Tourism and welfare enhancing export subsidies

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1. Introduction

Tourism is a major export industry for many countries, accounting for 6% of global exports overall and 30% of global service exports. As with any industry open to trade, it has been subject to a variety of trade taxes and subsidies. While much standard trade policy analysis applies equally well to trade in goods or services, some important features of tourism distinguish it from trade in goods. Tourism is an industry where the consumer travels to the exporting country to consume goods and services. Moreover, when visiting a destination, a tourist consumes a bundle of goods and services. This means that a tourist’s choice of destination depends not just on the price offered by a single supplier, but rather on the price of a package of goods and services expected to be consumed while visiting.

Previous work on the welfare effects of tourism (such as Copeland, 1991) and on optimal taxation of tourists (Copeland, 1990; Hämäläinen, 2004; Gooroochurn, 2009) has exploited the fact that tourists must travel to the destination country. This means that incidence of domestic consumption taxes falls partly on foreigners, and therefore the domestic tax structure can be manipulated to partly play the role of an export tax. The fact that consumers must travel to the destination country is also critical in the present paper, but the fact that tourists consume a bundle of goods when visiting a foreign country will be the key focus of the analysis. The main result of this paper is that the need to consume a bundle of goods and services, with each component of the bundle priced by different firms, can lead to an argument for an export subsidy targeting tourists that differs somewhat from previous arguments for export subsidies.

I consider a simple two country model where each country has intrinsically different features that appeal more to some consumers than others. Consumers choose which

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\footnote{1 See World Tourism Organization (2009).}
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country to visit, and while visiting the country consume a variety of services. The service sector in each country is modeled as providing differentiated products in a monopolistically competitive environment. The government chooses an optimal entry tax or subsidy levied on each tourist. I find that the optimal policy may be either a tax or subsidy on tourists. Subsidies are more likely to be optimal if the two vacation destinations are close substitutes or if the domestic markup factor in the tourist sector is high (or equivalently if services are highly differentiated products). Subsidies that target marginal tourists will be unambiguously welfare enhancing if feasible.

Much of the literature on tourism policy has focused on taxing tourists (Gooroochurn and Sinclair (2005) provide a good overview). However, the tourist sector also receives subsidies in many countries. The WTO (2006) World Trade Report notes that 62 out of 97 member countries reported subsidizing tourism during the period 1995-2004. The method of subsidization varies across countries. Subsidies to support marketing and infrastructure are often used. In some countries airports are subsidized; and in many countries there is incomplete cost recovery from tourists for public services (such as support of national parks). Subsidies in the tourist sector are often aimed at supporting economic growth in developing countries and regional development in developed countries (WTO, 2006).

The previous literature has identified three main channels via which export subsidies may sometimes be welfare enhancing: terms of trade improvements, strategic trade policy and second best arguments to alleviate other distortions.

In perfectly competitive markets with no distortions, governments have an incentive to use trade policy to affect their terms of trade. In the export sector, terms of trade will improve if the average price of exports increases. This calls for a restriction on export supply to drive up the price, and hence in simple two good models export subsidies reduce welfare: the optimal policy is to tax exports. In models with multiple goods, one
can show that export subsidies for some goods can be part of the optimal trade policy package; and starting from a non-optimal point (such as free trade), export subsidies on individual goods can improve welfare. However (subject to some regularity conditions on foreign demand) on average exports should be taxed (Feenstra, 1986; Bond, 1987; Neary 1988). One noteworthy and intuitively appealing result is due to Itoh and Kiyono (1987) who consider a model with a continuum of goods. In their model targeted export subsidies that transform marginal industries from import-competing to export industries can improve welfare.

With imperfect competition, Brander and Spencer (1985) showed that an export subsidy can improve welfare in an international Cournot duopoly because it gives the domestic firm a strategic advantage relative to its foreign rival. This result is sensitive to market structure – if firms compete in price, export taxes are optimal (Eaton and Grossman, 1986) and if there are multiple domestic firms selling to export markets, competition among the domestic firms dissipates potential rents that can be extracted from foreigners; hence an export tax will be optimal (Dixit, 1984).

Finally, there are various versions of the infant industry argument where learning spillovers, capital market imperfections, or other externalities can lead to arguments for welfare-enhancing subsidies in the export sector.

The mechanism by which an export subsidy may improve welfare in the current paper differs from the previous explanations, although it is based on an externality. Each independent service provider chooses its price to maximize its own profits, but does not take into account the effect of its decision on the overall price index for tourists. This affects other firms in the country because it affects the overall inflow of tourists.
2. Demand

There are two tourist destinations, home and foreign, and tourists differ in their intrinsic preference for each location. I use a Hotelling specification, with the two destinations at opposite ends of a unit interval in some vacation attribute space. There is a mass \( N \) of tourists, with their preferences being uniformly distributed along this line, and \( t_d \) is the disutility cost from being at distance \( d \) (in attribute space) from one's ideal vacation spot.

Tourists have a utility function given by:

\[
U = u(v) + Y - t_d
\]

where \( v \) is the utility from the vacation and \( Y \) is consumption of a numeraire good.

Vacation utility depends on a composite of services consumed while on vacation:

\[
v = \left[ \int_0^M x(i)^\rho \, di \right]^{1/\rho}
\]

where the \( x(i) \) are differentiated tourism services, \( M \) is the (endogenous) number of such services available, and \( 0 < \rho < 1 \).

Let \( p(i) \) denote the price of service \( i \). Let \( T \) be the travel cost to the tourist destination. Then a tourist's budget constraint is:

\[
\int_0^M p(i) x(i) \, di + T + Y = I
\]

Given that a tourist has decided to travel to a particular vacation destination, he or she will choose a mix of vacation services to maximize utility. Alternatively, the consumer's
problem can be solved in two stages. First we determine the cost of a unit vacation and then determine how many such units are purchased.

The cost minimization problem is:

\[ c^v = \min_{x(i)} \left\{ \int_0^M p(i)x(i)di : \left[ \int_0^M x(i)^\rho di \right]^{1/\rho} = 1 \right\} \quad (1.4) \]

Solving this yields unit vacation demands \( x^u \):

\[ x^u(i) = \frac{P^\sigma}{p(i)^\sigma} \quad (1.5) \]

where

\[ \sigma \equiv \frac{1}{1 - \rho} \quad (1.6) \]

and \( P \) is a price index for the service sector:

\[ P = \left[ \int_0^M p(i)^{1-\sigma} \right]^{1/(1-\sigma)} \quad (1.7) \]

Note that \( P \) is the price of a unit vacation:

\[ c^v = \int_0^M p(i)x^u(i)di = \int_0^M p(i) \frac{P^\sigma}{p(i)^\sigma} di = \int_0^M p(i)^{1-\sigma} di = P^\sigma P^{1-\sigma} = P \quad (1.8) \]

The aggregate demand for each service variety is given by:

\[ x(i) = \frac{nvP^\sigma}{p(i)^\sigma} \quad (1.9) \]

where \( v \) is the number of unit vacations each tourist purchases, and \( n \) is the number of tourists who visit the country. To determine \( v \), the consumer solves:
\[
\max_{\{v\}} \{u(v) - P v - T + I - t d\}
\]  

(1.10)

where we have substituted the budget constraint into the utility function (1.1). The first order condition determining the demand for unit vacations is

\[
u'(v) = P
\]  

(1.11)

which can be inverted to obtain:

\[
v = v(P)
\]  

(1.12)

where \(v\) is a decreasing function of \(P\).

3. Technology

Each service provider has a fixed requirement of one unit of land, and a variable input requirement of \(c\) units of labour per unit of output. Letting \(r\) be the return to land, and \(w\) the wage, a typical service provider chooses its price to maximize:

\[
\pi(i) = \left[ p(i) - cw \right] x(i) - r
\]  

(1.13)

where the demand for \(x(i)\) is given by (1.9). Since individual service providers are small, they rationally anticipate that they will have a negligible impact on the market. Hence when maximizing profits, firms treat \(n,v\) and \(P\) as given. This yields a constant markup over marginal cost:

\[
p(i) = \theta w c \equiv p
\]  

(1.14)

where the markup parameter is \(\theta \equiv \sigma / (\sigma - 1) = 1 / \rho > 1\).
Because of our symmetry assumptions, all firms will charge the same price, as indicated by (1.14). This allows us to simplify our expression for the price of a unit vacation (1.7) to:

\[ P = \left( M p^{1-\sigma} \right)^{1/(1-\sigma)} = \frac{P}{M^{1/(\sigma-1)}} \]  

(1.15)

Note that as \( M \) increases, the price of a unit vacation falls. This reflects tourists' taste for variety.

There is free entry into the tourist sector. Firms enter until profits are zero. Using (1.14) in (1.13), this condition is:

\[ \pi(i) = [p(i) - cw]x(i) - r = (\theta - 1)wc x(i) - r = 0 \]  

(1.16)

This yields an expression for output:

\[ x(i) = \frac{r}{(\theta - 1)wc} \]  

(1.17)

Again, because of symmetry, all firms produce the same amount of output.

4. Tourist enclave and optimal policy

We start with a simple model where there is a fixed amount of land \( M \), which can only be used for tourist services. Hence the number of varieties is simply \( M \). The rent on this land depends on the demand for tourist services. Setting the demand for each variety \( i \) (1.9) equal to its equilibrium supply (1.17) implies:

\[ r = \frac{nv(\theta - 1)wc}{M^{\sigma/(\sigma-1)}} \]  

(1.18)
Notice that as demand for vacation services increases, rents increase, but (because we have assumed variable costs are fixed), goods prices do not rises. Also, with more vacationers, the number of services $M$ does not change, but the outputs of each rises.

Finally, note that this model predicts that each additional tourist generates increased rents in the amount of $Mv(\theta-1)wc/M^{\alpha/(\alpha-1)}$. Because of the enclave assumption, this is welfare improving.

To determine the number of tourists who visit the country, we need to consider an individual tourist's choice of destinations. Tourists compare the utilities they would get at each destination and decide where to go.

Let

$$W(P,T) = u[v(P)] - Pv(P) - T$$

(1.19)

and let $W(P^*,T^*)$ be defined similarly for a vacation at the foreign destination. $W$ is the indirect utility for the vacation component of utility prior to discounting for location. Then if both destinations attract some tourists, the marginal tourist in that for which:

$$W(P,T) + s - td = W(P^*,T^*) - (1 - d)t$$

(1.20)

where we have allowed for the possibility of an entry subsid $s$ (or entry tax if $s < 0$) and where

$$\Delta W \equiv W(p,t) - W(p^*,T)$$

Solving for $d$, we obtain the fraction of tourist who go to point 0 (home):

$$d = \frac{1}{2} + \frac{\Delta W + s}{2t}$$

(1.21)
[If this level of \( d \) is outside the unit interval, then a corner solution obtains, with all tourists going to the same destination].

Let us now consider the government's optimal choice of entry tax or subsidy. Given our enclave assumption, the optimal entry subsidy (or tax) is that which maximizes rent net of subsidy disbursements. That is, assuming foreign is passive, the home government chooses \( s \) to maximize rent total rent \( R = rM \) less the cost of financing the subsidy:

\[
R = N \left[ \frac{1}{2} + \frac{\Delta W + s}{2t} \right] \left[ \frac{v(\theta - 1)wc}{M^{1/(\sigma - 1)}} - s \right] \tag{1.22}
\]

To determine whether a small subsidy raises welfare, we find \( dR/ds \) at \( s=0 \):

\[
\frac{dR}{ds} \bigg|_{s=0} = N \left[ \frac{v(\theta - 1)wc}{tM^{1/(\sigma - 1)}} - \left( 1 + \frac{\Delta W}{t} \right) \right] \tag{1.23}
\]

This will be positive if

\[
t < \frac{v(\theta - 1)wc}{M^{1/(\sigma - 1)}} - \Delta W \tag{1.24}
\]

Hence we conclude that subsidizing tourists raises welfare if (1.24) holds, and that taxing tourists raises welfare if (1.24) fails.

First, note that subsidies are more likely as the vacation destinations are closer substitutes (that is, as \( t \) gets smaller). To see the intuition for this, suppose the two destinations have the same \( P \) and \( T \), so that \( \Delta W = 0 \). Then each destination gets half the market. But if \( t \) is very small, then tourists do not have a strong intrinsic preference for home or foreign. Consequently, a small subsidy could potentially attract the entire market. Since each new tourist generates positive rents, this will improve welfare. [Of course the other country has an incentive to do this too, so that rents may be dissipated by a subsidy war.]
However, the point of the paper is that in the absence of an agreement to forsake subsidies, there will be incentives to do so.

On the other hand, as the home and foreign destinations become more differentiated in their intrinsic appeal (\(t\) rises), then the optimal policy is a tax on tourists. In this case, the international market for tourist destinations is less competitive and countries have more market power.

Next, notice that as \(\Delta W\) rises, it is more likely that a tax is better than a subsidy. That is, if (ignoring intrinsic appeal of the destination), home is more attractive because of lower \(p\) or higher \(M\), then it is more likely to tax tourists. Intuitively, as \(\Delta W\) rises, home becomes relatively more attractive and there is less need to use a subsidy to attract them. Or to put it another way, with a large base of tourists already coming to a destination, the cost of a uniformly applied subsidy rises, making it less attractive as an instrument to attract the marginal tourists. On the other hand, with \(\Delta W < 0\), the case for an export subsidy becomes more attractive.

Finally, notice that as domestic varieties become closer substitutes, the markup \(\theta\) falls. To highlight the effect of the markup, suppose again that the countries are symmetric so that \(\Delta W = 0\). Then as the markup approaches zero, (1.24) is violated and an export tax is optimal. This result helps us understand the role of export taxes and subsidies in this model. Each country has market power because they are differentiated as destinations as long as \(t > 0\). To exploit this market power, tourists should be charged a price above marginal cost. In the absence of government intervention, the monopolistically competitive framework does yield a price above marginal cost, and the ensuing rents accrue to landowners. However from a national perspective, the optimal price to charge tourists needs to take into account the effects of the markup on the overall flow of tourists into the country. Since individual producers do not internalize this effect, the markups
need not be optimal from a national perspective. If markups are too high, an export subsidy can help increase national income.

Stronger results can be obtained if we allow for targeted subsidies. Let $d_0$ denote the fraction of tourists who would visit the home country in the absence of a subsidy. From (1.21) we have:

$$d_0 = \frac{1}{2} + \frac{\Delta W}{2t}.$$ 

Now suppose that a subsidy is offered only to those tourists who have preference parameters $d > d_0$. That is, the subsidy targets only those tourists who would not come in the absence of a subsidy. Rents net of subsidy costs are now given by:

$$\tilde{R} = N \left[ \frac{1}{2} + \frac{\Delta W + s}{2t} \right] \left[ \frac{v(\theta - 1)wc}{M^{1/(\sigma-1)}} \right] - \frac{s^2}{2t}.$$ 

A small export subsidy must now unambiguously improve welfare:

$$\left. \frac{d\tilde{R}}{ds} \right|_{s=0} = \frac{Nv(\theta - 1)wc}{2tM^{1/(\sigma-1)}} > 0.$$ 

A subsidy is welfare improving because the marginal tourist generates positive rents, and a very small subsidy will induce the marginal tourist to switch destinations. In practice, while the informational requirements of identifying those tourists with $d > d_0$ are large, there may nevertheless be various identifiable characteristics of marginal tourists (such as age, nationality, income group, etc.) that might be used to design a subsidy package that is welfare enhancing.
5. Extensions

In progress

6. Conclusion

While many governments provide some subsidies and support for the tourist sector, standard welfare analysis would suggest that such policies are welfare-decreasing. This paper shows that an export subsidy can be welfare-increasing in a monopolistically competitive tourist economy. Because marginal tourists generate positive rents, policies designed to attract marginal tourists to the host economy are beneficial. This highlights a new channel via which export subsidies can be welfare enhancing.

Although the analysis of optimal trade policy for the tourist sector is somewhat narrow in focus, this paper has some broader relevance for trade policy analysis. The economic analysis of trade in services has not received as much attention as that for trade in goods, in part because it is often thought that standard trade theory applies just as well to services as to goods. While this is true in many cases, this paper shows how the consumption abroad mode of trade in services raises some policy issues that do not normally arise in goods trade. Tourists must travel to the destination country and end up consuming a bundle of goods and services, each component of which may priced by a different vendor. Since overall tourist demand depends on a price index for the bundle of goods and services, there is an externality in pricing that can yield a role for government policy to enhance rents accruing to the economy.

There are a number of ways that this paper could be extended. Adding another sector that competes for the use of land would provide some linkage between the tourist sector and the rest of the economy. Other forms of policies (such as support for infrastructure)
could be analyzed. Perhaps more interesting is that the analysis of the paper could provide an explanation for all-inclusive resorts or package tours since this would allow some coordination in the pricing of the bundle of goods and services and allow the private sector to at least partially internalize the effects of pricing on the flow of tourists.
7. References


