THEORETICAL APPROACHES IN THE RESEARCH OF INBOUND TOURISM: THE CASE OF BULGARIA

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Abstract: the present work is aimed at revealing the peculiarities of structure and dynamics of inbound tourism in Bulgaria in 2007-2016. The mathematical statistics and time series method are used to analyze tourism flows. The fluctuations in arrivals to Bulgaria were explained by the dynamics of outbound tourism in the countries of origin of tourists and by other factors. The analysis of the structure of inbound tourism has shown that about half of the arrivals come from the neighbouring countries and these flows have the character of "diffusion", as shown by the coherence of the arrivals with the length of the common land border, as well as the weak seasonal nature. Other arrivals directed from the countries with unfavourable conditions for recreation at the seaside and are concentrated in the summer period.

Key words: international tourism flows, inbound tourism, structure of tourist arrivals, seasonality in tourism, time series, trend and deviation

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INTRODUCTION

One of the main directions of the study of international tourism is the statistical assessment of the number of arrivals to certain countries, complemented by an analysis of their dynamics over a period of time, by consideration of the structure of arrivals by countries of origin of tourists, usually for the last or several marker years, etc. However, significant oppositely directed increments in the number of arrivals from different countries of origin of tourists can offset each other, thus there will be nothing noticeable in the overall dynamics of inbound tourism of the destination country and this will produce the impression that nothing important has happened that year. For example, such an illusion about inbound tourism in Bulgaria was observed in 2009. Therefore,

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studying dynamics of inbound tourism for a particular country of destination, it is necessary first of all to analyse the flows of visitors by countries of origin for a certain period and only after that the total number of arrivals by the years should be characterized. That is, a methodical approach is proposed, which considers the international tourism flow, first of all, as aggregated one. Unfortunately, it was impossible to apply this approach for all years of research due to the lack of information. In particular, during 2000-2006 the inbound tourism flows to Bulgaria were considered overall, and for 2007-2016 – as aggregated, that is, in terms of the countries of origin of tourists. However, this drawback made it possible to compare these two approaches in one work, which is methodically important.

Theoretical approaches.

International tourism flow is considered as a totality of individual trips that are formed over a period of time from one country of origin and have a common destination country. Usually, for a particular country, not only one, but a plurality of flows that go to it from different countries of origin (for inbound tourism), or, conversely, come from it in the direction of different countries of destination (for outbound tourism) are being researched. Such flows that converge at one end, but diverge at the other end as a "fan" are aggregated tourism flows. Using the concept by N. Leiper, they can be represented schematically as in Figure 1. A grey oval in this scheme is a highlighted object of the study, which is an aggregate inbound tourism flow, estimated in the number of arrivals by separate countries of origin of tourists. With that the quantity of arrivals is being understood as the number of registered visitors of a certain country who are non-residents of this country, per certain period of time (usually, a year). The visitors can be divided into same-day visitors, and tourists (overnight visitors). Measurements are conducted according to the following parameters, as in the scheme (Table 1) (UNWTO data).
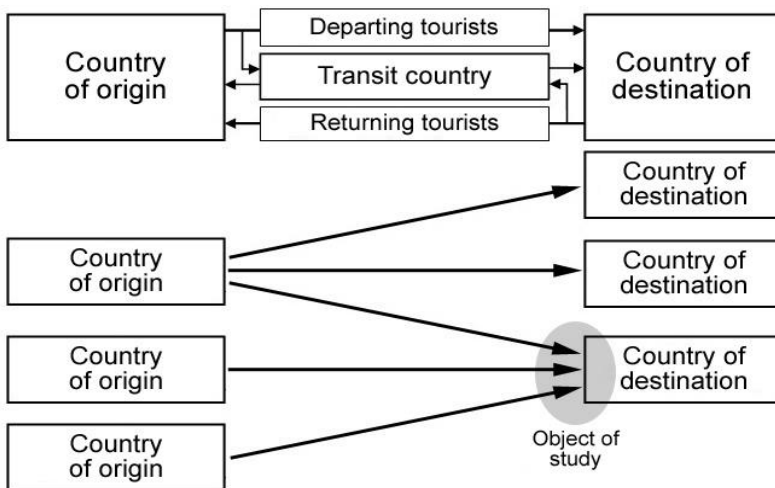
Figure 1. Model of international tourism flow and aggregation of tourism flows (Source: Leiper, 1979)

According to Table 1, all arrival measurements in international tourism are divided into the following categories:

TF – International tourist arrivals at frontiers (excluding same-day visitors);
VF – International tourist arrivals at frontiers (including tourists and same-day visitors);
TCE – International tourist arrivals at collective tourism establishments;
THS – International tourist arrivals at hotels and similar establishments.

When measuring, preference in international tourism is given to arrivals at frontier. However, it should be borne in mind that not every country has these data at its disposal. Hence, other ways for measuring can be used.

Table 1. Units of measure to quantify the volume of inbound tourism (Source: UNWTO)

Object	Parameter	Place	Comments
Visitors	Arrivals	At frontiers	
Tourists (overnight visitors)	Arrivals	At frontiers	
		At hotels and similar establishments	- excludes tourism in private accommodation
		At collective tourism establishments (e.g. hotels and other)	- arrivals are counted in every new accommodation visited

The present work is aimed at revealing the peculiarities of structure and dynamics, analyse the factors and their influence on the formation of international tourism flows to Bulgaria by using the methodical approach that considers international tourism flow as aggregated. Equally important is the approbation of the proposed methodical approach based on the analysis of the arrival dynamics as time series with trends and deviations from them. Unfortunately, due to the lack of information, the dynamics of inbound tourism in Bulgaria by certain countries of origin was considered only in 2007-2016. Accordingly, the subject of the study can be formulated as time series of the total number of arrivals to Bulgaria and by the countries of origin of tourists, and also the structure of arrivals by these countries.

The characteristics of time series are based on the analysis of two main components of a series – its trend and deviations of the actual values from it as fluctuations of separate levels of the series. In the analytical alignment of the time series, the actual values of y_t are replaced by calculations based on a certain function $Y=f(t)$, which is called the trend equation (t – time variable, Y – theoretical value of the series) (Herasymenko, 2000). The acceptability of the trend equation is determined with the help of the average approximation error, which should not exceed 15%. When studying the time series of international tourist arrivals in Bulgaria by separate countries of origin of tourists, analytical alignment of the series on the basis of the linear function $Y_t=a+bt$ was carried out. According to the regression analysis, the parameters a, b are determined by the least squares method (Herasymenko, 2000).

To simplify their calculations, it is expedient to move the start of the time reference ($t = 0$) to the middle of the time series; then, when numbering the periods from the middle of a series, the half of the numbers will be negative and half positive. In our case, the timing ($t = 0$) for the period 2007-2016 will be between 2011 and 2012, and for the period 2000-2016 – in 2008. Based on the built trend lines, it is possible to find the average annual increment for the entire time series, which is calculated as the ratio of the parameters of the trend equation in percentages $\Delta Y=b/a*100$ (Herasymenko, 2000). The comparison of increments of different time series allows comparing their dynamics. However, this analysis of trend lines is exhausted at that, in particular, they do not allow seeing the influence of certain events that occurred during the period of observations. It is impossible even to correlate the trend values calculated for different time series as the correlation coefficient for them is always equal to 1.

Therefore, the analysis of deviations of the actual indicators from the trend line is of greatest interest. For commensurability of fluctuations of different time series it is expedient to consider not actual absolute deviations, but calculated in the mean-square values (σ). At the same time, it can be assumed that the deviations less than 1 σ are random, and larger ones are caused by some factors.

RESULTS

Bulgaria with 8.252 million arrivals kept 20th position in the ranking of the European international tourism destinations in 2016. The number of international tourist arrivals to Bulgaria in 2000-2016 has increased almost threefold from 2.785 to 8.252 million and showed a stable growth, excluding 2007, 2009 and 2015 years (Figure 2).
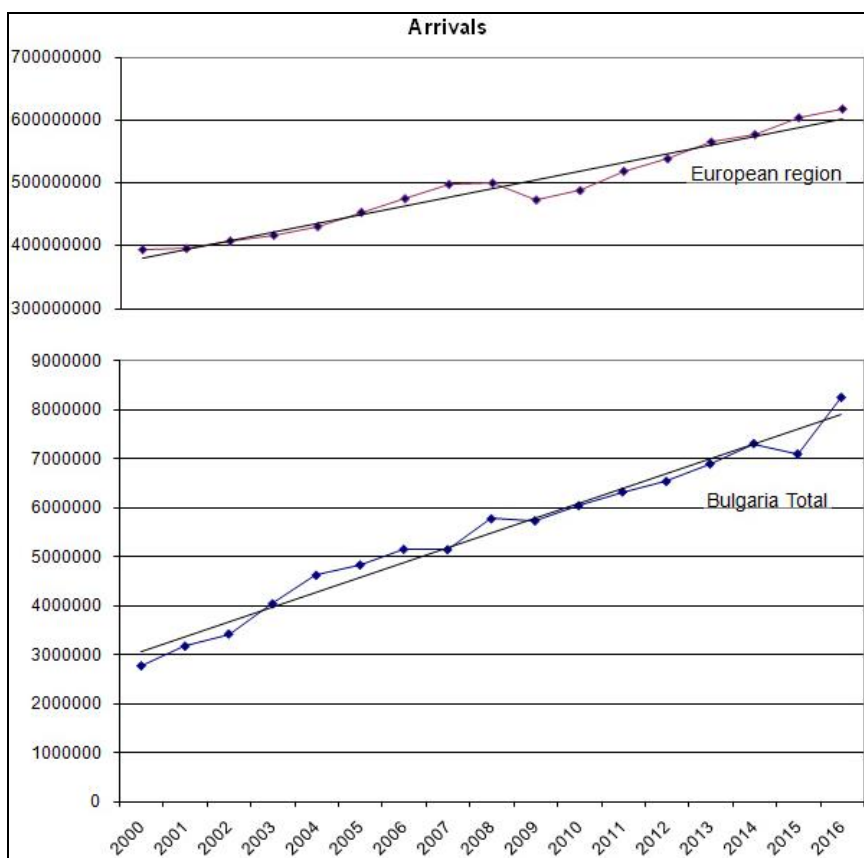
Figure 2. Evolution and trend lines of international tourist arrivals (Source: based on data from UNWTO)

The dynamics of arrivals, both within the European tourism region and in Bulgaria, was linear. The average approximation errors were very small and amounted to only 2.33% and 3.91% respectively. At the same time, inbound tourism in Bulgaria grew almost twice as fast as in Europe since the average annual change of trend series was 5.5%, and for Europe – 2.84% (Figure 2, Table 2). As fluctuations in the dynamics of arrivals show, the development of inbound tourism in Bulgaria was different from that in the European tourism region. This is indicated by the comparison of deviations from trends, the correlation coefficient between them is $r = 0.03$.

In particular, when in Bulgaria for three consecutive years (2004-2006) before accession to the European Union, the number of arrivals was higher than the average by more than 1σ, in Europe nothing similar was observed. The global financial crisis, which in Europe caused the biennium (2009-2010) drop by more than 2 σ, did not affect the total number of arrivals in Bulgaria. And only in 2016, their fluctuations, which were larger than one mean square deviation, were consistent (Table 3).

Table 2. Trends for international tourist arrivals, 2000-2016

Destination	Trend equation (own elaboration)	Approximation error, %	Average annual change (ΔY), %
Europe	$Y_t = 491411764+13943627*t$	2.33	2.84
Bulgaria	$Y_t = 5483705+301784*t$	3.91	5.50

Table 3. International tourist arrivals (Source: based on data from UNWTO)

Years	Arrivals within Europe				Arrivals to Bulgaria (TF)			
	Real (mln)	Trend (mln)	Deviation (mln)	(σ)	Real (mln)	Trend (mln)	Deviation (mln)	(σ)
2000	393.0	379.9	13.13	0.89	2.785	3.069	-0.284	-1.2
2001	395.0	393.8	1.195	0.08	3.186	3.371	-0.185	-0.78
2002	407.0	407.7	-0.749	-0.05	3.433	3.673	-0.240	-1.02
2003	416.0	421.7	-5.693	-0.38	4.048	3.975	0.073	0.31
2004	430.0	435.6	-5.636	-0.38	4.630	4.277	0.353	1.5
2005	453.0	449.6	3.420	0.23	4.837	4.578	0.259	1.1
2006	475.0	463.5	11.47	0.78	5.158	4.880	0.278	1.18
2007	498.0	477.5	20.53	1.39	5.151	5.182	-0.031	-0.13
2008	500.0	491.4	8.589	0.58	5.780	5.484	0.296	1.25
2009	473.0	505.4	-32.35	-2.19	5.739	5.785	-0.046	-0.2
2010	488.0	519.3	-31.29	-2.12	6.047	6.087	-0.040	-0.17
2011	519.0	533.2	-14.24	-0.96	6.328	6.389	-0.061	-0.26
2012	539.0	547.2	-8.185	-0.55	6.541	6.691	-0.150	-0.63
2013	566.0	561.1	4.871	0.33	6.898	6.993	-0.095	-0.4
2014	578.0	575.1	2.927	0.2	7.311	7.294	0.017	0.07
2015	605.0	589.0	15.98	1.08	7.099	7.596	-0.497	-2.11
2016	619.0	603.0	16.04	1.08	8.252	7.898	0.354	1.5

At the beginning of the time series in 2000-2002 in Bulgaria there were significant negative deviations from the trend. In this period, the visa regime with the countries of the former USSR and Eastern Europe was introduced in 2000-2001, and in 2002 the actual number of arrivals in Bulgaria became less than the average by more than one standard deviation. However, after a record increase in inbound tourism in 2003 (+ 18%), during 2004-2008 (with the exception of 2007), the number of arrivals to Bulgaria exceeded the trend values each year by more than 1σ (Table 3). Thus, in 2003 there was a break through in the dynamics of arrivals to Bulgaria. On the eve of the 21st of November 2002 at the NATO summit in Prague, Bulgaria was invited to an alliance that determined the foreign policy of the country. Many politicians at the summit talked about the gradual reunification of Europe, divided after the Second World War into the Western and Eastern blocs. Besides, as a result of the events of September 11, 2001, the war in Iraq and SARS, overseas travels between tourism regions became less popular and the demand for intraregional travels was growing and given the comparatively rising prices due to the continuous appreciation of the Euro in euro-zone countries (UNWTO Tourism Highlights, 2004), countries in Central and Eastern Europe in general and Bulgaria in particular gained competitive advantages in the European tourism market. Further analysis of the dynamics of arrivals in Bulgaria was conducted for the top countries of origin of tourists. For each of them, time series with their own trends were constructed (Table 4) and deviations from trends were calculated in the mean-square values (σ) (Table 5).

The dynamics of arrivals by the top countries of origin of tourists in 2007-2016 was linear. The linear trend equation cannot be used only for Turkish tourism flows, since the approximation error was more than 20%. Most countries from the top 10 are characterized by an increase in tourism flows, and only the equation for the United Kingdom reflects a

tendency towards reduction in the number of arrivals in Bulgaria. The highest average annual increments in the number of arrivals were observed from North Macedonia, Ukraine and Serbia, the smallest – from Romania, Germany and Greece (Table 4). Fluctuations in the time series of arrivals from a certain country of origin of tourists can be caused, first of all, by the dynamics of outbound tourism in that specific country as a whole. To ascertain this, time series for the total number of departures for the top tourism generating countries for which such information was available were constructed and deviations from trends were calculated in the mean-square values (σ) (Table 6). If the link between the two above-mentioned features is tight, this means that arrivals to Bulgaria from a certain country depend on the dynamics of outbound tourism in it. As a result, it is necessary to shift the analysis to that specific country of origin of tourists.

Table 4. Trends for international tourist arrivals to Bulgaria, 2007–2016

Country of origin of tourists	Trend equation (own elaboration)	Approximation error, %	Average annual change (ΔY), %
Romania	$Y_t = 947100+18903*t$	5.33	2.00
Greece	$Y_t = 927000+25600*t$	2.86	2.76
Germany	$Y_t = 675000+16861*t$	8.47	2.50
Russian Fed.	$Y_t = 465800+44024*t$	14.30	9.45
Turkey*	$Y_t = 325900+40576*t$	21.19	12.45
North Macedonia	$Y_t = 346800+38909*t$	7.53	11.22
Serbia	$Y_t = 254600+25733*t$	9.08	10.11
Poland	$Y_t = 242900+15679*t$	13.86	6.45
United Kingdom	$Y_t = 286500-11376*t$	0.46	-3.97
Ukraine	$Y_t = 198100+22164*t$	0.36	11.19
Bulgaria (total)	$Y_t = 6514600+289503*t$	0.12	4.44

* the trend is unreliable because of the big approximation error

Table 5. International tourist arrivals to Bulgaria and deviation from the trend by country of origin of tourists (Source: based on data from the Ministry of Tourism of the Republic of Bulgaria) *Arrivals

To Bulgaria from:	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Romania Arr* (mln)	0.750	0.997	0.942	0.918	0.960	0.932	0.941	0.947	0.987	1.097
Deviation (σ)	-1.84	1.90	0.69	-0.01	0.37	-0.40	-0.56	-0.78	-0.43	1.06
Greece Arr (mln)	0.827	0.844	0.815	0.905	0.943	0.929	0.935	1.032	0.973	1.067
Deviation (σ)	0.51	0.22	-1.61	0.55	0.96	-0.36	-1.02	1.37	-1.46	0.83
Germany Arr (mln)	0.520	0.580	0.740	0.714	0.700	0.650	0.683	0.714	0.623	0.826
Deviation (σ)	-1.20	-0.54	1.62	0.97	0.51	-0.51	-0.26	-0.05	-1.68	1.14
Russia Fed. Arr(mln)	0.246	0.291	0.287	0.378	0.455	0.598	0.682	0.656	0.485	0.580
Deviation (σ)	-0.25	-0.24	-0.81	-0.26	0.13	1.29	1.76	0.94	-1.58	-0.98
Turkey Arr (mln)	0.269	0.210	0.193	0.204	0.185	0.294	0.382	0.438	0.519	0.565
Deviation (σ)	1.89	0.39	-0.47	-0.92	-1.81	-0.78	-0.07	0.16	0.77	0.85
N. Macedonia Arr (mln)	0.157	0.217	0.205	0.310	0.383	0.389	0.397	0.408	0.474	0.528
Deviation (σ)	-0.53	0.23	-1.59	0.77	1.99	0.81	-0.29	-1.29	-0.32	0.22
Serbia Arr (mln)	0.163	0.189	0.130	0.206	0.245	0.276	0.303	0.312	0.347	0.375
Deviation (σ)	1.06	1.08	-2.65	-0.44	0.14	0.38	0.43	-0.30	0.10	0.20
Poland Arr (mln)	0.144	0.157	0.269	0.254	0.247	0.242	0.236	0.253	0.261	0.366
Deviation (σ)	-0.78	-0.85	1.79	0.95	0.33	-0.24	-0.83	-0.80	-1.01	1.44
U. Kingdom Arr (mln)	0.354	0.364	0.286	0.289	0.285	0.265	0.258	0.247	0.244	0.273
Deviation (σ)	0.75	1.73	-1.33	-0.67	-0.33	-0.73	-0.53	-0.51	-0.12	1.74
Ukraine Arr (mln)	0.102	0.119	0.111	0.146	0.176	0.254	0.295	0.270	0.242	0.266
Deviation (σ)	0.12	-0.05	-1.00	-0.60	-0.35	1.42	2.02	0.52	-1.07	-1.01
Bulgaria Total Deviation (σ)	-0.28	1.27	-0.24	-0.15	-0.19	-0.54	-0.23	0.33	-1.95	1.98

Table 6. International tourist departures and deviation from the trend
for country of origin of tourists (Source: own elaboration based on data from the World Bank) *Departures

Total departures	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Romania Dep* (mln)	10.980	13.072	11.723	10.905	10.936	11.149	11.364	12.299	13.118	16.128
Deviation (σ)	0.16	1.58	0.26	-0.63	-0.85	-0.93	-1.01	-0.51	-0.11	2.03
Greece Dep (mln)	3.519	3.765	3.835	3.799	4.941	4.681	4.594	5.802	6.291	7.235
Deviation (σ)	0.93	0.61	-0.13	-1.12	0.67	-0.84	-1.95	0.00	0.25	1.58
Germany Dep (mln)	82.099	86.201	85.547	85.872	84.692	82.729	87.459	83.008	83.737	90.966
Deviation (σ)	-0.73	0.89	0.48	0.48	-0.16	-1.14	0.75	-1.29	-1.12	1.84
Russia Dep (mln)	34.285	36.538	34.276	39.323	43.726	47.813	54.069	45.889	34.550	31.659
Deviation (σ)	-0.59	-0.32	-0.71	-0.04	0.54	1.08	1.93	0.68	-1.04	-1.52
Turkey Dep (mln)	4.956	4.893	5.561	6.557	6.282	5.803	7.526	7.982	8.751	7.892
Deviation (σ)	0.38	-0.57	-0.06	1.11	-0.26	-2.05	0.58	0.66	1.38	-1.16
Poland Dep (mln)	47.561	50.243	39.270	42.760	43.270	48.290	52.580	35.400	44.300	44.500
Deviation (σ)	0.27	0.90	-1.34	-0.54	-0.36	0.76	1.73	-1.81	0.13	0.24
U. King. Dep (mln)	69.450	69.011	58.614	55.562	56.836	56.538	57.792	60.082	65.720	70.815
Deviation (σ)	1.31	1.23	-0.59	-1.13	-0.91	-0.96	-0.75	-0.35	0.63	1.52
Ukraine Dep (mln)	17.335	15.499	15.334	17.180	19.773	21.433	23.761	22.438	23.142	24.668
Deviation (σ)	1.62	-0.63	-1.59	-0.99	0.20	0.65	1.63	-0.23	-0.51	-0.16

The comparison of deviations for the time series of arrivals to Bulgaria and deviations for the time series of the total number of departures altogether from the top countries of origin in 2007-2016 showed a close link between the two indicated features for the five countries which form 37-41% of incoming tourism flows to Bulgaria, among them: Russian Fed. (correlation coefficient $r = 0.95$), United Kingdom ($r = 0.88$), Ukraine ($r = 0.71$), Romania ($r = 0.61$) and Germany ($r = 0.60$) (Table 7).

Table 7. Correlations between deviations for the time series of arrivals to Bulgaria and total number of departures from the top countries of origin of tourists in 2007-2016

Arrivals to Bulgaria from:	Total departures from:						
	Romania	Greece	Germany	Russian Fed.	Poland	United Kingdom	Ukraine
Romania	0,61						
Greece		0,41					
Germany			0,60				
Russian Fed.				0,95			
Poland					-0,40		
United Kingdom						0,88	
Ukraine							0,71

Hence, arrivals from these countries to Bulgaria depend on the general dynamics of their outbound tourism. Thus, in 2012 and 2013 from Ukraine and Russia, in 2008 and 2016 from the United Kingdom and Romania, as well as from Germany in 2016 significantly more tourists arrived in Bulgaria (deviation of more than 1 σ), because in general they travelled abroad more actively then (Table 5, Table 6).

It is important to analyse the causes of fluctuations in the dynamics of outbound flows from the top 10 countries of origin, as this will help to understand better how an aggregated international tourism flow to Bulgaria was formed in 2007-2016.

In 2007, the total number of arrivals to Bulgaria as a whole was at the level of the trend, however, according to the countries of origin, significant negative deviations in the number of arrivals from Romania and Germany were observed (Table 5). In Germany, fiscal tightening took place that year, which influenced private consumption (World

Travel Trends Report, 2006-2007) apparently affecting outbound tourism (-0.73 σ) and arrivals of German tourists to Bulgaria (-1.20 σ). Regarding outbound flows from Romania, with an almost average number of departures (+0.16 σ) Romanian tourists arrived in Bulgaria much less comparing with the trend value (-1.84 σ), that is, the difference between the indicated characteristics was 2 σ. This means that there was a significant redirection of tourism flows. Obviously, after joining the European Union in 2007, Romanian tourists benefited from a visa-free regime and favoured European countries. This was facilitated by the exchange rate of the Romanian Lei, which was the highest to Euro (RON 3.2 to Euro) that year. In the next year, 2008, against the background of a noticeable increase in the total number of departures from Romania (+1.58 σ), arrivals in neighbouring Bulgaria also increased (+1.90 σ). After the global financial crisis in 2009, when the Lei fell to 4.2 to Euro, there were mostly minor (less than 1 σ) negative deviations in the arrivals of Romanian tourists to Bulgaria.

In general, 2008 was one of the most successful for inbound tourism in Bulgaria, when one of the largest positive deviations in the total amount of arrivals (+1.27 σ) during the period 2007-2016 was recorded. This was the year after joining the European Union and before the financial crisis of 2009, before the adverse factors that could affect outbound flows in main tourism-generating countries, as it will be discussed further, showed themselves. In particular, this applies to Britain, for which in 2008 there were positive deviations for more than 1 σ both for departures in general and for arrivals in Bulgaria. Other source markets, which showed a significant growth in arrivals in 2007–2008 were Serbia and Turkey. Although we are not able to conduct a similar analysis comparing fluctuations in the dynamics of arrivals and departures for these countries, we assume that the increased tourist interest of their citizens was related to the accession of Bulgaria to the EU. At first glance, the global financial crisis did not affect tourism volumes in Bulgaria overall – a negative deviation from the trend was only -0.24 σ in 2009, whereas for the European tourism region it exceeded 2 σ. However, regarding the countries of origin of tourists, the situation was the opposite, and almost zero overall outcome was the result of oppositely directed deviations that offset each other.

In particular, against the background of the global financial crisis, arrivals from Greece, Northern Macedonia, Serbia and the United Kingdom reduced by more than 1 σ. Instead, the deviations from the trend for inbound flows to Bulgaria from Germany and Poland in 2009 were positive and significantly exceeded the trend values (+1.62 σ and +1.79 σ respectively). Along with that, there was a significant negative deviation (-1.34 σ) in the total number of departures from Poland.

That is, there was a paradoxical situation, when in 2009 against the background of a significant decrease in the total number of departures from Poland, an increase in arrivals of the Poles in Bulgaria was observed. The only explanation is redirection of tourism flows. Obviously, in the context of the financial crisis, Poles and Germans did not refuse from taking a rest, but rather reoriented themselves on cheaper destinations, in particular Bulgaria, which attractive resorts offered relatively inexpensive leisure with a good price-quality ratio. By the way, the characters of the dynamics of tourism flows to Bulgaria from Poland and Germany are very similar, as indicated by a comparison of their deviations from trends, the correlation coefficient r = 0.91. Even greater consistency was noticed between the deviations in arrivals from Ukraine and Russia (r = 0.95), which allows us to consider these countries together.

Improvement of the economic situation along with increasing affluence after the financial crisis of 2009 as well as the stabilization of exchange rates reflected themselves in significant exceeding of the trend values of tourist departures from Ukraine and Russia and arrivals in Bulgaria in 2012-2013. Besides, in 2012, there was a simplification in visa

formalities for visitors from these two countries. After the annexation of the Crimea by Russia and its bringing about the war in the Donbass region of Ukraine in 2014, the dynamics of outbound tourism flows from Ukraine and Russia deteriorated significantly, as a result, the arrivals to Bulgaria decreased by about 1σ and more in 2015-2016. Although these two countries are opponents in these events, they both lost economically, which considerably reduced the purchasing ability of their population. In particular, from July 2013 to July 2015, the Ukrainian Hryvnia depreciated to the Euro by 127% and the Russian Ruble by 44%. Negative deviations in the dynamics of arrivals in Bulgaria in 2015 were also observed from other countries, in particular from the Eurozone (Germany and Greece), as well as from Poland. The depreciation of the Euro, when from July 2014 to July 2015, the Euro's value moved down to the US dollar by 18%, influenced the decline in tourism demand for international travel in general and, in particular, for one of the leaders of outbound tourism – Germany. Thus, in 2015, the total amount of departures of German tourists decreased by more than one standard deviation and their arrivals in Bulgaria became less than the trend value by 1.68 σ.

This year was generally one of the worst for inbound tourism in Bulgaria (-1.95 σ). In addition to the above-mentioned events, this could have been boosted by the escalation of the war in Syria that provoked a refugee crisis in Europe, by a series of terrorist attacks (France, Tunisia, Turkey, Iraq, etc.) which had an Islamic footprint. Thereby, tourists from Europe were not inclined to travel, especially in this direction.

To confirm this, we note that the arrivals in neighbouring Turkey in 2015 compared to the previous year decreased by 1%, while in 2013 and 2014, the annual increase exceeded +5%. The analysis of the tourist activity of the Greeks shows that the deviations from the trend values of the total number of departures and their arrivals to Bulgaria are consistent with the significant changes in the economic and political situation in Greece, although these two features are not always well correlated with each other. In those years, Greece underwent significant economic upheavals, so more attention should be paid to how they influenced the total number of departures, as well as the arrivals to its neighbour – Bulgaria. As the economic indicator, which directly determines the international tourism expenditure, and hence the departures, household consumption expenditure per capita (constant 2010 US$) were used.

In particular, they had the following values for Greece (Figure 3).
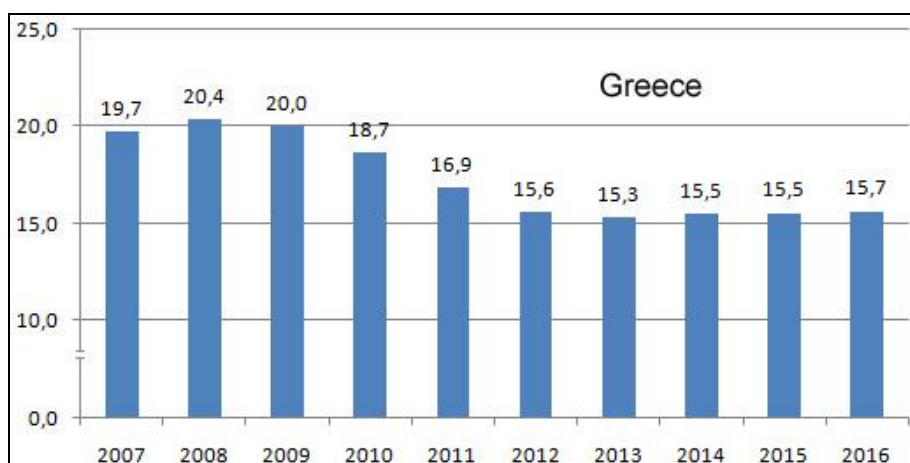
Figure 3. Household consumption expenditure per capita
(constant 2010 US$) (Source: the World Bank data)

In 2009, in the midst of the global financial crisis, along with the fall in the purchasing ability of the Greeks there was decrease only in their arrivals to Bulgaria (-1.61 σ), and in the next 2010, with the beginning of the debt crisis, the total amount of departures also dropped (-1.12 σ). Since then, the steady decline in the specific consumption expenditure of Greek households had been observed until 2013, when they reached their minimum (see Figure 3). It was then that considerable negative deviations were recorded both for arrivals in Bulgaria (-1.02 σ), and for the total number of departures from Greece (-1.95 σ). After that, with the improvement of the economic situation, there has been a three-year tendency of increasing the last indicator.

Also in 2014, there was a significant positive deviation in the number of arrivals to Bulgaria (1.37 σ). However, in the next, 2015, year, against the background of a depreciation of the Euro and, above all, in connection with the extensive economic damage after a financial referendum in Greece, when, in the summer, during the two weeks surrounding the vote, banks closed and restricted ATM withdrawals to 60 Euros per day, the number of the Greeks` arrivals to Bulgaria was less than the trend value by one and a half standard deviations. Regarding tourism flows from Poland, against the background of total departures close to the trend value, there was a notable negative deviation in arrivals to Bulgaria in 2015 (-1.01 σ) and positive in 2016 (+1.44 σ), that is we see again the redirection of flows. This is probably due to the fluctuations of the Polish Zloty to the Euro and the aftermath of security incidents in some popular tourism destinations. Strengthening of the Polish Zloty in 2015 has contributed to the increasing interest in more expensive destinations – Greece and Croatia (as evidenced by the analysis of outbound tourism in Poland in 2015), but already in the next 2016 we observe the opposite situation – the depreciation of Polish Zloty against the Euro, lower prices in the resorts of Bulgaria, which is furthermore considered as an ideal destination for price-conscious customers, as well as a considerable reduction in flows to Turkey and Egypt in 2016. As a result, there was growth in arrivals in Bulgaria. Obviously, exchange rate variations in Poland and security problems in other destinations, in particular in Turkey, were important factors influencing tourism flows from Poland to Bulgaria in 2015 and 2016.

After unsuccessful for inbound tourism, 2015, year, Bulgaria enjoyed strong results in arrivals (deviation +1.98 σ) in 2016. This positive deviation was due, above all, to greater than average value of arrivals from Romania (+1.06 σ), Germany (+1.14 σ), Poland (+1.44 σ) and Great Britain (+1.74 σ). The reactivation of incoming flows from these countries, except Poland, is explained by the same substantial excess in the total number of departures. That is, it was due to stronger travel demand from major generating markets overall, mostly due to fall in resort prices around Europe (incl. Bulgaria), and enhancement of Bulgaria's competitive advantage in the European tourism market. When choosing a destination, tourists began to pay more attention to security issues and Bulgaria was the place that they perceived as safe. Therefore, in the summer of 2016, when failed coup occurred in Turkey, tourism flows in this direction could partly be redirected to neighbouring Bulgaria. By the way, the top five tourism source markets for Turkey include Germany and the United Kingdom.

Structure of International Tourist Arrivals in Bulgaria

When considering the structure of inbound tourism, it should be borne in mind that over the study period (2000-2016), the number of arrivals in Bulgaria has increased threefold. In such circumstances, the maintenance of the share of arrivals on the same level is possible only when the tourism flows from a certain country of origin will grow at the same rate. In other words, the reduction of this share does not necessarily indicate a decrease in the number of arrivals from one country or another. We consider the structure of inbound tourism in Bulgaria for three years: 2000, 2008, 2016 (Table 8).

At first, we pay attention to arrivals from neighbouring countries. This approach is determined by the fact that the neighbouring flows have their own characteristics that distinguish them from the rest of tourism flows. Travels to neighbours, as a rule, are carried out at short distances, do not last long and are mainly "do-it-yourself" trips. A little money is spent for such trips and weekly free time (weekends) is suitable for them.

Thus, insignificant consumer spending and the opportunity to travel weekly make tourism flows to neighbours widespread. However, such trips are inexpensive; therefore, a large share of tourists from neighbouring countries predetermines low profitability of inbound tourism, which is calculated as international tourism receipts per arrival (Korol & Skutar, 2018). A country of destination with such a structure of inbound tourism is not considered too attractive, because it is visited, first of all, due to availability of money and time, and not for the sake of tourist attractions.

Table 8. Structure of international tourist arrivals in Bulgaria
(Source: based on data from the Ministry of Tourism of the Republic of Bulgaria)

№	Countries of origin of tourists	2000		2008		2016	
		arrivals (1000)	share (%)	arrivals (1000)	share (%)	arrivals (1000)	share (%)
1	Romania	221	7,9	997	17,2	1097	13,3
2	Greece	363	13,0	844	14,6	1067	12,9
3	Germany	283	10,2	580	10,0	826	10,0
4	Russian Federation	133	4,8	291	5,0	580	7,0
5	Turkey	177	6,4	210	3,6	565	6,8
6	North Macedonia	674	24,2	217	3,8	528	6,4
7	Serbia[*]	260	9,3	189	3,3	375	4,5
8	Poland	25	0,9	157	2,7	366	4,4
9	United Kingdom	62	2,2	364	6,3	273	3,3
10	Ukraine	92	3,3	119	2,1	266	3,2
11	Other	495	17,8	1812	31,3	2309	28,0

* Incl. Serbia and Montenegro up to 2006.

In 2016, 44% of international tourists arrived in Bulgaria from 5 neighbouring countries: Romania (13.3%), Greece (12.9%), Turkey (6.8%), North Macedonia (6.4%) and Serbia (4.5%). In 2000, these countries accounted for more than 60% of arrivals, and a noticeable decrease in their share was observed already in 2007 – 42.1%, when Bulgaria joined the European Union. Since then, the share of arrivals to Bulgaria from neighbouring countries hasn't changed much. Travels to neighbouring countries often cover areas nearby the state border and have the character of "diffusion with the return" (Figure 4).

Tourist flows to neighbors may come within the Hagerstrand's statistical theory of movements, according to which those inhabitants of home country who live closer to state border would have more often visits to border regions of neighboring country (Hagerstrand, 1970). As known, diffusion leads to a levelling of density on both sides of a transparent border and its speed depends upon the difference in density in both sides and the contact area of interpenetration, which in the case of tourism to neighbouring countries is identified by the length of the common border. But every tourist returns home, so the density does not level out on both sides and diffusion in this case is called "with the return". Nevertheless, there will always be some number of tourists on territory of the destination that can be explained by the density of residents nearer to the border in the country of origin, by the length and transparency of the common land border. Let's assume that the population in neighbouring tourism-generating countries is more or less evenly spaced throughout the territory, especially near the common land border with the

country of destination. At the same time, people make chaotic trips without giving preference to any direction. If the borders have the same transparency, then the number of such arrivals to the destination must obviously be consistent with the length of the common land border. In the structure of international tourism, the neighbouring countries that share a land border, can account for up to 90% of arrivals, and on average their share reaches 50%. At the same time, the number of neighbouring countries does not play a significant role; the more important here is the existence of a long land border.
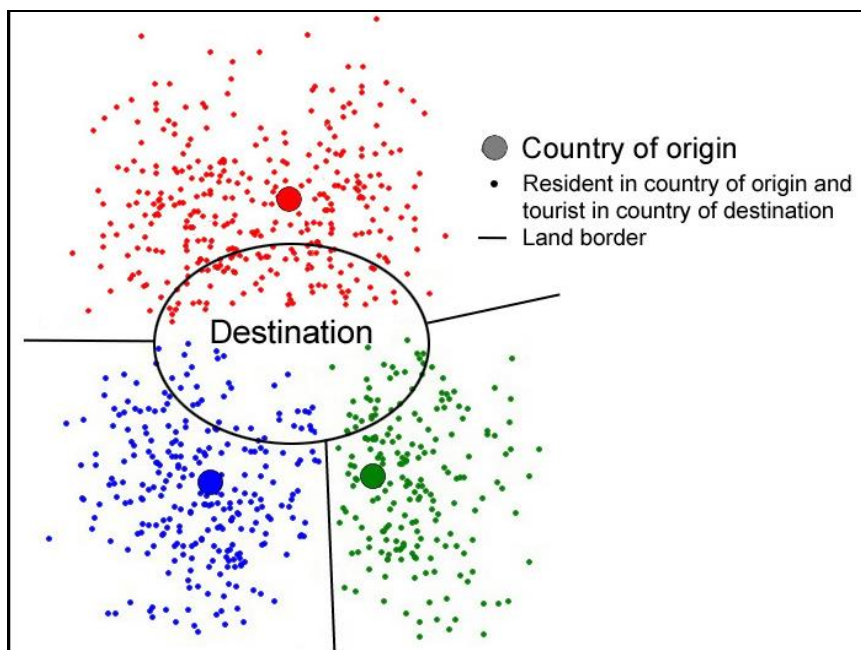
Figure 4. "Diffusion" in tourism to the neighbouring country

Previously, in our study of tourist flows of 28 countries, mostly the EU (Korol, 2017), we observed that the fraction of the neighbouring country in the structure of tourist arrivals was often proportional to the share of the common land border with the country of destination. We assume that under otherwise equal conditions, the volumes of tourists' exchange between such countries are congruent with the length of common land border. To test this assumption for neighbouring inbound tourism flows to Bulgaria, the chi-square criterion (χ^2) was used, which is also called in mathematical statistics the criterion of independence, consistency and homogeneity. It is defined as (Horkavyi & Yarova, 2004):

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Where:

O – the observed fraction of arrivals from the country of origin, which has common land border with destination, in the total number of arrivals from neighbours, which is taken as 100%;

E – the expected fraction of arrivals from a neighbouring country of origin, which in theory is equal to the share of a common land border, the total length of which is 100% (Horkavyi and Yarova, 2004).

The deviation between the observed and the expected fractions may be significant if caused by some factor, and also insignificant, which is due to random causes, and then the consistency of the fractions is confirmed. To determine this, the calculated chi-square value is compared to the table's values for a given degrees of freedom. If the total value of χ^2 is more than the one in the table, then the discrepancy is not random, i.e. the consistency of fractions is not confirmed (Horkavyi & Yarova, 2004). Thus, as a result of the performed analysis, the coherence between the share of arrivals from neighbours with the share of the common land border was observed in Bulgaria (Table 9).

Table 9. Coherence between the share of arrivals to Bulgaria from neighbouring countries with the share of the common land border, χ^2 (Source: based on data from the Ministry of Tourism of the Republic of Bulgaria)

№	Neighbouring countries	The length of the land border		Arrivals from neighbours (%), average for 2007–2016	χ^2
		km	share (%)		
1	Greece	494	27.3	33.1	1.232
2	North Macedonia	148	8.2	12.4	2.151
3	Romania	608	33.6	33.8	0.001
4	Serbia	318	17.6	9.1	4.105
5	Turkey	240	13.3	11.6	0.217
	Total	1808	100	100	7.706

The population density of the tourism-generating countries in the territories near the border with Bulgaria is more or less equal. The only exception is Romania where it is considerably higher. However, the share of arrivals from this country is also consistent with the share of common land border. This is explained by the fact that the Danube River, on the border with Bulgaria, becomes a hindrance to more intensive tourism flows from densely populated Romanian territories, including Bucharest agglomeration.

Although in the case of Bulgaria, the assumption of the coherence of tourism flows from neighbours with the length of the common land border was confirmed, as shown by similar studies for other countries (Korol, 2017), such a regularity is not always observed. However, this does not disprove the theoretical position, because it is based on the homogeneity of geographical and demographic conditions, which does not occur everywhere, but is often distorted by the following circumstances:

– unequal population density on the territories close to the common border, primarily from the country of origin of tourists;
– mental affinity of the population of countries on different sides of the border;
– transparency of the common border, which is hampered by rivers and other linear geographic barriers, visa regime, etc.

Combination of these circumstances may weaken or enhance their mutual influence. For example, if geographical obstacle is of plane character, then it does not only complicate transport accessibility, but also determines the low population density, as it is observed in mountainous regions. Consequently, these geographic and demographic circumstances can be introduced as additional parameters of the model of the formation and distribution of tourism flows from neighbours. So far, the tourism flows from the neighbours have been considered in view of the fact that they have the "diffusive" character, i.e. distributed randomly without any advantage in direction. In other words, diffusion trips do not have a vector, and this is possible when the countries of origin of tourists and destinations differ little from each other, primarily by tourist and recreational resources. If we imagine that the country of origin of tourists has an intracontinental location, and in the south, in the neighbourhood there is a destination with a warm sea, it is obvious that under such conditions travel will have the direction, that is, a vector. It can

be said about the arrivals from neighbours that they can have both a diffusive and a vector character, whereas the distant travels are usually directed to certain destinations, where the motives of inversion behaviour in tourism, developed by N. Graburn (Graburn, 1983) can be best satisfied. That is, for long-distance trips, a typical vector is an escape to a temporary opposite, which includes from a geographic point of view moving to destinations with the environment, which differs from the usual environment.

Thus, it is time to consider the rest of the countries, not neighbours, in the structure of arrivals in Bulgaria. It is anticipated that these trips will be of a vector nature, that is, they will be from countries that do not have what is found in this destination (Bulgaria). There is a moderate type of climate in Bulgaria that causes an intense manifestation of seasonality in tourism. Seasonality is "a temporal imbalance in the phenomenon of tourism, [which] may be expressed in terms of dimensions of such elements as numbers of visitors, expenditure of visitors, traffic on highways and other forms of transportation, employment, and admissions to attractions" (Butler, 1994).

Revealing the seasonality will help to identify vector travels that will concentrate in one or another season, and diffusion trips, on the contrary, will be distributed more evenly throughout the year. Thus, the task arises to determine the seasonality of arrivals and their distribution by season for each country of origin of tourists. Due to the lack of data, this was done for Bulgaria only in 2013, which turned out to be one of the quieter years for international tourism statistics (Table 10). Analysing the seasonality of tourism, it is necessary to find its quantitative characteristics (Krachylo, 1980):

$$S = \frac{100 \sum |x - \bar{x}|}{\sum x}$$

Where:
S – rate of seasonality;
x – number of tourists in a certain month;
$\bar{x}$ – average monthly number of tourists throughout a year.

The numerator here is the sum of deviations of the levels of time series variables from the average level of variable taken with a plus sign, and the denominator is the number of tourists for the entire cycle (Krachylo, 1980).

Table 10. The structure of tourist arrivals to Bulgaria by seasons and the seasonality
(Source: own elaboration based on data from the Ministry of Tourism of the Republic of Bulgaria)

Arrivals to Bulgaria from:	Arrivals by Seasons, %				Rate of Seasonality
	winter	spring	summer	autumn	
Romania	12.1	22.6	39.4	25.9	40.7
Greece	17.9	20.7	38.4	23.0	31.5
Turkey	20.9	23.1	28.9	27.2	13.5
North Macedonia	26.0	23.0	26.2	24.8	12.6
Serbia	22.2	23.1	30.4	24.3	11.4
Germany	3.7	7.2	66.2	22.9	101.9
Russian Federation	6.7	10.0	70.9	12.4	93.1
Poland	4.5	6.5	65.9	23.0	102.5
United Kingdom	12.4	12.2	55.0	20.4	69.5
Ukraine	7.4	7.7	70.1	14.7	93.5

As expected, the seasonality of arrivals to Bulgaria from neighbours was much smaller than from the rest of the top countries of origin of tourists (Table 10). Strongly

pronounced diffusive character, which is evidenced by an almost equal distribution of arrivals throughout the year, was peculiar to trips from Serbia, North Macedonia and Turkey. Arrivals from Greece and Romania had a small vector component, since about 40% of them were in the summer season. Although these two countries also have access to warm seas, in Romania, international sea resorts did not evolve in times of N. Ceausescu, as opposed to Bulgaria, where recreation at sea was popular as far back as in times of "socialism". Since then Bulgaria has established a status of being the best Black Sea destination. As S. Ivanov notes, while Bulgaria promotes a variety of tourism products, for example, cultural tourism (including the Thracian heritage) and golf, adventure, eco-, rural, events, and wine tourism, its main tourist product is mass tourism, with the attraction of the sun in the summer and snow in winter (Ivanov, 2017).

Significantly larger than an average annual share of Greek tourists in the summer can be explained by the multilevel international tourist exchange, when, due to the difference in the cost of rest at home and abroad, tourists from the countries with a high standard of living travel to destinations with a lower standard of living and, accordingly, the cost of rest. The seasonality of arrivals to Bulgaria from the top countries, which are not neighbours, was much higher; its indices were 90-100. These trips were mostly of a vector character – carried out for recreation at sea, since about 2/3 arrived in the summer (Table 10). In 2016, the total share of these countries in inbound tourism in Bulgaria was 28%, including Germany (10%), Russia (7%), Poland (4.4%), United Kingdom (3.3%) and Ukraine (3.2%). In 2000, these countries accounted for more than 21% of arrivals.

In 2008, their share increased to 26%, primarily owing to Poland and the United Kingdom (Table 8). When considering the dynamics of arrivals to Bulgaria by certain countries of origin of tourists, a high correlation between the deviations from the trends, calculated in the mean-square values (σ), $r = 0.91$ for Germany and Poland, as well as $r = 0.95$ for Ukraine and Russia was observed. Their indexes of seasonality also turned out to be almost identical (Table 10). This indicates the similarity of the studied tourism flows in each pair of these countries that allows grouping them. Tourist arrivals to Bulgaria from Germany and Poland were characterized by the highest indexes of seasonality. This is quite expected, because both of them are washed only by the cold waters of the Baltic and North Seas, which does not contribute to swimming and beach recreation within the country. For both the Poles and the eastern Germans, Bulgaria is a traditional maritime destination even from the "socialist" times. The important place of Germany in the structure of arrivals, the share of which did not fall below 10% for three marker years, is due to the fact that it is the world leader in the international (outbound) tourism market, which is promoted not only by the economic strength of the country, but also by geographical conditions. Although such Mediterranean countries as Spain, Italy and France remain the most popular among German tourists, the tourism flows to Spain and France have been decreasing over the last few years because of frugality; instead, more Germans travel to Turkey. Obviously, for the same reason, they choose Bulgaria.

It is also proved by the fact, that there is the most positive deviation from the trend (1.62 σ) observed in the time series of arrivals of German tourists to Bulgaria in the midst of the global financial crisis in 2009. The desire to save on recreation manifested itself even more brightly in arrivals from Poland. In 2009, the total number of tourist departures from this country was less than the trend value by more than one standard deviation, instead, there were by 1.79 σ more Poles who arrived in Bulgaria that year.

By the way, due to more than the average number of arrivals from these two countries against the background of more than 1σ drop in arrivals from other countries in 2009, the total number of arrivals in Bulgaria remained at almost the level of the trend (Table 5). Russia and Ukraine, unlike the two previous countries of origin of

tourists, have access to the Black Sea. However, because of the northern position of Russia, there is very little coastline with comfortable conditions for swimming and beach recreation, and its own Black Sea beaches are clearly not enough for this.

Therefore, Russians like to take a rest abroad in the summer. Many Russian tourists go to Bulgaria, because the Russian language is understood there, and for the same reason Ukrainians go there too. In general, Russian-speaking tourists do not even suppose that they will not be understood in Bulgaria, starting from service workers in hotels and restaurants, to sellers and ordinary passers-by. Thus, many tourists, first of all from Ukraine, find accommodation and eat independently in Bulgaria in a large private sector and hotels, since it is easy to navigate in the place, to communicate with the hosts and come to agreement about a price which is low due to the high competition.

The relative cheapness of the vacation, which is formed on the background of low specific consumption expenditure of the local population, is the second reason for visiting Bulgaria. For the same money, the tourism service at the Black Sea resorts in Russia and Ukraine is usually worse. Therefore, tourists often prefer the resorts of Bulgaria to their own Black Sea coast. Obviously, the main incentive for tourists from Russia was linguistic affinity, for Ukrainians there was also geographical proximity, as well as a better price-quality ratio compared to domestic tourism.

CONCLUSIONS

During 2000-2016 the dynamics of inbound tourism as a whole showed a stable growth (excluding 2007, 2009 and 2015 years) and the number of international tourist arrivals in Bulgaria has increased almost threefold from 2.785 million in 2000 to 8.252 million in 2016. Bulgaria's accession to NATO at the end of 2002, which determined its foreign policy and consolidated economic growth, as well as the country's joining the EU in 2007, had a significant impact on inbound tourism in Bulgaria. On one hand, interest in Bulgaria as a new member of the EU increased, on the other hand, complication of visa formalities for non-EU countries restricted the inbound tourism flows at the beginning of the study period that affected the structure of arrivals and the share of neighbouring countries reduced from more than 60% in 2000 to 42% in 2007. The next year after joining the EU, the year 2008, was one of the best in terms of the positive dynamics of arrivals to Bulgaria, and 2016 turned out to be the same.

The worst was 2015, when after the annexation of the Crimea and the aggression of Russia in Eastern Ukraine, due to a noticeable depreciation of their national currencies, the arrivals from these two countries significantly decreased. There were also fewer tourists from Germany and Greece in Bulgaria that year, which could be caused by the Euro depreciation in 2015. Although the Bulgarian Lev was pegged to the Euro, the substantial depreciation of the last could affect consumer mood in the Eurozone countries, where tourists came from. Research of the dynamics of arrivals based on the analysis of time series by the top countries of origin of tourists for 2007-2016 allowed to identify the main factors and the nature of their impact on tourism flows from these countries and, as a result, to explain the formation of the total inbound flow to Bulgaria. As shown by the correlation analysis, fluctuations in arrivals from 5 countries (Russia, United Kingdom, Ukraine, Romania and Germany), which form a substantial part (37-41%) of incoming tourism flows to Bulgaria, are related to changes in the general dynamics of their outbound tourism. At the same time, deviations from the trends of outbound flows at specific periods of time (years) are caused by the impact of both domestic for tourism generating countries and external factors of regional or global dimension. The most influential were economic (level of private consumption, exchange rate) and security factors. It should be noted that the same events, in

particular economic ones, have had a different impact on the inbound tourism flows to Bulgaria. For example, the global financial crisis in 2009 caused a marked reduction in tourism flows from countries such as Greece, United Kingdom, Serbia and North Macedonia, on the contrary, the arrivals from Germany and Poland increased then.

As a result, the total number of arrivals in Bulgaria has not undergone notable changes, and this has led to the false impression that the global financial crisis didn't have any influence there. On the contrary, consideration of international tourism flow as aggregated one from separate flows by separate countries of origin of tourists highlights the real situation. The case of foreign tourists from Germany and Poland, who reoriented themselves towards Bulgaria in times of economic difficulties, describes it as an attractive destination where it is possible to save money.

In 2016 less than half (44%) of international tourists arrived in Bulgaria from 5 neighbours: Romania, Greece, Turkey, North Macedonia and Serbia. Although the number of tourists from these countries increased over the study period, their share in the structure of arrivals decreased by almost a third, mainly due to Northern Macedonia and Serbia. This is quite positive, since such travels are mainly "do-it-yourself" trips, short-term and inexpensive. Thus, a large share of tourists from neighbouring countries determines the low profitability of inbound tourism, and the destination with such a structure of inbound tourism is not considered to be too attractive.

Trips from neighbouring countries may have the character of diffusion, which will be manifested in the coherence between the share of arrivals with the length of the common land border. Although such regularity is not always noticeable, as it is violated by the heterogeneity of geographical and demographic conditions in the territories near the border, and it took place in the case of Bulgaria. Mainly "diffusive" character of travels from neighbours is also shown by the weak seasonality, despite the fact that seasons are very obvious in Bulgaria. The seasonality of arrivals to Bulgaria from the rest of the top countries was much higher and the trips were mainly carried out for recreation at sea, since about 2/3 of the arrivals took place in summer. Germany and Poland were among them, as are washed only by the cold waters of the Baltic and North Seas, and it does not contribute to swimming and beach recreation within the country.

The trips from these countries were highly consistent with each other, and together they made up almost 15% of total arrivals in 2016. Flows from Ukraine and Russia were also very similar and accounted for more than 10% in the structure of inbound tourism in Bulgaria. The main incentive for tourists from Russia was linguistic affinity, for Ukrainians there was also geographical proximity, as well as a better price-quality ratio compared with domestic tourism on their Black Sea coast. Thus, taking into account the peculiarities of the dynamics of inbound tourism flows by countries of origin of tourists, including by season, as well as the structure and geography of arrivals, we can characterize the international specialization of Bulgaria in inbound tourism as an attractive destination for swimming and beach recreation, where tourists can save.

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