

positive price. Therefore, the Principle of Minimum Product Differentiation holds even for linear transportation costs.

**Proposition 5:** *When consumer preferences exhibit both imitation and congestion effects, even if consumers face linear transportation costs, there exists a unique symmetric equilibrium in which firms locate in the center of the interval setting positive prices:*

- 1)  $p_1 = p_2 = [t - C^{ext}(N)]$ ,
- 2)  $x_1 = x_2 = \frac{1}{2}$ .

## 2 Conclusion

We have investigated price competition in the Hotelling location model with linear transportation costs when consumer preferences are affected by the number of consumers shopping at the same store. The introduction of a quadratic and concave consumption externality permits to consider at the same time, and not alternatively, both the imitation and the congestion effects which are opposite forces at work.

Some significant even if predictable results are been reached. While competition is relaxed when consumers have an appreciable degree of sensitivity to congestion effects, a fiercer price competition results when preferences are appreciably affected from imitative behaviors. The sensibility of consumer preferences to the two opposite network effects also have significant impacts on the market share of the stores in cases of positional advantages. The market share of the store with positional advantage increases either when the imitation effect becomes more significant and when the congestion effect becomes less important. Even if our approach is partial -perhaps not too general- in many aspects, it resolves the non-existence problem of the Hotelling model. Our model shows that positive equilibrium prices exist for any symmetric and asymmetric location. Moreover, even if the stores were located at the same point, the usual Bertrand argument should not lead to the competitive outcome. Furthermore given the possibility for firms to set the best locations, we confer new validity to the principle of minimum product differentiation when consumer preferences exhibit both imitation and congestion effects.