sciendo

Zagreb International Review of Economics & Business, Vol. 25, No. 1, pp. 117-132, 2022

ISSN 1331-5609; UDC: 33+65
DOI: 10.2478/zireb-2022-0007

Tourism and Business Cycles: Does the Relationship Fade Away?

Ivan Kožić [*]
Vladimir Arčabić [**]
Ivan Sever [***]

Abstract: *For a long time, tourism has been considered a social, economic and environmental phenomenon that provides products and services whose consumption is supposed to surge in periods of economic growth and wane in periods of slowdown, thereby acting procyclical. To examine this hypothesis, we have explored the exact behavior of tourism activity before and after the last big economic crisis – the Great Recession 2008 followed by the European Sovereign Debt Crisis. We have applied a methodology of business cycle analysis to investigate the relationship between the cyclical components of GDP and tourism nights spent by the residents of 23 EU member states in the 1996-2018 period. We report an important structural change in the relationship between tourism and business cycles. The relationship became apparently weaker over time and finally became insignificant after the end of the crisis, suggesting a smooth structural change. Our findings suggest uncertainty as to how tourism activity would restore its usual dynamics following the end of the current COVID-19 pandemic recession.*

Keywords: business cycles; tourism cycles; coherence; the Great Recession 2008

JEL Classification: Z30, E32

[*] Ivan Kožić is at Institute for Tourism, Vrhovec 5, 10000 Zagreb, Croatia, Phone: +385-1-3909-666, Fax: +385-1-3909-667, E-mail: ivan.kozic@iztzg.hr
[**] Vladimir Arčabić is at Faculty of Economics and Business University of Zagreb, Trg J. F. Kennedyja 6, 10000 Zagreb, Croatia, Phone: +385-1-238-3144, E-mail: varcabic@efzg.hr
[***] Ivan Sever is thinktourism d.o.o., Radnička cesta 80, 10000 Zagreb, Croatia, Phone: +385-98-402-561, E-mail: ivan.sever@thinktourism.org

Introduction

Macroeconomic literature claims that economic output follows an erratic behavior consisting of a trend and a cycle. Such fluctuation of GDP exhibiting repetitive non-seasonal pattern, with alternating expansion and contraction stages, is called a business cycle (Burns and Mitchell, 1946). It is widely known that many economic activities, i.e., manufacture, construction, and retail, fluctuate coherently to the overall GDP, indicating coherence or synchronization of their cycles. Previous research suggests that business cycles and tourism cycles are not autonomous as well. Income in the source countries, prices of tourism products, and exchange rates all tend to display cyclical patterns that influence tourism demand flows (Croes et al., 2017). Consequently, tourism demand displays a cyclical behavior manifested in deviations from the long-term trend.

Following previous research, we have applied the macroeconomic methodology of business cycle analysis to examine the joint relationship between the fluctuation of GDP and tourism demand before and after the last big economic crisis – the Great Recession 2008. We have analyzed whether cycles of tourism demand were positively or negatively correlated to business cycles, i.e., whether tourism activity was pro- or countercyclical during phases of economic expansion, recession, and post-recession period in the case of 23 European Union countries covering the 1996-2018 period. A procyclical variable tends to increase during expansions and decrease during recessions, thus moving in the same direction as GDP. A countercyclical variable tends, on the contrary, to stabilize GDP during different phases of the business cycle. Our results show that these theoretical patterns have been radically changed in the period around the Great Recession 2008, indicating a further weakening of the relationship between tourism and business cycles over time. As for the current recession caused by the COVID-19 pandemic, it is important to examine whether tourism activity will start to recover along with the rest of the economy as soon as the COVID-19 pandemic ends.

The rest of the paper is organized as follows. The next section presents a brief literature review on the topic of the relationship between the business and tourism cycles, accompanied by a brief review of frequently used methods for business cycle analysis. This is followed by a description of our data, methodology, and empirical results. The paper ends with a conclusion section containing a brief discussion of the main findings.

A brief literature review

The relationship between tourism and business cycles has been investigated from the perspective of several theoretical frameworks, such as the prospect theory (Smer-

al, 2012; Smeral and Song, 2015), Keynes theory (Narayan, 2011), microeconomics (Eeckles et al., 2012), and quality of life (Bronner and de Hoog, 2017). Other studies examined (a)symmetric shape of this relationship (Bronner and de Hoog, 2017; Smeral, 2012; Smeral and Song, 2015), delayed effects (Gouveia and Rodrigues, 2005; Guizzardi and Mazzocchi, 2010; Merida and Golpe, 2016) and transitory or permanent effects (Narayan, 2011). Tourism demand cycles may be synchronized with business cycles of source markets or follow them with a certain delay (Gu et al., 2018; Guizzardi and Mazzocchi, 2010; Smeral, 2012). Narayan (2011) found a common-trend and common-cycle relationship between tourism expenditure and GDP, with variations in tourism expenditure mainly explained by transitory shocks and variations in economic output by permanent shocks. On the other hand, Gouveia and Rodrigues (2005) found a relatively constant time lag between the business and tourism demand cycles for Algarve, Portugal. Their findings were supported by Guizzardi and Mazzocchi (2010), who demonstrated that tourism demand cycles for Italy are significantly influenced by the delayed effects of the overall business cycle. This delayed effect was explained by the substitution effects and the time gap between the decision making and the actual holiday. Mayers and Jackman (2011) studied the tourism cycles of Barbados and concluded that they respond to the business cycles of the main source markets with some delay. The shocks in the business cycle series of the source markets explained up to 25 percent of the future variation of the tourism cycle.

Furthermore, tourism demand reaction to business cycles can be asymmetric since the pattern in one phase of the cycle is not necessarily the mirror image of the pattern in its opposite phase (Smeral, 2012). Previous research indicated that the income elasticity of tourism demand is asymmetric – lower when income drops than when it rises (Cellini and Cuccia 2015). Explanations for asymmetric behavior are usually found in the prospect theory and the concept of loss aversion (Kahneman and Tversky 1979; Smeral and Song 2015), liquidity constraints (Smeral and Song 2015), and quality of life (Dolnicar et al. 2012; Uysal et al. 2012). Smeral (2012) found evidence of asymmetric income elasticities of tourism demand across the business cycle, indicating that income growth and decline are not comparable in their effects on tourism demand. Further studies indicated that the income elasticities of tourism demand might vary depending on the phase of the business cycle as well (Smeral, 2014; Smeral and Song, 2015). Croes et al. (2017) also found asymmetric effects of business cycles on tourism demand, with positive gaps (i.e., overperformance) having a larger impact than the negative gaps (i.e., underperformance). The authors concluded that these effects were country-specific. Gu et al. (2018) showed that Macao's tourism cycle is asymmetric and influenced by Mainland China's business cycle. Morales and Devesa (2017) revealed the significant dependence and synchronization of the tourism expenditure cycle in Spain in relation to the economic cycles of the main tourist source markets, thus demonstrating that tourism income is procyclical. Finally, Bronner and de Hoog (2017) found differences in response to business cy-

cles between the main summer holiday and short vacations or day trips. The former exhibited an asymmetric behavior, being resistant to economic crises and showing strong growth during the expansion phase. Short vacations and day trips, on the other hand, exhibited symmetric behavior with the reductions during a recession comparable to the growth during the recovery phase.

The literature review has shown that the relationship between tourism and business cycles is not straightforward.

Data and methodology

Our sample consists of data on GDP, real effective exchange rate (REER), and overnight stays on trips of residents of 23 EU member countries. We differentiate between outbound, domestic, and total overnight stays on trips. Data are in natural logs except for REER, which is expressed as a base index. The choice of countries was determined by the data available from the Eurostat database. Countries included in our analysis are Austria, Belgium, Cyprus, Czech Republic, Germany, Denmark, Estonia, Greece, Spain, Finland, France, Croatia, Hungary, Italy, Lithuania, Latvia, Malta, Poland, Romania, Sweden, Slovenia, Slovakia, and the UK as a former EU member state. Data are collected by the national authorities of EU member states according to harmonized methodology.

Business cycles are typically analyzed using quarterly frequency. However, we consider both annual and quarterly data due to data availability. Annual data is available from 1996 to 2018, while quarterly data is available for the period from the first quarter of 2000 to the fourth quarter of 2011. Unfortunately, Eurostat does not publish quarterly data on overnight stays on trips after the end of 2011. To overcome this problem, after 2011 we interpolate annual data into quarterly using a state-space algorithm with the Kalman smoothing procedure. Quarterly variable *Nights spent at tourist accommodation establishments* has been used as a regressor to provide quarterly dynamics, and we used the ARIMA(1,1,0) model of Litterman (1983) for interpolation. Combining the original and interpolated series, we obtain extended series of quarterly data from the first quarter of 2000 to the fourth quarter of 2018. We call this series extended to differentiate it from the original series, which is available up to 2011:Q4. The purpose of using both annual and quarterly data is to confirm the robustness of the results. Quarterly data are also seasonally adjusted using the Census X11 method.

To measure business cycles and tourism cycles, we decompose all data series in our sample into the trend and cyclical component using a popular Hodrick and Prescott (1997) filter (HP), or:

$$x_t = \tau_t + c_t \tag{1}$$

where x_t represents the series of interest which is a sum of the trend τ_t and cyclical component c_t. The cyclical component represents business cycles or tourism cycles, respectively. The trend represents the potential GDP or the trend of the tourism demand series. The HP filter works as follows. In a first step, it removes the cyclical component with a frequency higher than 32 quarters, leaving the trend. The trend is computed by the following minimization problem:

$$\min_{\tau}\left(\sum_{t=1}^{T}(y_t-\tau_t)^2+\lambda\sum_{t=2}^{T-1}[(\tau_{t+1}-\tau_t)-(\tau_t-\tau_{t-1})]^2\right) \tag{2}$$

Again, x_t represents the series of interest, and τ_t is the trend. The term in parenthesis is squared cycle, while the term in brackets is squared second difference of the trend. The key parameter is λ which smooths the trend. We select the value of λ = 1600 for quarterly data and λ = 100 for annual data, as it is common in the literature (Hodrick and Prescott, 1997). The Hodrick-Prescott filter minimizes τ for each time period *t*. In the second step, we simply compute a percent deviation of the GDP and tourism series from the trend to obtain the cycle, or:

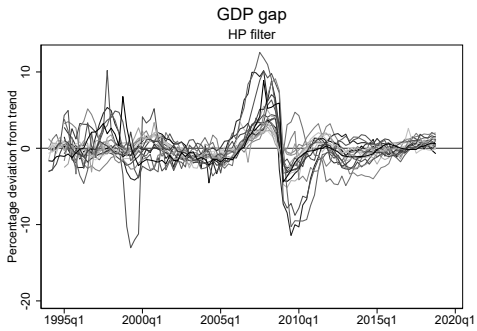
$$c_t = \frac{x_t - \tau_t}{\tau_t} \cdot 100 \tag{3}$$

The cyclical component is stationary by definition.

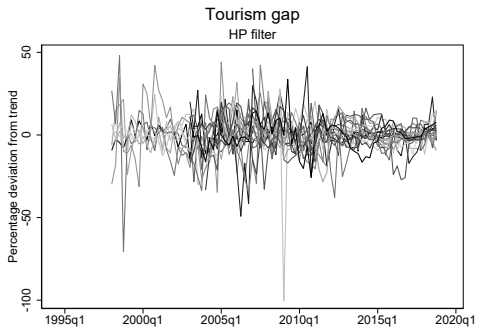
In **Figure 1**, we present calculated business cycles and tourism cycles of all countries in the sample, where we present total tourism as a sum of domestic and outbound nights spent.

Business cycles of all countries clearly show a decrease in overall economic activity as a result of the global financial crisis and the sovereign debt crisis in the Euro area from 2008 to 2012. On the other hand, tourism activity does not show a uniform drop around that time, but tourism cycles are more unstable and more volatile in comparison to business cycles. The volatility of tourism cycles is especially pronounced when quarterly data is observed (**Figure 1b**).

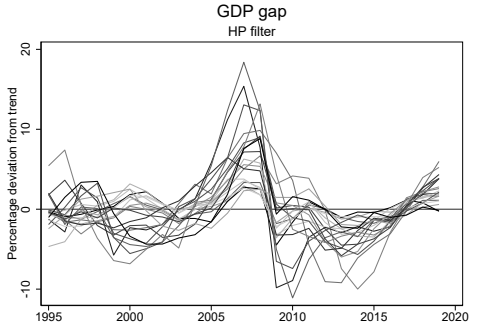
Figure 1: Business cycles and tourism cycles estimation by Hodrick and Prescott filter



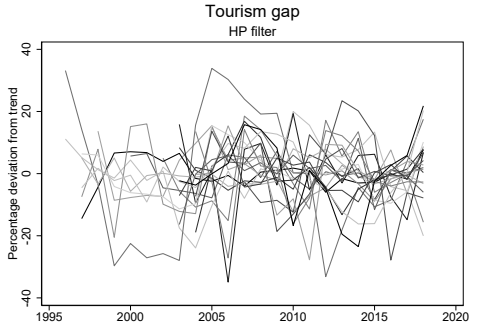
(a) Business cycles (quarterly)



(b) Tourism cycles (quarterly)



(c) Business cycles (annual)



(d) Tourism cycles (annual)

To analyze tourism cyclicality with respect to GDP, we use a panel data model with fixed effects. As mentioned before, our panel consists of 23 countries. It is an unbalanced panel, meaning that GDP and tourism overnight stays do not start at the same time for all the countries. The biggest advantage of the panel data model over time series or cross-sectional models is that the panel data model can account for unobserved heterogeneity or time-invariant differences between countries that could not be intrinsically observed. Intuitively, the panel data model with fixed effects adds a dummy variable for each country in our sample, which accounts for unobserved differences such as different languages, geographical position, work ethics, mores, customs, and others. Besides, the panel data model includes more observations than single time series or cross-sectional models because panel data variables consist of observations, where represents cross-sectional units or countries in our case, and represents time periods.

We estimate the following panel data model with fixed effects:

$$\widetilde{TU}_{it} = \alpha_i + \beta_1 \tilde{y}_{it} + \beta_2 \epsilon_{it} + e_{it} \quad (4)$$

Where *TUit* represents the tourism cycle for countries $i = 1, 2, \ldots, N$ and time periods $t = 1, 2, \ldots, T$. y_{it} is the business cycle in country i at time t. $\in_{it}$ is the real effective exchange rate in country i at time t. e_{it} refers to the independent and identically distributed (*iid*) error term. β_1 and β_2 are coefficients estimated by fixed effects. Coefficient α_1 represents country fixed effects. We use robust errors to deal with the problem of groupwise heteroscedasticity. Wooldridge (2010) test for serial correlation suggests that residuals are not correlated.

Equation (4) represents a panel data model with the tourism cycle as a dependent and business cycle as the independent variables where the relationship is controlled for the real effective exchange rate. We use the real effective exchange rate (REER) as a control variable for differences in prices and competitiveness between countries. The key coefficient is β_1, as it tells us whether there is a positive, negative, or zero relationship between tourism cycles and business cycles.

We consider two extensions of the panel data model. First, to get a better sense of tourism cyclicality, we re-estimate equation (4) with a standardized series of tourist overnight stays, GDP, and real effective exchange rate to obtain correlation coefficients. The correlation coefficient is informative about tourism cyclicality, and it is easy to interpret the sign and strength of the relationship. Correlation coefficients are very often used in business cycle analysis (see, for example, Inklaar et al., 2008 or Campos et al., 2019). We standardize each series by subtracting its mean and dividing by the standard deviation; thus, each series has mean zero and unit variance. In this special case, the estimated beta coefficients are equal to the correlation coefficient and take a value between and suggesting the perfect negative or positive correlation, respectively. To see the connection between the beta and the correlation coefficient, the Ordinary Least Squares (OLS) estimate of beta is equal to $\hat{\beta} = \text{corr}(Y_i, X_i) \cdot {}^{s_Y}/_{s_X}$, where represents the correlation between Y_i and X_i, and s_Y and s_X represent standard deviations. In case where Y_i and X_i are standardized to zero mean and unit variance, $s_Y = s_X = 1$, suggesting that the beta coefficient is equal to the correlation coefficient.

Second, to analyze the time-varying properties of the tourism cyclicality, we re-estimate the equation (4) as a rolling window panel with 20-quarter (5-year) windows. The first window is computed for the period from the first quarter of 2000 to the fourth quarter of 2004. The second window updates for one period, thus estimating the panel for the period from the second quarter of 2000 to the first quarter of 2005, and so on. The same procedure is followed when estimating the panel model with annual data. Then, we collect all the estimates to analyze if there are changes over time. 95% confidence intervals are computed as $\hat{\beta} \pm 1.96$. Rolling window estimation is commonly used in macroeconomics; see, for example, Swanson (1998), or

more recently, Arčabić (2018). Furthermore, to confirm our results, we estimate panel data model with annual data using subsamples.

Results

We present the panel data results in **Table 1**. The first row shows dependent variables, e.g., total, outbound, and domestic nights spent, that are calculated as cyclical components representing tourism cycles. For each dependent variable, we present three sets of results depending on the data set. Quarterly original refers to the Eurostat original quarterly series that spans from 2000:Q1 to 2011:Q4. Quarterly extended refers to our interpolated and extended quarterly series spanning from 2000:Q1 to 2018:Q4. Annual refers to Eurostat annual data from 1996 to 2018. The bottom three rows present the number of observations and R^2 value. Asterisks indicate the statistical significance of the estimated coefficients.

A brief look at **Table 1** confirms that there is a positive relationship between cyclical components of tourism and GDP, as coefficients next to GDP variable are positive in all nine models. However, this relationship is very weak or even zero, suggesting that tourism cycles are not strongly procyclical but rather non-cyclical as they do not closely follow business cycles. GDP cycle is statistically significant only in cases of total and outbound nights spent, but not in the case of domestic nights spent. Furthermore, the strongest relationship between cyclical components of tourism and GDP is found in models (4) to (6), where the cyclical component of outbound nights spent is the dependent variable. In this case, estimated coefficients are significant at 1% and 5% level. On the other hand, in models (1) and (2), where the dependent variable is the cyclical component of total nights spent, estimated coefficients are lower and statistically significant only at the 10% level. In other models, the GDP gap is not statistically significant, suggesting zero relationship between tourism and GDP cycles. The estimated R^2 values are very low. A low R^2 can also be an indicator of a low correlation between variables.

To further assess the strength of the relationship, we re-estimate the models from **Table 1** with standardized data to obtain correlation coefficients. The results are presented in **Table 2**. It is important to note that standardizing the data does not change statistical significance but only changes the scales of the coefficients. Coefficients take values between –1 and 1. The value of 1 suggests the perfect positive correlation, meaning that tourism activity could be considered as perfectly procyclical. The value of –1 indicates the perfect negative correlations, meaning that tourism activity could be considered as perfectly countercyclical. The value of 0 indicates that GDP and tourism cycles are not correlated at all, e.g., they are non-cyclical.

From **Table 2**, it is clear that cyclical components of tourism and GDP are only weakly correlated, close to being noncyclical. The estimated correlation coefficient is

between 0.07 and 0.13 in the case of total trips, between 0.09 and 0.19 in the case of outbound nights spent, and only between 0.02 and 0.11 in the case of domestic nights spent. The coefficients of the original and extended quarterly data are very similar. When annual data is considered, the estimated coefficient is somewhat higher, but it confirms our results. Correlation coefficients for all three types of tourism are low, and only the correlation in the case of outbound nights spent is statistically different from zero (at 10% level).

Table 1: Panel data results

VARIABLES	Total nights spent			Outbound nights spent			Domestic nights spent		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Quarterly original	Quarterly extended	Annual	Quarterly original	Quarterly extended	Annual	Quarterly original	Quarterly extended	Annual
GDP	0.369*	0.386*	0.409	0.743***	0.731***	0.720**	0.111	0.292	0.388
	(0.20)	(0.22)	(0.34)	(0.15)	(0.22)	(0.33)	(0.26)	(0.29)	(0.38)
Real effective	-0.052	-0.019	0.138	0.010	0.018	0.414***	-0.033	-0.020	0.101
exchange rate	(0.05)	(0.04)	(0.11)	(0.08)	(0.07)	(0.13)	(0.05)	(0.05)	(0.14)
Constant	4.949	1.809	-13.668	-1.142	-1.801	-40.564***	3.217	1.981	-10.062
	(4.99)	(4.14)	(10.67)	(8.28)	(6.97)	(12.99)	(4.83)	(4.85)	(13.51)
Observations	852	1,360	382	903	1,340	377	802	1,224	347
R-squared	0.009	0.008	0.027	0.015	0.012	0.066	0.001	0.003	0.017

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. Quarterly original refers to original quarterly series from 2000:Q1 to 2011:Q4. Quarterly extended refers to interpolated and extended quarterly series from 2000:Q1 to 2018:Q4. Annual refers to the annual series from 1996 to 2018.

Table 2: Panel data results with standardized variables

VARIABLES	Total nights spent			Outbound nights spent			Domestic nights spent		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Quarterly original	Quarterly extended	Annual	Quarterly original	Quarterly extended	Annual	Quarterly original	Quarterly extended	Annual
GDP	0.070*	0.085*	0.137	0.095***	0.108***	0.192**	0.019	0.056	0.112
	(0.04)	(0.05)	(0.12)	(0.02)	(0.03)	(0.09)	(0.04)	(0.06)	(0.11)
Real effective	-0.054	-0.019	0.172	0.007	0.014	0.373***	-0.032	-0.020	0.112
exchange rate	(0.05)	(0.04)	(0.13)	(0.06)	(0.05)	(0.12)	(0.05)	(0.05)	(0.15)
Constant	0.003	0.001	-0.060	-0.011	-0.005	-0.128***	0.003	0.002	-0.040
	(0.01)	(0.01)	(0.05)	(0.01)	(0.01)	(0.04)	(0.01)	(0.01)	(0.05)
Observations	852	1,360	382	903	1,340	377	802	1,224	347
R-squared	0.009	0.008	0.027	0.015	0.012	0.066	0.001	0.003	0.017

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. Quarterly original refers to original quarterly series from 2000:Q1 to 2011:Q4. Quarterly extended refers to interpolated and extended quarterly series from 2000:Q1 to 2018:Q4. Annual refers to the annual series from 1996 to 2018.

Next, we analyze the time-varying properties of the tourism-GDP cycles relationship using a 5-year rolling window panel estimation. The results are presented in **Figure 2**, where we present results based on quarterly data and **Figure 3** based on annual data. Total, outbound, and domestic tourism are presented in separate plots. In **Figure 2**, the upper three plots depict rolling window results based on the original quarterly data that ends in 2011:Q4, while the bottom three plots depict the results based on the extended (interpolated) data that ends in 2018:Q4. The results in **Figure 2** are obtained using a 20-quarter (5-year) window. For comparison, **Figure 3** shows the same results based on the annual data from 1996 to 2018, where we use the 5-year rolling window.

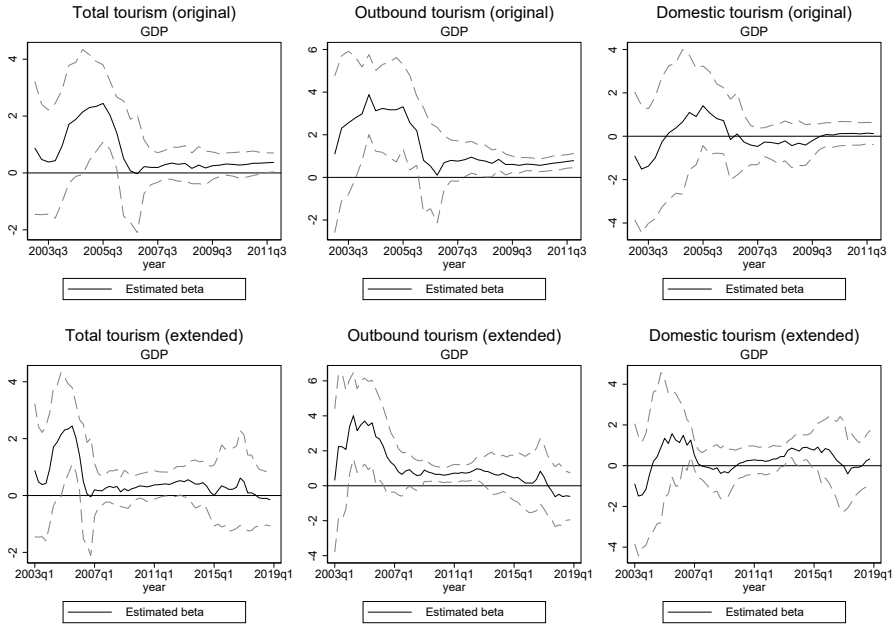
The solid black line always depicts the estimated rolling window beta coefficient, and the dashed lines are 95% confidence intervals. As long as the estimated beta coefficient, together with confidence intervals, is above the zero line, we can conclude that the relationship is positive and statistically significant. If the confidence interval includes zero, the relationship is not statistically significant, as we cannot be sure about the true sign of the relationship.

The results presented in **Figure 2 and 3** add to the previous findings. The relationship between tourism cycles and business cycles became weaker over time in the case of total and outbound nights spent and became insignificant after 2012. On the other hand, we do not see much change in the case of domestic nights spent, where the estimated beta coefficient is statistically insignificant the entire time. These results are in line with our previous findings from **Tables 1** and **Table 2**, where we showed a weak relationship between tourism and business cycles. Moreover, it shows that the coherence between tourism and business cycles has weakened over time.

Looking at total and outbound nights, the estimated beta coefficient before 2006 was between 2 and 4 and mostly statistically significant. However, there is an obvious change in the strength of the relationship towards 2006. The estimated beta coefficient for both types of tourism decreased substantially and was well below 1. During the sovereign debt crisis in the Eurozone from 2010 to 2012, the relationship was still statistically significant in the case of outbound nights spent, while the variable of total nights spent was on the border. However, after 2012, the relationship broke down, and it was statistically equal to zero for all three tourism types.

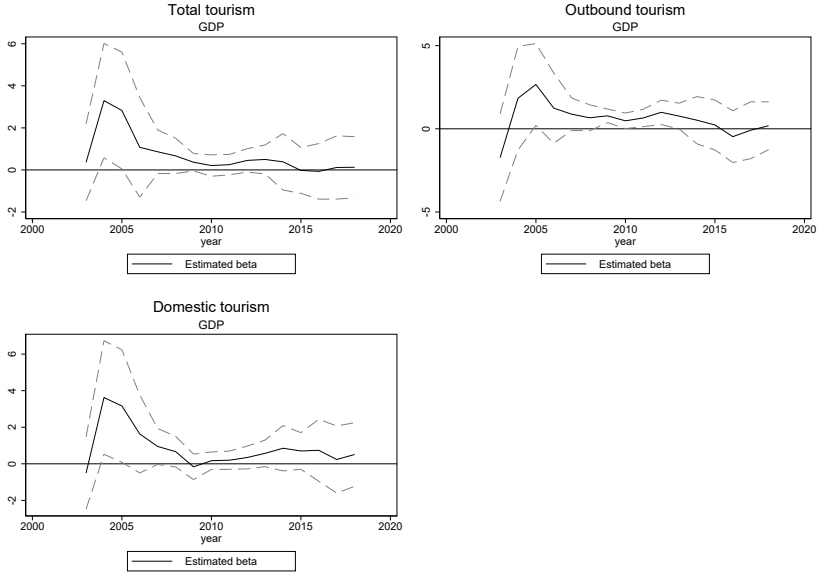
The results are not affected by the data construction, as we see very similar patterns in both **Figure 2** that uses quarterly data, and **Figure 3**, where the models are based on annual data. **Figure 3** shows a comparable decrease in the strength of the relationship between the GDP cycle on the one hand and the total and outbound tourism cycle on the other hand. Also, the relationship was statistically significant during the 2006-2012 period in the case of outbound tourism, but the relationship broke down afterward. Similarly, domestic tourism shows insignificant results for the entire period.

Figure 2: Rolling window results, quarterly data



Note: dashed lines represent 95% confidence intervals

Figure 3: Rolling window results, annual data



Note: dashed lines represent 95% confidence intervals

To confirm our results, we use subsample analysis of the panel data model based on annual data. **Table 3** summarizes results for the total, outbound, and domestic tourism. We consider three subsamples; the 1996-2007 subsample, which represents the period before the Great Recession 2008; the 2008-2012 period that includes both the Great Recession and the European Sovereign Debt Crisis; and finally, the 2013-2018 period after crises. The results are very similar to the full sample results from Table 1, with significant coefficients only for outbound tourism. However, the results confirm our analysis with rolling window estimation as well, as it is easy to observe a decrease in estimated coefficients of total and outbound tourism over time, while coefficients for domestic tourism are stable but statistically equal to zero.

The coefficient for the total tourism dropped from 0.82 before the crisis to 0.53 during and only 0.13 after the crisis. The estimated coefficients are insignificant in all three periods, so they may not be precise. However, the decreasing pattern is very clear and precise in the case of outbound tourism. The coefficient for the outbound tourism dropped from 1.1 before the crisis when the coefficient was highly significant to 0.88 during the crisis when it is significant only at 10% level. Finally, after the crisis, the coefficient is the lowest at 0.18, and it is not significant anymore. Therefore, the results of the subsample analysis confirm our findings from the rolling window panel estimation.

Table 3: Panel data subsample analysis based on annual data

VARIABLES	Total nights spent			Outbound nights spent			Domestic nights spent		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Smpl 96-07	Smpl 08-12	Smpl 13-18	Smpl 96-07	Smpl 08-12	Smpl 13-18	Smpl 96-07	Smpl 08-12	Smpl 13-18
GDP	0.819	0.525	0.127	1.130**	0.882*	0.184	0.615	0.566	0.511
	(0.48)	(0.33)	(0.74)	(0.45)	(0.46)	(0.73)	(0.49)	(0.34)	(0.89)
Real effective	0.201	-0.045	0.626*	0.822***	0.659	1.103**	0.148	0.012	0.272
exchange rate	(0.39)	(0.42)	(0.31)	(0.23)	(0.74)	(0.47)	(0.50)	(0.33)	(0.46)
Constant	-20.663	5.200	-62.592*	-79.036***	-65.877	-109.970**	-15.580	0.234	-27.149
	(37.75)	(42.68)	(30.64)	(21.46)	(74.14)	(46.45)	(48.06)	(33.72)	(45.30)
Observations	156	105	121	146	105	126	140	98	109
R-squared	0.058	0.069	0.021	0.157	0.134	0.037	0.027	0.063	0.015

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses.

Conclusion

We have analyzed whether tourism activity is positively or negatively related to GDP fluctuations, i.e., whether it is a pro- or countercyclical during different phases of

business cycles. A procyclical activity tends to increase during expansions and decrease during recessions, thus moving in the same direction as GDP. A countercyclical activity acts in the opposite direction of GDP and tends to stabilize it during different phases of the business cycle. We have used the methodology of business cycle analysis to extract cyclical components from GDP and tourist overnights time series, which were then submitted to the assessment of their coherence (mutual synchronicity) by the appliance of correlation analysis in the panel data framework. Our analysis has been focused on the period before and after the last big economic crises – the Great Recession 2008 followed by the European Sovereign Debt Crisis. By doing so, we have also tried to find an answer to the question of whether tourism activity will start to recover as soon as the COVID-19 pandemic ends. This is an especially important question regarding the fact that the current recession is not induced by the classic economic causes. Tourism industry is currently loaded much heavier than other economic activities, and the impact of the COVID-19 pandemic could easily continue to influence tourism demand beyond the end of the actual crises. We thus believe it is important to try to investigate how dynamics of overall economic activity, i. e. business cycles can indicate the possible future developments in the tourism industry after the end of the COVID-19 pandemic.

Two important findings could be drawn from our macroeconomic investigation. Firstly, considering the aggregate results of panel data analysis, we have confirmed a very weak positive relationship between tourism cycles and business cycles, indicating moderate procyclical nature of tourism activity. It should be, however, noted that the weak positive relationship is confirmed only in the case of total and outbound tourist nights spent on trips by the residents of EU member states, while the same conclusion does not hold in the case of domestic nights spent. Here it is important to note that in the period of crisis, countries tend to engage in marketing campaigns that promote domestic travel (Arbulu et al., 2021). Although weak, the relatively strongest relationship is noticed in the case of outbound nights spent, indicating a relatively highest degree of pro-cyclicality of outbound tourism. Secondly and more important, the time-varying analysis of the relationship between tourism and business cycles has shown a significant decrease in strength. The results have, in fact, shown that the magnitude of the relationship was higher in the period prior to the Great Recession in 2008 characterized by the growth of overall economic activity. It has decreased during the period of the Recession and completely vanished after the end of following European Sovereign Debt Crisis.

The rationale behind the long-lasting opinion that tourism is a procyclical activity lies in the widely adopted theoretical concept claiming that travelling is mainly financed by discretionary income, i.e., the part of individual's income that is usually left for spending (or saving) after paying for all personal necessities. Although such an idea could be considered reasonable a sixty or seventy years ago when mass tourism was in its infancy, it seems rather questionable to claim that traveling is a luxury

good today when vacation represents a "must" in the vast majority of modern societies. It is more likely that modern tourist will try to adapt to her/his own budget crises by substituting destination and reducing the length of stay than by completely giving up on her/his travel plans. Such a stance has been already empirically examined by authors Campos-Soria et al. (2015: 172) who claim that "tourists want to keep traveling despite the economic crisis but economizing during the holidays". Moreover, the stance claiming that modern tourists keen to travel despite the unfavorable economic situation is also promoted by other authors, see, for example, Cellini & Cuccia (2015) and Gunter & Smeral (2016). Our empirical results, showing that procyclical character of tourism activity has disappeared after the Great Recession 2008 and the European Sovereign Debt Crisis, contribute to these conclusions. Recent studies suggested that tourism experiences and activities contribute to the quality of life of tourists, positively affecting satisfaction in various life domains, such as social life and family life (Dolnicar et al., 2012, 2013; Sirgy, 2019; Smith & Diekmann, 2017; Uysal et al., 2016). This provides another possible explanation while people engage in travel despite the economic crisis. On the sample of Australians, Dolnicar et al. (2013) indicated that some people (10%) perceive vacations as essential for their quality of life, while most people (60%) perceive vacations as promoters of their quality of life, but not an essential feature.

Some important policy implications can be drawn from our study. Our findings suggest that stimulating tourism activity during phases of an economic slowdown could be considered a legitimate countercyclical strategy. Vacationing has likely become one of the few economic activities whose proceeding does not strictly depend on the overall economic situation and future expectations. At least not in such intensity as it is the case of other economic activities and goods whose consumption is immensely financed by the discretionary income. We agree that it can be discussed to what extent the stimulation of tourism activity could actually act countercyclically and mitigate the worst effects of economic crises. However, it could not be denied that tourism, in combination with other economic activities, could definitely help to make recession consequences less severe. It especially makes sense with regard to the fact that vacationing very often involves the fostering of retail spending, thereby helping the retail sector to maintain the desired level of activity.

As for the supply side of the tourism market, our results suggest that a timely reaction regarding pricing policy could bring some benefits to destinations and lodging facilities since it is less likely that tourists will give up their vacation plans in the time of economic slowdown. Instead, it is more likely that they will adapt their plans and try to apply a convenient economizing strategy. Wise and flexible destination management could certainly benefit from anticipating such a scenario at a favorable time.

With regard to the current recession caused by the COVID-19 pandemic, it is not clear how exactly will demand react after the end of the Coronavirus crises and, according to our empirical results, it could certainly not be anticipated by the analysis

of historical data and the strict observation of economic indicators. Since empirical results show that the coherence of tourism and business cycles completely vanished after the last big recession, it currently poses a significant threat to the success of forecasting short, medium, and even long-term developments in the tourism industry. Many potential consumers will exit the Coronavirus crises financially exhausted. The prolonged lockdown and economic crises will definitely affect the budgets of many households. However, it is reasonable to believe that potential consumers of tourism goods, being in the lockdown, have developed a strong desire for traveling. This could act positively on the upcoming process of tourism activity restoration.

For future research, we propose further examination and testing the coherence of tourism and business cycles beyond the scope of our data. It will be interesting to analyze what will exactly happen in the period following the end of the COVID-19 pandemics.

Acknowledgement

This work has been fully supported by Croatian Science Foundation under projects IP-2018-01-2961.

REFERENCES

Arbulu, I., Razumova, M., Rey-Maquieira, J. & Sastre, F. (2021). Can domestic tourism relieve the COVID-19 tourist industry crisis? The case of Spain. Journal of Destination Marketing & Management, 20: 100568.

Arčabić, V. (2018). Fiscal convergence and sustainability in the European Union. Public Sector Economics, 42(4): 353-380.

Bronner, F. & de Hoog, R. (2017). Tourist Demand Reactions: Symmetric or Asymmetric across the Business Cycle? Journal of Travel Research, 56(7): 839–853.

Burns, A. & Mitchell, W. (1946). Measuring Business Cycles. New York: National Bureau of Economic Research.

Campos, N. F., Fidrmuc, J. & Korhonen, I. (2019). Business cycle synchronisation and currency unions: A review of the econometric evidence using meta-analysis. International Review of Financial Analysis, 61: 274-283.

Campos-Soria, J. A., Inchausti-Sintes, F. & Eugenio-Martin, J. L. (2015). Understanding tourists' economizing strategies during the global economic crisis. Tourism Management, 48: 164–173.

Cellini, R. & Cuccia, T. (2015). The economic resilience of tourism industry in Italy: What the 'Great recession' data show. Tourism Management Perspectives, 16: 346-356.

Croes, R., Ridderstaat, J. & Rivera, M. (2017). Asymmetric Business Cycle Effects and Tourism Demand Cycles. Journal of Travel Research, 57(4): 419–436.

Dolnicar, S., Yanamandram, V. & Cliff, K. (2012). The Contribution of Vacations to Quality of Life. Annals of Tourism Research, 39(1): 59–83.

Dolnicar, S., Lazartevski, K & Yanamandram, V. (2013). Quality of life and tourism: A conceptual

framework and novel segmentation base. Journal of Business Research, 66: 724–729.
Eeckles, B., Filis, G. & Leon, C. (2012). Tourism Income and Economic Growth in Greece: Empirical Evidence from Their Cyclical Components. Tourism Economics, 18(4): 817–834.
Gouveia, P. M. D. C. B. & Rodrigues, P. M. M. (2005). Dating and Synchronizing Tourism Growth Cycles. Tourism Economics, 11(4): 501–515.
Gu, X., Wu, J., Guo, H. & Li, G. (2018). Local tourism cycle and external business cycle. Annals of Tourism Research, 73: 159-170.
Guizzardi, A. & Mazzocchi, M. (2010). Tourism Demand for Italy and the Business Cycle. Tourism Management, 31(3): 367–377.
Gunter, U. & Smeral, E. (2016). The decline of tourism income elasticities in a global context. Tourism Economics, 22(3): 466–483.
Hodrick, R. & Prescott, E. (1997). Post-war business cycles. An empirical investigation. Journal of Money, Credit and Banking, 29(1): 1–16.
Inklaar, R., Jong-A-Pin, R. & De Haan, J. (2008). Trade and business cycle synchronization in OECD countries—A re-examination. European Economic Review, 52(4): 646-666.
Litterman, R. B. (1983). A random walk, Markov model for the distribution of time series. Journal of Business and Economic Statistics, 1(2): 169-17.
Kahneman, D. & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. Econometrica, 47(2): 263–291.
Mayers, S. & Jackman, M. (2011). Investigating the Business Cycle Properties of Tourist Flows to Barbados. Journal of Public Sector Policy Analysis, 5: 3–21.
Merida, A. & Golpe, A. (2016). Tourism-Led Growth Revisited for Spain: Causality, Business Cycles and Structural Breaks. International Journal of Tourism Research, 18(1): 39–51.
Morales, J. M. L. & Devesa, M. J. S. (2017). Business cycle and external dependence on tourism: Evidence for Spain. Tourism Economics, 23(1): 187–199.
Narayan, P. (2011). Are Shocks to Tourism Transitory at Business Cycle Horizon? Applied Economics, 43(16): 2071–2077.
Sirgy, M. J. (2019). Promoting quality-of-life and well-being research in hospitality and tourism. Journal of Travel & Tourism Marketing, 36:1: 1–13.
Smeral E (2012). International tourism demand and the business cycle. Annals of Tourism Research 39(1): 379–400.
Smeral, E. (2014). Forecasting international tourism with due regard to asymmetric income effects. Tourism Economics, 20(1): 61–72.
Smeral, E. & Song, H. (2015). Varying Elasticities and Forecasting Performance. International Journal of Tourism Research, 17: 140–150.
Smith, M. K. & Diekmann, A. (2017). Tourism and wellbeing. Annals of Tourism Research, 66: 1–13.
Swanson, N. R. (1998). Money and output viewed through a rolling window. Journal of Monetary Economics, 41(3): 455–474.
Uysal, M., Perdue, R. & Sirgy, J. (2012). Handbook of Tourism and Quality-of-Life Research. Dordrecht: Springer.
Uysal, M., Sirgy, M. J., Woo, E. & Kim, H. L. (2016). Quality of life (QOL) and well-being research in tourism. Tourism Management, 53: 244–261.
Wooldridge, J. M. (2010). Econometric analysis of cross section and panel data. Cambridge: MIT press.