



Effects of tourism on regional asymmetries: Empirical evidence for Portugal[☆]



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H I G H L I G H T S

- We estimate tourism regional effects on output, employment and investment.
- The methodology considers the existence of direct effects and regional spillovers.
- Benefits from tourism are not equally distributed among regions.
- Some regions benefit more from tourism in other regions.
- Tourism in each region generates different effects at national level.

A R T I C L E I N F O

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A B S T R A C T

This study uses a vector autoregressive approach to estimate the regional effects of tourism in Portugal with the ultimate objective of assessing tourism's role in reducing regional asymmetries. We identify the locations where tourism generates higher effects for each region, as well as the regions where tourism generates the strongest effects on the country's economic performance. This issue is of particular interest from the side of the country's authorities since tourism is a strategic sector to promote national and regional convergence. The study's findings suggest that tourism has contributed to the concentration of economic activity in the largest region of the country and to reduce the gap between the second and the third largest regions. Some regions benefit more from tourism located in other regions than tourism located in each region and tourism in all regions generate positive effects on the country's economic performance.

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1. Introduction

While there is little doubt that tourism generates positive effects on product, employment and private investment in Portugal (World Travel & Tourism Council, 2013), there is little knowledge about the contribution of this sector to reduce the gap among regions and promote regional convergence. In this paper we address the issue of which regions benefit the most from tourism and ultimately whether tourism has contributed to the concentration of economic activity at the regional level. To the extent that the marginal product of tourism for any given region is greater than the

region share of private sector variables – output, employment and investment – we can ascertain that tourism contributes to the concentration of economic activity in the region. This is a critical issue from policy perspective as it directly relates to the relationship between the positive aggregate effects of tourism at the national level and the regional asymmetries they may generate. Related with the above discussion, but from a national perspective, we also aim to identify the regions where tourism generates the largest benefits for the whole country and how those effects are distributed between the region and the rest of the country. This issue is of relevant importance as it has direct policy implications for future decisions on tourism promotion and highlights whether tourism policy decisions towards the promotion of the aggregate growth can simultaneously promote regional convergence or, by the contrary, whether aggregate growth is accomplished at the cost of increasing regional asymmetries.

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Our methodology is based on the estimation of vector autoregressive models for each of the five contiguous NUTS II regions in the mainland in the way it is employed in [Pereira and Andraz \(2004, 2006\)](#), relating region-specific variables – tourism in the region, private output, private employment, private investment and tourism in other regions. This multivariate dynamic approach highlights the importance of dynamic feedbacks between tourism and macroeconomic variables, as well as the possible endogeneity of tourism activity. Moreover, the possible existence of spillover effects in each region, from tourism in other regions, is fully accounted for. Therefore, this approach accommodates our perspective according to which these dynamic feedback effects, along with the existence of network effects, are essential to understand the relationship between tourism and the economy's private sector, as well as the possible reverse causality in the sense of Granger.

The issue of regional spillover effects and the effects of tourism on regional asymmetries and regional concentration of economic activity, which are the focus of our work, have not been addressed in detail by any study applied to Portugal. However, few studies, to our knowledge, explore the regional dimension. [Silva and Silva \(2003\)](#) analyze the role of tourism in the industrial context in several Portuguese regions. [Soukiazis and Proença \(2008\)](#), using panel data, show evidence of the contribution of tourism to regional convergence. On the same direction, [Neves \(2009\)](#) analyses the contribution and importance of tourism activity in NUTS II regions over the period 1990–2007, through a panel data analysis. Following on the same vein, and focusing the Center region, [Eusébio \(2006\)](#) concludes that tourism was responsible for 3.9% of the production and 2.6% of the households' earnings in 2003.

At the international level, several studies deal with the relationship between tourism and economic growth, (see, for example [Katircioglu, 2009](#); [Kim, Chen, & Jang, 2006](#); [Lee & Chang, 2008](#); [Oh, 2005](#)) but only few studies explore the regional dimension. For example, [Yang and Wong \(2012\)](#) focus the spillover effects of tourism flows to several Chinese cities, both inbound and domestic, through a spatial panel data model. On the same direction, [Klychnikova and Dorosh \(2012\)](#) discuss the leakages effects on regions of Panama, whereas [Zhang, Madsen, and Jensen-Butler \(2007\)](#) use data for Denmark and [Aguayo \(2011\)](#) provides evidence for Central and Baltic countries. [Proença and Soukiazis \(2008\)](#) argue that tourism can be used as an instrument to reduce regional asymmetries.

This study, while adopting a vector autoregressive modeling approach, differs from the previous studies in several aspects. First, and most importantly, this study estimates long-run elasticities and long-run marginal products of regional economic variables with respect to tourism within a framework that explicitly addresses the importance of considering tourism regional spillovers in regional analysis of tourism impacts. This follows the idea expressed by [Haughwout \(1998, 2002\)](#) that the existence of spillover effects should be considered in regional impact analysis. This feature is not found in any of the regional studies but is of practical relevance since it guarantees that the sum across regions of the direct effects and spillover effects, which correspond to the overall aggregate effect of tourism in the country as derived from the regional models, is consistently in line with the results from the aggregate model. This strategy provides more rigorous estimates of tourism regional impacts. Second, results give evidence on whether tourism has contributed to regional concentration of economic activity. Third, results also allow us to identify the regions where tourism generates the largest effects at national levels and, by distinguishing between direct effects and spillover effects, it turns possible to conclude whether tourism promoting decisions pursuing the

country's economic growth are compatible with the reduction of regional asymmetries.

The remainder of this paper is structured as follows. Section 2 reports the data and a description of the main methodological issues. Section 3 reports the empirical results. Finally, Section 4 reports the main conclusions and policy implications.

2. Data and preliminary analysis

2.1. Data sources and description

The dataset is composed by annual data of gross domestic product (hereafter output), employment, gross fixed capital formation (hereafter private investment) and tourism, measured by the number of overnight stays in hotels, apartment hotels, tourist apartments, tourist villages, motels, bed and breakfasts, inns, guesthouses and camping parks of domestic and international tourists in the mainland and in each of the five contiguous administrative regions in the country (NUTS II) – North, Center, Lisbon, Alentejo and Algarve. Both monetary variables, product and investment, are in millions of constant 2006 euros and the employment is in thousands of full-work employees. The option for measuring tourism as the number of overnight stays is due to the lack of consistent information on other variables such as tourists' expenditures. However, the use of this proxy is not new. This proxy for touristic activity has also been used in recent works, such as [Cortés-Jiménez \(2008\)](#) or [Paci and Marrocu \(2013\)](#), as it reflects the length of stay and therefore it provides information about the occupation rate of touristic facilities. In this way, it is more informative than other variables such as the number of arrivals, which do not provide information on such dimensions.

All data are in logarithms and they span the period from 1987 to 2011 which is the most recent year for which the data are available and our sources are the annual issues of the Regional Accounts published by the National Institute of Statistics ([Instituto Nacional de Estatística, several years](#)) for the data on output and employment and the annual issues of Tourism Statistics for the data on tourism. The data on investment at the regional level were constructed as the aggregate investment weighted by the regions' output share for the period prior to 2003, as these data are not available from official sources. The figures for the remaining years come also from the Regional Accounts.²

The regional data series are depicted in [Figs. 1–4](#), while [Table 1](#) reports some summary statistics. All variables are upward trended notwithstanding the occurrence of oscillations. We notice an increase of all private-sector variables in the Centro region in the last decade, including tourism. At the same time, we notice a decline of the overall investment and employment in Lisbon in the mid-1990s.

However, Lisbon and the North appear as the most important regions in all variables over the sample period. They concentrate 74% of the output, 73% of the private investment and 70.4% of the employment. The Center region is ranked third and it accounts for 16.5% of the output, 16.9% of the investment and 20.3% of the employment. The last positions belong to the Alentejo and Algarve which together account for just 9.4% of the output, 10.3% of the investment and 9.3% of the employment.

In terms of tourism, the Algarve emerges as the main touristic region, concentrating, on average, 43.8% of the total number of overnight stays in the country. Lisbon is ranked in the second

² Appropriate statistical and econometric analysis did not identify any structural change in the data. The results are available upon request.

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