TIME AND SPACE ELASTICITIES OF SPORTS DEMAND – A CONTRIBUTION TO EFFICIENT SPORTS FACILITY ALLOCATION

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INTRODUCTION

Regarding the increasing scarcity of public funds, measures to allocate public money *efficiently* become more and more important. In sports sector, most of the public funds are spent on the construction and operation of sports facilities in clubs. Therefore, strategies to (1) save and/or (2) reallocate public money more efficiently particularly in the *sports facility* sector are auspicious for the public authorities.

A commonly used strategy to (1) save public money is privatisation through commercialisation (private funding to reduce public construction costs) and/or outsourcing (sports facilities operation by clubs to reduce public operation costs). Regarding the target of increasing (2) efficiency, a political consensus exists to allocate sports facilities locally so that "time to reach the sports facility" is reduced for each consumer.

The central argument for this political decision is that a "small distance to sports facilities" positively influences the consumer decision in favour of practising sport. For economic purposes this argument could *theoretically* be derived by the "new" theory of consumer choice developed by Becker (1965), Lancaster (1966), and Stigler/Becker (1977). According to their approaches, households actively maximise their utility function of commodities. Therefore consumption activities (e.g. practising a sport like playing basketball) are produced by means of the input of market goods (e.g. basketball shoes), time (e.g. time to reach the sports facility), human capital (e.g. knowledge of tactics) and other inputs (e.g. team-mates).

We must consider that the political argument (a "small distance to sports facilities" positively influences sports demand) is contestable especially in two ways: (1) Centralisation as well contains efficiency resources (e.g. economies of scale, see Samuelson & Nordhaus, 2001, 112 ff.) and this way could increase sports demand (e.g. through a favourable price) as well. Therefore an efficiency trade-off might exist. (2) It was never proved before empirically if the "distance to sports facilities" has an impact on sports demand *in reality*.

This research study is focused on the second argument. Since no empirical study before measured the impact of a "small distance to sports facilities" in favour of "practising a sport" we contribute to close this research gap with the objective to develop the necessary scientific foundation for the above mentioned discussion.

METHODS

With the target of measuring the extent of the impact we make use of the elasticity concept (see Cooke, 1994, 124. ff.; Samuelson & Nordhaus, 2001, 67 ff.). This way we get to know how much demand responds to changes in "time to reach the sports facility" and if there are differences between different sports.

The relevant data was collected with an inquiry among 5000 German sport service consumers where we (inter alia) inquire about (1) the time the people need to reach the sports facility of their most practised sport and (2) their maximum willingness to spend if necessary.

With this data we simulate different scenarios where we measure the quantity demanded different sport services evoked by increasing "time to reach the sports facility". Resultant we can derive the sport specific time(space)-elasticities (ε).

RESULTS

For small changes in time (e.g. plus 5 percent) all sports have time(space)-elastic demand ($\varepsilon > 1$) albeit interesting differences between the different sports exist: considering the most popular sports practised in clubs, a simulated 5 percent "increase in time" yields (1) a 6.7 percent decrease in quantity demanded playing basketball ($\varepsilon = 1.34$), (2) a 7.7 percent decrease in quantity demanded swimming ($\varepsilon = 1.54$), (3) a 7.8 percent decrease in quantity demanded playing tennis ($\varepsilon = 1.55$), (4) a 8.1 percent decrease in quantity demanded playing soccer ($\varepsilon = 1.63$), (5) a 10.6 percent decrease in quantity demanded playing handball ($\varepsilon = 2.11$), (6) a 13.4 percent decrease in quantity demanded playing volleyball ($\varepsilon = 2.68$).

The derived time(space)-elasticities of sports demand are influenced by several covariates like income, age of consumers and options of substitution. Additionally, we discovered, that less time(space)-elastic consumers have got a short distance to their sports facilities (mean value basketball: 6.99 km; tennis: 7.91 km; swimming: 5.67 km) whilst sports facilities for handball (14.01 km) and volleyball (10.15 km) players are farther. This discovered sport specific "facility allocation pattern" constitutes the initial point for the following conclusion.

DISCUSSION

Regarding the above derived results we could state, that consumers indeed care about the extent of time they need to reach the sports facilities. Especially handball and volleyball players are exceedingly time(space)-elastic. Therefore while planning new facilities, political decision makers could argue for a decentralised sports facility concept which positively influences the consumer decision in favour of practising sport. Nevertheless they mustn't forget the efficiency resources of centralisation.

With the objective of increasing efficiency one could think about a more *centralised* sports facility allocation in sports with less time(space)- elastic consumers like basketball, soccer, tennis and swimming (e.g. it might be possible, that two soccer clubs of one district play and practise on the same sports field). In contrary, a more *decentralised* allocation of handball and volleyball sports facilities might rather increase efficiency through an increased number of consumers.

Summing up, with the objective of maximising efficiency we advise against a generalised approach to sports facility allocation (like the proclaimed political consensus of a general *decentralisation*). To generate the appropriate efficiency maximising allocation pattern, a demand oriented sports facility planning concept should take the according sport specific time(space)-elasticities into account.

LITERATURE

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