1 Introduction

Most of the models of spatial discrimination with quantity competition exhibit a unique agglomerated equilibrium when the market space is linear and bounded. This result crucially depends on a restriction on the admissible levels of the unit transportation cost - restriction which is indeed imposed by many authors, in order to ensure that for any location pairs both firms deliver positive quantities over the whole market (Hamilton *et al* 1989, Anderson and Neven, 1991). However, agglomeration implies full symmetry of firms' behaviour at all market addresses, thus making the spatial dimension eventually irrelevant at equilibrium. Moreover, within the above framework, and under the same restriction on costs, Shimizu (2002) has shown that the agglomeration result is robust to the introduction of an element of product differentiation, and therefore that the degree of substitutability/complementarity is immaterial in the definition of the firms' optimal locations.

This paper discusses the role of product differentiation when the range of admissible values of the unit transport costs is extended to those consistent with full market coverage by both firms *at equilibrium*. By allowing for higher values of t, the existence of an additional dispersed solution with full coverage, originally suggested by Hamilton *et al*, is confirmed in the case of substitute goods for a range of the transportation costs, the width and bounds of which are shown to depend on the degree of substitutability. Moreover, the paper shows how the latter interacts with t in the definition of the optimal dispersed locations.

The paper is organized as follows. In the next section we modify the standard model of spatial discrimination with Cournot competition by introducing the Deneckere (1983) inverse demand function in order to capture product differentiation. The solution for the Subgame Perfect Nash Equilibria (SPNE) of the game is then followed by a brief discussion of their properties and of the role of product differentiation. Section 3 concludes.

2 The model

In a spatial market two firms (labeled 1 and 2) are assumed to decide their location along a segment of length l (normalized to 1 in the sequel) and then to engage in quantity competition at all sites. Consumers are uniformly distributed along the segment, a consumer's location being denoted by $x \in [0,1]$. Let a be the location of firm 1 and $1-b$ the location of firm 2 (i.e. b is the distance of firm 2 from the right endpoint of the segment), with $a+b \leq 1$. When firms 1 and 2 deliver their product to a location x, they bear a freight cost, linear in distance, respectively denoted by $t\,|a-x|$ and $t\,|1-b-x|$. We also assume that each firm incurs a constant and equal to zero marginal and average cost of production. The products of the two firms may be either substitutes or complements, so that in each address x market demand is given by $p_i(x) = 1-\gamma q_j(x) - q_i(x)$ (with $j \neq i$), where $\gamma \in [-1,1]$ (with $\gamma \neq 0$) denotes