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Sustainable Tourism, Economic Growth and Employment—The Case of the Wine Routes of Spain

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Abstract: Tourism has become a priority in national and regional development policies and is considered a source of economic growth, particularly in rural areas. Nowadays, wine tourism is an important form of tourism and has become a local development tool for rural areas. Regional tourism development studies based on wine tourism have a long history in several countries such as the US and Australia, but are more recent in Europe. Although Spain is a leading country in the tourism industry, with an enormous wine-growing tradition, the literature examining the economic impact of wine tourism in Spanish economy is scarce. In an attempt to fill this gap, the main objective of this paper is to analyze the impact of wine tourism on economic growth and employment in Spain. More specifically, by applying panel data techniques, we study the economic impact of tourism in nine Spanish wine routes in the period from 2008 to 2018. Our results suggest that tourism in these wine routes had a positive effect on economic growth. However, we do not find clear evidence of a positive effect on employment generation.

Keywords: wine routes; wine tourism; Spain; sustainable tourism; economic growth; employment; sustainable development; cultural routes; cultural tourism

1. Introduction

According to data from the World Tourist Organization, the number of tourism trips in 2019 was above 1.4 million, which implies a 3% growth when compared with the previous year. To have an idea of the importance of the tourist sector for the global economy, the total Gross Domestic Product (GDP) contribution in 2019 was 10.4%.

In spite of these numbers, more people are seeking a kind of tourism that is different from traditional mass and leisure tourism. Tourists seek out natural spaces, innovative models and even exclusive and personalized proposals involving emotional states as part of an increasing demand trend. This kind of tourism is closer to sustainable tourism. Examples of this are eco-tourism, rural tourism, agrotourism, geotourism, wildlife tourism, cultural tourism, historical tourism and wine tourism.

There are several definitions of wine tourism [1,2], but they all agree that it has direct links with historical and cultural tourism and, of course, with rural tourism and the conservation of natural resources [3]. The relationship between wine tourism and sustainability has been extensively addressed by several authors [4–8]. For these reasons, the Georgia Declaration on Wine Tourism, derived from the United Nations World Tourism Organi-
zation’s Global Conference on Wine Tourism from September 2016, states that wine tourism [9]: (a) can contribute to foster sustainable tourism by promoting both the tangible and intangible heritage of the destination; (b) is capable of generating substantial economic and social benefits for key players of the destination, apart from playing an important role in terms of cultural and natural resource preservation; (c) facilitates the linking of destinations around the common goal of providing unique and innovative tourism products, whereby maximizing synergies in tourism development, surpassing traditional tourism subsectors; (d) provides an opportunity for underdeveloped tourism destinations, in most cases rural areas, to mature alongside established destinations and enhance the economic and social impact of tourism on a local community.

This form of special interest tourism [10] is gaining increasing attention as a driver of economic growth and development and as an important vector between the tourism sector and wine production industry of most wine-producing regions [11,12]. Therefore, despite its disadvantages, this kind of tourism has many economic advantages in the regions involved [13], highlighting the positive impacts on the labor market and economic growth.

There are several studies assessing the relationship between local development and wine routes at the international and European level, and they have been considered in Montella [14], Vo Thanh and Kirova [15] and Gómez et al. [16]. In the same way, there are many similar works that have studied different wine routes in Spain. The most recent are López-Guzmán et al. [17], Alonso and Liu [18], Clemente Ricolfe et al. [19], De la Orden, R. [20], Gómez and Molina [21], Marzo-Navarro and Pedraja-Iglesias [22], Vieira Rodríguez et al. [23], Álvarez García et al. [24], López-Guzmán et al. [25], Pérez Gálvez et al. [26], and Ruiz et al. [27]. All these studies tackle the links between local development and tourist routes from different perspectives, concluding that this type of tourism has a positive impact.

However, and to the best of our knowledge, there are no previous studies analyzing the role of wine tourism as a driver of economic growth and job creation in Spain. Taking the Wine Routes of Spain project as the object of study, this paper aims to fill this gap in the literature. The Wine Routes project is part of the Spanish Association of Wine Towns (ACEVIN). This association works with the Ministry of Industry and Commerce and the Ministry of Agriculture, Fisheries, and Food, and is the main institution that monitors the wine tourism in Spain.

To evaluate this role of wine tourism, we selected a set of Wine Routes of Spain and, using two indicators defined according to data availability, the so-called Tourism-Led Growth (TLG) hypothesis and the Tourism-Led Employment (TLE) hypothesis were tested at the regional level. In order to contribute to the academic debate, we have also performed these tests for a general tourism indicator.

The TLG hypothesis is derived from the Export-led growth hypothesis, which postulates that economic growth can be directly generated by expanding exports. This hypothesis defines a theoretical and empirical link between tourism and economic growth, concluding that tourism is one of the main determinants of economic growth and, therefore, works as a driver of job creation (TLE hypothesis).

For testing these hypotheses, panel data techniques, and the cointegration and causality test are usually applied. Panel data studies are currently used extensively in social science research, because they can provide more robust results than other research methods for objects of study as the one analyzed.

As we will show in the paper, the results support the TLG hypothesis and the TLE hypothesis for the general tourism indicator. However, they are not so clear for the two indicators defined to evaluate the role of wine tourism as a driver of economic growth and job creation in Spanish provinces studied.

The paper is structured as follows: after this brief introduction, a literature review to contextualize the chapter is presented in Section 2. After that, we describe the methodology applied and the analyzed routes in Section 3. In Section 4, we present the results of
the econometric estimations. The final section provides a summary of the main results, a discussion and insights for future research.

2. Literature Review

2.1. Tourism-Led Growth Hypothesis

There are numerous studies that confirm the direct relationship between economic growth, employment and tourism [28–30]. These studies show the need to consider a series of aspects related to the economy, tourist profile and the environment that characterize the host region [31,32]. This positive impact can be divided into four categories: economic [33], social [34], cultural [35] and environmental [36]. Within the economic pillar, having a lasting economic and social development based on income generation and job creation at the regional and local levels is fundamental [37–40].

In recent years, there has been a surge of works applying non-linear and non-parametric analysis which reinforce the TLG hypothesis [41–46]. Nevertheless, some studies question these results, indicating that there could be no causality between tourism development and economic growth for some emerging countries [47], or that this causality operates only in the short term [48,49]. Similarly, within the environmental pillar, several works have begun to become alert to the relationship between tourism development, economic growth and CO2 emissions [50–52].

Finally, there are some recent works that, using panel data techniques, evaluate the relationship between economic growth, development and tourism. The present work is included within this field of study and aims to contribute to the related scientific debate. Tang and Tan [53] examine the TLG hypothesis in Malaysia. The tests consistently show evidence of cointegration and confirms that the hypothesis is generally valid and stable in Malaysia. Fahimi et al. [54] investigate this hypothesis in the microstates over the period 1995–2015, providing the same evidence. However, Chiu and Yeh [55] explore this relation for a cross-sectional data set of 84 countries suggesting that it is not continuous and constant.

In the same way, Skrinjaric [56] examines the dynamic relationship between spillovers of tourism growth and economic growth for Bulgaria, Croatia, Czech Republic, Hungary, Poland, Slovenia and Slovakia, obtaining mixed results for all of the countries throughout the sample. Sokhanvar et al. [57] reached similar conclusions. Their estimation results for the period 1995–2014 provided evidence of uni-directional causality in Brazil, Mexico and Philippines; reverse causality for China, India, Indonesia, Malaysia and Peru; no causality for seven out of sixteen emerging market countries; and bidirectional causality for Chile. Similarly, Alhowaish [58] studied the contribution of tourism to economic growth for the group of Gulf Cooperation Council (GCC) countries using panel data techniques for the period 1995–2012. For Kuwait, Saudi Arabia, Qatar, and the United Arab Emirates, the authors find evidence in favor of the TLG hypothesis. The reverse hypothesis holds true for Bahrain, while they find no causal relationship between tourism and economic growth in the case of Oman.

De Vita and Kyaw [59] investigate the TLG hypothesis for 129 countries over the period 1995–2011, concluding that the positive effect of tourism specialization on growth depends on the level of economic development as well as the financial system absorptive capacity of recipient economies. In a similar work, Muslija et al. [60] analyze a panel data of 113 countries for the years from 1995 to 2015, indicating that the tourism-economic growth nexus differs with the income level of countries. Tang and Tan [61] evaluate the TLG hypothesis for a panel dataset of 167 countries, reaching to similar conclusions and remarking the importance of institutional quality of the host tourism country. Finally, Risso [62] analyzes the relationship between tourism and economic growth for a worldwide dataset of 179 countries during 1995–2016, concluding bidirectional causality and supporting the feedback hypothesis at a worldwide level.

Among all the works included within this field of study, only one has focused on Spain. Applying the Johansen cointegration test and the Granger causality test, Balaguer
and Cantavella-Jordá [63] confirm that earnings from international tourism have a positive effect on economic growth in Spain. Furthermore, the authors highlight that the strong impact of tourist activity would reveal the existence of important long-term multiplier effects in the consumption sector, domestic prices and the country’s welfare.

To conclude, León-Gómez et al. [64] present a systematic review of the literature which studies the influence of “sustainable tourism” on “economic growth”. Using the Web of Science database, the authors found a total of 774 articles including the combination of two topics: “sustainable tourism” and “economic growth”. While this figure could lead us to think that there are many recent works using panel data techniques to analyze the impact of sustainable tourism on growth. Only Manzoor et al. [65] can be included within this group of articles. These authors investigate the impact of tourism on Pakistan’s economic growth and employment for the period 1990–2015. On the basis of a regression technique and Johansen cointegration approach, the authors find that there is a positive and significant impact of tourism on Pakistan’s economic growth as well as employment sector and there is also a long-term relationship among the variables under study. This work is also relevant because is the unique recent study based on these techniques to examine the TLE hypothesis.

2.2. Tourism-Led Employment Hypothesis

The empirical studies that confirm the positive relationship between tourism and employment are not as numerous as in the previous case. The TLE hypothesis is based on the idea, described by Mathieson and Wall [66], that tourism creates direct, indirect and induced employment in regional and national economies. This conclusion, described some years before by Vanhove [67], was reinforced by the definition of an employment multiplier and the idea that tourism should be considered a propulsive activity for economic development [68]. However, Ann and Faver [69] showed that it is important taking these conclusions with some caution, and the difficulty in defining the influence of tourism on employment continues today [70].

Only two works are found, both using Granger causality test and Johansen cointegration approach. Onder and Durgun [71] analyze tourism revenues in Turkey from 1980 to 2006. Results indicate that tourism has a positive effect on employment while the cointegration test indicates that there is a long-term correlation between tourism revenues and employment. Pavlić et al. [72] evaluate the relationship between tourism and employment in Croatia based on quarterly data from 2000 to 2012. The empirical research indicates that increasing tourism flows can bring many positive economic consequences to host countries, particularly in terms of GDP, employment opportunities, revenues and foreign exchange earnings. These conclusions would be convergent with those found by Manzoor et al. [65]. Finally, Condratov [73], using a panel data approach, analyses the hypothesis for Romania regions for the period 1990–2015, concluding that tourism contributes to the reduction in unemployment.

3. Study Description

3.1. Methodology

The analysis was carried using panel data techniques. The Breusch-Pagan and Hausman tests were carried out in addition to a F-test to determine the suitability of using a pooled, random effects or fixed effects model. The models used are based on a simple panel data model:

\[ Y_{it} = \alpha + \beta_1 X_{it} + \epsilon_{it} \quad i = 1 \ldots N, t = 1 \ldots T \]  

where \( i \) represents the cross-sectional dimension, \( t \) represents the temporal one, \( Y \) is the endogenous or dependent variable, \( X \) is the exogenous or independent variable, \( \alpha \) is the intercept, \( \beta_1 \) is the coefficient, and \( \epsilon \) is the error term.
To explore the relationship between variables, the following two models were considered:

\[
\text{Model 1: } GDP = (\text{tour}, \text{w}_\text{tour}, \text{wines})
\]

\[
\text{Model 2: } \text{Unemp} = (\text{tour}, \text{w}_\text{tour}, \text{wines})
\]

then

\[
\text{Model 1: } \text{GDP}_{ict} = \alpha + \beta_1 \text{tour}_{it} + \beta_2 \text{w}_\text{tour}_{it} + \beta_3 \text{wines}_{it} + \epsilon_{it}
\]

\[
\text{Model 2: } \text{Unemp}_{it} = \alpha + \beta_1 \text{tour}_{it} + \beta_2 \text{w}_\text{tour}_{it} + \beta_3 \text{wines}_{it} + \epsilon_{it}
\]

where the subscripts \( i \) and \( t \) represent “Spanish province and wine route” and “time”, \( \text{GDP}_{pc} \) refers to the level of annual income per inhabitant of each province evaluated, \( \text{Unemp} \) refers to the annual unemployment rate for each province evaluated, \( \text{tour} \) refers to the number of annual overnight stays in each province by non-wine tourists, \( \text{w}_\text{tour} \) refers to the annual number of wine tourists visiting each wine route, \( \text{wines} \) refers to the annual number of wineries assigned to each wine route, \( \beta_1, \beta_2, \beta_3 \) are the long-term elasticities of GDP and Unemployment respect to \( \text{tour}, \text{w}_\text{tour}, \) and \( \text{wines} \), \( \epsilon \) is the error term. According to the literature, in Equation (4), the sign of \( \beta_1 \) is expected to be positive since an increase in the number of annual overnight stays in each province by non-wine tourists leads to an increase in \( \text{GDP}_{pc} \). Moreover, in Equation (5), the sign of \( \beta_2 \) is expected to be negative since an increase in the number of annual overnight stays in each province by non-wine tourists leads to a decrease in the unemployment rate. The expected signs of \( \beta_2 \) and \( \beta_3 \) are inconclusive in both models since there is no similar work within the field of study to compare with.

For the two models above, three different estimations were made in order to analyze the level of significance of the main variables (tourists and number of wine tourists). In the first case, only the number of tourists (\( \text{tour} \)) was included as an exogenous variable. In the second case, the number of wine tourists (\( \text{w}_\text{tour} \)) was added. In the third case, the model was extended with the introduction of the number of wineries (\( \text{wines} \)). All the variables were transformed to natural logarithms as to obtain more homogeneous results and eliminate the problem of measuring variables in different units.

### 3.2. Endogenous Variables

The values of the Gross Domestic Product per capita (GDP\(_{pc} \)) were used for the economic growth data, which were taken from Eurostat. A problem encountered was that this statistical office only shows figures through 2017 at the provincial level (NUTS 3, from the nomenclature used by Eurostat). To obtain the 2018 value, initially, a prediction was made from the previous values of the series at a 95% confidence interval. From those data, the growth rate between 2017 and 2018 was determined. Moreover, the general growth rate of each of the autonomous communities (NUTS 2) of the province analyzed corresponding to the wine route was taken from the Spanish National Institute of Statistics (INE), as these data are available for 2018. An average was taken of both growth rates to define the value of the GDP\(_{pc} \) in 2018 for each of the provinces studied. However, because of the fact that two of the analyzed routes, Bullas and Jumilla, are in the same province, Murcia, the data had to be unified. Therefore, the data on growth and unemployment for the province of Murcia are evaluated from the joint data of these two routes.

As an indicator of job creation, the decision was made to evaluate the evolution of the unemployment rate (Unemp). A reduction in this indicator means an improvement in the employment figures in the region. The data on the unemployment rate were taken from the INE and correspond to the percentage of the working population in a situation of unemployment. The study will be considered to confirm the theory if the variables exposed promote employment, that is, if they show a negative sign in relation to the evolution of the unemployment rate.
3.3. Exogenous Variables

Turning to the wine tourism variables, several problems were encountered. The first one is related to the study period. To make a contrast with a high degree of significance, there must be a long time series. However, this has not been possible for a vast majority of variables that ACEVIN makes public through its reports.

ACEVIN’s annually published reports were used to evaluate the number of tourists contracting the services of each Wine Route of Spain; the so-called enotourists (wine tourists). Wine tourist data are only available from 2008 onwards. However, there are no values from that year for all 30 routes involved in the project. Furthermore, as there are contrasts by province, only routes limited to a single province can be analyzed. Thus, origin denominations, such as Ribera del Duero, which cover more than one Spanish province, are discarded. With this restriction, data are only available for 9 of the 30 Routes (Figure 1).

![Figure 1. Wine Routes of Spain. Source: ACEVIN. For any further information about the project: https://wineroutesofspain.com/ (accessed on 24 June 2021).](image_url)

This fact has been decisive in the choice of routes to be included in the study. Therefore, the defined period is 2008–2018; the last year available and the routes subject to evaluation are those that presented data from the beginning of the period and were assigned to only one province. If the number of wine tourists promotes economic growth and employment in the region, it will be considered a positive result. The nine routes chosen for this study are described in Table 1 and Figure 2.

### Table 1. Wine routes selected.

| Route               | Province (NUTS 3) | Region (NUTS 2) |
|---------------------|-------------------|-----------------|
| Bullas              | Murcia            | Murcia          |
| Jumilla             | Murcia            | Murcia          |
| Marco de Jerez      | Cádiz             | Andalucía       |
| Montilla-Moriles    | Córdoba           | Andalucía       |
| Navarra             | Navarra           | Navarra         |
| Rias Baixas         | Pontevedra        | Galicia         |
| Rioja Alavesa       | Álava             | Basque Country  |
| Somontano           | Huesca            | Aragón          |
| Utiel-Requena       | Valencia          | Valencian Community |

Source: authors.
Furthermore, in the ACEVIN reports, a distinction is made between domestic and foreign wine tourists starting only in 2017. Therefore, the study had to use general data and disregard this distinction. Apart from the general number of wine tourists, the only variable for which there are sufficient data according to the time series defined by the number of visitors is the number of wineries assigned to each wine route. Therefore, these will be the only two variables that could be used to assess the effect of this sustainable tourism project on economic growth and employment generation in the region studied.

![Wine routes selected and provinces](image)

**Figure 2.** Wine routes selected and provinces. Source: authors.

There was a significant problem here because, apart from the aforementioned, this association presents data on the number of wineries registered for each of the routes through 2016. However, from 2017 onwards, it shows general data of an indicator called “offer of wine tourism services”, which includes not only wineries but also the services of accommodation, restoration, leisure, museums, bars, stores, etc., that derive from the offer included in the route itself. To homogenize the sample, efforts were made to determine the part of this new indicator that refers only to the wineries that can be visited and are included in each route, excluding the rest of the services. However, this was not possible using the information available in the reports or on the project’s own website. Therefore, the association was contacted by e-mail so that they could provide us with this information; however, their answer was negative. Consequently, to establish the values for 2017 and 2018, it was necessary to make a prediction from the previous values of the series, always at a 95% confidence interval. If an increase in the number of wineries promotes economic growth and employment in the region, this will be considered an optimal result.

As far as general tourism is concerned, from the very beginning, there was the idea of assessing its impact on economic growth and job creation, contrasting both the TLG and the TLE hypothesis. This relationship has been shown to be positive at a general level, and, therefore, it is worthwhile to take advantage of the study to confirm these conclusions. To define the variable, work began from the general profile presented by the wine tourists of the wine routes. The person who contracts this service, apart from visiting the winery or wineries included in the route, participates in planned activities in the rural environment, shops in nearby areas, visits museums related to winemaking and stays overnight in accommodation in the local environment that is of the route. Consequently,
the goal was to focus on a type of tourism that would involve at least a day’s stay at the destination. Thus, as an indicator of the level of tourism in a province, the number of overnight stays was chosen. This indicator can be similar to the concept of the wine tourist because, in general, when spending the night in a place, tourists usually go to local restaurants, do some shopping in the surroundings of the accommodation, and even make some tourist visits. The data of annual overnight stays were taken from the INE. To maintain the homogeneity of the data, despite having information by origin of the tourists, contrasts were made with the general data of overnight stays, without distinguishing between national and foreign tourists.

To avoid data duplication, the annual data of wine tourists were subtracted from the annual data of overnight stays. It is clear that many wine tourists who contract a wine route most likely spend the night in other tourist destinations in the province. As a result, the number of wine tourists also potentially refers to the general effect of tourism on the endogenous variables of the model.

3.4. Summary Statistics

As can be seen in Table 2, the Marco de Jerez Wine Route, in the province of Cadiz, is by far the one that receives the largest number of wine tourists annually, both in number and in visitors per winery. The opposite case is represented by the Montilla-Moriles Route, in the province of Cordoba. The two routes with the highest number of wineries at the end of the period were Rías Baixas and Rioja Alavesa. However, they were, together with the former and the Navarra Wine Route, the ones with the lowest number of visitors per winery. To conclude, although the total number of wine tours has practically doubled during the period, this increase is not balanced. Thus, the highest growth was found in the Rías Baixas and Bullas-Jumilla wine routes. The lowest growth was found in the most consolidated tourist route, Marco de Jerez. This conclusion is interesting in terms of the potential possibilities of attracting visitors to routes that are not yet consolidated in the project. It is also of interest for assessing the possibilities of economic development of the regions to which each of these routes belong.

### Table 2. Summary statistics by Wine Route and Province.

| Route             | Wine Tourists (Units) (1) | Wineries (Units) (2) | (1/2) | Province | GDPpc (US Dollar) | Unemployment Rate (%) | Tourists (Thousands) |
|-------------------|---------------------------|----------------------|-------|----------|------------------|-----------------------|----------------------|
| Bullas            | 11,339                    | 65,145               | 15    | 18       | 755.93           | 3619.17               |                      |
| Jumilla           | 582,351                   | 24,513               | 33    | 31       | 31,156.39        | 18,785.52             |                      |
| Marco de Jerez    | 434,161                   | 25,605               | 16    | 10       | 771.44           | 1522.06               |                      |
| Montilla-Moriles  | 23,432                    | 16,615               | 16    | 16       | 17,414.63        | 16,420.38             |                      |
| Navarra           | 25,605                    | 29,705.71            | 10    | 10       | 2975.01          | 1951.10               |                      |
| Rías Baixas       | 116,557                   | 25,509               | 28    | 20       | 2509.39          | 1942.62               |                      |
| Rioja Alavesa     | 192,213                   | 20,170.21            | 40    | 38       | 3314.02          | 421.61                |                      |
| Somontano         | 79,601                    | 2881.19              | 16    | 16       | 4975.06          | 94.9                 |                      |
| Utiel-Requena     | 76,627                    | 1979.00              | 24    | 20       | 7662.70          | 13.70                 |                      |
| Total             | 651,305                   | 2823.06              | 188   | 186      | 5548.95          | 15.26                 | 23,625.62 ** 27,664.06 **

* Mean for routes analyzed. ** Total data from provinces analyzed. Source: authors using data from ACEVIN and INE.

With regard to the provinces analyzed, there is evident diversity, since they are regions above and below the national average in terms of income and unemployment rate. There is no apparent relationship between the income level of the province or the unemployment rate and the number of visitors received, in general terms, and for each of the routes associated with that region. Thus, the most internationally renowned route, Marco de Jerez, is located in one of the regions with the lowest national income level and the highest unemployment rate, Cadiz. The opposite case would be that of the Navarra Wine Route, which, despite being located in a region with a high-income level and low unemployment, is the one that receives the lowest number of wine tourists. We could make a
similar reading with regard to the number of general tourists that each province receives. Thus, the one that receives the largest tourist inflows is Valencia, but its associated Wine Route is not necessarily the most successful one. Moreover, the province of Alava receives a substantially reduced number of tourists, but a very high number of wine tourists.

As we have shown in this paper, a significant body of the literature relates tourism to economic growth and employment. However, these studies tend to focus on analyses at the national level, not at the level of provinces or regions within a country. In this regard, we did not find works such as the one presented here for the case of the Spanish economy—neither for its topicality, nor for its methodological concreteness at the regional level. Furthermore, we did not find works that assess the possibilities of sustainable tourism projects at this level, since the work of Manzoor et al. (2019) focuses on the national level.

For these reasons, we consider this to be a work of interest, which adds value to the general discussion of the TLG hypothesis and the TLE hypothesis, as well as to the specific discussion of the possibilities of sustainable tourism projects, based on these two hypotheses.

However, we are aware of the difficulty in drawing general conclusions for sustainable tourism projects, such as the Wine Routes of Spain. In general terms, the weight of tourists who visit any of the routes evaluated is very small in relation to the total number of tourists visiting each of the provinces studied (Figure 3), with the exception of the Rioja Alavesa Route. Even the number of wine tourists visiting the route with the greatest international presence, Marco de Jerez, barely represents 8% of the total number of tourists visiting the province of Cadiz. These percentages are remarkably reduced for the rest of the routes.

![Figure 3. Wine tourist/Tourists. Percentages. Source: authors.](image-url)

These figures force us to be cautious when evaluating the results of the contrasts made. We cannot expect the significance of the variables assigned to the wine routes (w_tour and wines) to be as high as that which we expect when evaluating the general number of tourists (tour). In fact, due to the low incidence that wine tourists have in relation to the total number of tourists, it is likely that $\beta_w$, $\beta_s$ are not significant. However, this fact does not detract interest from our work. We are interested in assessing what was previously described, together with the sign of the variables. Even if the number of wine tourists and wineries is not significant in explaining the evolution of economic growth and unemployment in the provinces analyzed, it is interesting to assess their sign in order to know whether they have a positive or negative impact. With these conclusions, we hope to lay the foundations for future related studies, at the level of the Spanish economy, and for the case of similar projects at the regional level in other countries.
4. Results

4.1. Descriptive Statistics and Correlation Matrix

Summary statistics and correlation matrix for variables in natural logarithms are presented in Table 3. Mean, standard deviation, minimum and maximum values and correlation are described.

| Variable | Mean | Std. Dev. | Min | Max | 1   | 2   | 3   | 4   | 5   |
|----------|------|-----------|-----|-----|-----|-----|-----|-----|-----|
| GDPpc    | 10.014 | 0.256    | 9.639 | 10.540 | 1 |     |     |     |     |
| Unemp    | 2.919 | 0.444    | 1.893 | 3.745 | -0.857 | 1 |     |     |     |
| wines    | 3.110 | 0.541    | 2.302 | 4.094 | 0.110 | 0.062 | 1 |     |     |
| w_tour   | 10.894 | 1.115    | 8.855 | 13.274 | 0.003 | 0.157 | 0.627 | 1 |     |
| tour     | 14.627 | 0.781    | 12.933 | 15.852 | -0.680 | 0.501 | -0.217 | 0.214 | 1 |

Source: authors.

4.2. Panel Data Results

When the dependent variable is GDPpc, the tests show the need to use the model based on random effects. In the case of unemployment rate, the tests show the need to use the fixed effects model.

The estimation results for GDPpc are shown in Table 4. As it can be noted, the number of overnight stays (tour) is highly significant, but the two variables in the model that are directly related to the wine routes are not significant at conventional levels. Furthermore, in each estimation, the constant term is also highly significant.

| Variable | Mean | Std. Dev. | Min | Max | 1   | 2   | 3   | 4   | 5   |
|----------|------|-----------|-----|-----|-----|-----|-----|-----|-----|
| GDPpc    | 10.014 | 0.256    | 9.639 | 10.540 | 1 |     |     |     |     |
| Unemp    | 2.919 | 0.444    | 1.893 | 3.745 | -0.857 | 1 |     |     |     |
| wines    | 3.110 | 0.541    | 2.302 | 4.094 | 0.110 | 0.062 | 1 |     |     |
| w_tour   | 10.894 | 1.115    | 8.855 | 13.274 | 0.003 | 0.157 | 0.627 | 1 |     |
| tour     | 14.627 | 0.781    | 12.933 | 15.852 | -0.680 | 0.501 | -0.217 | 0.214 | 1 |

Source: authors.

It is important to emphasize that the results are consistent with the theory and with the expectations from this study. For the provinces analyzed, it is clear that tourism is a variable of great importance for economic growth, and, thus, the variable chosen for its measurement has a positive sign and a high level of significance. In particular, the parameter estimates suggest that a 1% increase in the number of overnight stays is associated with an increase of around 0.2% in GDPpc. In the same sense, it seems that the tourists who contract the services of the Wine Routes of Spain have a positive effect. This has much the same effect that the number of wineries progressively becoming part of the routes does. As a result, although the degree of significance was not expected to be noticeable in the two exogenous variables related to the Routes, the sign corresponds to the expectations at the start of the study.
The estimated models related to the unemployment rate show results that are very similar to those of the previous ones (Table 5). However, there are certain aspects that must be considered. Mainly, it must be noted that the general significance of the model (r2) is substantially lower, which means that the results should be viewed with a certain degree of caution.

Under this premise, it is emphasized that, again, the parameter estimates on the number of overnight stays is significant at the 1% level. Directly related to the theory, this variable has a negative sign. In other words, the influx of tourists to these provinces would have a positive effect on job creation. However, the fundamental difference with respect to the prior contrast is centered on the variables related to the wine routes. Thus, it seems that the number of wineries that participate in this project would be beneficial to the labor market. However, the conclusion is not so optimistic if the number of tourists that contract this service is evaluated.

Table 5. Results for model of Unemployment.

|      | po1    | re1    | fe1    | po2    | re2    | fe2    | po3    | re3    | fe3    |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| tour | 0.2847 | -0.103 | -1.021 | 0.2783 | -0.2012| -1.246 | 0.382  | -0.189 | -1.297 |
| w_tour | 0.0208 | 0.0201 | 0.1247 | 0.0596 | 0.0026 | 0.137  | -       | -       | -      |
| wines |        |        |        | 0.234  | 0.1577 | -0.078 |        |        |        |
| _cons | -1.2445| 4.6830 | 17.867 | -1.3776| 5.6445 | 19.794 | -2.107 | 5.2319 | 20.651 |
| N    | 88     | 88     | 88     | 88     | 88     | 88     | 88     | 88     | 88     |
| r2   | 0.2511 | 0.2206 | 0.2206 | 0.2537 | 0.2608 | 0.2608 | 0.2925 | 0.146  | 0.2628 |

Breusch-Pagan test:
chibar2: 111.08 109.34 104.05
Prob > chi2: 0.0000 0.0000 0.0000

F test u_i = 0
F(7,79) = 25.22  F(7,78) = 26.72  F(7,77) = 24.53
Prob > F: 0.0000 0.0000 0.0000

Hausman test:
chi2: 29.87 33.45 31.26
Prob > chi2: 0.0000 0.0000 0.0000

*, **, *** indicates significance at 10%, 5% and 1% level, respectively. po: pooled; re: random effects; fe: fixed effects; N: observations; r2: R-squared. (1) R-squared: within. Source: authors.

More specifically, it can be said that the effect of the wine routes in terms of income generation is positive because the GDPpc is positively affected. However, its effect on the labor market would be contradictory. On the one hand, it seems that as more wineries join the routes, employment figures improve. That is to say, this project helps generate jobs. On the other hand, the arrival of more tourists who contract these services has a compensatory effect as it does not seem to be positive.

4.3. Panel Data Results with Robust Estimators

To account for the possible effects of heteroscedasticity, we estimated each of the six selected regressions using robust estimators. This type of analysis allows for more statistically consistent results. However, since it is a more demanding methodology, the significance of the variables is usually reduced. The results are shown in Table 6.

As it can be appreciated the degree of significance of tourism is substantially reduced. Therefore, based on a more rigorous analysis, the possibility of this variable as an important driver of growth and employment for the regions analyzed is partially questioned. The other novelty with respect to previous estimates focuses on the significance of the number of wine tourists as a driver of employment. As we have previously discussed, the number of visitors using the services of the Wine Routes of Spain seem to exert a perverse effect on the possible employment creation. Further, using robust estimators, this variable increases its significance even above that of the tourism variable in the second estimate performed. Although the variable reduces its consequence in the third estimate, it continues to be significant. In fact, it is at the same level as general tourism. Despite the reduced
value of the r2 for these estimates, this fact should be a warning and make us be cautious about affirming the positive effect in terms of employment generation for projects of this type.

Table 6. Results with robust estimators.

|          | Growth | Unemployment |
|----------|--------|--------------|
|          | re1    | re2          | re3          | fe1    | fe2    | fe3    |
| tour     | 0.2108 * | 0.2113 * | 0.2340 * | -1.0219 * | -1.2464 * | -1.2979 * |
| w_tour   | 0.0051  | 0.0005      | 0.1246 **  | 0.1373 *  |
| wines    | 0.0225   |             |            |        | -0.0784 |
| _cons    | 6.9306 *** | 6.8677 *** | 6.5156 *** | 17.8671 ** | 19.7939 ** | 20.6516 ** |
| N        | 88      | 88           | 88         | 88      | 88     | 88     |
| r2       | 0.4114  | 0.4053       | 0.4198     | 0.2207 | 0.2608 | 0.2628 |

*, **, *** indicates significance at 10%, 5% and 1% level, respectively. po: pooled; re: random effects; fe: fixed effects; N: observations; r2: R-squared. Source: authors.

5. Discussion

In this paper, we have tested the TLG hypothesis and the TLE hypothesis at the regional level using a general tourism indicator, the number of overnight stays. The results provide evidence in favor of both hypotheses, confirming the results obtained by Balaguer and Cantavella-Jordá [63] for the case of Spain.

We have also selected a set of Wine Routes of Spain and, using two indicators defined according to data availability and panel data techniques, the same tests have been performed. Based on the results of the different contrasts we have carried out, it seems that the Wine Routes of Spain tourism project has been successful in boosting economic growth. It would confirm the general conclusions of the only work that performs a similar analysis based on a sustainable tourism model, which is that of Manzoor et al. [65]. However, this success is not so evident in terms of job creation.

This conclusion is important because it confirms, using econometric techniques, the main conclusion of all the recent works that have studied different wine routes in Spain [17–27]; this type of sustainable tourism is eminently appropriate as a local development tool for declining rural areas in the Spanish provinces analyzed. Nevertheless, as we will point out below, in sustainable tourism projects as the one evaluated, it is interesting to pay attention to some important topics at the political and local level that could lead the project to a non-desirable result in terms of employment and social development.

Moreover, despite the degree of significance, the values for the variables analyzing the Wine Routes of Spain would also confirm this hypothesis. These results are as expected from the weight that visitors to this sustainable development project have in the overall number of tourists (Figure 3). However, their sign was unknown because there is no precedent of this type of work that evaluates the possibilities of sustainable development projects at the regional level. Consequently, we could identify these results with what Eyuboglu and Eyuboglu [47] already highlighted about the possibility that the evolution of tourism did not have a significant relationship with economic growth, or with the findings of Chiu and Yeh [55], which determined that this relationship need not be continuous and constant over time.

However, the most interesting results are those obtained when assessing the effect of the variables on unemployment. As we have mentioned, in the analysis using robust estimators, it seems that the relationship between tourism and job creation is not so significant. Furthermore, it supposes that the number of wine tourists has a negative effect on job creation, and is also a variable with a certain degree of significance. These results would challenge those obtained by Önder and Durgun [71], Pavlić et al. [72], Manzoor et al. [65] and, finally, Condratov [73], the latter being the only one to perform a similar analysis at the regional level.
Therefore, following the work of Ann and Faver [69] and Burkart and Medlik [70], we can conclude that it is important to take with caution the automatic fulfilment of the TLE hypothesis when positive results are obtained in the evaluation of the TLG hypothesis. Skrinjarić [56] and Sokhanvar et al. [57] also concluded that the results could vary between countries, and they need not be general for countries of similar characteristics. These conclusions can be extrapolated to analyses between different regions of the same country, such as the one carried out in this work. This conclusion becomes more important when, in addition, the regions analyzed present different tourist profiles [31,32], diversity of income levels [60], and a different institutional framework [61]. We understand that for this reason the model yielded the need to assess the results of Model 2 based on a fixed-effects model, where differences between regions are important and the model loses explanatory power. This last fact leads us to the need to assess possible effects at the political and local level that go beyond the quantitative results presented.

6. Conclusions, Policy and Local Implications and Future Research Direction

Tourism is an axis that enhances income, employment and cultural exchange and improves infrastructure [74,75]. However, it can also have negative impacts [76] that can substantially alter local communities [77]. Furthermore, despite the fact that tourism has proven to be one of the most effective activities in enabling productive transformation and diversification at the regional level, it does not seem to be as effective in crisis situations [78]. In the context of the current crisis, this evidence must be considered when implementing sustainable tourism projects from local authorities.

The perception by the local population of the benefits and costs of tourism activity has proven to be important [79]. It appears that the literature supports the need for any tourism project to be supported by the local population [80,81], particularly if it is a sustainable project, which often has a smaller dimension than mass tourism, and, therefore, is more sensitive to these issues. It seems that, without this support, the chances of success may be threatened [82].

Consequently, the importance of conducting studies that assess the relationship between tourists and residents has been emphasized for years [83]. The assessment of the project by residents is important in two ways. First, it has a significant impact on attracting native labor to work in the sector [84]. Second, this support is of utmost importance for policymakers to support the project and to initiate a possible public funding process [85]. In conclusion, without project planning and management that includes these aspects, the project may not be as successful as expected [86,87].

When a winery joins this project, related employment should be generated because of the success of the project and the arrival of more tourists to the region [88]. This impact can be direct and indirect [89], and will make the economy more dynamic [90], generate income and create new jobs [91]. However, it is likely that because this service offers many parallel services that have to be previously contracted, such as hosting services, restaurants, leisure, museums, stores, etc., as the number of tourists increases, the local companies and businesses involved in the project could take over all demand, thereby excluding the rest of the businesses. Situations like those described should not be dismissed for the regions analyzed.

We cannot overlook the fact that, although the number of wine tourists has increased substantially throughout the period in all routes, the number of wineries participating in the project has decreased in three of them, and remained constant in two others (Table 2). If the general reports provided by ACEVIN itself are consulted, the routes selected in this study are no exception. In other words, if we take into account the number of tourists that each route receives, we could consider that this is a successful project that should attract more and more wineries. However, we see that this conclusion is only a partial one.

For these reasons, it could be interesting for ACEVIN itself, through the Wine Tourism of Spain project, to extract information on all these issues. To do so, it would be necessary for the association, together with the local administrations, to begin to assess the
effect of this development project at the local level by means of winery surveys, establishments involved, establishments outside the circuits defined by the route and, mainly, by means of surveys of the local population involved. Now, in order to draw meaningful conclusions, we would need a significant amount of time that would allow us to carry out analyses of a certain rigor. In other words, this would be an exercise that would take years of field work, which, at present, only local administrations through ACEVIN would be able to carry out.

Because of the formal absence of similar studies to compare with, the researchers trust that this study will be the start of a general line of work to which more interested researchers will be assigned. Over time, and with more extensive, concrete and robust data, these studies will progressively gain rigor and will be comparable with the results obtained through qualitative or statistical studies at a more microeconomic, local and specific level.

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