Exploring the dynamics of private consumption and public expenditure on sporting goods and services in European countries with a distributed lagged values model

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1. Introduction

Physical activity offers health benefits like reducing chronic disease risk, enhancing mental health, and improving life quality. (Warburton & Bredin, 2017). Governments protect the health of citizens through various actions that are reflected in the budgets (Frieden, 2013), for example the amount spent on sports and recreation. On the other hand, private consumption could increase, in the short run and long run if there is an increase in the productive component of public (Asimakopoulos, Lorusso, & Pieroni, 2021). In this context, the objectives of this study were (i) to explore the relationship between the mean consumption expenditure of private households on sporting goods and services and public expenditure on sporting goods and services in European countries and (ii) to predict consumption expenditure of private households based on public expenditure and the Gross Domestic Product (GPD) per capita.

2. Methods

DATA COLLECTION AND VARIABLES

Data was collected from two databases, cleaned and combined. Eurostat (Eurostat, n.d.) allowed access to population data, consumption expenditure of private households (years 2010, 2015, and 2020), public expenditure (years from 2006 to 2020) in sporting goods and services, and GDP per capita. These databases were used since they provided data focused on European countries and economic variables. The sport- related goods and services identified are those considered as fully sport or related to sport activities (COICOP, Eurostat n.d.), including equipment for both outdoor and indoor leisure, maintenance of recreational durables, gear for sports, camping, and outdoor activities, as well as services for recreational and sporting events (attendance and participation). Public expenditure was calculated by dividing the total government spending on Sports and recreational activities by the population at the time. Once the data were obtained, countries that did not have all the private and public consumption data were removed.

STATISTICAL ANALYSIS

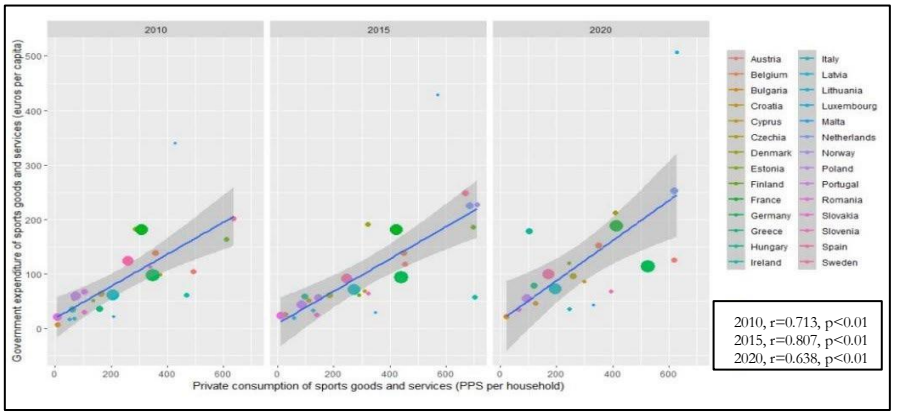
To know the relationship between private and public consumption, a bivariate Pearson correlation was conducted for the three years for which private consumption data was available (2010, 2015, and 2020). To predict the consumption expenditure of private households (dependent variable) based on public expenditure and GDP per capita (independent variables), a distributed lag model was used utilizing the five years prior to the consumption expenditure of private households:

$$Y_t = \beta_0 + \beta_1 X_t + \beta_2 X_{t-1} + \beta_3 X_{t-2} + \beta_4 X_{t-3} + \beta_5 X_{t-4} + \gamma_1 Z_t + \epsilon_t$$

For the analysis, the R software package (readxl, dplyr, ggplot2, purrr, stats, tidyr, writexl) was used, setting the p-value < 0.05 to consider the relationship as significant.

3. Results

Figure 1. *shows the Pearson correlation graph between consumption expenditure of private households and public expenditure for the years 2010, 2015, and 2020, adjusted for population weight.*



The consumption expenditure of private households (C) was predicted by 90% (adjusted R^2=0.900, p<0.001) based on public expenditure (G) in the previous four years (t) and GDP per capita according to the following equation (The values in parentheses are the standard error) (***p<0.001; *p<0.05):

$$\log(C_t) = -10.40^{***} + 0.75\log(G_t)^{*} - 0.14\log(G_{t-1}) + 0.34\log(G_{t-2}) - 1.29\log(G_{t-3})^{*} + 0.61\log(G_{t-4})^{*} + 1.44\log(GDP_t)^{***}$$
$$(1.01) \quad (0.30) \quad (0.34) \quad (0.36) \quad (0.51) \quad (0.30) \quad (0.13)$$

4. Discussion

The results showed a relationship (r≥0.638, p<0.01) between the consumption expenditure of private households and public expenditure, predicting 87% of the former based on the latter and GDP per capita. This shows the influence of public spending on private consumption (Asimakopoulos, Lorusso, & Pieroni, 2021). This suggests that public spending policies, not only directly affect economic activity through expenditure but also have a positive impact on private consumption. To this, it should be added that public spending on sports can have positive effects not only on health but also on household income and the labor market (Pawlowski, Steckenleiter, Wallrafen & Lechner, 2021).

However, it should be noted that the aforementioned study was conducted in a municipal context. Finally, private consumption was explained by 90% through public expenditure up to four years ago and the GDP per capita. In the long term (5 years), a 1% increase in public expenditure will result in a 0.27% increase in private consumption. Nonetheless, the relationship studied is complex and may have other consequences. Thus, if public spending is reduced, public sports programs may be forced to increase the fees that citizens must pay (private consumption) or " contract out" to private providers to compensate for budget reductions (Legg, Jones, & White, 2018).

5. Conclusions

The consumption expenditure of private households and public expenditure for the years 2010, 2015, and 2020 are related. Private consumption expenditure was predicted by 90% based on public expenditure and GDP per capita.

6. References

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