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**Determinates of public expenditure on the sport sector.
The case of European countries**

Magister (master) degree thesis
Field of the study: Data Science and Business Analytics

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Warsaw, July 2023

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Summary

The thesis focuses on analysing public expenditure in the sports sector in European countries over the last 20 years and identifying the main factors influencing government investment in this area. The research explores the relationship between public spending on sports and determinants such as GDP per capita, budget deficit, major sporting events, social exclusion, participation rate, private spending on sports, and employment rate. The null hypothesis is tested using a large dataset covering 31 European countries. By employing the Panel Data Model with both Random Effects and Fixed Effects estimators, important insights into government investment in the sports industry can be gained. As regards the null hypothesis that was defined - "Each controlling variable is statistically significant predictor of public expenditure on sport-to-GDP ratio" - it concluded that hypothesis was rejected. The reason is that only 5 out of 7 determinants of the dependent variable appeared to be statistically significant

Key words

Public expenditure in sports, determinants of sport spending, European countries, Panel Data model, Random and Fixed Effects, Hausman Test

The title of the thesis in Polish

Determinanty wydatków publicznych na sektor sportu.
Przypadek państw europejskich

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Introduction

In general, this research aims at analysing the public expenditure in the sport sector in the European countries over the last 20 years and the main factors that influence government investment in this domain.

The study presented is to give a better knowledge of the trends in public spending on sport in the European nations during the last 20 years. The specific goal is to support evidence-based policymaking and contribute to the sustainable growth of sports projects within the European context. Special attention is paid to identification of the critical variables that affect government investment in sports.

The sport industry contributes significantly to society in a number of ways, including promotion of physical health, social integration, and economic development. The value of sports in fostering a healthier population, fostering social cohesion, and even providing economic benefits through tourism and sports-related enterprises is acknowledged by governments. As a result, decision-makers pay attention to how public financial sources are allocated to support the growth and the sustainability of sports programs.

Understanding the factors that influence public spending in the sport sector is crucial for effective policymaking and resource allocation. That is why the connection between public spending on sport and its main determinants should be examined. In this research, to do so, econometric panel data model is proposed, and the dependent variable is public expenditure in the sport sector expressed as the percentage of GDP. To find the unit data about both the response variable and independent variables, the large dataset that includes European nations is used. To be precise, panel data model for 31 countries during 2000-2021 is proposed. Within the model, both the Fixed Effect and Random Effects options are tested, and consequently the Hausman test is applied.

The list of the explanatory variables within the model tested includes: GDP per capita, budget deficit, major sporting events, social exclusion, participation rate, private spending on sports, and employment rates. The following hypothesis is verified: "Each controlling variable is statistically significant predictor of public expenditure on sport-to-GDP ratio."

The thesis is organized as follows.

Chapter 1 focuses on public spending function, public spending multiplier, relative level of public spending and public spending by function and countries. The chapter 2 describes nominal and relative public spending in the sport sector, together with its potential determinants. Chapter 3 presents the empirical research, that is panel data model for 31

European countries during 2000-2021. Fixed Effects PDM, along with Random Effects PDM are tested.

The thesis ends with Conclusion and Recommendation section.

1. Public expenditure

1.1 Public spending functions

Budgetary expenditures have an effect on the national economy and social system through the allocation, redistribution, and stimulation processes.

Implementing the allocation function entails providing the populace including goods and services produced by the market economy is unable to supply to the necessary degree. It is important to remember that the population has a need for pure public goods, which are typically not offered by the commercial sector of the economy. Pure public commodities have the following characteristics:

1) it is impossible to exclude a specific consumer from their consumption or there would be significant costs involved in doing it

2) adding a customer does not result in an increase in costs.

There will always be those who do not want to contribute to the financing of such advantages, but it will be hard to stop them from enjoying the services. Hence, voluntary association of citizens for the purpose of financial provision of such benefits is practically impossible. Budgetary expenses are the only source available for funding these services. The provision of both completely public and other products with characteristics of private ones is ensured at the expense of budget dollars. The advantages of receiving particular services can be unfairly evaluated when private individuals make separate decisions about whether to purchase them. This could result in inadequate production and consumption of items with significant social significance. Because of this, it is believed that the state, in some circumstances, has a greater understanding of the interests of its inhabitants than do private individuals, and that a variety of expenditures ought to be made directly by the state (Malynyak B., 2021).

The core of the redistribution function is that it is possible to reduce societal income inequality, territorial imbalances, and other issues with the aid of the budget, particularly by giving transfers to the people, administrative-territorial units, and international bodies. Budgetary expenditures are used for redistribution, namely to prevent notable gaps between people of low and high wealth and to lower the level of poverty. They are one method of creating harmony and fairness in society. Social assistance is a sign that the majority of taxpayers in a democracy are concerned about the suffering of the poor (Stiglitz, 1998).

The purpose of the stimulation function is to stimulate specific economic sectors in order to reduce the negative effects of the amplitude of economic cycles and to solve economic systemic issues. To do this, different mechanisms for their implementation are used to alter the volume, composition, and structure of budget expenditures. Generally speaking, a little rise in budget spending during a recession promotes aggregate demand, which benefits the dynamics of economic indicators. Moreover, expenditure on sectoral assistance of specific economic sectors or significant clusters has a stimulant effect on them (Yakobson L.I., 2000).

The provision of public goods to the population and economic entities is part of the allocation role, which can be carried out at the expense of both the state and municipal budgets. The issue of how spending authority is distributed among various budget levels is crucial. A. Smith came up with the fundamental idea of separating the financial responsibilities of the national government and local self-governance in the middle of the 18th century. "Expenses of local or regional significance should be met from local or regional incomes and should not burden the general income of society," the scientist observed. It is unfair for society as a whole to pay for costs incurred for the advantage of just one segment of this society (Smith, 2001).

The supply of public services must be decided upon and paid for by those who benefit from them, according to American economist R. Musgrave, who made this observation around the end of the 20th century, demonstrating the correctness of the suggested theory. While those that solely relate to a particular region should be offered and paid for locally, public goods and services that benefit the entire population of the nation should be delivered and funded centrally. It should be kept in mind when addressing the issue of providing public services at the price of budget dollars that a decentralized approach offers the chance to more completely consider consumer interests, and that a move to centralized provision offers the same opportunity - to reduce the cost of services. The introduction of new incentives for citizen movement from one area to another may be linked to the local implementation of redistribution measures. People will try to settle in areas that offer more transfers to the populace, especially the poorest individuals (Buchanan J. M., 2004).

By creating national budget spending guidelines that guide the implementation of redistributive measures, this occurrence can be prevented. Also, the local government has access to more accurate and up-to-date information regarding the economic and property circumstances of the territory's citizens, demonstrating the advantage of funding such expenses from local budgets (Champernowne D.G., 1998).

In the context of openness of regional economies, there are very few opportunities to apply the stimulation function at the local level. The stimulation of economic growth in one

region will extend to the economies of other areas when there is free movement of goods, capital, and labour throughout the entire nation. This will greatly reduce the influence of local budget policy. On the premise that fiscal and monetary policy are coordinated, budgetary expenditures to revitalize the state's economic system are effective.

The implementation of the stimulation function with the aid of local budget expenditures will be ineffectual if the nation has a single monetary and credit system and local economies are open to one another. As a result, it is wise to include these costs in the state budget. The effectiveness of local spending on budgets intended to spur economic growth is likewise less effective during economic recessions since these budgets' revenues fall as the proportion of social spending rises. The restricted potential of local self-revenue government's base in these circumstances prevents a rise in the costs required for stabilizing and enhancing the economic situation (Raghbendra J., 1998).

In order to meet societal demands and advance citizen wellbeing, this job entails allocating resources to a variety of sectors, including infrastructure, public safety, healthcare, education, and the provision of basic services.

Education is one of the most crucial areas where public funds are allocated. Governments give money for adult education, vocational training, and basic, intermediate, and postsecondary education. This makes it possible to guarantee that people have the information and abilities necessary to engage in the labour force and boost the economy. The development of human capital, which is crucial for the expansion of the economy and the general well-being of society, depends on education. Governments may increase the long-term prospects of their citizens and foster economic growth and development by investing in education.

Another significant part of governmental spending is health care. Governments allocate money for public health initiatives like illness prevention and immunization campaigns as well as healthcare services like hospitals, clinics, and medical research. This makes it possible to guarantee that people have access to the treatment they require to be healthy and effective. Because healthy people are more productive and make greater economic contributions, healthcare is essential to both the wellbeing of the populace and the health of the economy.

Infrastructure is another important area of public spending allocation. Governments allocate public funds for the construction and upkeep of highways, bridges, airports, mass transit systems, and other forms of infrastructure. This makes it possible for people to move around and transfer things in an efficient manner, and it also ensures that public agencies like the police and fire departments have the funding they require to function well. Infrastructure is

essential to the economy's operation because it enables firms to carry commodities and people to their places of employment, educational institutions, and other activities.

Public safety is also a key area of public spending allocation. Public financial source are used to pay police and fire departments as well as ambulance services and search and rescue crews during emergencies. This makes it possible for society to run smoothly and for citizens to be safe and protected. The provision of citizens with the security and protection they need to live their lives and participate in the economy makes public safety crucial to the smooth operation of society.

Several more categories of public spending allocation exist in addition to these, such as social assistance, environmental preservation, and cultural programs. Each of these sectors is essential to society's operation and its members' welfare.

For resources to be distributed effectively and efficiently to meet societal demands, the allocation function of public spending is crucial. Governments may advance both the general health of the economy and the welfare of their inhabitants by providing basic public goods and services. It is crucial to keep in mind that the allocation function is not always ideal and that choosing how to distribute public resources involves a number of difficulties and trade-offs.

Governments, for instance, must weigh competing resource needs, such as funding for healthcare against education, and they must make difficult decisions about how to prioritize spending. Also, there are frequently disagreements over the best ways to distribute funds, such as whether to support public or private schools or to invest in renewable or conventional energy sources. These discussions can be complicated and involve a wide range of parties with various goals and viewpoints.

In conclusion, the functions of public spending is essential to ensuring that resources are allocated effectively and efficiently to meet societal needs. Governments may advance both the general health of the economy and the welfare of their inhabitants by providing basic public goods and services. The decision-making process for allocating public resources involves various difficulties and trade-offs, and the allocation function is not necessarily ideal. Governments must balance divergent resource needs and make challenging decisions.

1.2 Public spending multiplier

The idea that government expenditure can have a greater impact on the economy than its initial quantity is known as the "public spending multiplier," and it is a key topic in economics. A measure of how much economic activity is produced by a unit of government

spending is called the public spending multiplier. In other terms, it refers to the percentage rise in national income that will result from a specific increase in government spending.

The premise of the public expenditure multiplier is that government spending may have a "ripple effect" on the entire economy. For instance, when the government invests money in a public works project, it might employ people to create the project, and those people would then spend their salary on products and services. The demand for these goods and services is subsequently generated by the workers' spending, which in turn stimulates additional economic activity and employment growth (Rosen H. S., 2012).

The amount of government spending, its nature (i.e. whether it is spent on commodities or services), and the degree of economic activity in the economy are some of the variables that affect the size of the public expenditure multiplier. The public spending multiplier measures the impact of public spending on change in the volume of global demand in the economy (Gross Domestic Product):

$$Y = C + I + G$$

$$C = a + cY_d$$

$$Y_d = (1 - t)Y$$

where: Y – GDP, C – consumption, I – investments, G – government spending on goods and services, c – marginal propensity to consume, Y_d – disposable income, t – tax rate.

$$C = a + cY_d = a + c(1-t)Y$$

$$Y = C + I + G = a + c(1-t)Y + I + G$$

$$Y + \Delta Y = a + c(Y + \Delta Y)(1-t) + I + G + \Delta G$$

$$\Delta Y = \Delta G / (1 - c(1 - t))$$

The above formula says that as the variable c increases, there is a simultaneous increase in the multiplier. When the variable t increases, there is a subsequent decrease in the multiplier. Similarly, when the variable m increases, there is a subsequent decrease in the multiplier, implying a negative relationship between m and the multiplier (Musgrave R., 2000) (Rosen S., 2005).

In an open economy, the above equation can be extended in the following way:

$$Y = C + I + G + X$$

$$X = g - mY$$

where: X – net exports (exports minus imports), g – constant level of export, m – marginal propensity to import.

$$Y = C + I + G + X = a + c(1-t)Y + I + G + g - mY$$

$$Y = (a + I + G + g) / (1 - c(1 - t) + m)$$

In an open economy, the public expenditure multiplier totals:

$$\text{multiplier} = \Delta Y / \Delta G = 1 / (1 - c(1 - t) + m)$$

The formula for the public spending multiplier is sometimes expressed in the simple way as follows:

$$\text{multiplier} = 1 / (1 - c).$$

For example, if the marginal propensity to consume is 0.8, the multiplier would be: $\text{multiplier} = 1 / (1 - 0.8) = 5$. This means that for every dollar of government spending, the overall economy will increase by \$5. However, it's important to note that this is a simplified model and there are many other factors that can affect the size of the multiplier, such as the type of spending and the impact of taxes (StudySmarter, Expenditure Multiplier, 2021)

The idea of "crowding out" is crucial in relation to the public spending multiplier. The concept of "crowding out" refers to the possibility that government spending can lower private sector consumption and investment. For instance, if the government spends a lot of money on a public works project, it can cause borrowing rates to rise, which could deter private sector consumption and investment. This can lessen the multiplier effect of public spending overall (StudySmarter, Expenditure Multiplier, 2021).

The idea of "fiscal multipliers" is a crucial one in relation to the public expenditure multiplier. Fiscal multipliers are a way to quantify how the economy will react to changes in fiscal policy, including adjustments to taxes or spending. Fiscal multipliers come in many forms, such as the public spending multiplier, tax multiplier, and balanced budget multiplier.

The size and potency of the public expenditure multiplier are topics of discussion among economists. The multiplier, according to some, is not very large, especially during periods of economic expansion when the economy is already functioning at full capacity. Others contend that the multiplier can be fairly substantial, especially during recessions when there is a lot of underemployment and unspent resources (Ganti A., 2021).

According to some economist and policy-makers, if there are economic downturns, public spending should be higher. The reason is that the increase in public spending – in line with the expenditure multiplier approach - will result in economy which recovers, i.e. in economy with higher GDP.

Overall, the public spending multiplier is one of the most important concepts in the public finance and it has significant implications for government policy. By understanding the factors that influence the size of the multiplier, policymakers can make more informed decisions about the appropriate level of government spending and the potential impact of fiscal policy on the overall economy.

1.3 Relative level of public spending

The percentage of total economic output that the government allots for public purposes is known as the relative level of public spending, which is a crucial component of economic policy.

Because it significantly affects the health of the economy as a whole, the level of public spending in relation to its size is a crucial policy concern. Inflation, excessive state debt, and the displacement of private investment can result from public spending that is excessively high in comparison to the size of the economy. On the other hand, excessively low public spending can result in underinvestment in vital public services and goods, decreased social welfare, and sluggish economic expansion.

The political, social, and economic backdrop of a particular nation can have an impact on what degree of public spending is suitable. For instance, to increase social welfare and lower inequality, nations with high economic disparity may need to spend more on redistributive measures. Similarly, to assist economic growth and job creation, nations with poor infrastructure may need larger levels of public spending (StudySmarter, Government Spending, 2021).

The structure of the economy also has an impact on the relative level of public spending. Economies that are more stable and predictable, as well as those that have better levels of social welfare, are typically found in nations with larger public sectors. Yet, because of the possibility of private investment, they can also face slower rates of economic growth and innovation.

The right amount of public spending for a particular nation is a topic of discussion among economists. While some contend that higher levels of public spending are required to improve social welfare and lessen inequality, others contend that lower levels of public spending are linked to quicker economic growth and higher levels of private investment.

Overall, there are many different economic, social, political, and foreign factors that have an impact on the relative level of public spending. For policymakers, analysts, and citizens alike, it is crucial to understand the relative levels of public spending in various nations and contexts because this information can shed light on the priorities and objectives of various governments as well as the potential effects of public spending on the economy and society as a whole.

1.4 Public spending by functions and countries

Governments are in charge of a vast range of duties, including guarding borders, constructing hospitals, and issuing passports. Government spending by function reveals how much is allocated to important sectors including public order and safety, defence, social protection, and health and education. Analysing spending levels across these many functions can help reveal national goals, policy preferences, and preferred delivery methods (such as wholly public or a mix of public and private).

In 2019, the OECD countries spent the greatest money (13.3% of GDP) on social security, which includes retirement benefits, health and disability insurance, and unemployment compensation.

The countries that spent the most of their GDP on social protection were Finland (24%), France (23.9%), and Denmark (21.4%). The countries that spent the least were Chile (5.1%), Korea (6.0%), and the United States (7.6%).

Healthcare spending includes the cost of hospital services, outpatient treatments, furniture and equipment, medical supplies, including vaccines, and medical items. At a 7.9% average share of GDP, this is the second-largest spending sector in OECD nations. The top three spenders in this area were the United States (9.3%), Norway (8.7%), and Denmark (8.2%). Nonetheless, there are significant disparities even across nations with high spending rates. For instance, whereas health care is completely provided by the government in Norway and Denmark, only little more than one-third of Americans are protected by a public health insurance program. The countries that spent the least on healthcare were Chile (4.4%), Latvia (4.2%), and Switzerland (2.1%). In Switzerland, private insurance programs that are mandated must be used to pay for health care.

	General public services	Defence	Public order and safety	Economic affairs	Environmental protection	Housing and community amenities	Health	Recreation, culture and religion	Education	Social protection
Australia	4.0	2.3	2.0	4.9	0.9	0.6	7.3	0.9	5.8	9.8
Austria	5.7	0.6	1.3	5.8	0.4	0.3	8.3	1.2	4.8	20.1
Belgium	6.9	0.8	1.7	6.7	1.3	0.3	7.6	1.3	6.2	19.4
Chile	3.0	1.1	2.0	2.3	0.2	0.9	4.4	0.3	5.5	5.9
Colombia	4.9	1.2	2.1	3.1	0.5	0.5	5.1	0.7	4.2	8.7
Czech Republic	4.4	0.9	1.9	6.1	0.8	0.7	7.6	1.4	4.9	12.6
Denmark	6.0	1.1	1.0	3.1	0.4	0.2	8.2	1.6	6.3	21.4
Estonia	3.5	2.1	1.8	3.9	0.7	0.4	5.3	2.0	6.0	13.2
Finland	7.9	1.2	1.2	4.2	0.2	0.3	7.1	1.5	5.6	24.0
France	5.5	1.7	1.6	6.0	1.0	1.1	8.0	1.4	5.3	23.9
Germany	5.7	1.1	1.6	3.3	0.6	0.4	7.4	1.0	4.3	19.7
Greece	7.9	2.0	2.1	4.0	1.4	0.2	5.3	0.8	4.0	19.8
Hungary	8.2	1.0	2.1	8.0	0.5	0.8	4.5	3.0	4.7	12.7
Iceland	7.2	0.1	1.5	4.9	0.6	0.5	7.8	3.0	7.0	10.9
Ireland	2.7	0.2	0.9	2.3	0.4	0.7	4.7	0.5	3.1	8.9
Israel	4.2	5.3	1.6	2.9	0.5	0.2	5.4	1.5	7.0	11.1
Italy	7.5	1.3	1.8	4.0	0.9	0.5	6.8	0.8	3.9	21.1
Japan	3.8	0.9	1.2	3.7	1.1	0.7	7.7	0.4	3.3	16.1
Korea	4.0	2.4	1.2	4.4	0.8	1.0	4.7	1.0	4.8	6.9
Latvia	3.8	1.9	2.2	5.3	0.6	1.0	4.2	1.5	5.8	12.1
Lithuania	3.5	1.6	1.4	3.0	0.4	0.5	6.2	1.2	4.6	12.3
Luxembourg	5.0	0.4	1.2	5.2	0.9	0.6	5.0	1.3	4.7	18.0
Netherlands	4.1	1.3	1.8	3.8	1.4	0.4	7.7	1.2	5.0	15.4
Norway	4.8	1.9	1.2	6.0	0.9	0.8	8.7	1.8	5.6	19.7
Poland	4.2	1.6	2.1	4.8	0.5	0.5	4.9	1.3	5.0	16.7
Portugal	6.7	0.8	1.7	3.6	0.6	0.5	6.6	0.9	4.4	16.9
Slovak Republic	5.4	1.1	2.3	5.1	0.8	0.5	7.7	1.2	4.2	14.4
Slovenia	5.2	1.0	1.6	4.5	0.6	0.4	6.7	1.4	5.5	16.5
Spain	5.5	0.8	1.8	4.0	0.9	0.4	6.1	1.1	4.0	17.4
Sweden	6.9	1.2	1.3	4.4	0.5	0.7	7.0	1.3	6.9	19.0
Switzerland	4.2	0.8	1.6	3.9	0.6	0.2	2.1	1.0	5.4	12.9
United Kingdom	4.3	2.0	1.8	3.5	0.6	0.8	7.7	0.6	4.9	14.8
United States	5.8	3.4	1.9	3.4	0.0	0.5	9.3	0.3	5.9	7.6
OECD	5.4	2.2	1.7	3.9	0.5	0.6	7.9	0.7	5.1	13.3
OECD-EU	5.8	1.2	1.7	4.4	0.8	0.6	7.0	1.2	4.7	19.3
Costa Rica	3.7	0.0	2.5	3.2	0.4	0.8	5.9	0.2	7.7	8.3
Romania	4.2	1.7	2.2	4.7	0.7	1.1	5.0	1.0	3.6	11.9

Source: OECD National Accounts Statistics (database); Eurostat Government Finance Statistics (database).

StatLink  <https://doi.org/10.1787/888934257090>

Figure 1. Public expenditure by functions

Source: OECD National Accounts Statistics (database); Eurostat Government Finance Statistics, <https://doi.org/10.1787/888934257090>

The running of the central executive and legislative branches of government, transfers between levels of government, and other general public services made up 5.4% of GDP in all OECD nations in 2019. The countries that spent the most on this function were Italy (7.5%), Greece (7.9%), and Finland (7.9%). For Italy and Greece, public debt transactions made up the majority of this function, but general services made up more than half in Finland. OECD nations spend, on average, 5.1% of GDP on education and 3.9% on economic matters. Subsidies to businesses and industries fall under this final category. Spending on environmental protection accounts for 0.5% of OECD countries' average GDP, the lowest percentage of any category (OECD, General government expenditures by function (COFOG), 2021).

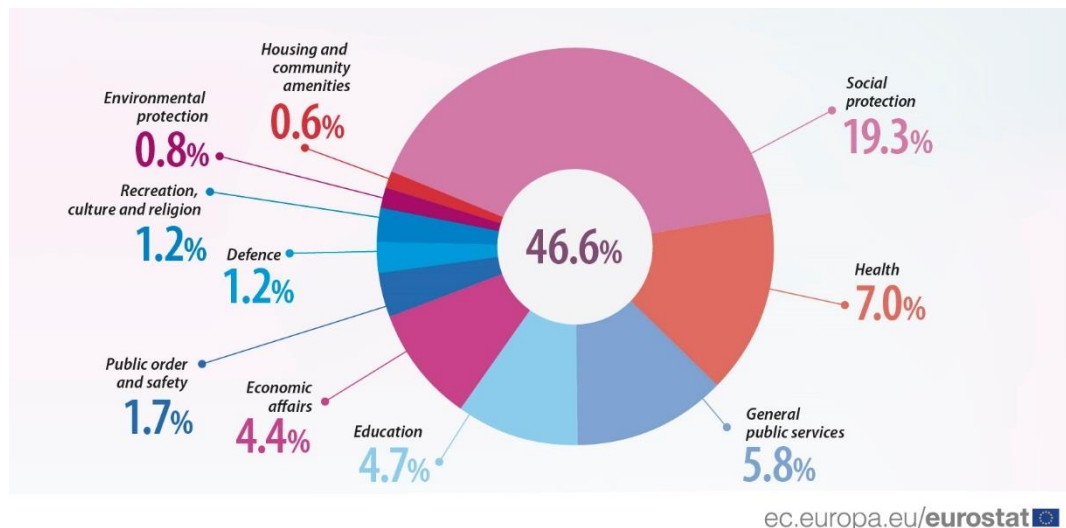


Figure 2. General government expenditure by functions as % of GDP
in the EU in 2019

Source: <https://ec.europa.eu/eurostat/en/web/products-eurostat-news/-/ddn-20210226-1>

The United States has a relatively low level of overall public spending compared to other developed countries. The largest component of public spending is on redistributive programs, public expenditure such as Social Security, Medicare, and Medicaid, which account for approximately 56% of total public spending. Allocation spending accounts for approximately 13% of total public spending, while stimulation spending accounts for approximately 1% of total public spending (OECD, General government spending, 2022).

Norway has a higher level of public spending than the United States, with the largest component of spending going to allocation programs such as education, health, and research and development. Redistributive spending is also a significant portion of public spending in Norway, accounting for approximately 22% of total spending. Stimulation spending is a relatively small portion of public spending in Norway, accounting for approximately 1% of total spending (OECD, General government spending, 2022).

An example of public spending by functions can be seen in Japan's investment in infrastructure. The Japanese government has a long history of investing in infrastructure projects, such as roads, bridges, and public transportation systems. In recent years, the government has focused on modernizing and expanding its transportation network, with the goal of reducing traffic congestion and improving connectivity between cities. To achieve this goal, the Japanese government has allocated significant resources to high-speed rail projects, such as the Shinkansen bullet train, which is one of the fastest and most reliable transportation systems in the world. These infrastructure investments have helped to support economic growth

and development in Japan, as well as to improve the quality of life for its citizens. Japan has a relatively high level of public spending, with the largest component of spending going to allocation programs such as infrastructure, education, and healthcare, which account for approximately 23% of total spending. Redistributive spending is a smaller portion of public spending in Japan, accounting for approximately 12% of total spending. Stimulation spending is also a relatively small portion of public spending in Japan, accounting for approximately 2% of total spending.

One country with a relatively high level of public spending on healthcare is Sweden. The Swedish government spends approximately 11% of its GDP on healthcare, which is among the highest levels of healthcare spending in the world. This high level of spending is reflected in Sweden's comprehensive healthcare system, which provides universal coverage to all citizens and residents. The system is funded through a combination of taxes and patient fees, and includes a range of services such as preventative care, primary care, specialized care, and dental care. In addition, the Swedish government has invested heavily in health research and innovation, with a focus on developing new treatments and technologies to improve the health outcomes of its citizens (Roser Esteban Ortiz-Ospina and Max., 2016).

South Africa has a relatively high level of public spending compared to other developing countries, with a significant portion of spending going to redistribution programs such as social grants and healthcare subsidies. Allocation spending accounts for approximately 12% of total public spending, while stimulation spending accounts for approximately 5% of total public spending (NationalTreasury, 2021).

In Brazil, the government spends approximately 13% of its GDP on social welfare programs, which are designed to support low-income families and reduce poverty. These programs include a range of services such as cash transfers, housing subsidies, and food assistance, and are targeted at the most vulnerable members of society. The Brazilian government has also invested in programs to promote economic development and job creation, with the goal of reducing inequality and improving the standard of living for its citizens (WorldBankData, 2021).

2. Public spending in the sport sector

2.1. What does public expenditure in sports depend on?

Public expenditure in sports refers to the amount of money that governments spend on sports-related activities, such as building and maintaining sports facilities, supporting amateur and professional athletes, and hosting major sporting events. Public expenditure on sports varies widely from country to country and can depend on a range of factors. In this thesis, we will take an in-depth look at the factors that influence public expenditure in sports.

Government priorities is one of the most significant factors that influence public expenditure in sports is the priorities of the government in power. Different governments have different priorities, and some may view sports as a more important area of investment than others. For instance, some governments may view sports as a way to promote national identity, while others may see it as a means of generating economic growth. As a result, the level of public expenditure on sports can vary depending on the priorities of the government.

In some countries, sports is a key part of the national identity and is seen as an important part of the country's culture. For example, in Brazil, football is a national obsession, and the government has invested heavily in football development programs and infrastructure. Similarly, in India, cricket is a hugely popular sport, and the government has provided significant funding to support the development of the sport.

In other countries, the government may prioritize sports as a means of generating economic growth. Hosting major sporting events can provide a boost to the local economy, with increased tourism and spending from visitors. For example, the 2010 FIFA World Cup in South Africa was estimated to have generated \$5 billion in economic activity, providing a significant boost to the country's economy (Amara Mahfoud, 2020).

Economic factors can also play a significant role in determining the level of public expenditure on sports. In times of economic growth, governments may have more funds to allocate to sports-related activities. Conversely, in times of economic recession, sports may receive less funding as governments prioritize spending on other areas, such as healthcare and education.

Furthermore, the economic impact of sports can also influence government spending. For example, the revenue generated from hosting major sporting events can have a positive impact on the economy, leading to increased investment in sports-related activities.

Additionally, the sports industry can provide employment opportunities and contribute to economic growth, which may lead to increased government investment in the sector.

Popularity of sports can also have an impact on the level of public expenditure. Sports that are more popular among the public may receive more funding than less popular sports. For example, football is a popular sport in many countries and, as a result, often receives more government funding than less popular sports, such as cricket or rugby.

However, it is worth noting that popularity is not always the only factor in determining public expenditure. Some governments may prioritize supporting less popular sports to promote diversity and inclusion. For example, the Canadian government has invested in programs aimed at developing winter sports, such as curling and ice hockey, to promote diversity and inclusion in sports.

Analysing sporting events, hosting major sporting events, such as the Olympic Games or the World Cup, can require significant investment from the government. Governments may need to build new sports facilities, upgrade transportation infrastructure, and provide security for the event, among other expenses. The cost of hosting such events can be substantial, with some estimates suggesting that hosting the Olympic Games can cost billions of dollars.

However, governments may see hosting major sporting events as an opportunity to promote their country on a global stage and to boost the local economy. For example, the 2012 Olympic Games in London generated an estimated \$17 billion in revenue, including increased tourism, job creation, and infrastructure investments.

As regards infrastructure, the level of public expenditure on sports can also depend on the state of infrastructure needed to support sports activities. Building and maintaining sports facilities such as stadiums, training centres, and playing fields can require significant investment. The level of investment required will depend on the specific needs of the sport and the facilities required to support it. For example, some sports, such as football, may require large stadiums to accommodate the number of spectators, while other sports, such as swimming, may require specialized facilities, such as an Olympic-sized swimming pool (Cristea Mihai-Alexandru, 2022).

Considering government policies, it can also influence the level of public expenditure on sports. Governments may introduce policies aimed at increasing sports participation among young people, which may require additional funding. For example, a government may invest in building more sports facilities in schools or provide financial support to young athletes to encourage their participation in sports. Additionally, some governments may use sports as a

tool for social inclusion and may invest in sports programs aimed at disadvantaged communities.

Public expenditure in sports can depend on a range of factors. Government priorities, economic factors, the popularity of sports, hosting major sporting events, infrastructure needs, and government policies are the main predictors.

Modern sport has become an important sector of the economy in many countries. It involves significant financial resources and a significant amount of labour. Nowadays, the degree of development of the sports industry is a factor that affects the pace of development of society, the level and quality of life of the population, and business activity. Modern research shows that people who are systematically engaged in physical culture and sports have higher labour productivity than those who are not engaged in sports. In addition, the turnover of active athletes is much lower than that of their peers. The same applies to work discipline. Such factors have a favourable impact on labour productivity and production in general.

Sport not only improves the quality of the productive forces of society, but also manifests itself in many other areas of human activity as a means of social and economic strengthening of the country. By positively influencing the state of human health, sport contributes to the growth of the most valuable of all the wealth of the state of the able-bodied population, which, in turn, increases the well-being of the country itself. Considering this aspect of the impact on the economy, it is necessary to note that physical education and mass sports are important here. Their main goal is to improve the health of the population and support its reproductive capabilities.

The involvement of people in sports, especially young people, also makes it possible to reduce the criminality of the social situation in society, which also affects the improvement of the economic situation in the country. This is manifested in the reduction of public expenditures on ensuring public order, the reduction of the number of people with drug and alcohol addiction, as well as in the increase in the demand for services in the field of sports and sports services (Sport: economy, politics, culture, 2013).

The holding of sporting events ensures the development of industries directly or indirectly related to the field of sports. In addition, the number of fans, including foreign tourists, is increasing at international competitions, which stimulates the development of the service sector. We are talking about hotel and tourist business, trade, and catering. This contributes to the growth of revenues of enterprises producing food products, sports symbols, souvenirs, etc., provides additional orders for industrial enterprises and contributes to the development of infrastructure in the region where international sports competitions take place.

The production of sports equipment, sportswear and equipment is now a significant industry in the world. The popularization of sports and the increase in the number of people involved in it causes a corresponding demand for the products of sports manufacturers, which has transformed this industry from an auxiliary to a dynamically developing one.

The development of physical culture and sports services also makes a significant contribution to the eco-economy of many countries, as the popularization of this industry leads to an increase in the demand for sports facilities and places where sports can be practiced. In this regard, there is an increase in the number of facilities offering a wide range of relevant services: from stadiums, gyms and swimming pools to sports and recreation centres.

The participation of popular athletes in advertising campaigns indicates the use of sport as an element of the marketing strategy of manufacturers of various types of products, which also gives grounds to talk about its growing importance in the national and global economy.

The desire for high sports results also stimulates the development of sports medicine and pharmacology, which are closely related to sports. The trade in various drugs that stimulate the work of human organization has been transformed into a separate branch of medical industry, which contributes to the economic development of many countries.

It should be noted that today physical culture and sports have different levels of development in different countries, and, accordingly, different proportions in the structure of the national economy. The leading positions in the field of physical culture and sports belong to the United States of America. This country has a very developed physical culture and sports infrastructure and a well-developed training system.

Analysing the macroeconomic indicators of the functioning of the sphere of physical culture and sports, scientists note that since the 1980s, the most intensive penetration of market relations in this sphere has begun in the history of physical culture and sports, especially in sports of the highest achievements, which has led to an increase in its importance in the development of macroeconomic processes in many countries of the world. Researchers point to the significant contribution of the sphere of physical culture and sports to the economic development of developed countries, determining its share in the gross domestic product of the European Union countries (Mazurashu George, 2018).

Country	Population coverage level (%)
Finland	52
Australia	46
Canada	39
Germany	27
Japan	26
USA	26
France	24
UK	21
Ukraine	13

Table 1. The level of coverage of the population in physical education and sports

Source:<https://sportbuk.com/2011/03/18/osoblyvosti-i-perspektyvy-rozvytku-systemy-upravlinnya-sferoyu-fizychnoji-kultury-i-sportu/>

2.2 Relative public spending on sports by countries

The socioeconomic development of any nation depends heavily on sport and leisure. Everyone can benefit from increasing their level of physical activity because it has been scientifically proven to have positive effects on health. Sports activities have unique characteristics that set them apart from other industries and as a result, require significant government intervention in the form of subsidies or exemptions from labour, competition, and other laws for sports firms. Establishing sports policy, providing funding for sports infrastructure, fostering talent, and developing specialized programs for sports development are all responsibilities of the government and governmental entities. The government is essential to the growth, development, and funding of sport. As a result, the government must set aside money for the sports it funds. Through increasing domestic demand, providing jobs, etc., the sports business has emerged as a new engine of national economic growth.

In 2018, the global market for recreation has a close to \$1.44 trillion market value. It is anticipated to reach \$1.81 trillion by 2022. The second-largest sector in the worldwide recreation market was the sports market, which had 34% of the market. In nations that are a part of the European Union (EU), it is estimated that the sports industry contributes between 2 and 5% of GDP¹².

All 28 EU countries spent 51.3 billion euros on sports and leisure in 2017. Since the time series start in 2004, the general government spending on recreation and sport in the EU has remained stable (Michał Wielechowski, 2019).

In 2018, the 27 EU Member States spent over €51 billion—or €113—on leisure and sports collectively. Government recreation and sports spending as a percentage of overall spending ranged across EU nations, from 0.4% in Bulgaria, Ireland, and Malta to over 2% in Hungary.

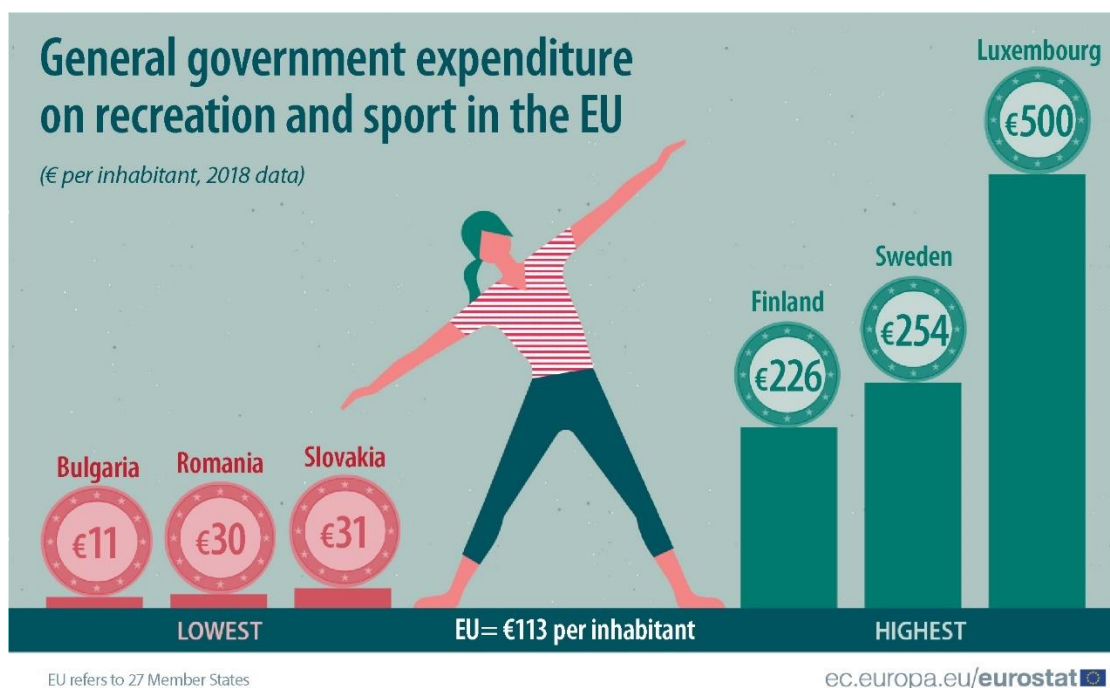


Figure 3. General government expenditure on recreation and sport in the EU

Source: <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/edn-20200923-1>

The above numbers can be viewed in context when taking into account the population density of each EU member state. As a result, Figure 3's six Member States - Luxembourg (€500 per resident), Sweden (€254), Finland (€226), France (€204), the Netherlands (€202), and Denmark (€201) - had relative expenditures per resident that were higher than €200. The lowest per-capita recreation and sports spending was found in Slovakia (€31), Romania (€30), and Bulgaria (€11) (How much do governments spend on recreation and sport?, 2020).

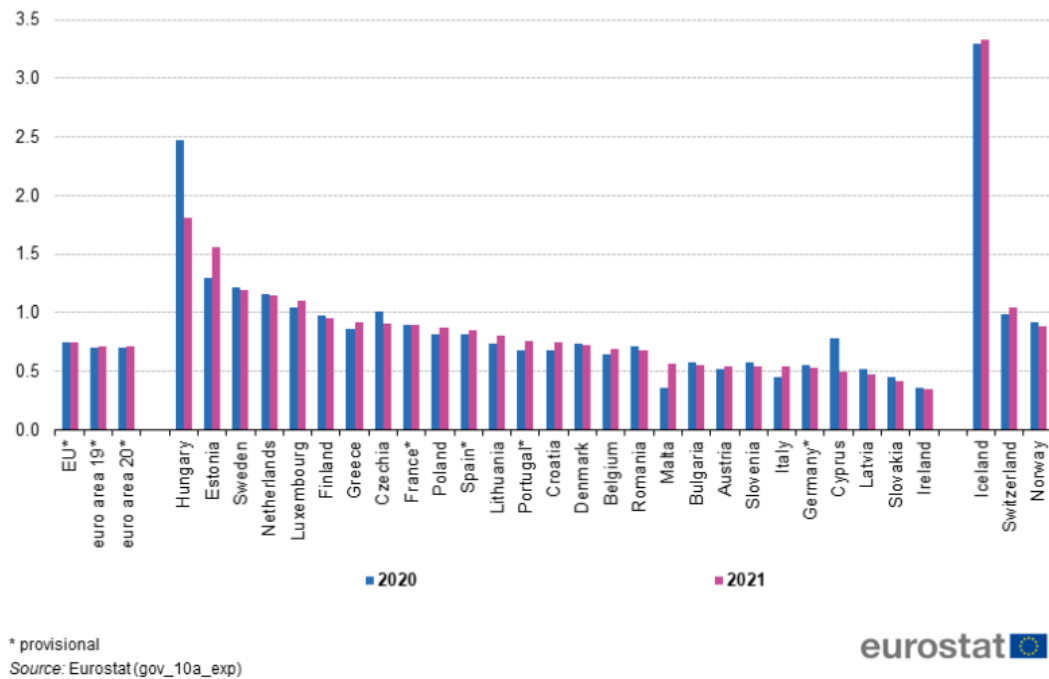


Figure 4. General government expenditure on sport in the Europe in 2020-2021

Source: [https://ec.europa.eu/eurostat/statistics-](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Government_expenditure_on_recreational_and_sporting_services&oldid=593739)

[explained/index.php?title=Government_expenditure_on_recreational_and_sporting_services](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Government_expenditure_on_recreational_and_sporting_services&oldid=593739)
&oldid=593739

As regards Asian nations, they are making significant investments in sports infrastructure and development. The top three countries for sports spending are China, Japan, and South Korea. By 2025, Statista predicts that China's sports market would be worth 482 billion yuan (\$74 billion). The sports industry in Japan was worth \$24.8 billion in 2019, compared to \$4.4 billion in South Korea in 2018.

The amount of money spent on sports differs throughout Asian nations in terms of the percentage of total GDP. For instance, South Korea spends 0.3% of its GDP on sports, compared to China's 0.2% GDP. In contrast, Japan allocates about 0.5% of its GDP to sports. It's important to note that these proportions do not account for private investments in sports infrastructure and programs (South Korea - Statistics & Facts, n.d.) (Zhang, 2022) (O'Neill, 2021).

Referring to North America, the two countries that spend the most in nominal terms on sports in the continent are the United States and Canada. According to a Plunkett Research analysis, the United States has one of the greatest sports markets in the world, with a market value of \$73.5 billion in 2019. In 2018, the Canadian sports industry was worth \$19.6 billion.

Compared to Canada, which spends about 0.9% of its GDP on sports, the United States spends roughly 0.5% of its GDP on sports. The National Football League (NFL), National Basketball Association (NBA), and Major League Baseball are just a few examples of professional sports leagues that attract significant private investment in the United States (MLB) (Gough, 2021) (ResearchPlunkett, 2022).

Brazil and Argentina are the top sports consumers in South America. Brazil's sports industry was worth \$18.3 billion in 2019, while Argentina's was worth \$3.7 billion in 2018, according to a Euro monitor international research.

Brazil spends about 0.4% of its GDP on sports, while Argentina spends about 0.2% of its GDP on sports, when measured as a proportion of total GDP. Although both nations also make large private investments in sports, soccer is the most well-liked sport in South America.

The two countries that spend the most on sports in Africa are South Africa and Nigeria. According to data from Euro monitor International, the sports market in South Africa was worth \$1.3 billion in 2018 and the sports market in Nigeria was worth \$1.1 billion in 2019.

South Africa spends roughly 0.1% of its GDP on sports, while Nigeria spends about 0.06% of its GDP on the same activity. But both nations also make large private contributions in sports, especially in soccer, the most well-liked sport in Africa.

Generally, spending on sports differs between various nations and areas. Some countries allocate a smaller percentage of their GDP on sports, compared to certain nations that make significant infrastructure and development investments in sports. It is important to remember, nevertheless, that in many nations, private investments in sports - particularly in professional sports leagues - are enormous.

2.3. Potential determinants of public spending on the sport sector

A key indicator of economic output per person in a nation is the Gross Domestic Product (GDP) per capita. It is frequently used as a gauge of the living conditions in that nation. Public spending in the sports industry can be significantly impacted by the GDP per capita. That is why the relationship between GDP per capita and government spending on the sports industry should be examined.

There are more funds available for public investment, including spending on sports, in nations with higher GDP per capita. These nations may make investments in modern sports facility construction, professional sports team sponsorship, and funding for sports education and development initiatives. The United States, which has one of the greatest GDP per capita

in the world, is a good example. Sports are a significant portion of the nation's public spending, and professional sports leagues bring in billions of dollars each year

However, nations with lower GDPs per capita might only have a small amount of money available for public spending, which includes money on sports. Because the government may place a higher priority on spending on other critical services like healthcare, education, and infrastructure, governmental investment on sports may be minimal or non-existent in such nations. For instance, the government spends little to no money on sports in many African nations, preferring instead to improve the nation's fundamental infrastructure, healthcare, and education.

The allocation of public finances can be influenced by a number of circumstances, therefore there is not a clear correlation between GDP per capita and public spending on sports. Public spending on sports can be influenced by a variety of factors, including political agendas, cultural norms about sports, and the nation's general economic status (Fernando Lera-López P. W., 2015) (Dingqing Wang, 2022) (Debroy, 2011).

Referring to priorities in politics, public spending on sports can be strongly impacted by a nation's political interests. A government is more likely to provide more funding for sports development programs, professional sports teams, and sports infrastructure if it prioritizes sports.

Taking into account cultural attitudes, sports can also influence the amount of money that the public spends on them. The government may allot more money for sports development programs and infrastructure in nations where sports are deeply rooted in the culture.

Considering economic situation, public spending on sports can also be influenced by a nation's general economic status. Governments may cut back on funding for sports development initiatives and infrastructure during economic downturns in order to give other crucial services priority.

In conclusion, GDP per capita is an important metric of a nation's economic output per individual and is frequently used to gauge that nation's standard of life. It might significantly affect how much the government spends on sports. There are typically more resources available for public investment, including spending on sports, in nations with higher GDP per capita. In practice, the pattern of allocation of public finances can be influenced by a variety of complex circumstances. That is why to determine a direct correlation between GDP per capita and public spending level on sports in a given country, one should identify all possible determinants, which is rather difficult . Public spending on sports can be influenced by a variety of factors, including political agendas, cultural norms about sports, and the nation's general economic status.

Analysing private expenditure on sports, public investment in the industry may be stimulated by private spending on sports equipment, which in turn may serve to increase demand for sporting events and facilities. For instance, showing policymakers that there is a high demand for sports and physical activity by having a lot of people buy and use sports equipment on a regular basis may persuade them to allocate more public funds to support the creation of sports facilities and programs.

Even though there may not be much money spent on sports by the government, private equipment purchases can serve to supplement sports programs and activities. This can include money for sports teams, tools, venues, and training plans, all of which can help to raise the caliber and accessibility of community members' access to sporting possibilities (Fernando Lera-López M. R.-G., 2006).

As regards participation in the sports activities, many governments have made supporting individual physical activity a priority. Countries all across the world have made significant financial investments to promote sports participation. For instance, Pawlowski and Breuer (2012) calculate that Germany spends almost 10 billion EUR annually on governmental expenditures related to sports. Similar to other public expenditures, sports-related public expenditures are justified by the occurrence of market failures as well as by public and meritorious qualities.

Despite the significant sums of money spent on sports facilities, it is unclear if these public investments actually encourage more people to participate in sports. The relationship between public sports spending and general physical activity has only been briefly examined in a few research. Even less is known about the connection between facility costs and participation in particular sports.

Governments frequently work to enhance public health through involvement in sport and exercise since these activities frequently produce the advantages linked to the degree of health-improving physical activity advised by the World Health Organization. The British government, for instance, underlined in their Game Plan that the growth of grassroots sports is essential for addressing a number of health issues. The German Federal Government similarly mentioned in their annual report on sport that one of the main considerations for sponsoring sport is the health benefits (Carina Steckenleiter, 2019).

Participating in sports and physical activity frequently has positive health effects while fostering social inclusion and physical education, which raises the general level of health consciousness in society.

An essential component of this strategy is encouraging people to participate in sports and physical activity. By directing public monies to the establishment of sports facilities and sports programs, sport policy seeks to encourage recreational sport for all.

Public spending on sports can be greatly influenced by participation because it can increase demand, lead to better health outcomes, foster social cohesiveness, and heighten competition. As a result, politicians frequently aim to boost sports participation rates as part of their initiatives to support the growth of the sports industry (Dallmeyer, Wicker, & Breuer, 2017).

Taking into account big sports events in the last 20 years, the events become major business because they draw plenty of participants, spectators, sponsors, and media attention. Sport event hosting has fuelled rivalry between countries, regions, and cities. The spectrum of sporting events includes large-scale competitions like the Olympic Games and the FIFA Soccer World Cup, as well as endurance competitions like the Tour de France and the Comrades ultramarathon, as well as more intimate competitions like cricket and football games. An event has an effect on the local economy because it stimulates spending. For many years, researchers from all around the world have tried to measure this effect of sporting events, leading to a large body of literature on the subject.

Since major sporting events frequently necessitate huge investments in infrastructure, security, marketing, and other areas, they can have a big impact on public spending. Here are some ways that major sporting events may affect government spending:

1. Building new facilities: to accommodate huge audiences and fulfil the event's technical specifications, hosting a major sporting event may need building new sports facilities, such as stadiums or arenas. These building projects can be very expensive, and financing them frequently involves using public financial sources.

2. Upgrading infrastructure: it may be necessary in addition to new construction when hosting a major sporting event, including improvements to existing hotels, transit networks, and communication networks. These improvements may also be expensive and call for tax dollars.

3. Security and safety measures: to protect athletes, spectators, and the general public, major sporting events may necessitate considerable financial investments in security and safety precautions. These actions may include stepped-up law enforcement, emergency assistance, and surveillance, all of which call for public money.

4. Marketing and promotion: to draw tourists and reap financial rewards from the event, host nations or towns may also invest a sizable money in marketing and promotion. Advertising

campaigns, sponsorships, and other marketing endeavours fall under this category (Maennig Wolfgang, 2017) (Saayman Melville, 2014).

Hosting a major sporting event may be a costly endeavour that necessitates significant governmental spending. However, these events can also result in increased tourism, job development, and economic prosperity for the host nation or city. As a result, when considering whether to spend public money on hosting a major sporting event, governments and legislators frequently take possible economic gains into account.

Analysing social inclusion, sport and physical activity serve as a foundation for the personal, social, and academic growth of participants as well as a catalyst for social inclusion and integration. Physical activity and sport foster inclusion, togetherness, tolerance, and a host of other athletic and EU ideals.

Sport provides marginalized and underprivileged individuals with the chance to meet and integrate with other social groups, such as migrants and those at danger of prejudice. People with disabilities who participate in sport have the chance to show off their skills, challenge preconceptions, and participate more fully in society. The potential social advantages of sport are not always realized. Many marginalized groups are underrepresented among athletes, volunteers, committee members, and members of governing bodies (Social inclusion, 2021).

Some groups face obstacles that prohibit them from fully participating in political, economic, and social life in every nation. These groups may be excluded not just by the law, the market for real estate, and the labour force, but also by stigmatizing or discriminatory attitudes, beliefs, or perceptions. Disadvantage is frequently determined by a person's gender, age, place of residence, job, race, ethnicity, religion, citizenship status, ability, and, among other things, sexual orientation and gender identity (SOGI). People who experience this form of social marginalization lose their sense of worth, security, and chance at a better life. It will be difficult to promote inclusive growth that is sustainable and quick poverty reduction if the underlying causes of structural exclusion and discrimination are not addressed.

Certain groups may choose to avoid certain markets, services, and environments due to exclusion or the appearance of exclusion, which has implications for both people and the economy. It is estimated that gender disparity alone has cost the world \$160.2 trillion in lost human capital wealth. The poverty rate among people of African descent is still notably higher (it is 2.5 times higher in Latin America). In developing nations, 90% of children with impairments do not attend school. Combating violence, prejudice, and marginalization against LGBTI people is particularly challenging in many nations. Currently, homosexuality is illegal around 70 nations.

Exclusion has enormous long-term social and economic implications since it can eventually lead to societal tensions and even increase the likelihood of violence and conflict. When social inclusion is prioritized in public spending, it can help to reduce inequality and promote a more just and cohesive society (Ivers Laura, 2021).

Speaking about employment rate in the sport sector, the following observation can be made. When there is a high demand for sports and physical exercise, as well as prospects for growth and development within the industry, it can be said that the sports industry is experiencing high employment rates. As a result, governments may decide to spend more money on sports-related programs, infrastructure, and initiatives in order to support job creation and economic development.

On the other side, if the employment rate in the sports industry is low, there may be less demand for sports and physical exercise as well as less chances for job creation and economic growth, making it harder to defend public expenditure in the area.

It is crucial to remember, nevertheless, that government spending in the sports industry can also increase employment rates by stimulating the economy and creating jobs. expenditures in sports programs and initiatives, on the other hand, can generate jobs in coaching, training, and administration while expenditures in sports infrastructure and facilities can provide construction opportunities.

It is crucial to take into account the wider social and economic benefits of investing in sports and physical exercise, such as improved health outcomes, social inclusion, and community cohesiveness, even though the employment rate in the sports sector can affect public investment in the sector.

Considering the other potential determinates, international trade of sports equipment may have an impact of the public spending. The import and export of sporting goods, equipment, and apparel contribute to the overall economy and can affect the allocation of public funds. Increased international trade might result in greater demand for sporting events, spots, and infrastructure, which would encourage governments to make greater investments in their creation and maintenance. Additionally, the sale of broadcasting rights and sponsorship agreements can bring in money that governments can use to fund sports initiatives and programs.

Speaking about public debt, the amount of available funds that governments have to invest in sports projects, facilities, and programs can be impacted by the level of public debt, which can also have an impact on public spending in the sports industry.

Governments may have less money available for discretionary spending, such as sports and entertainment, when public debt levels are high. Governments may need to put expenditure on necessities like healthcare and education ahead of spending on sports and entertainment in this case.

However, it's also critical to remember that government investment in the sports business can have advantageous social and economic effects, including fostering physical exercise and bettering public health, fostering community cohesiveness, and generating jobs in the sector. Therefore, in order to promote these social and economic benefits, governments may still decide to invest in sports programs and facilities even when public debt levels are high.

Governments might also look for alternate financial sources for sports initiatives and programs, such as user fees, philanthropic gifts, or partnerships with the commercial sector. These alternate sources of funding can aid in reducing the negative effects of large levels of public debt on public investment in the sports industry (Kormendi Roger, 1983)

Overall, governments can still choose to invest in sports programs and projects as a method of promoting social and economic advantages, and may seek alternative funding sources to support these expenditures. Even though, public debt might have an influence on public expenditure in the sports sector.

3. Empirical research: Panel Data Model for European countries

3.1 Source of data

The European Union's (EU) statistical agency, known as Eurostat, is in charge of supplying high-quality statistical data and information to support research, policymaking, and decision-making at both the EU and national levels. Eurostat, the EU's official statistics repository, is essential to the development of the EU's economic, social, and environmental policies.¹

Data for Eurostat are gathered using a mix of administrative sources, statistical models, and surveys. To guarantee that its data is accurate, dependable, and comparable across nations and time periods, it uses stringent quality control procedures. To maintain consistency in data collecting and reporting and to standardize methodology, the statistical office also collaborates closely with national statistical agencies.

On its website, Eurostat makes its data freely accessible to the public, allowing users to access a wide range of statistical datasets, tables, and interactive tools. Users of the website can search and download data on a variety of subjects, as well as build personalized reports and visualizations depending on their own requirements and interests.

A wide variety of stakeholders, including politicians, researchers, journalists, corporations, and the general public, use Eurostat data. Decisions about topics like economic growth, social welfare, and environmental protection are based on statistics from Eurostat. The information is used by researchers to carry out research and examine trends in many economic areas. The information is used by businesses to spot market opportunities and form strategic plans. The public utilizes the data to keep up with trends and changes in the EU, and journalists use it to report on economic and social issues.

Data from Eurostat has been essential in formulating EU initiatives and policies. For instance, Eurostat's statistics and data are used to inform the EU's policies on energy, climate change, and sustainable development. Additionally, its data is used to track advancements

¹ Since its founding in 1953, Eurostat has been tasked with gathering, compiling, and disseminating data and statistics on a variety of subjects, including agriculture, energy, environment, trade, and many more. All 27 EU members as well as those nations with which the EU has statistical exchange agreements are included in its data set.

toward the social and economic objectives of the EU, such as lowering poverty and inequality and fostering innovation and competitiveness.

In conclusion, Eurostat is a crucial source of statistics for researchers, businesses, journalists, and the general public as well as for policymakers. The EU policies and activities are shaped by its high-quality, dependable, and easily accessible data, which also supports the use of evidence in decision-making. Since the EU continues to face difficult economic, social, and environmental issues, Eurostat's role in delivering accurate and thorough statistical data will be essential in determining the direction of the EU in the future.

Leading provider of market and consumer data, Statista focuses on gathering, analysing and visualizing statistical data from a variety of sources. The company offers a wide range of statistics and data on a variety of subjects, including business, media, technology, healthcare, and many more ².

Statista's user-friendly interface and data visualization capabilities are among its standout qualities. More than a million data sets, charts, and graphs are available on its platform, all of which may be easily searched for, filtered, and customized. Data and charts are readily available for download in a variety of formats, including Excel, PowerPoint, and PDF, so users may use them for their own reports, presentations, or research.

The data used by Statista is gathered from a variety of primary and secondary sources, including government organizations, business associations, scholarly studies, and surveys. To guarantee that the data is precise, dependable, and current, the organization employs a staff of researchers and data analysts. Additionally, it makes use of cutting-edge data analytics and visualization tools to provide insights and patterns in an approachable manner.

Several different stakeholders, including companies, decision-makers, researchers, and the general public, use Statista's data. To determine market trends, customer behaviour, and industry benchmarks, businesses use Statista's data. The information is used by decision-makers to assess the effects of laws on various industries and to inform policy decisions. The data is used by researchers to examine trends, carry out market research, and create scholarly papers.

² In 2007, Statista was established in Hamburg, Germany. Since then, it has grown internationally, with offices in the US, Europe, and Asia. It provides a variety of goods and services, such as data visualization tools, bespoke data requests, and market research studies. To reach a larger audience, Statista has partnered with a number of prestigious media organizations, including Forbes, The Wall Street Journal, and Business Insider.

The public utilizes Statista's data to keep up with trends and advancements across a range of industries.

To accommodate the various demands of its users, Statista provides a variety of subscription packages, including individual, corporate, and academic programs. In order to offer insights and trends on numerous issues, the company's website also offers a variety of free data and statistics, including infographics, research articles, and newsletters.

In summary, Statista is a top supplier of consumer and market data, providing a wide range of statistics and data visualization tools. It is an invaluable resource for organizations, decision-makers, researchers, and the general public due to its user-friendly interface and flexible data requests. Because of the company's dedication to accuracy, dependability, and innovation, a wide range of stakeholders trust its data and insights.

As regards the empirical research that is presented below, unit data necessary to explain sport spending-to-GDP ratio in European countries was taken from Eurostat Data Base and Statista. The time period covered is 2000-2021. To be precise, empirical sample used to test Fixed Effect and Random Effect panel data model consists of 31 countries.

The list of variables used in the model is as follows:

- geo – it is all EU countries plus Iceland, Norway, Switzerland and UK
- TIME_PERIOD – years all countries
- private.exp – private expenditure in sport sector (own money that people spend on the sport equipment)
- sport.exp – public expenditure in sport, it is how much money each country spend on it in the percentage of gross domestic product
- deficit – government deficit/surplus, public debt in the percentage to the GDP
- events – dummy variable, that shows if county hosted a big sport event like Olympic games, football World Cup, European championship (1 – YES, 0 – NO)
- GDP per capital – Gross Domestic Product per capita in purchasing power standards
- emp_rate – employment rate in the sport sectors in the thousands persons
- social – level of social exclusion in percentages of the population
- participation – participation people in the cultural, sport activities in the percentage of the population. GDP per capital.

In total, the empirical sample includes 10 variables and 681 observations.

	Min	1 st Qu.	Median	Mean	3 rd Qu.	Max	NA's
TIME_PERIOD	2000	2005	2010	2010	2016	2021	-
private.exp	-8.70	1.50	2.70	3.17	4.10	46.80	15
sport.exp	1.50	0.30	0.30	0.38	0.40	1.80	61
deficit	2.70	-4.37	-2.40	-2.58	-0.20	6.90	87
events	0.00	0.00	0.00	0.011	0.00	1.00	-
social	11.00	17.40	20.75	23.03	27.20	61.30	177
participation	6.60	11.70	14.90	17.82	23.82	39.90	125
GDP	35.00	72.25	96.00	125.00	125.00	283.00	163
emp_rate	0.6	6.10	23.10	56.60	56.60	445.40	372

Table 2. Descriptive statistics

Source: own calculations

Analysing the unit data that constitute the research sample, some additional remarks can be made.

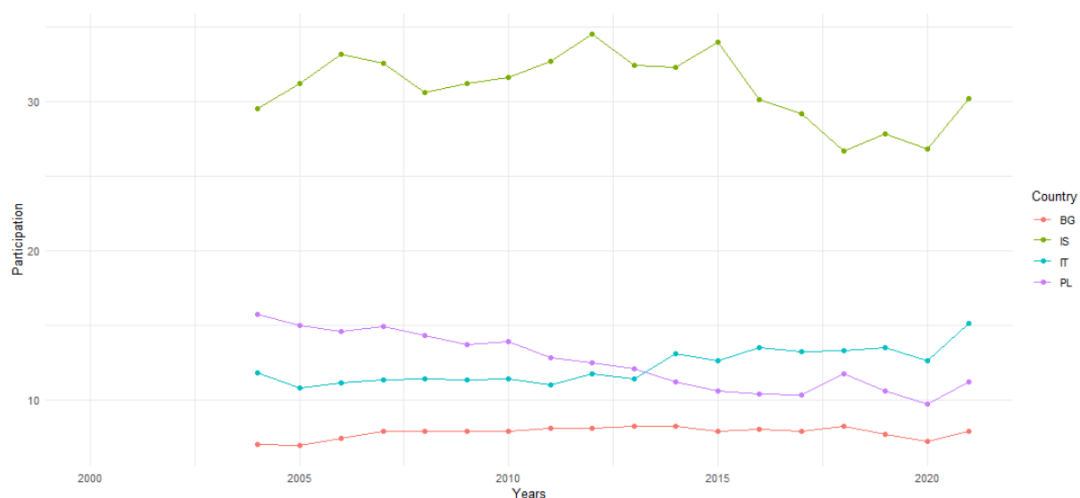


Figure 5. Participation in the sport activities and cultural events in selected European countries

Source: own calculations

From chart 5, it can be observed that three countries - Bulgaria, Poland and Italy - have quite close participation in the sport activities and cultural events and the variable is stable for the last 20 years. It is different situation for Iceland where percentage of people who participate in the sport activities is high and much bigger than selected countries.

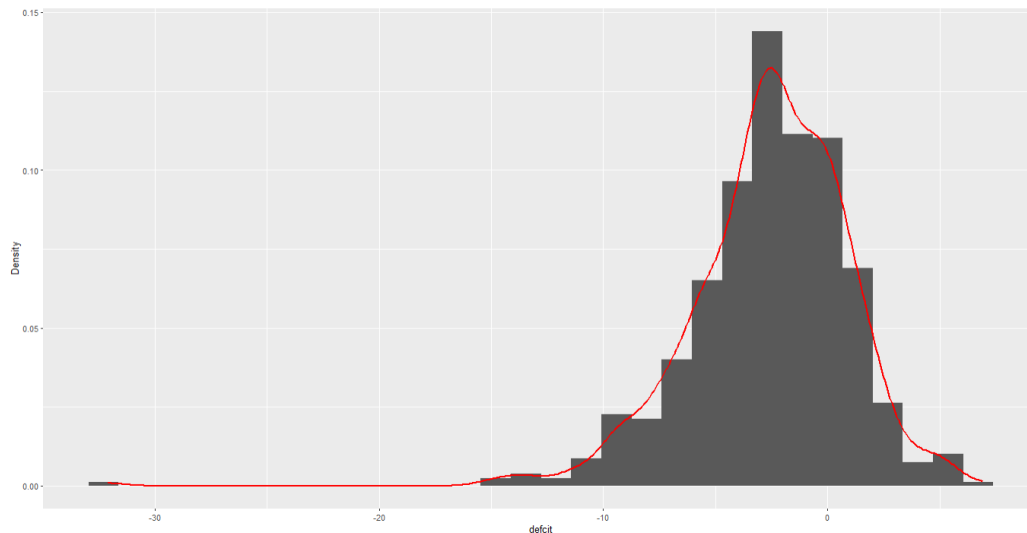


Figure 6. Distribution of deficit and public debt in the European countries

Source: own calculations

The distribution and trends of the Deficit variable are examined in the context of the study in the EU, as well as in Iceland, the UK, Switzerland, and Norway. It can be seen from the data for the last 20 years that the deficit variable in these nations has a normal distribution. Despite the normal distribution pattern, it is notable that the majority of countries included in the analysis exhibit negative deficits over the last two decades. This shows that over this time, these nations spending has continuously less than their income.

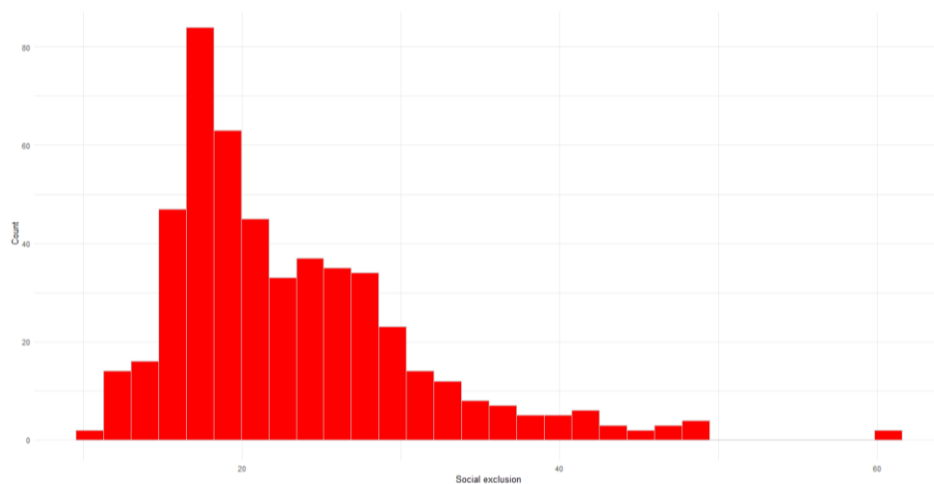


Figure 7. Distribution of social exclusion between European countries

Source: own calculations

The graph illustrates that the distribution of social exclusion in these countries is left-skewed. This means that the majority of countries have relatively low social exclusion rates.

An interesting conclusion from the graph is that 20% of the people in these nations exhibit an unwillingness to interact socially or with other people. This finding draws attention to the sizeable segment of the population that is socially isolated or opts out of engaging in social activities

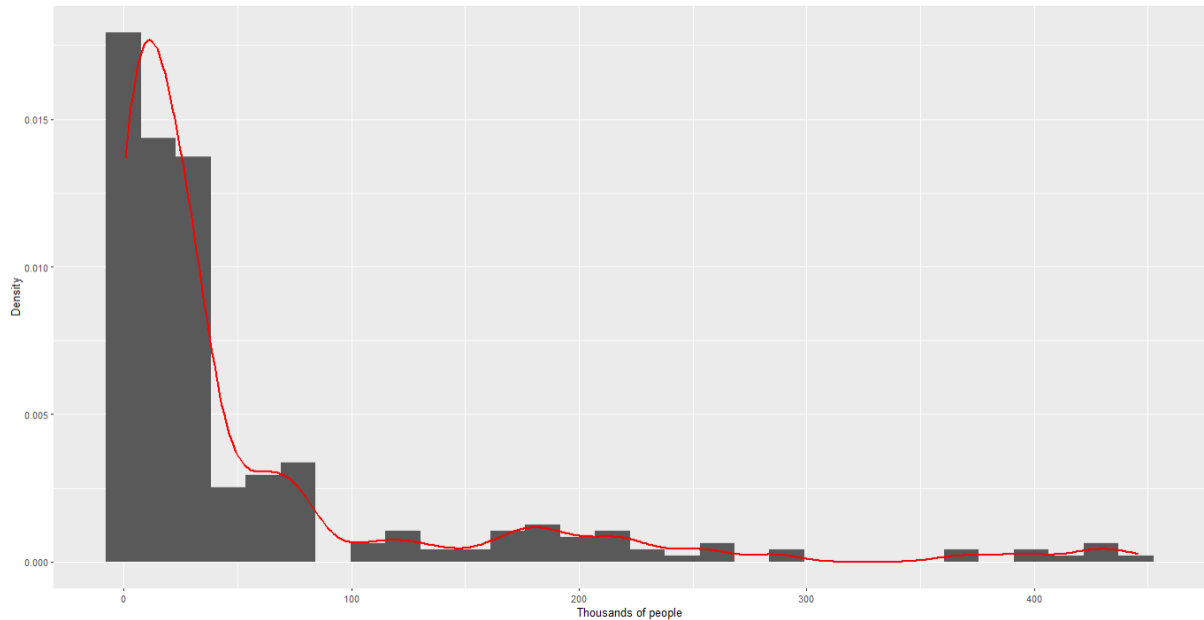


Figure 8. Distribution of employment rate in the sport sector in European countries

Source: own calculations

The distribution of employment rates across the region is severely skewed, as seen in the graph. In addition, the graph shows that there aren't many people working in the sport industry in official capacities. This shows that the working responsibilities in the European sports business are filled by a rather small number of people.

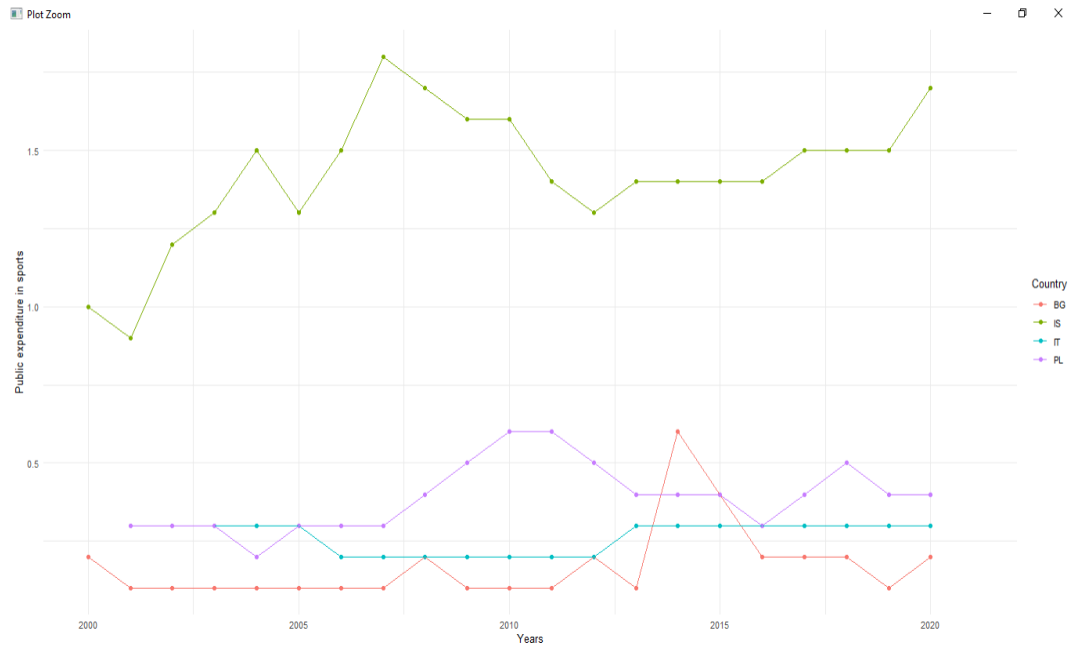


Figure 9. Public expenditure in sport sector in selected European countries

Source: own calculations

On Graph 9, public expenditure in the sport sector in four European countries is presented for the last 20 year. For nations like Poland, Italy, and Bulgaria, a consistent level of public spending may be seen over the course of the observed time period. This implies that these nations have consistently invested in the sport industry over the years.

Iceland, on the other hand, exhibits a distinct tendency. The graph depicts an upward trend in public spending on the sports industry in this nation. This shows that during the past 20 years, Iceland has devoted more financial resources to the growth and support of sports activities.

3.2. The econometric equations: Fixed Effects and Random Effects estimators

The standard static model can be expressed as follows, where i ranges from 1 to N and t ranges from 1 to T :

$$y_{it} = \beta_0 + \mathbf{x}_{it}'\boldsymbol{\beta} + \epsilon_{it}$$

In the given standard static model, the variable \mathbf{x}_{it} represents a K -dimensional vector of explanatory variables for each combination of i and t . This model does not include a constant term (intercept) β_0 , and both $\boldsymbol{\beta}$ (a $K \times 1$ vector of slopes) and the error term ϵ_{it} are assumed to

be independent of i and t . However, the error term ϵ_{it} is allowed to vary across different values of i and t .

Individual characteristics (which do not vary over time), z_i , may be included, which yields:

$$y_{it} = \beta_0 + \mathbf{x}_{it}'\beta_1 + \mathbf{z}_i'\beta_2 + \epsilon_{it}$$

Assuming errors and applying OLS, we get consistent estimates. If $E(\epsilon_{it}) = 0$ and $E(\mathbf{x}_{it} \epsilon_{it}) = 0$, then if the \mathbf{x}_{it} are weakly exogenous. Consistency (exogeneity) assumption is met.

Autocorrelation in the errors refers to the correlation or dependence between consecutive errors in a time series or regression model. Since individual i is repeatedly observed (contrary to pooled data)

$$\text{Corr}(\epsilon_{i,s}, \epsilon_{i,t}) \neq 0$$

with $s \neq t$ is very likely. Then, standard errors are misleading (similar to autocorrelation residuals) and OLS is inefficient. Common solution for individual unobserved heterogeneity. Unobserved (constant) individual factors, i.e. if not all z_i variables are available, may be captured by α_i . E.g. we decompose ϵ_{it} into:

$$\epsilon_{it} = \alpha_i + u_{it} \quad \text{with} \quad u_{it} \text{ iid}(0, \sigma_u^2)$$

u_{it} has mean value equal to 0, it is homoscedastic and not serially correlated. In this decomposition, all individual characteristics - including all observed, z_i i β_2 , as well as all unobserved ones, which do not vary over time - are summarized in the α_i 's.

As the next step, the distinction between Fixed Effects (FE) and Random Effects (RE) models should be applied (Hauser Michael, 2019).

In a Fixed effects model, α_i represents the individual intercepts that are fixed for a given N , indicating the varying baseline levels across different individuals in the analysis.

$$y_{it} = \alpha_i + \mathbf{x}_{it}'\beta + u_{it}$$

No overall intercept is (usually) included in the model.

In Fixed Effects models, it is not necessary for the individual intercepts (represented by the coefficients α_i 's) and the error terms u_{it} to be uncorrelated for consistency. The only requirement for consistency is that the expected value of the product between the error term and the individual-specific component $E(\mathbf{x}_{it}u_{it}) = 0$ must hold. Additionally, in FE models, there are $N - 1$ extra parameters used to account for individual heteroscedasticity.

In the empirical research reported, the FE panel data model will be represented by the equation:

$$\text{sport.exp}_{it} = \beta_0 + \beta_1 * \text{GDP}_{it} + \beta_2 * \text{private.exp}_{it} + \beta_3 * \text{deficit}_{it} + \beta_4 * \text{events}_{it} + \beta_5 * \text{emp_rate}_{it} + \beta_6 * \text{social}_{it} + \beta_7 * \text{participation}_{it} + \alpha_i + \varepsilon_{it}$$

where:

- sport.exp_{it} is the expenditure on sports for individual/entity i at time t (dependent variable)
- GDP_{it} represents the gross domestic product for individual/entity i at time t
- private.exp_{it} denotes private expenditure for individual/entity i at time t
- deficit_{it} represents the deficit for individual/entity i at time t
- events_{it} represents the occurrence of special events for individual/entity i at time t .
- emp_rate_{it} denotes the employment rate for individual/entity i at time t
- social_{it} represents a measure of social factors for individual/entity i at time t
- $\text{participation}_{it}$ denotes the level of participation in sports for individual/entity i at time t
- $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$ are the coefficients to be estimated
- α_i represents the fixed effect or dummy variable for individual/entity i
- ε_{it} is the error term or disturbance.

However, the RE panel data model can be described as:

$$\alpha_i \sim iid(0, \sigma_\alpha^2)$$

$$y_{it} = \beta_0 + \mathbf{x}_{it}'\boldsymbol{\beta} + \alpha_i + u_{it}, \quad u_{it} \sim iid(0, \sigma_u^2)$$

The value α_i is specific for individual i . The α 's of different individuals are independent, have a mean of zero, and their distribution is assumed to be not too far away from normality. The overall mean is captured in β_0 .

Coefficient α_i is time invariant and homoscedastic across individuals. There is only one additional parameter σ_α^2 . Only α_i contributes to $\text{Corr}(\epsilon_{i,s}, \epsilon_{i,t})$. α_i determines both $\epsilon_{i,s}$ and $\epsilon_{i,t}$. Two problems: endogeneity and autocorrelation in the errors (Schmidheiny Kurt, 2022).

In the empirical research presented, the RE panel data model can be expressed as:

$$\text{sport.exp}_{it} = \beta_0 + \beta_1 * \text{GDP}_{it} + \beta_2 * \text{private.exp}_{it} + \beta_3 * \text{deficit}_{it} + \beta_4 * \text{events}_{it} + \beta_5 * \text{emp_rate}_{it} + \beta_6 * \text{social}_{it} + \beta_7 * \text{participation}_{it} + u_i + \varepsilon_{it}$$

where:

u_i represents the individual/entity-specific random effect.

ε_{it} is the error term or disturbance.

The RE panel data model assumes that the individual/entity-specific random effect u_i is uncorrelated with the independent variables. This random effect captures unobserved heterogeneity that is specific to each individual/entity but may be correlated with the

independent variables. By including the random effect, the unobserved heterogeneity is accounted for leading to more efficient and consistent estimates of the coefficients.

It's important to note that the RE panel data model assumes that the random effect u_i is independent of the independent variables, whereas the fixed effects model assumes that the fixed effect α_i is correlated with the independent variables. The choice between a random effects model and a fixed effects model depends on the nature of the unobserved heterogeneity and the research objectives.

3.3 Results of the model

Considering Fixed Effect panel data model, the residuals are presented in Table 3.

Min.	1st Quarter	Median	3rd Quarter	Max.
-4.3570e-01	-3.4510e-02	-1.5453e-05	3.7865e-02	4.0524e-01

Table 3. Residuals for the Fixed Effect model

Source: own calculations

The table below represents the estimated coefficients for Fixed Effect model, together with standard errors, t-values, and p-values.

	Estimate	Std. Error	t-value	Pr(> t)
GDP	-0.00208320	0.00101007	-2.0624	0.040261 *
deficit	-0.00616034	0.00221618	-2.7797	0.005879 **
private.exp	0.00067731	0.00327386	0.2069	0.836278
factor(events)1	-0.06887318	0.10036112	-0.6863	0.493227
emp_rate	0.00064640	0.00053885	1.1996	0.231499
social	-0.01162313	0.00240600	-4.8309	2.447e-06 ***
participation	0.00755490	0.00356085	2.1217	0.034909 *

Table 4. The result of Fixed effect model

Source: own calculations

The significance codes are as follows and it applies to all subsequent results.

**** " represents a p-value less than or equal to 0.001, indicating extremely high statistical significance. This suggests strong evidence to reject the null hypothesis in favour of the alternative hypothesis.

*** " represents a p-value less than or equal to 0.01, indicating high statistical significance. This implies strong evidence to reject the null hypothesis.

** " represents a p-value less than or equal to 0.05, indicating moderate statistical significance. This suggests sufficient evidence to reject the null hypothesis.

." represents a p-value less than or equal to 0.1, indicating weak statistical significance. This implies some evidence to reject the null hypothesis, but with caution.

" " represents a p-value greater than 0.1, indicating no statistical significance. This suggests that the results are not statistically significant and the null hypothesis cannot be rejected.

According to the results of estimating the Fixed Effect model, only four variables - *GDP*, *deficit*, *social*, and *participation* - are statistically significant variables. This suggests that it is possible to interpret the coefficients or parameters linked to these factors as significantly affecting the outcome variable. The null hypothesis cannot be ruled out for the variables *private.exp*, *events*, and *emp_rate*. This is due to the fact that these variables' p-values are larger than 0.05, which indicates that their coefficients are not statistically significant at the accepted significance level. Because of this, care should be taken when interpreting the effects or linkages of these variables in the model because, based on the existing evidence, they might not have a significant effect on the outcome variable.

Based on the results of our model, it is possible to estimate effects of specific variables on public expenditure in the sport sector:

- GDP: it can be seen that the increase in the GDP by 1% will lead to public expenditure being lower by 0.00208.
- Deficit: model predicts an increase in public spending on sports of 0.0061 if the deficit decreases by 1%. This suggests that as budget deficits shrink, governments may have more money to spend on the sports industry.
- Social Exclusion: an increase in public spending on sports of 0.0116 is associated with a decrease in social exclusion of 1%. This shows that increasing inclusion and decreasing socioeconomic exclusion can enhance government spending on sport.
- Participation: model predicts that government spending on sports will increase by 0.0075 if participation in cultural and sporting events increases by 1%. This

demonstrates how crucial it is to promote and facilitate active involvement in sports and cultural activities.

The next table shows the parameters for the Fixed Effect model.

Total Sum of Squares	2.383
Residual Sum of Squares	2.077
R-Squared	0.12841
Adj. R-Squared	0.0065388
p-value	2.9165e-05
F-statistic	4.96722 on 7 and 236 DF

Table 5. Parameters for the Fixed Effect model

Source: own calculations

An additional frequently used test for poolability in panel data analysis is the F test for individual effects. This test determines if the individual effects of the various entities in the pane differ significantly from one another. The result shows:

data: sport.exp ~ GDP + private.exp + deficit + events + emp_rate + social + participation

F = 19.981, df1 = 26, df2 = 236, p-value < 2.2e-16

This test will help to understand if a simple regression model can be used.

The null hypothesis says that all individual effects are jointly insignificant. It can be seen that p-value is much less than 5%, it means we should reject the null hypothesis. To simplify it, overall, it is better to use fixed estimator and data panel model than simple regression.

The Breusch-Godfrey/Wooldridge test is a commonly used test for serial correlation in panel data models. This test examines whether there is autocorrelation, or serial correlation, in the residuals of the model, indicating a violation of the assumption of independence of observations. The results yields:

data: sport.exp ~ GDP + private.exp + deficit + events + emp_rate + social + participation

chisq = 84.262, df = 10, p-value = 7.296e-14

Based on the p-value of 7.296e-14, which is extremely small, we can conclude that we reject the null hypothesis in the Breusch-Godfrey/Wooldridge test for serial correlation in the panel data model. This indicates strong evidence of autocorrelation in the residuals.

The studentized Breusch-Pagan test is a statistical test used to examine heteroscedasticity in regression models. Heteroscedasticity is the term used to describe the

inconsistent variability or dispersion of residuals over the range of independent variable values.

The result shows that:

data: sport.exp ~ GDP + private.exp + deficit + events + emp_rate + social + participation

BP = 11.916, df = 7, p-value = 0.1033

The Breusch-Pagan test argues that there is no evidence of heteroscedasticity in the residuals if it shows that we cannot reject the null hypothesis. In this case, it can be concluded that the residuals are homoscedastic, that is there are not problems in our model.

Considering Random Effect panel data model, the residuals are presented in Table 6.

Min.	1st Quarter	Median	3rd Quarter	Max.
-0.355195	-0.042886	-0.042886	0.031432	0.499059

Table 6. Residuals for the Random Effect model

Source: own calculations

Individual and idiosyncratic effects in a sample population represent in the table below.

	variance	std.dev	share
idiosyncratic	0.008801	0.093813	0.292
individual	0.021344	0.146096	0.708

Table 7. Parameters for the Random Effect model

Source: own calculations

The table below represents the coefficients for Random Effect model with estimate, standard error, t-value, and p-values.

	Estimate	Std. Error	t-value	Pr(> t)
Intercept	0.57629912	0.10460592	5.5092	3.604e-08 ***
GDP	-0.00116292	0.00059993	-1.9384	0.052569 .
deficit	-0.00602898	0.00216476	-2.7851	.005352 **
private.exp	0.00048712	0.00318915	0.1527	0.878602
factor(events)1	-0.06994212	0.09916179	-0.7053	0.480603
emp_rate	0.00037815	0.00034303	1.1024	0.270294
social	-0.00970163	0.00212942	-4.5560	5.214e-06 ***
participation	0.00637243	0.00270811	2.3531	0.018618 *

Table 8. Coefficients for the Random Effect model

Source: own calculations

According to the results of the random effect model, only three variables - *deficit*, *social*, and *participation* - are statistically significant. This suggests that it is possible to interpret the coefficients or parameters linked to these factors as significantly affecting the outcome variable. The null hypothesis cannot be ruled out for the variables *GDP*, *private.exp*, *events*, and *emp_rate*. This is due to the fact that these variables' p-values are larger than 0.05, which indicates that their coefficients are not statistically significant at the usual significance level. Because of this, care should be taken when interpreting the effects or linkages of these variables in the model because, based on the existing evidence, they might not have a significant effect on the outcome variable.

Based on the results of our model, it is useful to estimate effects of specific variables on public expenditure in the sport sector:

- **Deficit:** Our model predicts an increase in public spending on sports of 0.05352 if the deficit decreases by 1%. This suggests that as budget deficits shrink, governments may have more money to spend on the sports industry
- **Social Exclusion:** An increase in public spending on sports of 5.214e-06 is associated with a decrease in social exclusion of 1%. This shows that increasing inclusion and decreasing socioeconomic exclusion can benefit government spending on sport.
- **Participation:** Our model predicts that government spending on sports will increase by 0.018618 if participation in cultural and sporting events increases by 1%. This demonstrates how crucial it is to promote and facilitate active involvement in sports and cultural activities

Total Sum of Squares	2.6029
Residual Sum of Squares	2.289
R-Squared	0.12057
Adj. R-Squared	0.097079
p-value	7.4994e-06
Chisq	35.9219 on 7 DF

Table 9. Parameters for the Random Effect model

Source: own calculations

In the research sample, the Hausman test is used to assess the endogeneity issue and decide whether Fixed Effects or Random Effects estimation is the better option.

data: sport.exp ~ GDP + private.exp + deficit + events + emp_rate + social + participation

$$\text{chisq} = 4.4078, \text{df} = 7, \text{p-value} = 0.7318$$

Since the p-value in our situation is higher than 5%, the conclusion that the random effects model is better suited for analysis can be drawn. Accordingly, the premise of exogeneity is supported because it suggests that the individual-specific effects are not systematically linked with the independent variables.

A robust estimator for the Random Effects model as a consequence to get accurate and effective parameter estimations was used. As it is an issue with autocorrelation in the model and it cannot be trusted all our explanation and data. The robust estimator should apply to make our result consistent.

	Estimate	Std. Error	t-value	Pr(> t)
Intercept	0.57629912	0.15056209	3.8277	0.0001619 ***
GDP	-0.00116292	0.00055600	-2.0916	0.0374388 *
deficit	-0.00602898	0.00235961	-2.5551	0.0111821 *
private.exp	0.00048712	0.00304702	0.1599	0.8731092
factor(events)1	-0.06994212	0.01854372	-3.7717	0.0002004 ***
emp_rate	0.00037815	0.00024689	1.5317	0.1268143
social	-0.00970163	0.00361800	-2.6815	0.0077949 **
participation	0.00637243	0.00196180	3.2483	0.0013127 **

Table 10. Coefficients for the t test

Source: own calculations

According to the results, only five variables - *GDP*, *deficit*, *events*, *social*, and *participation* - are statistically significant. This suggests that it is possible to interpret the coefficients or parameters linked to these factors as significantly affecting the outcome variable. The null hypothesis cannot be ruled out for the variables *private.exp* and *emp_rate*. This is due to the fact that these variables' p-values are larger than 0.05, which indicates that their coefficients are not statistically significant at the usual significance level. Because of this, care should be taken when interpreting the effects or linkages of these variables in the model because, based on the existing evidence, they might not have a significant effect on the outcome variable.

Based on the results of our model, we can observe the estimated effects of specific variables on public expenditure in the sport sector:

- GDP: it can be seen that the increase in the GDP by 1% will lead to public expenditure being lower by 0.0374388.
- Deficit: our model predicts an increase in public spending on sports of 0.0111821 if the deficit decreases by 1%. This suggests that as budget deficits shrink, governments may have more money to spend on the sports industry
- Events: if there were a some big sport events like Olympic Games, World cup, it will decline a government spending in sports in the EU countries.
- Social Exclusion: An increase in public spending on sports of 0.0077949 is associated with a decrease in social exclusion of 1 %. This shows that increasing inclusion and decreasing socioeconomic exclusion can benefit government spending on sport.
- Participation: our model predicts that government spending on sports will increase by 0.0013127 if participation in cultural and sporting events increases by 1%. This demonstrates how crucial it is to promote and facilitate active involvement in sports and cultural activities

Conclusions and Recommendations

Several important conclusions can be drawn from the study of public spending in the sport sector in the European nations during the last 20 years. The conclusions are as follows:

1. Analysing the GDP level across different countries suggests that economic growth alone does not necessarily translate into higher government spending in the sport sector.
2. According to the budget deficit figures, governments with smaller deficits have more resources to devote to the sports sector. As a result, decreasing budget deficits may benefit public spending on the sports industry.
3. When large sporting events occur, like the Olympic Games, the World Cup, or other significant events, government spending on sports in European nations decreases. Based on this finding, holding such events can cause public funds for normal sports projects to be diverted. That is why the trade-off between funding major events and sustaining continuing national support for sports development should be carefully considered by governments.
4. According to the empirical research presented in Chapter 3, that is panel data model that takes into account Random Effects, there is a link between public investment on sports and social exclusion. The increase in public investment on sports cases the decline in social exclusion. This demonstrates how sports-related projects could support social inclusion and advance equitable opportunities for all residents.

Concluding, the findings of both theoretical analysis and panel data model with Random Effects applied show the importance of the promoting participation in the sport activities as it leads to the investment in the sport industry.

As regards the null hypothesis that was defined in the introduction section - "Each controlling variable is statistically significant predictor of public expenditure on sport-to-GDP ratio" - it should be concluded that hypothesis is rejected. The reason is that only 5 out of 7 determinants of the dependent variable appeared to be statistically significant. The remaining 2 variables turned out not to be statistically significant: private expenditure and employment rate in the sport.

Theoretical evaluation, as well as econometric approach presented in Chapter 3, result in the following recommendations for European countries regarding public expenditure in the sport sector:

1. Increase the effectiveness of public spending: Given the inverse link between GDP growth and public spending on sports, it is essential for governments to place a high priority on

efficient resource allocation and make sure that their investments in the sports industry produce the best results.

2. Address budget deficits: Governments should concentrate on eliminating budget deficits because doing so can help the sport industry get more funding. To make more money available for greater spending on sports activities, strategies including budgetary consolidation and revenue generation should be investigated.

3. Strike a balance between investments in major events and grassroots development: Governments should carefully assess the impact on regular sports programs even if hosting major athletic events can have a number of advantages. Striking a balance between funding major events and sustaining continuing support for the growth of sports is crucial.

4. Promote social inclusion through sports: Governments should give top priority to policies and initiatives that support equal access and participation in sports, especially among marginalized communities, in light of the positive relationship between public spending on sports and a decline in social exclusion.

5. Encourage active engagement: Governments should fund initiatives and infrastructure that promote and support active participation in extracurricular activities like sports and the arts. This can encourage healthier and more active societies and enhance governmental spending in the sport industry.

By following the above-listed recommendations, European countries can effectively allocate public funds in the sport sector, fostering social inclusion, promoting physical activity, and maximizing the benefits derived from public expenditure in sports.

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