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Tourism spatial spillover effects and urban economic growth

Tao Ma [a,1], Tao Hong [a,2], Haozhe Zhang [b,*]

[a] School of Management, Harbin Institute of Technology, 13 Fayuan Street, Nan Gang District, Harbin 150001, PR China
[b] School of Architecture, Harbin Institute of Technology, 66 Xidazhi Street, Nan Gang District, Harbin 150001, PR China

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ABSTRACT

The present study investigates the effect of tourism and its spatial correlation on urban economic growth. The study examines 272 prefecture-level administrative units between 2002 and 2011 in China as the sample and a β convergence model as the frame. The conclusions are that tourism development has a substantial impact on urban economic growth in China without decreasing the economic gap among cities. The tourism growth effect contributed primarily in the development of positive spatial correlation that led to spatial spill-overs—a large indirect effect; the direct effect of tourism on local economies was minimal. Introducing spatial correlation analysis of the relationship between tourism and urban economic development avoids reaching misleading conclusions and enables the analysis of both direct and indirect effects of tourism development.

1. Introduction

Tourism now is one of the fastest growing industries globally. Global tourist trips increased from 52.8 million in 1995 to 1.1 billion in 2013, with an average annual rate of increase of 4.34%. Asia and the Pacific Rim had the highest growth rates. China became the third biggest world travel market in 2013 with a total of 58 million visits (UNWTO, 2014). Furthermore, with the constant increase in disposable income and people's quality of life, the effective demand for casual trips is increasing continuously and rapidly in China. In 2013, vacation travel in China included 3.6 billion domestic trips, 3 billion more than the 0.5 billion in 1996 (Chinese Academy of Social Sciences (CASS), 2014).

Improvement of micro-level personal welfare is the final goal of social development, which is influenced by the economic development of a country. Thus, how much effect tourism development has on economic development is an unavoidable topic that needs to be addressed by relevant studies. Intuitive figures show that tourism has become an important part of the world's and China's economy. Increased tourism in 2013 made up 9% of the world GDP. At the same time, Chinese foreign tourism income reached 51.7 billion dollars, which was 2.33% of the total export and 24.55% of the total service exports (National Bureau of Statistics of China, 2013). Domestic tourism income reached 2.63 trillion Yuan, which was 4.62% of the GDP, with a 15.7% increase over the same period in 2012 (National Bureau of Statistics of China, 2013). However, although many studies have been published regarding the relationship between tourism and economic development, their conclusions have been very different or have even contradicted one another.

Scholars hypothesize that tourism stimulates economic growth (tourism-led growth). A cross-national study (de Mello-Sampayo & de Sousa-Vale, 2012) concluded that tourism stimulated economic growth using a co-integration test on 23 years of panel data from 31 European countries. Research on 179 regions in 10 European countries (Fayissa, Nsiah, & Tadasse, 2012), a study of 42 African countries (Proenca & Soukiazis, 2008), an investigation of southern European countries (Greek, Italy, Portugal and Spain) and a study of 17 Latin American countries (Fayissa, Nsiah, & Tadesse, 2009) also provided similar empirical evidence.

Using internal regional investigations, Moraru (2013) concludes that the development of tourism could only stimulate economic development in the short-term through an analysis in Morocco and Tunisia. In addition, Brida, Sanchez Carrera, and Risso (2012) indicate that the development of tourism also had positive long-term effects through research on regional-level units of Mexico. Other investigators (Cortés-Jiménez, 2008; Jin, 2011) arrive at similar conclusions. However, some scholars offer opposing evidence, that is, economic growth stimulates the development of tourism rather than the reverse. For example, in a transnational study, Katircioglu (2009) found a one-way causal relationship showing that economic growth promoted tourism development in a study on Mediterranean countries. In regional-level studies, several investigators (Lee, 2008; Odhiambo, 2011; Payne & Mervar, 2010) report similar one-way relationships in the domestic regions of Tanzania, Croatia, and Singapore, respectively.

* Corresponding author. Tel.: +18645019786.
E-mail addresses: mataohit@gmail.com (T. Ma), hongtao.hit@gmail.com (T. Hong), 591282167@qq.com (H. Zhang).
[1] Tel.: +15904508391.
[2] Tel.: +86 1 919 360 4885.

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The gap between research findings is far more than what has been shown. Both theories—a bidirectional causal relationship between tourism and economic development and no causal relationship between tourism and economic development—have empirical evidence to support them. Transnational-level studies, such as the research by Nissan, Galindo, and Méndez (2011) on 12 countries, including Denmark, Finland and Germany, and the study of Othman, Salleh, and Sarmidi (2012) of 18 countries, including China, as well as regional-level studies, such as the research of Ridderstaat, Croes, and Nijkamp (2013) and Li, Mahmood, Abdullah, and Chuan (2013) in Aruba and Malaysia, support the bidirectional relationship. In contrast, Çağlayan, Şak, & Karymshakov et al. (2012) report no significant causal relationship between tourism and economic development in Asia when studying the correlation between tourism and the economies of 135 countries on four continents throughout the world.

Huge differences exist in studies on related issues in China. For example, Gao, Tian, Zhou, and Zhang (2009) suggest that foreign tourism income had a significant promoting effect on economic development based on a study of dynamic panel data from 30 provinces in China from 1995 to 2007. Studies done in Fenghuang (Feng, 2008) and Turpan (Donaldson, 2007; Keyim, Yang, & Zhang, 2005) provide similar results. Li and Liang (2009) show that the development of tourism was the Granger cause of the increase in foreign tourism income through time series analysis of the data from 1994 to 2007 in China.

However, Li (2011) provides empirical evidence that economic growth promoted tourism development by studying province-level units in China using a factor analysis method. Wang, Li, and Wang (2011) provide empirical evidence for a bidirectional causal relationship between regional economic growth and tourism. Based on existing studies, two important characteristics of tourism have not been well represented. First, the development of tourism has a significant spatial externality; that is, tourism development in one area affects tourism in another area through a spatial spillover effect. Second, the city is the basic unit of tourism products' demand and supply, that is, a city's tourism products usually show as a whole for customers to choose and usually share similarities and coherence in product characteristics and operating management. Not only do large differences occur in "producing" processes among internal tourism products, but also, the market that tourism products face is a mix of several types of markets when considering spatial units bigger than the city, such as the province or country, as the study object.

Taking the city as the basic unit of analysis and considering the spatial externality of tourism development will undoubtedly help us to understand the essential characteristics of tourism and to increase the accuracy of our data analysis. Beginning from this judgment, the present study analyzed the relationship between tourism development and urban economic growth using spatial economic analysis with panel data of 272 prefecture-level administrative units in China from 2002 to 2011.

The remaining content is organized as follows. The second part constructs five different experimental analysis models to show the influence that tourism and its spatial correlation have on urban economic growth. The third part is an introduction to data resources and variable set-ups. The fourth part shows the results of the empirical analysis and simple discussions. The final part is the conclusion.

2. Empirical analysis models

The present study analyzes the relationship between tourism and urban economic growth as well as between tourism's spatial correlations and urban economic growth under the frame of a β convergence model (Barro & Sala-i Martin, 2004; Mankiw, Romer, & Weil, 1992). The economic growth model is open, which means that we could analyze the effect of one variable on economic growth by adding that variable into the model under the premise of the key factors being under control. According to the purpose of the present study, we introduced the initial average GDP and variables representing tourism development and its spatial correlations into the model.

Tobler (1979) summarizes the first theory of geography as, "Everything is related to everything else but near things are more related than distant things." According to this theory, no region is isolated, and every region is always in development according to its correlation with other regions. Elements, products, knowledge and information are in continuous exchange, the cost of which is positively correlated with distance. Thus, interactions between areas with close spatial positions are also relatively significant. Omitting the spatial correlations in an econometric analysis when variables are spatially correlated would lead to bias (Anselin, 1988). The interaction effect inside a country is more significant than across countries due to higher market openness. Thus, we needed to give special attention to the spatial correlations among variables because we considered 272 prefecture-level administrative units in China as the study object.

The positive spatial spillover effects in many regions of China resulting from economic growth have been demonstrated by many studies (Ying, 2003; Zhang & Felmingham, 2002). Model (1), which is the basic model used for comparison with other models' results in the present study, is a β-convergence model with built-in economic growth spatial correlations.

$$\mathbf{log}(\mathbf{y_{it+1}}/\mathbf{y_{it}})=\boldsymbol{\alpha}+\boldsymbol{\beta}\mathbf{logy_{it}}+\boldsymbol{\rho}\mathbf{Wlog}(\mathbf{y_{it+1}}/\mathbf{y_{it}})+\boldsymbol{\varepsilon}_{\mathbf{it}} \quad (1)$$

In the model, i represents the city, t represents time, and α is the intercept parameter. The variable y is the indicator of economic growth, $\log(y_{it+1}/y_{it})$ represents the growth rate of city i over time period $t+1$, and β, the coefficient of $\log y_{it}$ is the basis to estimate whether the economy between cities is convergent. If $\beta<0$, we take it that cities with less-developed economies have faster economic growth, which means that all cities are converging toward a stable level; otherwise, we take the inter-city economies as divergent, that is, the gap between cities will be increasing. W is the spatial weight matrix built through three steps: first, calculate the distance between cities based on the latitude and longitude of the city's centers; second, take the reciprocal of that distance as the element of the spatial weight matrix because the spatial correlation is inversely proportional to distance; last, standardize the spatial weight matrix and calculate the W used in the model. The first row and first column of W represent the 272 cities, while the other elements all represent the corresponding standardized reciprocals of the distance between the cities. The term ε_{it} represents the residuals.

For the tourism industry, the spatial correlation may come from the labor market sharing and knowledge spill-overs (as discussed by Marshall), that is, the inter-regional flow of tourism practitioners and the inter-regional learning and imitation in the process of building tourism products. The spatial correlation may also come from the characteristics of customers' multi-destination tourism; that is, the volatilities of the demands for different tourism products have a high level of synchronization because customers usually choose several cities at the same time when they make a travel plan. Thus, model (2) and model (3) introduce T_{it}, which represents tourism development, and $\delta_1 \mathrm{Wlog}T_{it}$, which represents the successive tourism spatial correlation.

$$\mathbf{log}(\mathbf{y_{it+1}}/\mathbf{y_{it}})=\boldsymbol{\alpha}+\boldsymbol{\beta}\mathbf{logy_{it}}+\boldsymbol{\rho}\mathbf{Wlog}(\mathbf{y_{it+1}}/\mathbf{y_{it}})+\mathbf{r_1}\mathbf{logT_{it}}+\boldsymbol{\varepsilon}_{\mathbf{it}} \quad (2)$$

$$\mathbf{log}(\mathbf{y_{it+1}}/\mathbf{y_{it}})=\boldsymbol{\alpha}+\boldsymbol{\beta}\mathbf{logy_{it}}+\boldsymbol{\rho}\mathbf{Wlog}(\mathbf{y_{it+1}}/\mathbf{y_{it}})+\mathbf{r_1}\mathbf{logT_{it}}+\boldsymbol{\delta_1}\mathbf{WlogT_{it}}+\boldsymbol{\varepsilon}_{\mathbf{it}} \quad (3)$$

Comparing model (2) and model (1), we obtain two ways to investigate the effects of tourism on urban economic growth. First, observe the coefficient of γ_1 and its significance. If the coefficient is significantly positive, we take it as true that tourism development could stimulate urban economic growth. Second, compare the coefficient of β and its