

Tourist Tax and Cultural Heritage Sites

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Abstract

This paper studies the issues related to a tourist tax in a scenario of multi-jurisdictional tax competition between main cultural tourist attractions of China. On the one hand, tourism expenditure has a positive effect on production, income and employment in the tourist destinations or cultural heritage sites, together with government income. On the other hand, too many tourists cause damage to cultural heritages and higher congestion costs. It is found that under reasonable assumptions more tourists will increase the government expenditure on cultural heritage protection.

Keywords: tourist tax; cultural heritage; tourism externalities; tax competition

JEL classification: H21; H23; R5

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1. Introduction

According to United Nations World Tourism Organization (UNWTO), trips abroad have multiplied by twenty-five since the 1950s. Many places of cultural heritage see the great potential of tourism and the commercial value associated with subscription on the UNESCO World Cultural Heritage List. While "heritage" enthusiasm, or "world heritage fever", seems to be on the rise, experts have cautioned that the commercial motivation behind the applications could undermine the honor and sustainability of tourism.² The excessive demand and use of heritage sites bring about many subsequent problems, of which one is prominent: increased visitation as the primary threat to heritage sites. This problem is mainly about the pressure and damage on "cultural heritage goods", namely, historic and culturally important buildings, monuments and artifacts. These goods may not be typical public goods but do have variable degrees of "non-excludability" and "non-rivalry", which are two properties of pure public goods. Since cultural heritages have a public good element, they would have to be funded as least partly by taxation. Spatially differentiated taxation aimed at visitors and tourists is adopted in parts of the world which may promote a more equitable allocation of costs of local public good.

This paper studies the interactions between tourist tax, local public good provision, which is restricted to protection and restoration of cultural heritage goods in this paper, and number of tourists in a scenario of multi-regional tax competition between local governments of cultural tourist attractions. On the one hand, tourism has a positive effect on private income in the cultural heritage sites, as well as government tax revenue. On the other hand however, there is a tourism-related social cost which is equivalent to "congestion" of regular public goods. It is found that under reasonable assumptions more tourists will increase the government expenditure on cultural heritage protection.

2. The Model and Analysis

The basic model of this study considers an economy consisting of a large number of identical regions called "cultural heritage sites", each of which has two sectors: an industrial sector and tourism sector. The regions are engaged in perfect competition utilizing their cultural goods to attract visitors who are assumed to be from outside of the economy. Each heritage site has the same number of local residents which is normalized to 1 and which is also the total labor supply. Employing Ricardian technology, the industrial sector produces a tradable good sold in the world market and has a uniform wage level denoted by w_d . Let z_j represent the cost of switching

² See Sun and Ma (2005); Fang and Huang (1997); Liu and Li (2006).

to the tourism sector, the educational cost e.g., by individual j . The value of z_j is assumed to be uniformly distributed between 0 and \bar{z} . Therefore, we have the labor supply of tourism sector as

$$w_T = w_D + \bar{z}L_T, \quad (1)$$

where w_T is the wage level and L_T the total labor of tourism sector. A simple transformation of (1) gives us the expression of tourism labor supply:

$$L_T = \frac{w_T - w_D}{\bar{z}}. \quad (2)$$

Assume that the tourism market is perfectly competitive and provides a private good x , which represents accommodation, food and other services provided by local tourism sector, with a single production factor, labor. Let β be the productivity parameter, namely, the amount of tourism good x provided by each worker. Then we have

$$p = \frac{w_T}{\beta}, \quad (3)$$

and $x = \beta L_T, \quad (4)$

where p is the price of the tourist good. Let M be the number of tourists in the region. As each tourist buys one unit of good x , we have

$$x = M. \quad (5)$$

Combining (2), (3), (4), and (5) we have

$$p = \frac{w_D}{\beta} + \frac{\bar{z}}{\beta^2}x, \quad (6)$$

and

$$p = \frac{w_D}{\beta} + \frac{\bar{z}}{\beta^2}M. \quad (7)$$

It is assumed that the cultural heritages are of value to both local residents and tourists, however at different levels—higher for the former than the latter. To tourists these cultural goods are of purely esthetic value. For local residents by contrast, they take extra utility from the knowledge of the fact that these cultural heritages are kept under good condition through self-identification with these heritages, in addition to the esthetic values.

A tourist is attracted by the cultural good provided by a tourist region, buys a tourism good x and pays a uniform tourist tax t_T , which may also represent entry fees to a specific site, etc. Therefore we may state the tourist's utility as follows:

$$u_T = \alpha u(g_i) + \bar{y} - p - t_T, \quad (8)$$

where \bar{y} is the exogenous income of a tourist and g_i represents the quality of cultural heritage good in region i . Here $u(g_i)$ represents the utility that a local resident derives from the cultural heritage good in region i and has these properties: $u'(g_i) > 0$ and $u''(g_i) < 0$. Since it is assumed that a tourist receives less utility from a resident, her utility from the good is $\alpha u(g_i)$ with $0 < \alpha < 1$.

By the assumption of perfect competition, each region has to be a "utility taker", namely, no single region can alter the utilities that must be offered to tourists to induce them to travel there. Therefore (7) is restated as the equilibrium condition:

$$\bar{u} = \alpha u(g_i(G_i, M)) + \bar{y} - p(M) - t_T. \quad (9)$$

Here G_i represents the government spending of region i to improve or maintain the quality of cultural heritage g_i , therefore, $\frac{\partial g_i}{\partial G_i} > 0$. There is a large body of literature

about the impact of tourists on the condition of cultural heritages -- $\frac{\partial g_i}{\partial M}$ in this case. There is overwhelming evidence that points to increased visitation as the primary threat to cultural heritages. Therefore, it is normal to assume $\frac{\partial g_i}{\partial M} < 0$.

Differentiating both sides of (8) gives us:

$$(\alpha u'(g_i) \frac{\partial g_i}{\partial M} - p'(M))dM + \alpha u'(g_i) \frac{\partial g_i}{\partial G_i} dG_i = 0, \quad (10)$$

which leads to:

$$\frac{dM}{dG_i} = - \frac{\alpha u'(g_i) \frac{\partial g_i}{\partial G_i}}{\alpha u'(g_i) \frac{\partial g_i}{\partial M} - p'(M)}. \quad (11)$$

And by the same rationale:

$$\frac{dM}{dt_T} = \frac{1}{\alpha u'(g_i) \frac{\partial g_i}{\partial M} - p'(M)} \quad (12)$$

By the properties of $u(g_i)$ and $g_i(G_i, M)$, together with the fact that $p'(M) > 0$, which can be derived from (7), it can be proven that $\frac{dM}{dG_i} > 0$ and $\frac{dM}{dt_T} < 0$.

The government of region i maximizes the total utility of local residents of the region, which is denoted by B , where

$$B = u(g_i) + \int_0^1 w_{ij} d_j - t_i, \quad (13)$$

subject to a budget constraint:

$$G_i = t_T M + t_i, \quad (14)$$

where t_i is a head tax levied on local residents.

Considering the fact that $\int_0^1 w_{ij} d_j = \frac{1}{2} (w_T - w_D) L_T$, the government's maximization problem is

$$\max_{G_i, t_T} B = u(g_i(G_i, M)) + w_D + \frac{1}{2} \frac{\bar{z}}{\beta^2} M^2 - (G_i - t_T M). \quad (15)$$

The first order conditions are

$$\frac{dB}{dG_i} = u'(g_i) \frac{\partial g_i}{\partial G_i} - 1 + (u'(g_i) \frac{\partial g_i}{\partial M} + \frac{\bar{z}}{\beta^2} M + t_T) \frac{dM}{dG_i} = 0, \quad (16)$$

and

$$\frac{dB}{dt_T} = M + (u'(g_i) \frac{\partial g_i}{\partial M} + \frac{\bar{z}}{\beta^2} M + t_T) \frac{dM}{dt_T} = 0. \quad (17)$$

To simplify the problem we first consider the special case of $\bar{z} = 0$, which means $w_T = w_D$, $P = w_D / \beta$ and $P'(M) = 0$. Now we define a new function $v(G, M) = u(g(G, M))$. As $\bar{z} = 0$, we have from (11) and (12)

$$\frac{dM}{dG} = -\frac{v_G}{v_M} > 0 \quad (18)$$

and
$$\frac{dM}{dt_T} = \frac{1}{\alpha v_M} > 0. \quad (19)$$

From (16) and (17), we have

$$\frac{dB}{dG} = v_G - 1 + (v_M + t_T) \frac{dM}{dG} = 0 \quad (20)$$

and
$$\frac{dB}{dt_T} = M + (v_M + t_T) \frac{dM}{dt_T} = 0. \quad (21)$$

Combining the four equations above, we get $t_T \frac{v_G}{v_M} = -1$ and $\alpha M + 1 + \frac{t_T}{v_M} = 0$, and hence

$$V_G = \frac{1}{\alpha M + 1}.$$

Therefore, if G and M are separable in $v(G, M)$, it must be true that $\frac{dG}{dM} > 0$. It may also be shown that given the Cobb-Douglas form of $v(G, M)$, again we have $\frac{dG}{dM} > 0$.

3. Conclusion

This paper studies the issues related to a tourist tax in a scenario of multi-jurisdictional tax competition between main cultural tourist attractions of China. On the one hand, tourism expenditure has a positive effect on production, income and employment in the tourist destinations or cultural heritage sites, together with government income. On the other hand, too many tourists cause damage to cultural heritages and higher congestion costs. It is found that under reasonable assumptions more tourists will increase the government expenditure on cultural heritage protection.

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