Collective or Individual? What Types of Tourism Reduce Economic Inequality in Peripheral Regions?

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Abstract: Regional inequalities are a major concern for governments and policymakers. There is no doubt that tourism impacts the reduction of inequalities, but this impact is not entirely clear. We consider this ambiguity to be related to both the level of study and type of accommodation. In the present study, we examine the inequality level measured by the Gini coefficient in 108 municipalities of the peripheral region of northeastern Poland from 2009 to 2018. We employ a directional spillover index to measure the impact of two accommodation types on tax incomes per capita. The empirical results indicate that collective accommodation-based tourism only reduced inequality during the financial crisis, while individual accommodation-based tourism started to reduce inequality from 2014, when Russian sanctions hit local agriculture and businesses. These results indicate that the role of accommodation types is time-varying and evident in measuring economic distress during and after shocks.

Keywords: economic inequality; sustainable development; tourism; individual accommodation; collective accommodation; Gini coefficient; Warmia-Masuria; Poland

1. Introduction

Income inequalities between regions have accompanied economic development in Europe for centuries [1–5] and have widened in recent decades, benefiting the most urbanized areas [6]. Conversely, the peripheral areas are lagging, even though they profit in some ways from these inequalities [7]. The central concern of peripheral areas is the weakness of endogenous development potential and weak linkages with the exogenous economies, as a result of which all cohesion policies fail to deliver the expected results [8]. Therefore, for the sustainable development of peripheral regions, all opportunities for growth that foster convergence processes and reduce economic inequality are desirable.

Tourism is one such opportunity undertaken in this research because it can be exploited by rural areas [9,10] regardless of the level of development. Tourism can be an opportunity to explore and utilize the natural and cultural assets of the countryside and has become an important area of market activity. However, when the attractiveness of natural or cultural resources is not sufficient to attract collective accommodation facilities (such as hotels and similar facilities regardless of the origin of the owner), agritourism farms and facilities offering rooms for rent (hereafter referred to as individual accommodation facilities) may be the only option for residents to earn additional income [11]. Consequently, an increase in tourists induces demand in related local industries, creating spillover effects [12] and improving the well-being of the community as a whole [13,14].

Although empirical studies mostly support the positive role of tourism in reducing economic inequality [15], there is still no consensus on this issue [15–17]. In the present study, we strive to address these concerns. We analyze the overnight stays provided to tourists in both collective and individual accommodations in one of the most touristic
regions of Poland, i.e., Warmia-Masuria province, and, at the same time, the most peripheral area not only of Poland but also of the entire European Union. We examine the impact of both overnight stay streams on the dynamics of per capita tax income of municipalities in this province and then compare the level of economic inequality in a real economy with an economy in which there would be no tourism in either collective or individual accommodation facilities. Using advanced statistical techniques of the directional spillover index, this study sheds new light on the contribution of tourism to reducing income inequality by type of accommodation. In particular, it provides insights into the unique situation of each municipality in terms of where income is created from each type of tourism and how it is distributed in a way that reduces income inequality.

Such an investigation has not been conducted before for several reasons. First, data from collective and individual accommodation are rarely available for the larger aggregate, i.e., a province. Second, data are generally available at the national or regional level, which may not reflect the specific characteristics of small agricultural municipalities. Third, surveys generally focus on attractive tourist destinations, which, even if peripheral, benefit mainly from the presence of large-scale collective accommodation facilities, whereas our study focuses on peripheral municipalities that are unable to attract large investors. Finally, while most empirical studies focus on both developing and developed countries, only a few studies have looked at transition economies [18].

1.1. Ambiguous Impact of Tourism on Economic Growth and Inequality

It is widely recognized that tourism contributes to long-term economic growth. Over the past two decades, researchers have sought to investigate and define the causal relationship between tourism development and overall economic growth in individual countries and regions, which is known in the literature as the tourism-led growth hypothesis (TLGH); for an overview, see [19]. Tourism directly influences the gross domestic product (GDP) by creating new jobs, reducing unemployment, stimulating investment, and, thus, increasing budget revenues for local governments and the country itself. In addition to the direct effect, however, the impact of tourism on economic growth can be analyzed through the indirect and induced effects introduced by the WTTC [20].

A meta-analysis of empirical studies on the relationship between tourism and economic growth (TLGH) reveals that this relationship is mostly confirmed [21,22]. Out of a sample of 87 studies, 55 indicated an unequivocal relationship between tourism and economic growth. Another recent review [19] also shows that with few exceptions TLGH is confirmed for the countries studied. In particular, TLGH has been confirmed in the European destinations of Italy [23], Turkey [24], Greece [25], Spain [26], and the Asia-Pacific destinations of Malaysia [27] and Taiwan [28]. As can be seen, most of the studies focus on countries in Asia, the Pacific, and Europe that have high levels of summer/leisure tourism [19,29]. There are also a few studies using broader databases with cross-country comparisons (e.g., small tourist countries, OECD countries, CEE transition countries) that yielded similar results [18,30–32].

However, unlike the above studies supporting TLGH, numerous studies [33–36] have demonstrated the opposite effect indicating that it is the sustainable economic growth of the country that facilitates the development of the tourism sector. The performance at the country level is comprised of the impact of tourism on regional or local economies, which can vary in intensity and even character. Thus, in some areas, TLGH may occur while in others there is reverse causation. At the same time, in the same area, one type of tourism facility may facilitate TLGH while other types of tourism may develop as a result of economic growth. The types and wealth of tourists can also lead to different income elasticities and GDP per capita growth [37]. To address these concerns, research needs to be brought down to a lower level of detail. However, relatively few studies have been conducted on a smaller scale, i.e., in regions [29,38,39] due to the scarcity of data. Studies on regions conducted to date have also confirmed TLGH with different measures such as per capita GDP, per capita tourism expenditure, and relative prices in
the Trentino-Alto Adige region of Italy [29]; annual GDP from 1980 to 2006, the number of foreign tourists in South Tyrol, and relative prices between South Tyrol and Germany (where more than 60% of foreign tourists came from) [38]; tourism GDP (measured by the hotel and restaurant sector); and the contribution of tourism to changes in total GDP in the regions of Vietnam [39].

As shown in the meta-analyses to date [19,40,41], almost all studies employ measures of all on-site tourism accommodation, sometimes disaggregating the tourist flow between domestic and international origin. Consequently, few studies have examined the effects of employing different types of tourist accommodation, especially individual accommodation facilities to enhance the development of local economies. This disaggregation might be of great importance as different types of accommodation might locate in different areas and their impact on local economies might be different. Andriotis [42], for example, demonstrates that, on the one hand, large-scale hotels can increase public sector revenues through higher levels of taxes paid, but, on the other hand, they tend to transact less with local suppliers. Therefore, to enhance local multiplier effects, tourism activities need to mobilize a larger contribution of local investors and create more employment opportunities.

Individual accommodation tourism may better suit the development opportunities of local poor peripheral regions than aggregate tourism. In general, tourism can benefit poor peripheral regions because it distributes development from economic centers to less-developed areas [43]. Therefore, tourism can be seen as an instrument for reducing regional disparities and balancing regional income inequalities through “tourism spillovers”. Tourism creates jobs for lower-skilled and lower-wage workers and thus can reduce income inequality and poverty within each location [15]. For instance, tourism development reduced poverty in some Central American countries between 1980 and 2012 [44] and had the long-term effect of reducing regional inequality in 113 countries between 1995 and 2012 [45]. However, despite a considerable body of empirical research confirming the role of tourism in reducing income inequality, there is still no consensus on this issue [15–17,46,47]. Hence, the question arises is individual accommodation tourism, including agritourism, more important in this process?

1.2. The Potential Role of Individual Accommodation Tourism in Reducing Economic Inequality

Individual accommodation facilities comprise agritourism farms and facilities offering rooms for rent. The scientific literature [11] defines the term “agritourism” ambiguously, it is often used synonymously with terms such as “agrotourism”, “farm tourism”, “farm-based tourism”. Although numerous definitions of agritourism can be found in the literature, highlighting its various features, in general, agritourism is a form of tourism closely related to agriculture and working farms, where crop production and animal husbandry are part of the attractions. These features are related to (1) farm (rhythm of farm life, farm chores, presence of farm animals, fresh food, scents, sounds, etc.); (2) people and family (direct contact with the farmer’s family, opportunity to become acquainted with their customs, hospitality, opportunity to meet new people and make new friends, everyday activities of the villagers); (3) rural life (culture, customs, folklore, tradition, and history of the village and region); (4) space (contact with nature, freedom of movement, little traffic, peace, quiet, opportunity for recreation and sports) [48].

Agritourism activities are increasingly seen as a diversification strategy for farmers and agricultural entrepreneurs and as part of a multifunctional model of rural development that provides an opportunity for farm development while fulfilling recreational and educational functions [9,10]. Besides, it is becoming one of the pillars that support sustainable territorial development by, among others, promoting productivity in rural areas, increasing employment, participation in income distribution, and the establishment of farms, agritourism, and organic farm networks [49]. As a sustainable development strategy for rural communities, agritourism is attracting increasing interest from policymakers, researchers, and regional authorities [50].
Farm diversification for visitor recreation and leisure is becoming more widely used for a myriad of economic and non-economic (environmental and socio-cultural) benefits, including improved quality of life for farmers [51,52]. As it directly allows the agricultural sector to earn additional income, it can naturally cause the convergence of left-behind places. Indeed, most studies focus on its economic benefits, confirming the importance of its fundamental role in boosting local rural economies [53] by introducing income diversification strategies [54] and consequently increasing farm incomes [52,55], household income, and profitability, i.e., return on assets [56]. A study conducted among Polish agritourism farms found that the average income from agritourism accounted for as much as 28.4% of total household incomes [57].

A more systematic, up-to-date, and focused literature review on the role of agritourism in supporting sustainable rural development was prepared by Ammirato et al. [11]. A holistic look at the different perspectives from which researchers address the common themes of agritourism and sustainability revealed several important issues. Agritourism is a potential way of development for less developed and peripheral areas, especially for territories with limited development opportunities. Most importantly, agritourism offers numerous opportunities for small and medium-sized farms as an alternative source of income to diversify their activities. It provides employment for family members and the opportunity for farm succession planning to preserve the business for future generations and maintain and renew the farm and its assets. Although agritourism is marked by excessive waste production and pollution, it is sensitive to the deteriorating image of naturally clean places and thus indigenous residents are concerned about the environment for the common benefit [58]. The direct stimulation of agritourism activities not only generates multiplier effects in the local economic system but generates indirect positive effects throughout the local economic structure in the form of public investment and the attraction of capital from outside the rural area. The positive impact of agritourism on the rural area is shared among several types of economic activities because tourist spending is not only related to agritourism services, but also restaurants, crafts, trade, and other businesses located in the rural region. Therefore, agritourism activities act as a stimulus for other local activities (i.e., tourism providers, agri-food producers, handicrafts, restaurants, stores, museums) and the promotion of the rural area [12], as well as contributing to the preservation of customs and local culture [59]. Hence, the impact of agritourism can be evident in growing sales and local employment, and, consequently, in the income taxes generated by the operators and employees.

Thus, while tourism does not necessarily contribute to reducing economic inequality, as evidenced by studies described in the previous section, agritourism and, in general, tourism based on individual accommodations can easily succeed for several reasons. It contributes to the income of the poorest households (although it is not limited to them). It makes income less vulnerable to shocks and natural disasters because it becomes more diversified. It does not necessarily require excessive investment in farm infrastructure, labor, or equipment. Farms diversifying into tourism are likely to focus on those activities that use their existing resources rather than requiring additional external investment. Finally, such tourism creates spillovers to other local industries as it is more embedded in the local economy. Therefore, we can hypothesize that:

**Hypothesis 1 (H1). Individual accommodation-based tourism contributes to reducing economic inequality in a peripheral region to a greater extent than collective accommodation-based tourism.**

### 1.3. Warmia-Masuria Province as an Example of a Peripheral Region with Tourism Potential

In order to test our hypothesis, we consider Warmia-Masuria province as one of the larger areas in Europe with unusual landscape values, i.e., great recreational and sports opportunities, clean air, the proximity of forests, numerous lakes that, together with canals and rivers, create long and picturesque waterways. With an area of 24,203 km², the province located in eastern Poland is near the border zone and far from major economic centers,
with a low investment rate and a modest inflow of foreign investment. According to Statistics Poland, it is a predominantly rural region with a population density of about 80 inhabitants/km$^2$. The region remains one of the least accessible areas not only in the country but also in the European Union. Within the province, there are 116 municipalities (including 16 urban, 33 urban-rural, and 67 rural).

Despite its rich cultural heritage, traditions, and handicrafts, the province has struggled to develop. The decline of the industrial sector has resulted in high rates of unemployment and migration. There are many features characteristic of a peripheral area, among which the most important is the aging of the population. The contemporary socio-economic situation of the province and its low competitiveness in comparison to the country can be explained to a large extent by historical conditions, in particular, its development after World War II. Half a century of the state economy, especially in decreasing rural areas, with typically state-owned agricultural areas (from 1970–1980, the share of agricultural land owned by the state was about 30%) affects the current economic condition of the region. Furthermore, Russian sanctions introduced in 2014, in particular, on meat and meat products, milk and dairy products, and fruits and vegetables, significantly reduced the export of agri-food products and hit local farmers, especially in Warmia-Masuria province. The border traffic between the Kaliningrad region and parts of Warmia and Masuria and the transfer of goods from Poland to Russia has also decreased dramatically, impacting small traders and shopkeepers [60].

The marginal character of the province contrasts with its tourism potential. The province stands out nationally and Europe-wide for the diversity and richness of its natural environment, which includes numerous lakes (2600) and dense forest complexes. Half of the province’s area is under legal protection. Per one inhabitant of the region, there is the largest area of legally protected areas in the country (7.8 thousand square meters, while the national average is 2.7 thousand square meters). The province is located within the functional area of the Green Lungs of Poland.

However, the poor economic situation is beginning to change. Over the past 15 years, the province has become one of the Polish regions with greater infrastructure and tourism investments. This is due to strong support from EU funds and the promotional activities of the provincial government may have also contributed to this surge in tourism inflow. There was also a significant rise in arrivals to the region due to an improvement in the quality of services. The tourist traditions of the region, as well as an increase in wealthier Polish tourists, are significant factors in the region’s development. Consequently, between 2009 and 2018 there has been a dynamic expansion of tourism in the province, both in terms of collective and individual accommodation facilities. The number of beds in collective accommodation increased by 39.4% (from 13,054 in 2009 to 18,204 in 2018), while in individual accommodation the increase was even higher (47.7%, i.e., from 1334 in 2009 to 1970 in 2018). Regarding bed occupancy, there was a tremendous increase in both collective and individual accommodation facilities, as the number of overnight stays increased by 86.6% (from 1,180,106 in 2009 to 2,202,058 in 2018) and 83.1% (from 41,339 in 2009 to 75,711 in 2018), respectively. Therefore, the province has proven to be appropriate for the analysis of the impact of tourism on reducing inequalities in socio-economic development.

The remainder of the paper is structured as follows: First, in Section 2, we present the empirical model, including the calculation of the variables of interest, an explanation of the econometric techniques used, and the preparation of the data. In Section 3, we present the results relating to the role of tourist accommodation in reducing economic inequality, while Section 4 provides the discussion and conclusion.

2. Materials and Methods

2.1. Empirical Model

This study seeks to determine the role of tourism in reducing economic inequality in the very attractive, (albeit less-developed) peripheral Warmia-Masuria province in Poland. Economic inequalities in income distribution can be measured in numerous ways [61–63];
however, the Gini coefficient became the most popular measure in this regard, albeit with some limitations [64]. The Gini coefficient was chosen to calculate the inequality in tax revenue between municipalities in the province from 2009 to 2018. Tax revenues were calculated for each municipality and year, based on agricultural tax receipts and tax shares for state budget revenues from personal income tax (PIT) to capture both employed and farmer incomes. These taxes most closely reflect the wealth level of the residents [65]. As the latter tax only flows to the municipality in a proportion that varies over time, it was converted into a total value dividing by the relevant proportions (from 36.72% in 2009 to 37.98% in 2018). Besides, cities with county rights (Olsztyn and Elblag) receive an additional 10.25% of the PIT, which was also included in this transformation. All variables are calculated on a per capita basis to ensure comparability between municipalities.

The Gini coefficient measures the average of the absolute differences between all pairs of municipalities for the level of calculated tax revenue. The minimum value is 0 when all municipalities would have the same level of tax income, and the theoretical maximum is 1 for an infinitely large set of municipalities in which all but one municipality has a value of 0, the ultimate inequality. For the Gini coefficient to be an unbiased estimate of the true population value, the calculated Gini is multiplied by \( n/(n-1) \) [66,67].

We hypothesize that individual accommodation facilities play a more important role in reducing economic inequality than collective accommodation facilities. While numerous researchers use international arrivals, receipts, and expenditures as proxy variables [19], we use overnight stays provided, that approximate both the length of stay and a specific level of expenditure, given the type of tourism accommodation. To analyze the reduction of economic inequality, we compare the Gini coefficients of the taxes generated by the economies of the municipalities of the whole province in the period 2009–2018 with the Gini coefficients of the same economies in the same period under the assumption that the tourism sector (divided into individual and collective accommodation facilities) would not contribute to tax revenues. We, therefore, assume that the Gini coefficient for the real economy would be higher than that for the economy without the collective accommodation contribution, whereas it would be lower than that for the economy without the individual accommodation contribution. As data on tourist expenditures are not systematically collected at the municipal level, we took overnight stays as a proxy for the budgetary expenditure of tourists in each locality contributing to tax revenues, reflecting the category of tourists who spend different amounts in collective and individual accommodation facilities and the duration of their stay.

The empirical model involves calculating the impact of both collective and individual accommodation on the volume of municipal tax revenues. For this purpose, we employ a directional spillover index [68,69] that identifies the interrelationship between tax revenue and tourism performance, i.e., decomposes the total spillover into components derived, among others, from both overnight stay streams to tax revenues. We estimated a VAR model as in Equation (1):

\[
y_t = \sum_{i=1}^{q} B_i y_{t-1} + \epsilon_t,
\]

where \( y_t \) is a vector of 3 \times 1 endogenous variables (\( N = 3 \)) for each municipality (\( j = 108 \), for 8 municipalities missing data is reported) comprising the tax revenue described above, overnight stays in each year in both collective and individual accommodation facilities; \( B_i \) are 3 \times 3 autoregressive coefficient matrices and \( \epsilon_t \) is a serially uncorrelated vector of error terms. As all the time series in a VAR model should be stationary, we use the Augmented Dickey–Fuller (ADF) unit root test [70] for testing stationarity. All multivariate time series exhibit a unit root, thus in the model, we used variables in the first difference, that indicate their growth rates.

Revealing interrelationship between tourism performance and tax revenue is based on a moving average or transformations such as impulse response functions or variance decompositions. We follow [68,69] and apply the latter to understand the dynamics of the system. The directional spillovers are calculated by the n-step-ahead generalized forecast-
error variance decompositions [71] of the moving average representation of the VAR model in Equation (1). The variance decomposition allows us to divide the forecast error variances for each variable into parts attributable to the performance of other variables. As the shares of both own and cross-variable variance do not sum to one, each entry of the variance decomposition matrix is normalized by the sum of its rows [69]. Therefore, the directional spillovers revived by per capita income growth \( i \) from the collective and individual accommodation growth \( a \in \{a_{coll}, a_{ind}\} \) are defined as:

\[
DS_{i-a} = \frac{\sum_{a=1}^{N} a \neq i \bar{\Theta}_{ia}(n)}{N} \times 100,
\]

where \( \bar{\Theta}_{ia}(n) = \frac{\Theta_{ia}(n)}{\sum_{a=1}^{N} \Theta_{ia}(n)} \) is normalized entries of the variance decomposition matrix by its row sum; and \( \Theta_{ia}(n) \) is given by:

\[
\Theta_{ia}(n) = \frac{\sigma^{-1}_{ia} \sum_{k=0}^{n-1} (e_i^{'A_k} \Sigma e_a)^2}{\sum_{k=0}^{n-1} e_i^{'A_k} \Sigma A_k^{'e_i}}, \quad i, a = 1, 2, 3,
\]

where \( \Sigma \) denotes the variance matrix of the error vector \( \epsilon \), \( \sigma^{-1}_{ia} \) denotes the error term’s standard deviation for the \( i \)-th equation, \( e_i \) a selection vector with one as the \( i \)-th element and zeros otherwise; \( A_k \) coefficient matrices of the moving average representation of Equation (1).

In this study, we are only interested in those parts of the tax revenue variance decomposition that are imputable to overnight stays in collective and individual accommodation. Thus, as a result of the analysis, we obtained the contribution of these two variables to the generation of tax revenue growth rate. It was, therefore, possible to subsequently reduce the growth rate of tax revenues accordingly and to successively calculate the volume of these revenues in subsequent years. Finally, based on three matrices of real tax revenues, tax revenues reduced by the absence of collective, and (separately) individual accommodation contributions, we calculated three sets of Gini coefficients for the period 2009–2018.

2.2. Data Preparation
We used Statistics Poland data [72] for all variables from 2008 to 2018 because the first growth rate had to be calculated for 2009. Due to the need to ensure statistical confidentiality, the scope of the information provided changed from 2015 onwards—data on the utilization of facilities is provided if the population to which the data refers consists of 3 or more facilities. Therefore, for the years 2015–2018, we had a complete set of data on beds, while for some municipalities information on overnight stays provided was missing. We imputed missing values by first calculating the average rate of overnight stays per bed in the municipality in 2014 with missing data. We then calculated such a ratio for neighboring municipalities from 2014 to 2018, starting with 0.5 maximum distance between municipalities. If this was insufficient, we assumed one maximum distance. Neighboring municipalities from adjacent provinces were also included in this calculation. Finally, we calculated the neighborhood growth rate of overnight stays per bed for the period 2015–2018.

As a first step, having the overnight stays per bed in 2014 in the municipality with missing data, we multiplied the 2015–2018 beds by the overnight stays per bed in 2014 in that municipality and the dynamics of the overnight stays per bed in the neighborhood in the following years. In cases where the rate of overnight stays per bed was missing in 2014 in a municipality with missing data (when accommodations appeared in 2015–2018), we adopted the rate from the neighborhood. Both steps were performed separately for collective and individual overnight stays, given the respective sets of statistics.
3. Results

3.1. Descriptive Statistics

Warmia-Masuria Province is one of the most popular tourist destinations in Poland. Throughout 2008–2018 the number of overnight stays in both collective and individual accommodations was increasing (see Figure 1). However, some fluctuations can be seen in the increasing trend, such as the visible impact of the crisis in 2009 (collective) and 2011 (individual accommodations). A certain slump for the latter is also visible in 2017. The financial crisis is also visible in the tax revenues of municipalities in 2008–2009, which, apart from this period, are characterized by a fairly stable upward trend, accelerating slightly in 2018.

![Figure 1. Time series of variables of interest reflecting collective and individual overnight stays and tax revenue in Warmia-Masuria province from 2008 to 2018. Note: overnight stays are in thousands, tax revenue is in billions, tax revenue is in local currency, i.e., in Polish zloty.](image_url)

It is also useful to look at our main explanatory variable, i.e., tax revenue on a per capita basis and its spatial distribution (see Figure 2). This will give us a picture of the distribution of income inequality in the province. The highest level of tax revenue per capita is concentrated around the provincial capital of Olsztyn and to a lesser extent around the second city with county rights, Elblag.

In both maps, similar values are grouped to maximize the differences between categories while keeping the number of categories constant (5). This provides an opportunity to compare the two maps despite significant tax revenue levels increases between 2009 and 2018. In general, the pattern of inequality has not changed much since 2009, but the central part of the province seems to show less inequality, almost exclusively in one category, except for the very popular tourist destinations: Mrągowo, Mikołajki, and Giżycko with much higher levels of tax revenue. In other parts of the province, some rare changes can be seen in both directions (to both higher and lower categories).

The trend depicted in the maps in Figure 2 is further confirmed by the graph of the Gini coefficient for the province from 2009 to 2018 (see Figure 3). Interestingly, inequality in per capita tax revenue between Warmia-Masuria municipalities has steadily declined from 0.211 in 2009 to 0.173 in 2018. This implies that despite the overall increase in per capita tax revenues, their level between municipalities is equalizing. This is not only the...
3.2. The Role of Touristic Accommodation in Reducing Economic Inequality

Before we empirically analyze the role of both collective and individual accommodation in reducing economic inequality, we can observe patterns in the spatial distribution of overnight stays intensity in 2009 and 2018 (see Figure 4). It is evident that while the collective accommodation facilities tended to concentrate around the southern municipalities of Olsztyn, north-east of Elblag in the vicinity of the Vistula Lagoon, and in the central part of the province (Mrągowo, Mikołajki, Ruciane Nida, Giżycko), the individual accommodation facilities were much more dispersed territorially. In 2018, the development of collective accommodation facilities followed a spillover pattern, mainly towards Olsztyn and further west along transport corridors to Mrągowo and Giżycko, as well as south of Olsztyn. Compared to Figure 2, the intensity of collective accommodation tourism is found to increase in relatively richer municipalities, albeit with certain exceptions. This
may support our hypothesis that this type of accommodation is unlikely to contribute to reducing inequality, as it is more conducive to the development of rich areas.

Figure 4. Overnight stays per capita in municipalities of Warmia-Masuria province in: (a) collective accommodations in 2009; (b) collective accommodations in 2018; (c) individual accommodations in 2009; (d) individual accommodations in 2018. Note: maps are prepared in R using [73] with the “Jenks” style identifying groups of similar values in the data and maximizes the differences between categories.

Individual accommodation facilities in both years were also located and sold overnight stays mainly around the most attractive areas of the province (Mrągowo, Mikołajki, and Giżycko), but developed with greater ease in less prosperous areas, e.g., in the north (along the border with the Russian Kaliningrad Oblast) and in the south of the province. These facilities are therefore slightly more prone to reducing inequality, according to our hypothesis; however, this effect is not at all obvious, as can be seen from the map analyses in Figures 2 and 4.

In the next step, we performed a quantitative analysis of the directional spillover index to confirm (or not) the hypothesis in a more precise way. Two scenarios involving the calculation of tax revenue assuming no collective and individual accommodations and then computing Gini coefficients for provincial municipalities in subsequent years are shown in Figure 5. These two scenarios are further compared with the Gini coefficient of real tax revenues (red dashed line) to test the hypothesis.
Individual accommodation facilities in both years were also located and sold over-...models; however, this effect is not at all obvious, as can be seen from the map analyses.

Table 1. Fractions of the spatial decomposition of the Gini coefficient in municipalities of Warmia-Masuria province in 2009–2018: inequality among the eight closest (geographically) neighbors and inequality among non-neighbors.

| Year | Real Tax Income Revenues | No Collective Accommodation | No Individual Accommodation |
|------|--------------------------|-----------------------------|-----------------------------|
|      | Nearest Neighbors | Non-Neighbors | Nearest Neighbors | Non-Neighbors | Nearest Neighbors | Non-Neighbors |
| 2009 | 6.00          | 94.00         | 6.01          | 93.99         | 5.96          | 94.04         |
| 2010 | 5.98          | 94.02         | 6.02          | 93.98         | 5.94          | 94.06         |
| 2011 | 6.10          | 93.90         | 6.08          | 93.92         | 6.04          | 93.96         |
| 2012 | 5.78          | 94.22         | 5.79          | 94.21         | 5.84          | 94.16         |
| 2013 | 5.82          | 94.18         | 5.83          | 94.17         | 5.93          | 94.07         |
| 2014 | 5.82          | 94.18         | 5.86          | 94.14         | 5.99          | 94.01         |
| 2015 | 5.73          | 94.27         | 5.85          | 94.15         | 6.01          | 93.99         |
| 2016 | 5.80          | 94.20         | 5.90          | 94.10         | 6.08          | 93.92         |
| 2017 | 5.81          | 94.19         | 5.91          | 94.09         | 6.07          | 93.93         |
| 2018 | 5.84          | 94.16         | 5.98          | 94.02         | 6.13          | 93.87         |
also contrary to our expectations; however, it may be an effect of the aftermath of the financial crisis and the role of tourism in the recovery process, which will be discussed in the next section.

4. Discussion and Conclusions

The purpose of the present study was to examine the time-varying impact of different types of tourism (collective and individual) on the reduction of economic inequality in a tourist-attractive, yet peripheral province of Poland from 2009 to 2018. To this end, we employed a directional spillover index [69] to measure the impact of two different types of accommodation on per capita tax revenues. We included both collective and individual accommodation-driven tourism. We then calculated per capita tax revenues without both types of accommodation for each of the 108 municipalities considered and finally derived Gini coefficients for three settings, i.e., the real economy, the economy without collective accommodation, and the economy without individual accommodation. The empirical results indicate that the impact of tourism on reducing economic inequality is not stable over time in magnitude or direction, indicating that the role of both types of accommodation is strongly dependent on time and external conditions.

The results of this paper have both theoretical and policy implications. Theoretically, we provide evidence on the positive role of tourism in reducing regional economic inequality. However, this role is not as obvious as we anticipated in our hypothesis. Surprisingly, it changes over time, as both types of accommodation can increase or decrease inequality depending on the year analyzed, more specifically, on external shocks occurring in the province. The existing literature shows the varying impact of crises with distinct origins on tourism and the tailored sector response to them [77]. Our results confirm these observations in a way that both types of tourism reduce economic inequality during different types of crises.

We, therefore, broaden the existing literature on the imperative to step down to the local level with an analysis of the impact of tourism on economic performance, which provides a better insight into the mechanisms driving this impact. However, the literature on this subject rarely focuses on the microeconomic level and rather seeks insights into the impact of tourism activities on the economy as a whole [19,40,41]. It appears that most economic modeling approaches are macroeconomic approaches that cannot cope with microeconomic assessments for a variety of reasons, notably the lack of available data [78]. Indeed, studies conducted at the provincial level show ambiguity. We can point to the positive impact of tourism in reducing economic inequality, for example in China [17]. Furthermore, a country-level study reveals similar results for many countries [45] yet there are also conflicting results for more than a dozen countries with high tourism intensity during the same period [79]. At the micro-level (household and individuals), existing studies show a negative effect of tourism on reducing income inequality, e.g., in Spain [15] and the US [47]; however, these studies were conducted without identifying the specific type of tourism service. In our study, the entire local community is observed, which means that our results may not be comparable to those.

Our results may explain these contradictions as they reveal the specific role of tourism, especially during the impact of external shocks. Moreover, depending on the nature of the shock, different types of tourism play an important role in reducing inequality. Individual accommodations have a particular role when income from core activities deteriorates or is lost, such as from agriculture after the introduction of economic sanctions by Russia in 2014 [60]. Most likely, in a similar way, diversification of sources of income is also helpful when natural disasters such as flooding, or drought occur in rural areas. It is, therefore, an important element of farm development strategies, which can serve as an effective way not only to develop non-agricultural activities, but as a safety buffer during production or sales-related difficulties of basic agricultural crops. The same mechanism applies to room renters. In the scenario where their basic income is significantly reduced as a result of, for
example, loss of jobs or clients, the income from individual tourism may not allow them to reduce their income and increase inequality in their immediate neighborhood.

If, on the other hand, the crisis involves more non-agricultural activities, for example, the crisis in 2009, collective accommodations located in central and wealthier municipalities, which lost the most from the crisis, had a greater impact on minimizing its impact. Another interesting observation arises from the spatial decomposition of the Gini coefficient. While collective accommodation tourism located in wealthier municipalities reduced inequalities, individual tourism comprising mainly rooms for rent in these areas had the opposite effect. A different mechanism can be observed in peripheral regions. It is, therefore, necessary to adequately promote the entire area and attract tourists to both the center and the main attractions of the region, and then gradually attract tourists to the outermost areas. If this is initiated, individual tourism will spill over to neighboring areas, increasingly reducing income inequalities.

Consequently, our research also identifies some policy implications. Addressing income disparities at the regional level is a challenge for most local governments in numerous countries. Tourism can be an important part of implementing a sustainable development strategy, though it should be cautiously encouraged. At the local and rural levels, individual tourism should be promoted as the main avenue for increasing individual income and reducing inequality. Moreover, these inequalities are reduced to a greater extent in neighboring municipalities, and, hence, individual accommodation has a more spatial impact than collective facilities. At the regional level, the recommendation for policymakers is to increase the number of collective accommodation facilities in the most attractive areas and to strengthen the development of individual tourism in the more peripheral municipalities in order to reduce inequalities to the greatest extent possible.

Although the results presented in this paper provide early insights into the differential impact of collective and individual tourism on reducing income inequality, further research is needed. The different roles of these two types of accommodation in reducing inequality should be investigated in more detail and under different spatial and temporal conditions. Future research should also explore the factors that promote the reduction of inequality in these types of accommodation and conditions. A clearer picture of the mechanism for reducing inequalities in areas that employ collective and individual accommodations in reducing inequalities should emerge, given the challenges facing the hotel industry in the near future, arising from the strains of the globalization of the industry and COVID-19 type crises that will emerge in the future. There is a need for a more permanent system to monitor the contribution of accommodation types to reducing income inequality to help the public sector develop strategies for peripheral areas and taking effective initiatives in the future.

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References

1. Alfani, G.; Ryckbosch, W. Growing Apart in Early Modern Europe? A Comparison of Inequality Trends in Italy and the Low Countries, 1500–1800. Explor. Econ. Hist. 2016, 62, 143–153. [CrossRef]

2. Bukowski, P.; Novokmet, F. Between Communism and Capitalism: Long-Term Inequality in Poland, 1892–2015. Cep Discuss. Pap. 2019, 1628, 1–90.

3. Brea-Martinez, G.; Pujadas-Mora, J.-M. Estimating Long-Term Socioeconomic Inequality in Southern Europe: The Barcelona Area, 1481–1880. Eur. Rev. Econ. Hist. 2018. [CrossRef]

4. Malinowski, M.; van Zanden, J.L. Income and Its Distribution in Preindustrial Poland. Cliometrica 2017, 11, 375–404. [CrossRef]

5. Hoffman, P.T.; Jacks, D.S.; Levin, P.A.; Lindert, P.H. Real Inequality in Europe since 1500. J. Econ. Hist. 2002, 62, 322–355. [CrossRef]

6. Enflo, K.; Henning, M.; Schon, L. Swedish Regional GDP 1855–2000: Estimations and General Trends in the Swedish Regional System. Res. Econ. Hist. 2014, 30, 47–89.

7. De Dominicis, L. Inequality and Growth in European Regions: Towards a Place-Based Approach. Spat. Econ. Anal. 2014, 9, 120–141. [CrossRef]

8. Iammarino, S.; Rodriguez-Pose, A.; Sterpor, M. Regional Inequality in Europe: Evidence, Theory and Policy Implications. J. Econ. Geogr. 2019, 19, 273–298. [CrossRef]

9. Sznajder, M.; Przezborska, L. Agroturystyka [Agritourism]; PWE: Warsaw, Poland, 2006; ISBN 83-208-1607-6.

10. Tew, C.; Barbieri, C. The Perceived Benefits of Agritourism: The Provider’s Perspective. Tour. Manag. 2012, 33, 215–224. [CrossRef]

11. Ammirato, S.; Felicetti, A.M.; Raso, C.; Pansera, B.A.; Violi, A. Agritourism and Sustainability: What We Can Learn from a Systematic Literature Review. Sustainability 2020, 12, 9575. [CrossRef]

12. Ollenburg, C.; Buckley, R. Stated Economic and Social Motivations of Farm Tourism Operators. J. Travel Res. 2007, 45, 444–452. [CrossRef]

13. Dluzewska, A.M. Well-Being versus Sustainable Development in Tourism-The Host Perspective. Sustain. Dev. 2019, 27, 512–522. [CrossRef]

14. Dluzewska, A.M. Wellbeing versus Sustainable Development—Conceptual Framework and Application Challenges. Probl. Ekorozw. 2017, 12, 89–97.

15. Carrascal Incera, A.; Fernández, M.F. Tourism and Income Distribution: Evidence from a Developed Regional Economy. Tour. Manag. 2015, 48, 11–20. [CrossRef]

16. Goh, C.; Li, H.; Zhang, Q. Achieving Balanced Regional Development in China: Is Domestic or International Tourism More Efficacious? Tour. Econ. 2015, 21, 369–386. [CrossRef]

17. Li, H.; Chen, J.L.; Li, G.; Goh, C. Tourism and Regional Income Inequality: Evidence from China. Ann. Tour. Res. 2016, 58, 81–99. [CrossRef]

18. Chou, M.C. Does Tourism Development Promote Economic Growth in Transition Countries? A Panel Data Analysis. Econ. Model. 2013, 33, 226–232. [CrossRef]

19. Brida, J.G.; Cortes-Jimenez, I.; Pulina, M. Has the Tourism-Led Growth Hypothesis Been Validated? A Literature Review. Curr. Issues Tour. 2016, 19, 394–430. [CrossRef]

20. WTTC Economic Impact Reports. Available online: https://wttc.org/Research/Economic-Impact (accessed on 10 March 2021).

21. Pablo-Romero, M.D.P.; Molina, J.A. Tourism and Economic Growth: A Review of Empirical Literature. Tour. Manag. Perspect. 2013, 8, 28–41. [CrossRef]

22. Nunkoo, R.; Seeptah, B.; Jaffur, Z.R.K.; Moraghen, P.G.W.; Sannassee, R.V. Tourism and Economic Growth: A Meta-Regression Analysis. J. Travel Res. 2019, 59, 404–423. [CrossRef]

23. Cortes-Jimenez, I.; Pulina, M. Inbound Tourism and Long-Run Economic Growth. Curr. Issues Tour. 2010, 13, 61–74. [CrossRef]

24. Gunduz, L.; Hatemi, J.A. Is the Tourism-Led Growth Hypothesis Valid for Turkey? Appl. Econ. Lett. 2005, 12, 499–504. [CrossRef]

25. Dritsakis, N. Tourism as a Long-Run Economic Growth Factor: An Empirical Investigation for Greece Using Causality Analysis. Tour. Econ. 2004, 10, 305–316. [CrossRef]

26. Balaguer, J.; Cantavella-Jordá, M. Tourism as a Long-Run Economic Growth Factor: The Spanish Case. Appl. Econ. 2002, 34, 877–884. [CrossRef]

27. Lean, H.H.; Tang, C.F. Is the Tourism-Led Growth Hypothesis Stable for Malaysia? A Note. Int. J. Tour. Res. 2009, 12, 375–378. [CrossRef]

28. Kim, H.J.; Chen, M.-H.; Jang, S.S. Tourism Expansion and Economic Development: The Case of Taiwan. Tour. Manag. 2006, 27, 925–933. [CrossRef] [PubMed]

29. Brida, J.G.; Pulina, M. A Literature Review on the Tourism-Led-Growth Hypothesis. Work. Pap. Crenos 2010, 17, 1–26.

30. Brau, R.; Lanza, A.; Pigliaru, F. How Fast Are Small Tourism Countries Growing? Evidence from the Data for 1980–2003. Tour. Econ. 2007, 13, 603–613. [CrossRef]

31. Lanza, A.; Temple, P.; Urga, G. The Implications of Tourism Specialisation in the Long Run: An Econometric Analysis for 13 OECD Economies. Tour. Manag. 2003, 24, 315–321. [CrossRef]

32. Liberto, A.D. High Skills, High Growth: Is Tourism an Exception? J. Int. Trade Econ. Dev. 2013, 22, 749–785. [CrossRef]

33. Allhowaish, A.K. Is Tourism Development a Sustainable Economic Growth Strategy in the Long Run? Evidence from GCC Countries. Sustainability 2016, 8, 605. [CrossRef]
69. Antonakakis, N.; Dragouni, M.; Filis, G. How Strong Is the Linkage between Tourism and Economic Growth in Europe? *Econ. Model.* 2015, 44, 142–155. [CrossRef]

70. Dickey, D.A.; Fuller, W.A. Distribution of the Estimators for Autoregressive Time Series with a Unit Root. *J. Am. Stat. Assoc.* 1979, 74, 427–431. [CrossRef]

71. Pesaran, H.H.; Shin, Y. Generalized Impulse Response Analysis in Linear Multivariate Models. *Econ. Lett.* 1998, 58, 17–29. [CrossRef]

72. GUS Local Data Bank. Available online: https://bdl.stat.gov.pl/BDL/start (accessed on 15 January 2021).

73. Tennekes, M. Tmap: Thematic Maps in R. *J. Stat. Softw.* 2018, 84, 1–39. [CrossRef]

74. Wickham, H. *Ggplot2: Elegant Graphics for Data Analysis*; Springer International Publishing: Cham, Switzerland, 2016; ISBN 978-3-319-24277-4.

75. Efron, B.; Tibshirani, R. Improvements on Cross-Validation: The 632+ Bootstrap Method. *J. Am. Stat. Assoc.* 1997, 92, 548–560. [CrossRef]

76. Rey, S.J.; Smith, R.J. A Spatial Decomposition of the Gini Coefficient. *Lett. Spat. Resour. Sci.* 2013, 6, 55–70. [CrossRef]

77. Pforr, C.; Hosie, P. Crisis Management in the Tourism Industry: Beating the Odds? *Disaster Prev. Manag. Int. J.* 2010, 19, 515–515. [CrossRef]

78. Li, S.; Jago, L. Evaluating Economic Impacts of Major Sports Events—A Meta Analysis of the Key Trends. *Curr. Issues Tour.* 2013, 16, 591–611. [CrossRef]

79. Mahadevan, R.; Suardi, S. Panel Evidence on the Impact of Tourism Growth on Poverty, Poverty Gap and Income Inequality. *Curr. Issues Tour.* 2019, 22, 253–264. [CrossRef]