

# PRIVATE AND PUBLIC INCENTIVE TO REDUCE SEASONALITY: A THEORETICAL MODEL

Submitted to Economics (MS 706)

## Referee Report

### General comment

The paper investigates the problem of seasonality in demand by applying the theory of (vertical) product differentiation, along the lines of Gabszewicz and Thisse (1979) and Shaked and Sutton (1982). Accordingly, the quality is not embodied in the good itself, but is associated to the timing in which the good or service is demanded and consumed. In this way, the authors are able to analyse the effectiveness of policy instruments that can be used by private firms or by the policy maker to reduce the extent of seasonality.

The paper has one strength and one weakness. The weakness is that the theoretical framework is not new at all, since the paper is mainly an application of well-known models of product differentiation. The strength is that it opens a new and promising perspective for looking at the problem of seasonality. In fact, it is amazing how there is little theoretical research on the economic problem of seasonality. This lack certainly exists in tourism economics but, to the best of my knowledge, an economic theory of seasonality does not exist in other fields of economic research either.

In this respect, the paper can be a breakthrough, and its underlying intuition is very powerful, just because is very simple indeed. Although, as the authors highlight, the model is developed by having in mind the problem of seasonality in tourism, its relevance can be extended to any market in which demand is seasonal, particularly when the capacity is constrained.

Therefore, I suggest the authors to improve the paper by following the comments listed below, in particular by dealing with comments (3b) and (3f), which are major limitations in the present version of the paper.

### Main comments

1. Literature review: the paper starts by stating that "a large body of literature, in each of the different fields, deals with causes and effects of seasonality" (p. 1). Provide here (or in a new Section 2 - Literature review) some more precise references, by highlighting the contribution of the different fields of economic literature. In my opinion, the authors should organise this section by stating that the literature mainly focuses on: a) a descriptive analysis of pros and cons of seasonality; b) identifying, measuring and controlling for seasonality in applied econometric work. Moreover, the authors should state more clearly that a comprehensive microeconomic theory of seasonality does not exist, to highlight the important contribution of their work (in this respect, seasonality is often seen as a case of market segmentation due to demand constraints, in which firms can price discriminate).

2. Pros and cons of seasonality: the literature suggests (Koenig-Lewis and Bischoff, 2005) that the optimal level of seasonality is positive, and that there are economic, social and environmental reasons for which the existence of a low-season is perceived positively by firms, consumers and workers. The authors should provide some elements of this discussion in the introduction of the paper. This is of relevance when discussing the social costs (but also benefits) of seasonality on local residents (end of Section 1, p. 2), having an effect on the last paragraph of Section 4 (p. 10). Moreover, (p. 5) when discussing the available policy tools for decreasing seasonality, the authors should deepen the description (for example, by quoting the policy of tourism mix).

### 3. Assumptions:

a) the paper is somehow too synthetic, and some assumptions should be discussed more clearly. For example, (p. 3) the model starts by considering a monopolistic firm, an assumption that might be considered quite unrealistic. However, most destinations are characterized by the presence of firms with strong monopoly power (tour operators, hotel chains, etc.).

b) Similarly (p. 4) the marginal cost of production is incidentally defined after eq. 11. In this respect I have two comments: firstly, discuss the existence and the relevance of fixed costs for the model: in tourism, the share of fixed costs over total costs is often very high. How does it affect the model? Secondly, the implicit assumption of equal marginal cost between high and low season is probably too strong. Without the need of developing the model with two different costs, which can be left to further developments, the authors should acknowledge the criticality of this point. This is relevant in the discussion of the results stemming from eqs. 24 and 25 (end of p. 6)

c) Linked to this point is the assumption for which the cost of effort is fixed in quantity. Why? Discuss.

d) At the beginning of Section 3 (p. 5) the authors should discuss how the effort differs, conceptually and analytically, from a policy of price reduction in low season or price increase in high season. In the same paragraph, the authors should restate by saying that there are non-linearities in the investment effort, and that the model attempts to catch them by assuming a quadratic form, which is (quite) standard in the literature.

e) Change  $p(l)$  in eq. 25 to *distinguish it from*  $p(l)$  of eq. 13.

f) A critical assumption is in Section 4 (p. 8): the cost of effort for the policy maker is the same as the cost borne by the private firm. Why? Discuss. Analytically, this might imply that the policy maker forces the firm (by law or regulation) to undertake the effort. Alternatively, the effort can be undertaken directly by the policy maker (the destination management, in the tourism case). But in this case, there is a budget constraint to satisfy, which is not investigated in the paper. How is the cost of effort financed? By taxing profits? By taxing consumers? This is, in my opinion, a major problem for the paper.

4. Define what  $e(c)$  and  $e(i)$  are and use  $e(c)$  rather than  $e(i)$  to avoid confusion in the interpretation. Again, (p. 9),  $e(pm)$  and  $e(m)$  should be explicitly defined.

5. I would avoid (p. 11) the sentence "we believe that our model is robust to further modifications".

6. A comprehensive English proof-reading should be undertaken.