

Tourism, Capital / Labor Inflow and Regional Development

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Abstract

We consider an open rural region of a developed country with two sectors: an environmentally sensitive agricultural industry and locally operated tourism, which generates pollution. We find that if residents' preference for environmentally unfriendly touristic services is small, introducing additional capital, labor, and tourist promoted by local government may harm residents' economic welfare. Even if tourism is environmentally friendly, we can assert that the inflow of capital or labor can still possibly negative effects. On the other hand, if residents' preference for touristic service is large, increased tourists from outside may have positive effects.

Keywords: tourism, environmental pollution, remittance

JEL Classification: R23, Q56, F22

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1 Introduction

It is widely known that tourism is almost the only solution for economic development, not only for lower developing countries, but also for rural regions in developed countries. Visitors who consume various goods and services at tourist spots spend a lot of money. They also help create job opportunities. We can see almost all countries worldwide are keen to attract tourists from abroad.

On the other hand, we need to remember that tourism often causes several difficult problems. The most serious problem is environmental pollution. Tourism will contaminate the air and water due to drainage from hotels and restaurants, garbage from sightseeing sites, and so on. Damage to the natural environment will surely have negative effects on the health of ordinary residents living in touristic areas, in addition to indirect negative effects, including negative externalities on the productivities of agricultural and fishery industries. Therefore, it is commonly recognized that establishing environmentally friendly tourism is a rather important subject. Nevertheless, due to fast population declines and lost economic prosperity, some of the rural areas or developing countries are rushing to expand tourism by introducing foreign capital (or domestic capital from outside the region), such as a globally networked hotel.

Several studies focus on the environment and tourism. Beladi et al. (2007) examine the effects of tourism on welfare and the environment applying a two goods model (one tradable good and one non-tradable good). They conclude that an exogenous tourism boom can harm the environment and lower domestic residents' welfare. Their model assumes that pollution has direct negative effects on residents' economic welfare and that the productivity of each good does not change. Yabuuchi (2012) examines the three-sided problem of combining tourism promotion with environmental protection and unemployment concerns simultaneously. He formulates a general equilibrium model with unemployment a la Harris-Todaro and a tourism sector that generates pollution. One of the main findings is that tourism promotion, which implies an increase in expenditure by foreign tourists, increases unemployment and improves welfare if the pollution tax imposed on producers in the tourism sector is higher than the marginal disutility of

pollution. We must remark that he considers a small, open economy comprising three sectors: manufacturing, tourism, and agriculture. Additionally, the model assumes that both domestic residents and foreign tourists demand tourism goods (touristic services). Furthermore, this study also focuses only on the direct negative external effects of pollution on residents' economic welfare while the productivity of each good does not change. On the other hand, Yabuuchi (2015) examines the interaction between tourism and environmental protection by considering both production and consumption externalities, and obtains results similar to those of Yabuuchi (2012). Finally, Tetsu (2006) extends Hazari et al.'s (2003) study to also examine the effects of tourism promotion in an urban-rural general equilibrium model with four goods. His study also aimed to examine the economic effects of tourism promotion, but assumes that most domestic residents cannot afford to consume tourism due to poverty. The main result is that both tourism promotion policies by introduction of foreign capital and foreign tourists have positive effects on rural farmers, but negative effects on urban workers. Here, we note that his study does not consider pollution caused tourism.

In our study, we consider an open rural region of a developed country. Different from studies above, which focus on national economies, we focus on a small rural area in which an agriculture or fishery industry and locally operated tourism exist without a manufacturing sector. This setting considers only rural areas, and justifies ignoring the existence of unemployment. In terms of the local government's industrial promotion policies, we consider three possible scenarios. In the first, we consider the inflow of (foreign) capital, such that investment from outside the region intends to manage the tourism service sector with local (domestic) capital. But we reasonably assume that the total earnings of capital from outside should be remitted. Second, we consider that labor inflow from outside the region also follows the public strategies to solve the serious problem of depopulation in rural area. Third, we study the economic effects of increased tourists from outside. To distinguish the differences in the properties of tourists and immigrants, we assume that immigrants contribute productions and consume both agricultural goods and tourist services, as domestic residents do, while tourists only consume touristic services as temporary visitors. Different from Beladi et al. (2007) and Yabuuchi (2012), we here consider the negative externality of tourism only on the agricultural sector's productivity, and this indirect effect seems sufficient to express the negative side of pollution. We find

that three policies may harm residents' economic welfare when residents' preferences for environmentally unfriendly touristic service is small. Paradoxically, we can assert that the inflow of capital or labor can still possibly have negative effects even when tourism is relatively environmentally friendly.

In Section 2, we present the Model. Section 3 is devoted to the analysis. We provide concluding Remarks in Section 4.

2 The Model

Let us consider a small open rural region in a developed country located somewhat far from an urban area with a large population. For example, we can imagine the Gargano and Salento peninsulas in Pougla, Italy, which are on the fringes of Bari metropolitan city. We may consider the Atsumi and Shima peninsulas in Tokai area, Japan, which are the frontier districts of the large economic bloc of Nagoya. Due to the inferior location just outside of the traffic network of the core city, each area is not suitable for the manufacturing industry. Thus, in this district, we find that agriculture and tourism are the main industries.

We can consider the agricultural goods as tradable because those produced in suburban areas are exported to the urban area in a typical case. On the one hand, tourism, including hotel services and several other activities, is essentially a non-tradable industry. Put simply, agricultural goods are produced by labor input while tourism is managed by sector-specific capital and labor. Following Copeland and Taylor (1999), we reasonably assume that the agricultural sector's productivity depends on the environmental stock. Additionally, according to Yabuuchi (2015), we also assume that the expansion of tourism, which implies exploitation of large scale hotels, causes pollution, implying negative externalities on the environmental stock. We consider that in this area, depopulation is a rather serious problem, and introducing capital, labor, or tourists from outside is an urgent issue for industrial promotion.¹

Assume that the tourism production function can be expressed as a Cobb-Douglas type, that is,

$$T = L_T^{\frac{1}{2}} (K + K^*)^{\frac{1}{2}}, \quad (1)$$

where T denotes the total supply of tourism services, L_T denotes the total amount of labor employed in tourism, K denotes the local capital input to tourism, and K^* denotes foreign capital (including domestic capital introduced from outside of this area) input to tourism. The production function of the agricultural sector is

$$A = \sqrt{E}L_A, \quad (2)$$

where A denotes output, E denotes environmental stock, and L_A denotes total amount of labor employed in the agricultural sector.

We assume that environmental pollution is a function of the magnitude of tourism,

$$Z = \lambda T, \quad (3)$$

where Z denotes the level of pollution and λ denotes the parameter that indicates the magnitude of pollution caused by one unit of tourism service. As we mention above, pollution damages environmental capital, that is,

$$E = \bar{E} - Z, \quad (4)$$

where \bar{E} denotes the initial level of environmental stock without any pollution.

We assume perfect competition in both factor markets. Then, factor prices are equalized with the value of marginal products. Thus, the following conditions should be satisfied:

$$w = \frac{1}{2}p_T(K + K^*)^{\frac{1}{2}}L_T^{\frac{1}{2}}, \quad (5)$$

$$w = \sqrt{E}, \quad (6)$$

$$r = \frac{1}{2}p_T L_T^{\frac{1}{2}}(K + K^*), \quad (7)$$

where the price of agricultural goods is the numeraire, w denotes the wage rate, r denotes the rental price of capital, and p_T denotes the price of one unit of tourism service.

We can express the full employment condition for labor as

$$L \equiv L_T + L_A = \bar{L} + L_M, \quad (8)$$

where \bar{L} denotes the initial level of labor endowment in this region and L_M denotes the inflow of foreign labor (including domestic workers from outside the region).

Let us also assume that the social utility function can be expressed as a Cobb-Douglas type, that is,

$$U = \alpha \log D_T + (1 - \alpha) \log D_A, \quad (9)$$

where U denotes social welfare, D_T denotes the aggregate demand for tourism services, D_A denotes aggregate demand for agricultural goods, and α denotes the parameter reflecting consumers' preference for tourism services. Tourism services are non-tradable and consumed within the region. Foreign capital owners are simply investors and are assumed to be free of consumption in this region. Thus, the total income of foreign capital should be remitted by agricultural goods. Additionally, we consider tourists from outside who are only temporary visitors and consume only touristic services in this region in our model.² Under the above scenario, we have

$$D_T = T - \beta, \quad (10)$$

$$D_A = A - rK^*, \quad (11)$$

where β denotes the exogenously given total amount of tourism services consumed by tourists visiting from outside the region (including foreign tourists). The budget constraint condition within this region is

$$P_T D_T + D_A = wL + rK. \quad (12)$$

Solving the welfare maximization problem for (9), subject to constraint (12), and considering (10) and (11), we obtain

$$p_T (T - \beta) = \alpha (wL + rK), \quad (13)$$

$$A - rK^* = (1 - \alpha) (wL + rK). \quad (14)$$

Note that we can exempt either equation (13) and (14) from Walras Law. Remembering the property of the Cobb-Douglas function, from equation (1), the distributive share

between capital and labor is the same. Then, we have

$$r(K + K^*) = wL_T. \quad (15)$$

We now have 5 equations, (1), (5), (6), (7), and (13) that determine 5 endogenous variables, p_T , w , L_T , r , and T . Accordingly, L_A should be from (8), and A will be from (2). Finally, we obtain U from (9).

3 Results

Proposition 1 *Consider a rural region with an economy that depends on two industries, agriculture and tourism. Agricultural goods are tradable and produced by labor. Their productivity depends on the environmental stock. Tourism services are produced by factor-specific capital and labor, are non-tradable, and generate pollution, which has negative effects on the environmental stock. Then, we can assert the following four statements:*

1. *Introducing additional labor L_M from outside the region has negative (positive) effects on the economic welfare \tilde{U} of native inhabitants if residents' preferences for tourism services α is sufficiently small and the negative external effect on the environment caused by tourism λ is larger (smaller).*
2. *When the population size \bar{L} of native inhabitants is sufficiently small, their welfare \tilde{U} first increases and eventually decreases as the number of external workers L_M increases if the negative external effect on the environment caused by tourism λ is smaller.*
3. *Introducing additional tourists β from outside the region mostly causes negative (positive) effects on the economic welfare \tilde{U} of native inhabitants if residents' preferences for tourism services α is sufficiently small (large).*
4. *Introducing additional capital K^* from outside the region also has negative effects on the economic welfare \tilde{U} of native inhabitants if residents' preferences for tourism services α is sufficiently small.*