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## Article

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Annals of Tourism Research Empirical Insights

### Provided in Cooperation with:

Elsevier

*Suggested Citation:* Kožić, Ivan; Sever, Ivan (2022) : Can tourism activity stabilize cyclical employment?, Annals of Tourism Research Empirical Insights, ISSN 2666-9579, Elsevier, Amsterdam, Vol. 3, Iss. 1, pp. 1-3,  
<https://doi.org/10.1016/j.annale.2022.100043>

This Version is available at:

<https://hdl.handle.net/10419/337706>

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## Can tourism activity stabilize cyclical employment?

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### ARTICLE INFO

Editor: Dr Li Gang

#### Keywords:

Business cycle  
Cyclical employment  
Tourism

### ABSTRACT

Being the most interesting component of total employment, directly related to the business cycle, cyclical employment is a frequent topic of macroeconomic analysis. It is generally acknowledged and empirically proven that cyclical employment related to many economic activities, such as trade or construction, is highly synchronized with the fluctuation of GDP. The aim of this paper is to explore whether the same conclusion is valid in the case of tourism. Our results show that cyclical employment related to tourism activity acts slightly different and has a potential to stabilize the overall cyclical employment during the different phases of business cycle. It contributes to a better understanding of the role of tourism activity on labor market.

### 1. Introduction

The increase of employment is arguably the most important effect of economic growth. Besides its huge importance for the general well-being of modern societies, employment is also an important phenomenon and unavoidable subject of macroeconomic analysis. Although highly interesting in its integral form, total employment is often disaggregated into its main components. From the macroeconomic point of view, the most interesting component of total employment is cyclical employment. Its dynamics is the direct consequence of business cycle, i.e., fluctuation of the Gross Domestic Product (GDP).

It is hitherto widely acknowledged that cyclical employment related to many economic activities, e.g., manufacturing, construction, or retail trade, follows the exact path as the overall cyclical employment thereby exhibiting a positive relationship with GDP dynamics. To the best of our knowledge, the relationship between the fluctuation of GDP and cyclical employment related to tourism activity has not been hitherto adequately explored. The aim of this paper is to investigate whether the cyclical employment related to tourism activity follows the same pattern as the overall cyclical employment during the periods of economic expansion and recession.

The rest of the paper is organized as follows. The next section presents a very brief literature review. This is followed by a description of our data, methodology, and empirical results. The paper ends with concluding remarks.

### 2. A very brief literature review

Regarding the cyclical employment generated by tourism activity, the available literature is very scarce. For instance, [Perles-Ribes, Ramon-Rodriguez, Sevilla-Jimenez, and Moreno-Izquierdo \(2016\)](#) analyzed the effect of economic crisis on unemployment rates in Spanish residential and hotel destinations. Their study showed that residential destinations experienced a greater decrease of employment than hotel destinations during the Great Recession. [Wilton \(2004\)](#) demonstrated that tourism employment is affected by the Canadian business cycle. His study revealed a correlation between the cyclical fluctuations of tourism employment and cyclical fluctuations of overall employment. However, the cyclical fluctuations of tourism employment were generally lower than the cyclical fluctuations of total employment. [Sharma and Mitra \(2020\)](#) found an asymmetric relationship between tourist arrivals and employment in Sri Lanka, and [Wei, Qu, and Ma \(2013\)](#) concluded that tourism employment does not always grow in accordance with the tourism economy.

Literature review suggests the scarcity of sources implying the need for more research in this field.

### 3. Data and methodology

Our data set consists of quarterly time series of GDP, total employment, and the employment in accommodation and food service activities for 24 member states of the European Union: Belgium, Bulgaria, Czech Republic, Germany, Estonia, Ireland, Greece, Spain, France, Croatia,

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**Table 1**  
Results of panel data analysis.

	Period before the Great Recession (2002–2007)		Period during the Great Recession and the European sovereign debt crises (2008–2012)		Period after the Great Recession and the European sovereign debt crises (2013–2019)	
	Total cyclical employment	Cyclical employment generated by tourism	Total cyclical employment	Cyclical employment generated by tourism	Total cyclical employment	Cyclical employment generated by tourism
Common correlation coefficient (degree of synchronicity with cyclical component of GDP)	0.628*** (0.06)	0.315*** (0.06)	0.492*** (0.06)	0.135*** (0.04)	0.410*** (0.13)	0.217 (0.13)
p-value of F-test for the decision between common and fixed effects model	0.762	0.998	0.003	0.474	0.324	0.993
p-value of Breusch-Pagan test for the decision between common and random effects model	0.121	0.007	–	0.897	0.367	0.025
p-value of Hausman test for the decision between fixed and random effects model	–	0.180	0.047	–	–	0.244
Estimated model	Common effects	Random effects	Fixed effects	Common effects	Common effects	Random effects
Number of observations	573	573	480	480	672	672

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Robust standard errors (heteroscedasticity and autocorrelation consistent) in parentheses.

Italy, Cyprus, Latvia, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Slovenia, Slovakia, Finland, and Sweden. Constrained by the data availability, we have covered a time span of 18 years (from the first quarter of 2002 to the fourth quarter of 2019). Each employment series is seasonally adjusted by TRAMO/SEATS standard procedure. GDP was already seasonally adjusted by the source. The data was collected from the European Statistical Office - EUROSTAT.

With regard to the methodology, the standard procedure of business cycle analysis includes appliance of the Hodric-Prescott filter for decomposition of time series (in our case decomposition of GDP and employment) on their trend and cyclical components (see [Hodrick and Prescott \(1997\)](#)). The next step involves the calculation of Pearson correlation coefficient between the extracted cyclical components. A higher correlation coefficient indicates a higher degree of mutual synchronicity between fluctuating series, thereby suggesting the stronger coherence of their cycles. For an adequate appliance of the methodology for business cycle analysis see, for instance, [Inklaar, Jong-A-Pin, & de Haan \(2008\)](#) or [Campos, Fidrmuc, and Korhonen \(2019\)](#).

In order to obtain more robust results, we decided to apply the correlation analysis in a panel data framework. To do so, we have performed the z-score transformation of each extracted cyclical component by subtracting its mean and dividing by the standard deviation. Thus, each series had zero mean and unit variance, and the estimated beta coefficient of panel data model is equal to the correlation coefficient taking a value between  $-1$  and  $1$ .

It has to be noted that the purpose of the panel data analysis was not to build a valid and comprehensive predictive model. In fact, our aim is a robust calculation of a common correlation coefficient covering all countries included in our data set. Thus, the panel data analysis can be used in a simplified manner, without the usage of control variables and without paying the strict attention to diagnostics.

Even though we just use the panel data analysis for summing up the correlation coefficients related to 24 countries, we nonetheless respect all requirements of the panel data technique. To tackle the possibility of heteroscedasticity and autocorrelation we use the heteroscedasticity and autocorrelation robust standard errors and for the selection of adequate model we use F-test, Breusch-Pagan test and the Hausman test respectively. For a proper usage of panel data methodology see, for instance, [Wooldridge \(2010\)](#) or [Baltagi \(2013\)](#).

#### 4. Results

In order to capture the possible temporal dynamics of the degree of synchronicity, we have divided our sample into three subsamples

considering the periods before, during and after the Great Recession and the European sovereign debt crises. The first subsample covers the period 2002–2007, the second subsample covers the period 2008–2012, and the last subsample covers the period 2013–2019. Although the Great Recession did not impact USA and Europe simultaneously, we decided to divide the data in accordance with historical facts available from public sources (for instance, Wikipedia and Britannica). For each of these subsamples, we have conducted the mentioned statistical procedure for making the choice between the common, fixed and random effects models, and then estimated the most appropriate model.

[Table 1](#) shows the results of panel data analysis indicating the higher degree of synchronicity between the cyclical component of GDP and the total cyclical employment in comparison to the degree of synchronicity between the cyclical component of GDP and the cyclical employment generated by tourism activity. For example, the common correlation coefficient between the cyclical component of GDP and the total cyclical employment before the Great Recession was 0.628. It means that these variables have shown a much higher degree of co-movement in comparison with the degree of co-movement between the cyclical component of GDP and the cyclical employment generated by tourism activity, which amounts to 0.315. The difference is evident and strong regarding each subsample. The degree of co-movement between the cyclical component of GDP and the total cyclical employment is on average 2.5 times higher than the degree of co-movement between the cyclical component of GDP and the cyclical employment related to tourism activity.

Another important finding is related to the temporal dynamics of the degree of synchronicity. Although there is an evident decrease of its magnitude from one period to another in the case of both, total cyclical employment and cyclical employment related to tourism activity, it is obviously more pronounced in the case of cyclical employment generated by tourism activity. Furthermore, in recent times, that is, after the Great Recession and the European sovereign debt crises, the synchronicity between the cyclical component of GDP and the cyclical employment related to tourism activity has, in fact, completely vanished. The most likely reason is a more stable dynamics of cyclical employment generated by tourism activity in comparison to the dynamics of total cyclical employment whose coherence with business cycle remains moderately preserved. Unlike the total cyclical employment, the cyclical employment related to tourism activity follows its own path which is not so coherent with the path of business cycle.

## 5. Concluding remarks

This paper represents a macroeconomic inquiry into the cyclical employment related to tourism. Our findings indicate that a developed tourism sector could unexpectedly have a very positive role on labor market. Not only it can regularly absorb the surplus of predominantly (but not necessarily) low-qualified work force but can also act as a stabilizer of total cyclical employment during different phases of business cycle. Unlike some other economic activities, for instance construction and trade, whose cycle is fairly coherent with the cycle of fluctuating GDP, tourism acts in a somewhat different manner. The cyclical employment related to tourism activity is less coherent with the cycle of fluctuating GDP.

As for the current situation caused by COVID-19 pandemic, our findings suggest that heavily impacted tourism employment should start to recover as soon as the health hazard and travel obstacles disappear. We expect it would not follow the path of overall world economy which could easily slide into a post COVID recession induced by the rise of energy prices.

For future research, we propose further examination of the relationship between the cyclical employment related to tourism activity and the business cycle beyond the scope of our data. It would be interesting to analyze whether the same conclusions could be drawn for the countries outside the European Union. Small Islands Developing States (SIDS) might be an interesting case study.

## Acknowledgements

This work has been fully supported by the Croatian Science

Foundation under the project [IP-2018-01-2961]

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