA (Significance F)
Germany	0,94661098***	0,89607234	5,6737E-11
Cyprus	0,92523303***	0,85605617	1,3725E-07
Latvia	0,91389072***	0,83519625	3,1039E-07
Lithuania	0,90562735***	0,8201609	7,6921E-06
Estonia	0,89274848***	0,79699985	2,2422E-07
Belgium	0,88513151***	0,78345778	3,1493E-09
Portugal	0,87146656***	0,75945397	4,9446E-08

Poland	0,84191406***	0,70881928	2,2533E-07
Romania	0,79223282***	0,62763285	1,8305E-07
Czech Republic	0,67800237***	0,45968722	3,849E-06
Greece	0,67409305***	0,45440144	1,2789E-08
Sweden	0,67394977***	0,4542083	1,293E-06
Luxembourg	0,64997835***	0,42247186	4,5389E-11

Source: Own processing

As can be seen above, in the countries listed in Tab. 8 we register the dependence between the net occupancy rate of beds and rooms in hotels and similar accommodation establishments and the average price of shared Airbnb accommodation. In this case (as in the previous one) we assume that an increase in the net occupancy rate of beds and rooms in hotels and similar accommodation facilities in the country will lead to an increase in demand for alternative forms of accommodation (such as shared accommodation), which will be reflected in increase in the average price of shared accommodation. Hypothesis H6 tested by us ("The net occupancy rate of beds and rooms in hotels and similar accommodation facilities in the country affects the average price of Airbnb accommodation") is in the countries listed in Tab. 8 accepted because the ANOVA test results are in the range of less than 0.05, which means that the selected model was correct (and we reject H0 in these cases). In addition, the P-value for the locating constant (independent variable) is not only less than 0.05, but in all cases even lower than 0.001 (marked as *** p <.001 in the table), which only again emphasizes the significance this coefficient.

The value of the correlation coefficient (Multiple R) ranges from 0.9466 to 0.6499, which indicates a very strong to strong positive relationship (Table 1). The last output of the econometric analysis for this case is the value of R Square (R2), which achieves the most relevant results in up to nine countries. In the other four, the value of this indicator is less than 0.5 and the independent variable does not explain the changes in the dependent variable sufficiently.

Finally, in our study, we take into account the current crisis caused by the coronavirus pandemic, and the latest analysis of the paper examines the relationship between the cumulative number of coronavirus infections and the average price of shared Airbnb accommodation in selected cities.

Table 9: Regression results for the variable net occupancy rate of beds and rooms in hotels and similar accommodation establishments (NACE Rev. 2, I, 55.1) (*** p<.001, ** p<.01, * p<.05)

Country	Correlation coefficient (P-value)	R2	ANOVA (Significance F)
Cyprus	0,83522293***	0,69759735	0,0782785
Netherland	0,75031151***	0,56296736	0,01986189

Source: Own processing

In the last output of our analysis in Tab. 9 countries in which we record a relationship between the cumulative number of coronavirus cases and the average price of shared Airbnb accommodation can be monitored. In this case, we assume that an increase in the number of coronavirus cases in the country will lead to a decrease in the average price of shared accommodation. Hypothesis H7 tested by us ("Cases of coronavirus occurrence in the country affects the average price of Airbnb accommodation") is accepted only in two countries in Tab. 9, the ANOVA results are in the range of less than 0.05, which means that the selected model was correct (and we reject H0 in these cases). The P-value for the locating constant (independent variable) is not only less than 0.05, but in all cases even less than 0.001 (in the table marked *** p <.001), which emphasizes the significance of this coefficient.

The value of the correlation coefficient (Multiple R) ranges from 0.8352 to 0.7503, which indicates a very strong positive relationship (Table 1). The last output of the econometric analysis is the value of R Square (R2), which reaches relevant for both countries, as both values are higher than 0.5 and the independent variable thus explains the changes in the dependent variable to a sufficient extent.

However, it should be noted that the onset of the pandemic in European countries can be dated from the spring months (March / April) to 2020, and therefore there are relatively few statistics (approximately 7-8 based on the monthly nature of the data collected) for regression and correlation analysis. As part of the examination of the last variable, we otherwise converted the cumulative indicator of the increase in the number of coronavirus infections to the chain index format. Almost no relevant conclusions can be drawn from the results obtained by us (summarized in the table 9-C), as the results of regression and correlation analysis of modified data show even less informative value than the comparison of a dependent and independent variable expressed in absolute values.

CONCLUSION

In this paper, we examined changes in Airbnb shared accommodation prices in the capitals of countries caused by changes in selected macroeconomic indicators of countries (inflation and unemployment rate), indicators from the real estate market (building permits issued), tourism indicators (arrivals to tourist accommodation, overnight stays in tourist accommodation establishments by residents / non-residents, net occupancy of beds and rooms in hotels and similar accommodation establishments (NACE Rev. 2, I, 55.1)) and an increase in the number of people infected with pandemic coronavirus disease (number of coronavirus cases).

To meet the objective of the paper, which was to explicitly express the relationship between selected economic and social indicators and the average price of shared accommodation Airbnb in the capitals of countries, we chose the methodology of regression and correlation analysis using ANOVA, based on which we accepted all seven predetermined hypotheses. , but limited only to individual cases in the contribution of the named countries - the results are therefore not applicable to all 26 countries surveyed in the European Union and so it is not possible to generalize in absolute terms.

It can be argued that the change in the price level (inflation) both in real time and, assuming a reaction only after the publication of the data, have almost no effect on the development of the average price of shared Airbnb accommodation. The effect of the development of the labor market (unemployment rate) is very similar, which has achieved even more negligible results in our analyzes. We reached similar results in the real estate market survey (number of building permits issued), which also did not show more relevant results. Reflecting the current situation caused by the global pandemic in the form of measuring the dependence between the price of accommodation and the increase in infected persons (number of coronavirus cases), we also did not reach results that could be relevant for practice. Transforming the data to a chain index didn't help either.

Based on the results of our research, however, it can be assumed that the impact of the pandemic is reflected in other indicators of the tourism sector, which already show elements of dependence with our chosen dependent variable. Within the statistical indicator of arrivals to tourist accommodation establishments, we recorded a significant dependence in up to six capital cities; for the indicator of net occupancy of beds and rooms in hotels and similar accommodation establishments (NACE Rev. 2, I, 55.1), this number represented up to nine matches. and for the indicator of overnight stays in tourist accommodation establishments by residents / non-residents even twelve. We therefore formulate the conclusion that the price level of shared accommodation

through Airbnb reflects changes in the field of tourist accommodation services, even in real time.

3.1 Limitations

There is a limitation that could skew our results. As part of the examination of alternative hypotheses predicting regression, the recommended minimum number of measured elements is eight (N = 8) for a narrow data model (i.e. very low variation), and with high variable variation the minimum number of measured elements N is shifted to twenty-five (N ≈ 25). (Jenkins & Quintana-Ascencio, 2020). For the time period specified by us (01/11/2019 - 30/11/2020), based on the monthly periodicity of the monitored indicators, the amount of data collected is at the level of twelve or less, and therefore the results may be skewed. Therefore, we suggest conducting further research in the future in order to verify the results we have achieved on a larger data set.

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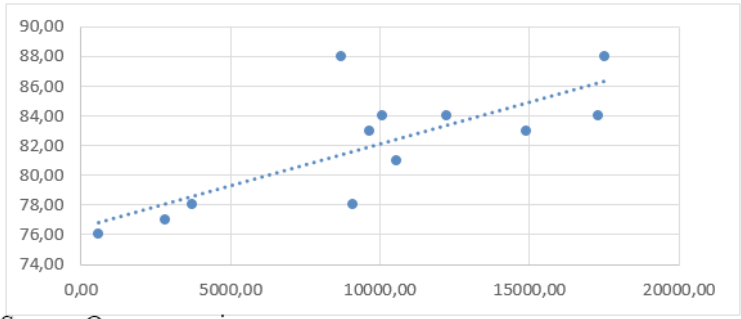
Appendix

Graph 1-B Example of the slope of the regression line for the regression function
y = 55,63+1,22x



Source: Own processing

Scheme 1-A Example of regression analysis output for regression function
y = 55,63+1,22x

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,918984616
R Square	0,844532725
Adjusted R Square	0,827258583
	2,169790034
Observations	11

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	230,1735554	230,1735554	48,88999647	6,3799E-05
Residual	9	42,37189912	4,707988792		
Total	10	272,5454545			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	55,63024161	1,573503214	35,35438703	5,72972E-11	52,07073	59,18975317
X Variable 1	1,21646E-06	1,73976E-07	6,99213819	6,37989E-05	8,229E-07	1,61003E-06

Source: Own processing

Table 2-A EU27 Average prices of accommodation (in EUR)

	11/2019	12/2019	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020	11/2020
Austria	71	87	72	64	59	56	54	61	62	66	62	58	53
Belgium	71	76	69	68	62	60	57	61	64	64	59	62	61
Croatia	40	56	45	37	34	34	38	38	39	44	47	40	37
Cyprus	43	42	40	40	37	35	36	39	40	45	45	47	50
Czech Republic	57	78	64	51	50	84	85	58	52	57	56	71	86
Denmark	113	119	112	107	99	103	110	112	109	113	110	116	103
Estonia	51	61	60	49	42	35	38	45	55	55	47	45	42
Finland	81	79	75	72	63	54	58	67	69	73	78	83	63
France	117	122	129	115	108	107	99	96	98	100	100	104	98
Germany	67	72	67	67	61	57	58	63	70	72	68	71	61
Greece	46	45	43	47	40	39	46	45	45	49	46	50	41
Hungary	46	56	51	46	43	35	44	45	40	44	40	40	35
Ireland	106	107	100	102	102	86	100	107	103	109	98	94	92
Italy	76	82	76	67	65	78	77	68	67	73	73	74	66
Latvia	40	44	45	37	33	29	33	38	44	45	37	38	34
Lithuania	38	44	44	37	32	27	30	35	39	42	39	36	35
Luxembourg	88	84	78	83	78	76	77	81	84	88	83	84	88
Malta	83	82	77	78	74	78	83	88	72	82	79	83	62
Netherlands	144	152	143	142	136	139	146	128	130	138	131	131	115
Poland	40	42	40	36	34	29	29	31	35	39	35	37	32
Portugal	56	61	56	51	49	45	41	45	55	61	56	52	44
Romania	37	38	35	34	33	28	28	34	33	35	35	33	32
Slovakia	48	56	47	43	39	34	35	39	42	49	45	40	38
Slovenia	50	63	56	47	46	55	56	56	62	64	56	52	46
Spain	78	88	75	72	69	74	67	56	57	58	58	62	56
Sweden	100	101	96	93	85	73	75	79	81	92	92	99	92

Source: Own processing by ALLTHEROOMS (2020)

Table 3-A EU27 Inflation (v %)

	Note	11/2019	12/2019	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020
Austria	2015 = 100	1,1	1,5	2	2,2	1,6	1,5	0,7	1,1	1,7	1,4	-0,3	-0,7
Belgium	2013 = 100	0,39	0,76	1,41	1,1	0,62	0,57	0,48	0,6	0,73	0,82	0,4	0,3
Croatia	2010 = 100	0,7	1,4	2	1,5	0,6	-0,2	-0,6	-0,2	-0,3	-0,1	0,7	0,7
Cyprus		-0,5	0,7	1,1	1,4	0,7	-1,2	-1,5	-2	-1,5	-1,2	0,6	0,4
Czech Republic	2005 = 100	3,1	3,2	3,6	3,7	3,4	3,2	2,9	3,3	3,4	3,3	-0,9	-0,8
Denmark	2015 = 100	0,7	0,8	0,7	0,8	0,4	0	0	0,3	0,5	0,5	0,2	0,2
Estonia	1997 = 100	1,8	1,8	1,6	2	0,9	-0,8	-1,7	-1	-0,9	-0,9	1,1	1,2
Finland	2015 = 100	0,7	0,9	1	0,8	0,6	-0,3	-0,2	0	0,6	0,2	-1,2	-1,5
France	2015 = 100	1	1,5	1,5	1,4	0,7	0,3	0,4	0,2	0,8	0,2	1,5	1,3
Germany		1,1	1,5	1,7	1,7	1,4	0,9	0,6	0,9	-0,1	0	-0,2	-0,2
Greece	2009 = 100	0,2	0,8	0,9	0,2	0	-1,4	-1,1	-1,6	-1,8	-1,9	0,9	0,74
Hungary	1990 = 100	3,4	4	4,7	4,4	3,9	2,4	2,2	2,9	3,8	3,9	-1,1	-1,5
Ireland	2016 = 100	1,1	1,3	1,3	1,1	0,7	-0,1	-0,5	-0,4	-0,4	-1	-0,34	-0,1
Italy		0,2	0,5	0,5	0,3	0,1	0	-0,2	-0,2	-0,4	-0,5	3,2	3,1
Latvia	2015 = 100	2,1	2,3	2,2	2,3	1,4	0	-0,6	-0,7	0,5	-0,2	-0,6	-0,3
Lithuania	2010 = 100	1,7	2,7	3	2,8	1,8	1	0,3	1	1	1,3	0,5	0,6
Luxembourg	2015 = 100	1,2	1,7	1,9	1,7	0,9	0,6	0,2	0,8	0,9	0,6	-0,4	-0,8
Malta	2015 = 100	1,3	1,3	1,4	1,1	1,2	1,1	0,9	1	0,7	0,7	-2	-1,8
Netherlands	2015 = 100	2,6	2,7	1,8	1,6	1,4	1,2	1,2	1,6	1,7	0,7	0	0
Poland	1998 = 100	2,6	3,4	4,3	4,7	4,6	3,4	2,9	3,3	3	2,9	-0,1	-0,1
Portugal	2012 = 100	0,3	0,4	0,8	0,4	0	-0,2	-0,7	0,1	0,1	0	3,2	2,9
Romania	1990 = 100	3,8	4	3,6	3,1	3,1	2,7	2,3	2,6	2,8	2,7	0,7	0,7
Slovakia	2005 = 100	3	3	3	3	2,3	2,1	2	1,8	1,7	1,4	0	-0,1
Slovenia	2012 = 100	1,4	1,9	2,1	2	0,5	-1,2	-1,2	-0,3	0,3	-0,14	2,5	2,2
Spain	2011 = 100	0,4	0,8	1,1	0,7	0	-0,7	-0,9	-0,3	-0,6	-0,5	3,4	3
Sweden		1,8	1,8	1,3	1	0,6	-0,4	0	0,7	0,5	0,8	1,4	1,6

Source: Own processing by TRADING ECONOMICS (2020)

Table 3-B Regression results for variable inflation

	Korelačný koeficient	R^2	P-value	ANOVA (Significance F)
France	0,85086012	0,72396294	3,3765E-13	0,000226372
Sweden	0,72265481	0,52222998	1,0342E-11	0,00526301
Spain	0,70376612	0,49528676	3,3168E-12	0,007262423
Czech Republic	0,69594727	0,48434261	0,00033846	0,008241616
Romania	0,65996001	0,43554721	1,1605E-05	0,014102989
Portugal	0,61869302	0,38278105	1,793E-12	0,024176636
Hungary	0,61277915	0,37549828	0,00128882	0,02596799
Netherland	0,59498517	0,35400735	6,496E-10	0,031949121
Finland	0,57992754	0,33631596	1,5211E-10	0,037749552
Lithuania	0,55573628	0,30884281	3,2769E-08	0,048615077
Estonia	0,53864435	0,29013773	6,0165E-11	0,057533199
Malta	0,43915734	0,19285917	1,4002E-08	0,133257464
Slovakia	0,42149276	0,17765614	0,00010313	0,151441836
Croatia	0,41090271	0,16884104	1,3466E-10	0,163081515
Latvia	0,37844545	0,14322096	6,701E-11	0,202276424
Denmark	0,36107585	0,13037577	2,3994E-12	0,225463788
Ireland	0,34381772	0,11821062	7,867E-15	0,250042176
Belgium	0,31433121	0,09880411	3,3052E-08	0,295581387
Italy	0,31125989	0,09688272	3,6153E-14	0,300580317
Austria	0,28997719	0,08408677	0,00027348	0,336527912
Greece	0,1524108	0,02322905	7,4932E-13	0,61913596
Germany	0,13822816	0,01910702	2,7272E-12	0,652462885
Poland	0,07327191	0,00536877	0,00031453	0,811970811
Cyprus	0,01867935	0,00034892	8,4062E-12	0,951703691
Slovenia	0,01073713	0,00011529	7,9497E-12	0,972228939
Luxembursko	0,00287713	8,2779E-06	3,3667E-12	0,992557242

Source: Own processing

Table 3-C Regression results for variable inflation with delayed response of the provider (case M + 1)

	Korelačný koeficient	R^2	P-value	ANOVA (Significance F)
France	0,77215513	0,59622354	0,00869122	0,00325084
Spain	0,71669775	0,51365567	0,0078095	0,00872262
Netherland	0,6178104	0,38168969	0,11719913	0,03228889
Sweden	0,61359722	0,37650154	0,07594515	0,03382999
Czech Republic	0,51669379	0,26697248	2,3702E-07	0,08542794
Portugal	0,43944467	0,19311162	0,18214223	0,1528951
Greece	0,4125526	0,17019965	0,24233901	0,18260459
Cyprus	0,38879499	0,15116155	0,26914232	0,21163939
Poland	0,3813066	0,14539472	0,00785037	0,22133799
Romania	0,37083248	0,13751673	0,8321767	0,23534432
Germany	0,3043633	0,09263702	0,22547227	0,33611758
Slovakia	0,2727525	0,07439393	0,48045261	0,3910512
Estonia	0,26708499	0,07133439	0,41103511	0,40135692
Slovenia	0,26083585	0,06803534	0,35106149	0,41287703
Finland	0,20778773	0,04317574	0,77123183	0,51696419
Ireland	0,20613676	0,04249236	0,52554911	0,52037447
Luxembursko	0,20127972	0,04051353	0,36465122	0,53046336
Austria	0,19401959	0,0376436	0,04193683	0,54569738
Malta	0,10992368	0,01208322	0,60272579	0,73379583
Hungary	0,09037886	0,00816834	0,11460873	0,7799879
Lithuania	0,08850215	0,00783263	0,64219708	0,78446035
Italy	0,07035545	0,00494989	0,8042039	0,82799727
Croatia	0,06383783	0,00407527	0,67887325	0,84374961
Latvia	0,05324658	0,0028352	0,94218908	0,86945759
Denmark	0,02764578	0,00076429	0,7163033	0,93203475
Belgium	0,0193437	0,00037418	0,46252523	0,95242011

Source: Own processing

Table 4-A EU27 Unemployment rate (in %)

	11/2019	12/2019	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020	11/2020
Austria	7,3	8,5	8,7	8,1	12,2	12,8	11,5	10,1	N/A	N/A	N/A	N/A	N/A
Belgium	5,2	5,2	5,1	5	5	5,1	5	5	8,9	8,8	8,3	7,8	7,7
Croatia	7,7	7,9	8,4	8,3	8,6	9,4	9,5	9,1	6,6	6,4	6,3	6,3	6,3
Cyprus	6,5	6,3	6,4	6,1	6,3	7,5	8	7,7	5,2	4,9	4,8	4,6	N/A
Czech Republic	2,6	2,9	3,1	3	3	3,4	3,6	3,7	7,6	8,5	9,3	10,5	N/A
Denmark	3,7	3,7	3,7	3,7	4,1	5,4	5,6	5,5	7,7	7,7	7,6	7,4	6,9
Estonia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4,5	4,6	4,4	4,3	4
Finland	5,9	6	7,2	6,9	7,3	8,1	0,6	7,9	6,2	6,7	7,2	7,2	7,5
France	8,2	8,2	7,7	7,5	8	7,3	7,2	6,9	9,2	9	8,4	8,7	9,5
Germany	3,2	3,3	3,4	3,6	3,8	4	4,2	4,3	4,4	4,5	4,5	4,5	N/A
Greece	16,7	16,4	16,1	15,9	15,6	15,7	17,7	17,5	5	5,1	5,2	5,1	N/A
Hungary	3,5	3,3	3,4	3,5	3,7	3,8	4,1	4,6	N/A	N/A	N/A	N/A	N/A
Ireland	4,7	4,8	4,9	4,9	5	4,6	4,8	5,3	9,2	9,1	8,6	8,6	N/A
Italy	9,5	9,6	9,5	9,3	8,5	7,3	8,7	9,4	6,1	6,1	6,1	6,1	6,1
Latvia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9,9	9,8	9,7	9,8	N/A
Lithuania	8,4	8,7	9,2	9,4	9,8	11,2	11,8	12,1	3,3	3,3	3,4	3,4	3,5
Luxembourg	5,4	5,4	5,5	5,5	6,1	7	6,9	6,9	16,9	16,6	16,3	16,2	N/A
Malta	3,6	3,6	3,6	3,7	3,6	3,5	3,4	3,3	17	16,5	16,1		N/A
Netherlands	3,5	3,2	3	2,9	2,9	3,4	3,6	4,3	9,4	9	8,8	8,6	N/A
Poland	5,1	5,2	5,5	5,5	5,4	5,8	6	6,1	7,9	8,1	7,9	7,5	N/A
Portugal	6,7	6,7	6,8	6,4	6,2	6,3	5,9	7,3	3,8	3,8	3,8	3,7	3,8
Romania	4	4	3,7	4,3	4,6	5	5,1	5,3	12,8	13,7	14,1	14,9	15,5
Slovakia	4,92	4,9	5	5,1	5,2	6,6	7,2	7,4	9	9	8,8	9,1	9,3
Slovenia	7,4	7,7	8,2	7,9	8	9,1	9,3	9,2	5,5	5,4	5,1	5,3	N/A
Spain	13,8	13,7	13,5	13,5	14,9	15	15,6	15,9	4,8	4,6	4,4	4,3	N/A
Sweden	6,8	6	7,5	8,2	7,1	8,2	9	9,8	7,7	7,6	7,4	7,4	7,4

Source: Own processing by CEIC (2020), FRED (2020), NATIONAL STATISTIC OFFICE (2020), TRADING ECONOMICS (2020)

Table 4-B Regression results for the unemployment rate variable

	Correlation coefficient	R^2	P-value	ANOVA (Significance F)
Spain	0,87578733	0,76700345	2,7116E-06	0,00018836
Sweden	0,67148757	0,45089556	4,7261E-06	0,01196314
Netherland	0,57220217	0,32741533	1,1842E-07	0,04100541
Portugal	0,56596449	0,32031581	0,26479127	0,0550881
Hungary	0,55824041	0,31163236	0,00010875	0,05925006
Austria	0,54577519	0,29787056	2,7744E-05	0,05368207
Cyprus	0,53781956	0,28924988	0,00037959	0,0712967
Poland	0,53749311	0,28889884	0,00131355	0,05817284
Croatia	0,48813318	0,238274	0,00503294	0,09057862
Greece	0,4773111	0,22782588	0,58742858	0,13763793
Romania	0,47411004	0,22478033	4,2546E-05	0,11942875
Slovenia	0,45694361	0,20879746	0,33963125	0,13533234
Belgium	0,44793971	0,20064998	0,38417357	0,14419687
Slovakia	0,44574153	0,19868551	5,7858E-05	0,12686719
Luxembursko	0,33738553	0,113829	9,7191E-06	0,25959544
Finland	0,22524891	0,05073707	3,3942E-05	0,45935797
Ireland	0,2090024	0,043682	4,3507E-07	0,49317486
Latvia	0,18199582	0,03312248	0,00651395	0,57131914
Denmark	0,17200292	0,02958501	5,0082E-07	0,59297051
Czech Republic	0,17051753	0,02907623	0,18418108	0,57754982
Malta	0,17019642	0,02896682	0,07074789	0,5782774
France	0,16334813	0,02668261	0,00441726	0,61197287
Lithuania	0,15196234	0,02309255	0,00020589	0,62017996
Italy	0,13204708	0,01743643	0,00248651	0,68247766
Germany	0,02190892	0,00048	0,00061029	0,946118
Spain	0,87578733	0,76700345	2,7116E-06	0,00018836

Source: Own processing

Table 5-A EU27 Number of building permits issued

	Note	11/2019	12/2019	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020
Austria		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Belgium		2163	2325	2548	2425	3187	105,6	115,7	103,4	100,5	97	N/A	N/A
Croatia		800	850	684	771	665	185	204	193	N/A	N/A	N/A	N/A
Cyprus		N/A	N/A	N/A	N/A	N/A	2019	1858	1780	1702	1918	1677	N/A
Czech Republic		7006	7259	6894	6353	6223	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Denmark		2623	2783	1575	2075	3271	3758	3196	3982	990	3052	N/A	N/A
Estonia		N/A	N/A	N/A	N/A	N/A	5090	3844	5270	6617	3346	5450	7024
Finland		3371	2591	1937	2884	3218	1823	1774	1922	1598	1737	867	2196
France		37182	41889	40233	34622	24784	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Germany		26954	36606	24464	21791	24708	27043	28434	30663	27613	27733	26450	26760
Greece		1785	1799	1339	1599	1305	2198	1753	2276	2178	2457	N/A	N/A
Hungary		1046	1236	735	769	865	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ireland		1591	1714	1639	1813	1678	196	250	282	272	304	287	414
Italy		N/A	N/A	N/A	N/A	N/A	28841	37103	46948	57094	65557	75042	84224
Latvia		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lithuania		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Luxembourg		164	171	147	194	160	933	1080	1162	1071	1043	N/A	N/A
Malta		N/A	N/A	N/A	N/A	N/A	973	1339	1747	2116	1294	1732	N/A
Netherlands		5348	5753	3772	4308	5718	18722	21575	31440	38578	32895	41438	40885
Poland		90235	96777	6813	13841	21948	1303	1775	1897	2142	N/A	N/A	N/A
Portugal		1800	1554	2221	1993	1712	7012	7625	7852	7424	7595	7433	N/A
Romania		3423	3182	2405	3100	3224	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Slovakia		N/A	N/A	N/A	N/A	N/A	734	766	683	676	738	1031	N/A
Slovenia		316	233	350	236	231	2290	3062	3881	4114	4331	4289	4017
Spain		1871	2056	2181	2247	995	1007	1022	1039	1045	885	1085	986
Sweden	2015 = 100	78,9	90,2	103,1	97,6	114,8	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Own processing by CEIC (2020), EUROPEAN CENTRAL BANK (2020), FRED (2020), MOODY'S ANALYTICS (2020), TRADING ECONOMICS (2020)

Table 5-B Regression results for the variable number of issued construction

	Correlation coefficient	R^2	P-value	ANOVA (Significance F)
Sweden	0,73763236	0,5441015	0,00012207	0,01489077
Spain	0,64924502	0,42151909	0,00016714	0,0422174
Croatia	0,54410164	0,2960466	0,26913547	0,0835695
Greece	0,45753078	0,20933442	8,2342E-06	0,15707211
Cyprus	0,4566101	0,20849278	5,0307E-06	0,15801599
Netherland	0,43823049	0,19204596	2,2669E-08	0,15416505
Romania	0,33721908	0,11371671	9,7022E-05	0,28375657
Finland	0,3283235	0,10779632	4,9809E-05	0,35433363
France	0,32744828	0,10722238	4,3225E-05	0,29881281
Poland	0,31344116	0,09824536	3,2227E-08	0,29702512
Czech Republic	0,29694963	0,08817908	0,88047395	0,37520633
Portugal	0,25700001	0,06604901	0,03464518	0,50441112
Denmark	0,21824422	0,04763054	5,4693E-08	0,51912577
Germany	0,20408303	0,04164988	0,0008009	0,52463024
Belgium	0,15849994	0,02512223	0,00185984	0,66186121
Luxembursko	0,14199023	0,02016122	0,00126765	0,73732505
Slovenia	0,08686752	0,00754597	6,1662E-05	0,77780597
Ireland	0,08121497	0,00659587	3,2484E-06	0,80188235
Hungary	0,03537454	0,00125136	0,00552245	0,91309055
Austria	N/A	N/A	N/A	N/A
Malta	N/A	N/A	N/A	N/A
Italy	N/A	N/A	N/A	N/A
Estonia	N/A	N/A	N/A	N/A
Latvia	N/A	N/A	N/A	N/A
Lithuania	N/A	N/A	N/A	N/A
Slovakia	N/A	N/A	N/A	N/A

Source: Own processing

Table 6-A EU27 Arrivals to tourist accommodation facilities

	11/2019	12/2019	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020	11/2020
Austria	910375	917766	942418	1007659	364994	33431	189207	900243	1512535	1812539	1228880	N/A	N/A
Belgium	662795	629148	448880	579034	229368	7874	15614	313047	965903	858344	N/A	N/A	N/A
Croatia	134682	132745	97194	106729	43260	1483	30500	156065	276207	410601	133052	95722	N/A
Cyprus	34165	53016	40547	45970	17363	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Czech Republic	703416	561442	642909	693396	284553	16109	109722	734820	1882410	1961224	1086689	N/A	N/A
Denmark	359482	260564	251792	282434	146792	141009	207339	294539	891658	647908	433525	436997	N/A
Estonia	115870	120964	94809	111734	44566	11627	31977	121365	210261	218741	115945	138978	N/A
Finland	688231	538159	559174	663546	332540	57419	117412	578769	1433652	873979	595031	531854	N/A
France	7692733	7329581	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Germany	10673783	9525358	8136369	9007973	4236165	750057	3142894	8266788	11698459	13084156	11959357	N/A	N/A
Greece	524746	600512	400150	440369	149396	9271	22558	334395	:	1255331	493520	N/A	N/A
Hungary	471875	467376	391797	426388	N/A	N/A	N/A	304211	817767	986174	428993	371004	N/A
Ireland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Italy	3904888	4500502	3696648	3179022	555009	64375	431539	3019367	6754569	10095720	4944984	N/A	N/A
Latvia	62005	62360	52902	56413	N/A	10766	23683	74282	133073	143711	74507	N/A	N/A
Lithuania	134897	149998	117125	N/A	N/A	22835	60470	177483	293472	317577	206002	N/A	N/A
Luxembourg	8692	10069	9107	9649	3718	588	2838	10563	12225	17498	14882	17294	N/A
Malta	22786	24987	16906	27570	6662	96	543	13396	29220	35061	33044	N/A	N/A
Netherlands	1771783	1732834	1497610	1664456	914687	184364	901803	1891753	2967786	3627493	2541392	N/A	N/A
Poland	2063752	1778143	1857402	1956569	722124	74562	367228	1231539	2432575	2888448	1935725	N/A	N/A
Portugal	794500	798247	652760	797984	302718	N/A	N/A	497227	880260	1538498	964158	N/A	N/A
Romania	726382	685959	668636	603642	N/A	15503	33262	320964	887688	1269122	761701	N/A	N/A
Slovakia	315503	264898	274862	308351	N/A	5923	34293	153830	406439	494076	288590	N/A	N/A
Slovenia	98696	109885	95576	127754	:	0	13431	153607	403344	511973	361659	N/A	N/A
Spain	4237770	4319005	3349851	4275534	1594432	0	120992	1359143	5123508	7280878	4050718	2522110	N/A
Sweden	1711123	1365698	1363043	1538999	925321	480562	864441	1444437	3612968	2368269	1435832	1460338	N/A

Source: Own processing by EUROSTAT (202

Table 6-B Regression results for the variable arrivals to tourist accommodation establishments

	Correlation coefficient	R^2	P-value	ANOVA (Significance F)
Germany	0,91898462	0,84453273	5,7297E-11	6,3799E-05
Luxembursko	0,75549462	0,57077212	7,7961E-13	0,00448753
Poland	0,74639572	0,55710657	1,5478E-07	0,00832733
Latvia	0,72900858	0,53145352	1,2229E-06	0,01675421
Portugal	0,72114691	0,52005287	3,7196E-06	0,02833689
Romania	0,71487757	0,51104994	4,1473E-08	0,02014836
Greece	0,70404098	0,49567371	4,1881E-10	0,02305316
Slovakia	0,6812569	0,46411097	4,6537E-06	0,0300754
Estonia	0,66344813	0,44016342	1,6902E-06	0,01866637
Cyprus	0,64061839	0,41039192	0,00124063	0,24419979
Lithuania	0,59585582	0,35504415	4,0403E-05	0,09041617
Czech Republic	0,56502509	0,31925335	4,5634E-07	0,07010677
Belgium	0,56143451	0,31520871	2,8119E-08	0,09126238
Slovenia	0,54630457	0,29844868	2,803E-07	0,12805791
Finland	0,44899271	0,20159445	1,2523E-07	0,14314139
Austria	0,35671646	0,12724664	1,8302E-06	0,2815439
Netherland	0,35384736	0,12520795	2,2698E-10	0,2857094
Croatia	0,30506154	0,09306254	1,0003E-07	0,33495392
Denmark	0,28071321	0,0787999	1,0758E-11	0,37680686
Hungary	0,22777877	0,05188317	2,4428E-05	0,55557005
Sweden	0,15098075	0,02279519	1,5101E-07	0,6395095
Malta	0,06870349	0,00472017	2,9212E-10	0,84092164
Italy	0,06206476	0,00385203	1,1218E-09	0,85614776
Spain	0,01231808	0,00015174	3,9596E-06	0,97132601
Ireland	N/A	N/A	N/A	N/A
France	N/A	N/A	N/A	N/A

Source: Own processing

Table 7-A EU27 Overnight stays in tourist accommodation establishments by residents / non-residents

	11/2019	12/2019	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020	11/2020
Austria	2670951	7754539	10267613	204657	99919	22199	28604	108873	308989	295739	74801	N/A	N/A
Belgium	1366650	1462946	1070269	763010	334593	127417	214621	271702	537668	480742	369047	N/A	N/A
Croatia	547460	521800	321132	107077	60611	5574	31234	99549	219020	250874	108953	N/A	N/A
Cyprus	725563	352268	361428	489694	187372	27324	45458	292385	1226755	1221813	458652	N/A	N/A
Czech Republic	1839611	2176491	1746007	378675	138773	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Denmark	604406	589655	460217	613087	266554	16953	20041	44314	140756	144460	86991	79685	N/A
Estonia	288615	312409	258925	2603100	1203411	118267	406304	1819963	4631643	3938567	2432473	N/A	N/A
Finland	456766	789032	710656	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
France	4856213	5850892	N/A	11978029	3760045	67593	118720	1808240	7648211	8752751	4811748	N/A	N/A
Germany	6043072	6386597	5077699	5613269	1954787	494083	677375	1665530	4736847	4677075	3381773	N/A	N/A
Greece	1030902	648130	467586	1266749	452177	15683	26727	312386	1277238	1023831	541262	N/A	N/A
Hungary	1088701	1082708	911088	234320	94051	9044	16967	83271	259405	214030	89233	N/A	N/A
Ireland	N/A	N/A	N/A	450611	132865	11554	14410	200070	667170	814481	360048	N/A	N/A
Italy	6474246	6855768	7967758	1095477	473360	83695	101715	258115	819304	961003	822527	N/A	N/A
Latvia	244307	260131	238051	8814309	1173322	267459	363825	2052599	10289764	15501368	13304707	N/A	N/A
Lithuania	269014	256707	198589	529247	228974	11460	11394	11104	220408	407440	201854	N/A	N/A
Luxembourg	132494	110173	119014	15094824	7299713	0	158810	596106	6485196	7444823	2812884	2223116	N/A
Malta	641185	514427	459921	459711	260047	10522	12013	363058	4939566	8861357	6655467	N/A	N/A
Netherlands	3190674	2527320	2616524	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Poland	1305583	1287489	1077819	2702576	1460677	:	:	195175	996452	1903557	1660177	N/A	N/A
Portugal	2872603	2360367	2330795	1833964	631637	6447	18313	244305	882985	1111526	627553	N/A	N/A
Romania	358614	318119	276321	172533	84621	15217	33272	75434	186978	162929	74705	N/A	N/A
Slovakia	358557	360564	414575	395594	183666	26001	101153	3131375	13340946	14524987	2716605	N/A	N/A
Slovenia	441782	502294	496583	261297	70468	5306	3976	27292	66198	70013	72611	N/A	N/A
Spain	15242729	14054692	14578946	892727	316368	16534	22229	100525	478231	606756	129974	N/A	N/A
Sweden	713140	713492	670502	431647	144446	3787	7561	75943	391920	441468	215346	N/A	N/A

Source: Own processing by EUROSTAT (2020)

Table 7-B Regression results for the overnight stay variable in tourist accommodation establishments by residents / non - residents

	Correlation coefficient	R^2	P-value	ANOVA (Significance F)
Poland	0,95307772	0,90835713	1,1854E-10	5,7436E-06
Estonia	0,91111911	0,83013803	2,5612E-08	9,5686E-05
Latvia	0,90494919	0,81893303	5,8026E-09	0,00012824
Germany	0,8746928	0,76508749	6,1545E-11	0,00042512
Cyprus	0,86578877	0,7495902	0,00011401	0,05781959
Belgium	0,86362069	0,7458407	8,7123E-11	0,000612
Sweden	0,86314908	0,74502634	2,0488E-08	0,00062114
Luxembursko	0,79285756	0,6286231	3,0997E-12	0,00360241
Lithuania	0,79041196	0,62475107	1,8346E-07	0,00378341
Slovakia	0,77655339	0,60303516	1,289E-07	0,00493911
Hungary	0,73339942	0,53787471	7,8666E-09	0,01021497
Romania	0,73225662	0,53619975	1,9091E-10	0,01039461
Spain	0,62276067	0,38783086	1,6334E-08	0,0305433
Portugal	0,55114983	0,30376613	5,0854E-06	0,12402719
Greece	0,54646286	0,29862166	6,4925E-12	0,08197074
Austria	0,50840751	0,25847819	2,497E-07	0,11029496
Slovenia	0,50164193	0,25164463	3,6803E-08	0,11591549
Finland	0,45492744	0,20695897	3,6997E-09	0,13728578
Denmark	0,40929336	0,16752106	1,3173E-11	0,21129681
Czech Republic	0,26443615	0,06992648	3,7473E-06	0,43199479
Netherland	0,18500538	0,03422699	2,3191E-10	0,58603232
Croatia	0,07348354	0,00539983	4,3765E-08	0,82998838
Malta	0,07050494	0,00497095	1,0414E-10	0,83679816
Italy	0,06902581	0,00476456	1,1164E-09	0,84018359
Ireland	N/A	N/A	N/A	N/A
France	N/A	N/A	N/A	N/A

Source: Own processing by

Table 8-A EU27 Net occupancy of beds and rooms in hotels and similar accommodation establishments (NACE Rev. 2, I, 55.1) (in %)

	11/2019	12/2019	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020	11/2020
Austria	37	37,9	33,7	32,8	N/A	6,9	10	22,5	44,3	45,5	20,9	N/A	N/A
Belgium	42	35	34	39	20	10	14	20	48	35	29	N/A	N/A
Croatia	30,27	27,19	29,57	27,39	14,24	1,1	1,6	11,1	17,4	21,7	20,48	N/A	N/A
Cyprus	43	35	31	34	14	3	7	18	49	36	29	N/A	N/A
Czech Republic	48,2	29,6	29,7	32,5	22,1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
Denmark	22,9	42,4	38,3	44,2	22,9	6,4	9,3	22,1	48,6	32,5	26,2	25,8	N/A
Estonia	45,8	42,1	37,5	44,1	18,8	2,7	9,9	24,2	42,7	46,8	35,2	N/A	N/A
Finland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
France	29,9	45,3	55,9	69,8	20,8	0,9	2,7	17,9	46,3	54,1	39,3	N/A	N/A
Germany	42,07	39,77	33,34	38,08	19,9	7,86	13,32	27,09	39,24	43,23	41,65	N/A	N/A
Greece	45,5	47,67	35,78	42,9	20,89	5	6,9	19,29	38,72	34,37	N/A	N/A	N/A
Hungary	43	44	35	39	14	2	5	22	48	39	23	N/A	N/A
Ireland	32,83	32,99	33,34	36,41	:	0,28	1,6	20,34	50,28	61,02	44,68	N/A	N/A
Italy	37,3	33,9	34,6	38,7	17,3	6,8	8,4	19,9	36	42,9	32,2	N/A	N/A
Latvia	35,5	36,8	40,3	43,6	10,7	3,9	6,1	16,7	40,2	61,9	37,1	N/A	N/A
Lithuania	56,3	43,8	39,1	48	24,1	4,6	4,8	7,9	25,8	40,6	24	N/A	N/A
Luxembourg	51,12	48,03	46,54	51,52	29,02	0	12,17	18,82	36,16	45,31	26,76	20,97	N/A
Malta	16,9	18,7	28,3	29	11,3	15,5	26,1	12,2	N/A	52	37,5	N/A	N/A
Netherlands	43	43	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Poland	38,4	33,6	31,4	38,1	18,1	6	8,3	14,4	25,1	44,5	32,2	N/A	N/A
Portugal	44,1	44,5	43,8	56,8	48,2	8	17	28	39,6	43	26,71	N/A	N/A
Romania	37,4	37,5	32,5	N/A	N/A	4,8	9	24	38,6	40,3	29,4	N/A	N/A
Slovakia	26,6	25,7	19,2	27,3	12,8	2,6	3,9	21,2	47	58,9	20,3	N/A	N/A
Slovenia	35,8	29,1	28,8	28,9	N/A	7,9	6,9	14,4	31,2	42,4	29	N/A	N/A
Spain	38,3	37,1	31,4	34,4	N/A	N/A	N/A	16,3	38	45,7	20,4	N/A	N/A
Sweden	32,78	28,65	29,73	36,27	N/A	16,44	10,62	18,03	40,98	47,6	29,64	N/A	N/A

Source: Own processing by EUROSTAT (2020)

Table 8-B Regression results for the variable net occupancy rate of beds and rooms in hotels and similar accommodation (NACE Rev. 2, I, 55.1)

	Correlation coefficient	R^2	P-value	ANOVA (Significance F)
Germany	0,94661098	0,89607234	5,6737E-11	1,0172E-05
Cyprus	0,92523303	0,85605617	1,3725E-07	0,00281908
Latvia	0,91389072	0,83519625	3,1039E-07	0,00021656
Lithuania	0,90562735	0,8201609	7,6921E-06	0,0007744
Estonia	0,89274848	0,79699985	2,2422E-07	0,00021685
Belgium	0,88513151	0,78345778	3,1493E-09	0,00066165
Portugal	0,87146656	0,75945397	4,9446E-08	0,00047433
Poland	0,84191406	0,70881928	2,2533E-07	0,00115112
Romania	0,79223282	0,62763285	1,8305E-07	0,00629058
Czech Republic	0,67800237	0,45968722	3,849E-06	0,02185577
Greece	0,67409305	0,45440144	1,2789E-08	0,03255353
Sweden	0,67394977	0,4542083	1,293E-06	0,02296936
Luxembursko	0,64997835	0,42247186	4,5389E-11	0,03039334
Slovakia	0,6109938	0,37331342	0,00018152	0,06057713
Finland	0,54429284	0,2962547	9,6075E-07	0,06731059
Austria	0,53407926	0,28524066	7,0889E-07	0,09058553
Denmark	0,5134835	0,26366531	1,0631E-10	0,10619605
Slovenia	0,35623598	0,12690407	2,3793E-07	0,31232349
Spain	0,32931507	0,10844842	2,1547E-06	0,29590224
Croatia	0,29756227	0,0885433	2,0284E-06	0,37417451
Hungary	0,18963135	0,03596005	0,00124805	0,6528732
Netherland	0,08113558	0,00658298	1,3438E-09	0,812543
Malta	0,0808323	0,00653386	4,0421E-10	0,81323303
Italy	0,03904323	0,00152437	5,9244E-09	0,90926065
Ireland	N/A	N/A	N/A	N/A
France	N/A	N/A	N/A	N/A

Source: Own processing

Table 9-A EU27 Number of cases of coronavirus (in thousands)

	11/2019	12/2019	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	08/2020	09/2020	10/2020	11/2020
Austria	N/A	N/A	N/A	N/A	0,38	0,85	1,06	1,12	1,23	1,39	1,73	5,68	17
Belgium	N/A	N/A	N/A	0,01	4,36	21	38,4	67,1	76,7	84,2	93,1	124	255
Croatia	N/A	N/A	N/A	N/A	1,99	3,77	4,02	4,26	6,62	6,63	8,43	17,1	34
Cyprus	N/A	N/A	N/A	N/A	2,58	9,01	11,6	12,8	13,7	16,7	27,5	45,2	79,4
Czech Republic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,08	1,49	1,74	4,22	10,4
Denmark	N/A	N/A	N/A	N/A	1,31	4,91	6,83	7,21	7,42	8,8	9,73	15,9	24,6
Estonia	N/A	N/A	N/A	N/A	12,6	39,3	46,4	50,3	54,3	70,7	121	341	518
Finland	N/A	N/A	N/A	N/A	2,91	20,3	24,9	25,5	26	28,8	35,7	61,1	72,2
France	N/A	N/A	N/A	N/A	9,62	15,4	16,6	17,7	21	27,2	44,6	101	278
Germany	N/A	N/A	N/A	N/A	61,9	159	181	194	209	242	289	519	1050
Greece	N/A	N/A	N/A	N/A	15,3	49,9	58,9	61,9	69,6	85,4	122	438	578
Hungary	N/A	N/A	N/A	N/A	0,68	1,67	1,86	1,99	2,05	2,37	3,31	4,77	12,1
Ireland	N/A	N/A	N/A	N/A	0,76	1,42	1,47	1,58	2,14	2,87	5,49	32,5	75,4
Italy	N/A	N/A	N/A	N/A	2,31	12,9	23,8	34,4	45,7	67,4	91,5	363	985
Latvia	N/A	N/A	N/A	N/A	0,38	0,85	1,06	1,12	1,23	1,39	1,73	5,68	17
Lithuania	N/A	N/A	N/A	N/A	0,16	0,46	0,62	0,67	0,75	1,86	3,04	5,94	9,75
Luxembourg	N/A	N/A	N/A	N/A	94,4	213	239	249	289	463	769	1190	1650
Malta	N/A	N/A	N/A	N/A	1,21	2,58	2,92	3,39	4,4	10,1	18,1	37,2	104
Netherlands	N/A	N/A	N/A	N/A	52,1	130	152	165	188	281	564	1370	2220
Poland	N/A	N/A	N/A	N/A	7,44	25	32,5	42,1	51,1	58	75,5	141	298
Portugal	N/A	N/A	N/A	N/A	3	7,58	9,23	11,8	16,3	24,4	67,8	324	520
Romania	N/A	N/A	N/A	N/A	0,48	1,38	1,66	1,82	2,06	2,87	4,58	13,8	61,3
Slovakia	N/A	N/A	N/A	N/A	0,79	2,06	2,25	2,73	5,07	10,1	16,4	46,5	127
Slovenia	N/A	N/A	N/A	N/A	1,76	12	19,1	26,6	49,6	86,8	125	236	472
Spain	N/A	N/A	N/A	N/A	0,49	3,87	3,87	4,14	4,5	5,96	26,5	75,3	217
Sweden	N/A	N/A	N/A	N/A	0,34	1,39	1,52	1,67	2,27	3,88	9,57	51,7	106

Source: Own processing by TRADING ECONOMICS (2020)

Table 9-B Regression results for the variable number of coronavirus cases

	Correlation coefficient	R^2	P-value	ANOVA (Significance F)
Cyprus	0,83522293	0,69759735	0,00010269	0,0782785
Netherland	0,75031151	0,56296736	2,8332E-10	0,01986189
Luxembursko	0,65034798	0,4229525	5,7344E-10	0,05789357
Hungary	0,59588141	0,35507465	4,9049E-09	0,09039875
Slovenia	0,56787853	0,32248602	2,3477E-08	0,11069784
Malta	0,54163864	0,29337241	2,5096E-08	0,13201201
Austria	0,50456442	0,25458526	2,3505E-09	0,16597542
Czech Republic	0,47342376	0,22413006	1,0055E-05	0,19801218
Spain	0,45783932	0,20961684	1,6345E-07	0,21524597
Sweden	0,4378089	0,19167663	2,632E-08	0,20571491
Ireland	0,38531247	0,1484657	9,8575E-08	0,30579143
Finland	0,29771498	0,08863421	1,037E-05	0,43652949
Italy	0,29323025	0,08598398	8,6523E-09	0,44380027
France	0,18011607	0,0324418	2,1662E-10	0,64284617
Romania	0,156875	0,02460976	2,4725E-08	0,68689857
Latvia	0,1352752	0,01829938	6,7357E-07	0,72858755
Portugal	0,13240986	0,01753237	1,1E-06	0,73416685
Slovakia	0,11923818	0,01421774	1,3905E-07	0,75994961
Greece	0,1055411	0,01113892	2,1102E-08	0,78697924
Estonia	0,07353372	0,00540721	3,8652E-06	0,85087171
Belgium	0,06206188	0,00385168	1,3119E-10	0,87397368
Lithuania	0,05318525	0,00282867	3,7643E-07	0,89190697
Denmark	0,04702307	0,00221117	2,4573E-09	0,90438174
Germany	0,04598631	0,00211474	1,5819E-07	0,9064824
Croatia	0,03187546	0,00101605	1,027E-07	0,9351188
Poland	0,02354949	0,00055458	6,984E-08	0,95204754

Source: Own processing

Table 9-C Regression results for variable number of coronavirus cases, data in chain index format

	Correlation coefficient	R^2	P-value	ANOVA (Significance F)
Finland	0,74648049	0,55723313	0,0095814	0,03338288
Germany	0,60577259	0,36696043	0,06790294	0,08382139
Portugal	0,54976282	0,30223916	0,09008142	0,1251732
Slovenia	0,53955236	0,29111675	0,12306674	0,13380308
Greece	0,51546552	0,2657047	0,17135949	0,15551832
Denmark	0,50290455	0,25291299	0,04127933	0,16760216
Ireland	0,5006175	0,25061788	0,02492888	0,16985849
Croatia	0,49821888	0,24822205	0,12987971	0,17224348
Austria	0,44201576	0,19537793	0,25717428	0,23355827
Malta	0,37512042	0,14071533	0,06796961	0,31984395
Slovakia	0,37018292	0,1370354	0,16626362	0,32676558
Czech Republic	0,36718232	0,13482286	0,18036192	0,33100801
Italy	0,36566183	0,13370857	0,12844268	0,33316812
Poland	0,34397037	0,11831561	0,19902829	0,36473277
Belgium	0,30973154	0,09593363	0,08822722	0,41731103
Spain	0,28407223	0,08069703	0,01486622	0,45880991
Estonia	0,27792856	0,07724428	0,15349629	0,46899935
Hungary	0,27659095	0,07650256	0,24336358	0,47123041
Latvia	0,27274965	0,07439237	0,20052718	0,47766233
Luxembursko	0,26109038	0,06816819	0,10924715	0,49740667
Netherland	0,24411778	0,05959349	0,13035571	0,52672693
Sweden	0,23599863	0,05569535	0,08127493	0,51155746
Cyprus	0,19852793	0,03941334	0,50517971	0,74889678
Romania	0,16913154	0,02860548	0,09781976	0,66355609
France	0,16027813	0,02568908	0,07901227	0,68039344
Lithuania	0,13818736	0,01909575	0,26230115	0,72292837

Source: Own processing