

Research Article

Patterns of Social Policy Expenditures in European Countries: A Multidimensional Scaling Analysis of Education, Health, and Social Protection Expenditures

Avrupa Ülkelerinde Sosyal Politika Harcamalarının Örüntüleri: Eğitim, Sağlık ve Sosyal Koruma Harcamalarının Çok Boyutlu Ölçekleme Analizi

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Abstract

Public social expenditure is an essential element of social policy, which encompasses areas such as social protection, health and education. These expenditures contribute to determining welfare systems, economic stability, and the social cohesion of countries. Furthermore, expenditure structures vary between countries, and factors such as political priorities, economic conditions, and cultural attitudes towards welfare influence these expenditures. This study aims to identify the similarities and differences among European countries in terms of social policy expenditures. Within this framework, the study employed “multidimensional scaling analysis” and utilized the “social protection,” “health,” and “education” expenditure categories derived from Eurostat’s 2023 public expenditure dataset. In conclusion, it has been observed that European countries exhibit a relatively heterogeneous distribution in public expenditures in education and health. However, social protection expenditures present a more homogeneous regional picture and display similar patterns to regional clustering in terms of welfare. When the categories defined in terms of social policy are analyzed as a whole, it is notable that regional clustering among countries remains significant.

Keywords: European Countries, Welfare State, Public Expenditures, Social Policy Expenditures, Multidimensional Scaling.

Öz

Kamu sosyal harcamaları, sosyal koruma, sağlık ve eğitim gibi alanları kapsayarak sosyal politikanın temel bir unsurunu oluşturmaktadır. Bu harcamalar, ülkelerin sosyal güvenlik sistemlerinin şekillenmesine, ekonomik istikrarına ve toplumsal uyumuna katkıda bulunmaktadır. Bununla birlikte ülkelerin harcamaları farklılıklar göstermekte, siyasi öncelikler, ekonomik koşullar ve refaha yönelik kültürel tutumlar gibi faktörler harcamalar üzerinde etkili olmaktadır. Çalışmada Avrupa ülkelerinin sosyal politika harcamaları açısından benzerlik ve farklılıklarının belirlenmesi amaçlanmaktadır. Bu doğrultuda çalışmada “çok boyutlu ölçekleme analizi” tercih edilmiş ve Eurostat’ın 2023 yılına ait kamu harcamaları veri setinden elde edilen “sosyal koruma”, “sağlık” ve “eğitim” harcamaları kategorileri kullanılmıştır. Sonuç olarak eğitim ve sağlık alanlarındaki kamu harcamalarında Avrupa ülkelerinin görece heterojen bir konumlanmaya sahip olduğu görülmüştür. Bununla

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birlikte, sosyal koruma harcamalarında bölgesel olarak daha homojen bir görünümle karşılaşmakta ve refaha ilişkin bölgesel kümelenme örüntüleriyle paralellikler içermektedir. Sosyal politikaya ilişkin tanımlanan kategoriler bir bütün olarak analiz edildiğinde ise ülkeler arasındaki bölgesel kümelenmenin hala önemli düzeyde olduğu dikkat çekmektedir.

Anahtar Kelimeler: Avrupa Ülkeleri, Refah Devleti, Kamu Harcamaları, Sosyal Politika Harcamaları, Çok Boyutlu Ölçekleme

1. Introduction

Throughout history, societies have been subject to a multitude of socioeconomic risks, with conventional approaches such as family support, charitable contributions from religious institutions, and professional relief funds being employed to alleviate these challenges. However, the Industrial Revolution, widely recognized as a fundamental transformation point in the economic and sociological evolution of societies, has resulted in significant socioeconomic challenges, including poverty, unemployment and social inequality, with considerable losses experienced by communities over the years. As a result of increasing social and economic inequalities, the need to reorganize capitalism emerged after World War II. In this context, welfare state practices that enable economic development to be handled with a social welfare-oriented approach have started to develop. Thus, institutional social policy measures began to develop, where the state determined the general conditions and regulations, and where the security of life and work was recognized as a right for citizens in society and a responsibility for the state (Alcock, May & Rowlingson, 2011, p.8). Therefore, the development of social policy in Europe, where the industrial revolution took place, was shaped by social, political and economic developments.

Within the paradigm of capitalist economic relations, there has been a reconstruction of the system for those who are marginalized or exposed to economic and social inequalities within this system. In this process, it was aimed to provide protection against social and economic risks through social policy practices. In the late 19th and early 20th centuries, socioeconomic problems and inequalities formed the foundations of the social-welfare state. Thus, state intervention in social issues began to be institutionalized and many policies such as the expansion of workers' rights and the establishment of a social security system were implemented. However, the pace of technological, political, economic, and socio-demographic change since the early years of the 21st century has intensified pressure on welfare systems and accelerated discussions about the future of the European social model (Hantrais, 2017). In the context of social policy, public social expenditures represent a pivotal instrument of the welfare state, serving to maintain peace and promote social development. Public expenditures are built on increasing social welfare, ensuring coherence among social groups, especially disadvantaged groups, and ensuring a fair income distribution. Thus, these expenditures point to a system that provides a response to social problems through state intervention. The state provides public goods or services in order to maximize social benefits and improves social indicators as well as economic indicators for this purpose (Koç, 2019, p.67).

Policy-making and intervention processes vary from country to country; therefore, it is not possible to describe a uniform policy-making process regarding welfare policies. Therefore, it is important to identify the distinct characteristics of countries based on how they design their relevant policies and to categorize the countries according to these characteristics. In this context, Esping-Andersen's (1990) categorization of the welfare state undoubtedly constitutes one of the most significant debates. Within this framework, Esping-Andersen focuses on de commodification, social stratification, and the public-private mix, and argues that countries can be classified into three distinct welfare state categories: liberal, conservative, and social democrat (Gümüş, 2020; Bamba, 2007). Based on this classification, countries such as the United States, Australia, and Canada are categorized as liberal; countries such as Germany, France, and Switzerland as conservative; and countries such as Sweden, Denmark, and Norway as social democratic welfare states (Esping-Andersen, 1990). However, this categorization has also faced significant criticism due to various shortcomings in its classification criteria. In this context, different classifications have been developed that specifically take into account the characteristics of Southern Europe and the former Soviet Union countries (Bamba, 2007; Fenger, 2007). However, although differences in welfare policies create conditions for the emergence of distinct clusters, processes such as European Union membership have contributed to convergence among countries (Tkacova, Gavurova & Toth, 2024).

While the European countries have traditionally been known for their generous social welfare expenditures, they have been affected by neoliberal policies since the 1990s. During this process, the emphasis on economic competition began to challenge the scope and capacity of the welfare state. The concept of the welfare state has been called into question in light of the long-term challenges that may arise from comprehensive social policy measures, the increasing trend towards public social spending, and the ageing population (McManus, 2022, p.48). The social and economic transformations that have taken place since the last quarter of the 20th century have given rise to a series of new social risks to which the traditional welfare state has been unable to respond adequately. This situation has necessitated restructuring in two main areas of social welfare system design. The first relates to the traditional welfare state, which is under pressure to limit expenditures, and to traditional social risks. The second concerns the need to adapt protection systems to new social risks arising from changes in the family and labor market issues. Discussions on aging and the financial sustainability of welfare systems, socio-economic inequality, and the need to adapt social protection systems to a more “flexible” workforce and automation have brought important issues to the agenda (Esping-Andersen, 1996, p.617; Lindbeck, 2002, p.2-4; Stiglitz, 2017, p.1; Caleiras & Carmo, 2024, p.1043). With the Amsterdam Treaty signed in 1997, employment became a priority issue at the European Union (EU) level, and a series of measures were implemented that later became the European Employment Strategy (Hantrais, 2017). The open method of coordination (OMC) provided a new framework for cooperation between EU countries in areas of social policy such as employment, social protection, health, education, and vocational training (EU-OMC, 2025).

The social aspects of countries’ public expenditures serve as a crucial indicator in terms of financing social policy and revealing the nature of that policy. This study examines expenditures on health, education, and social protection areas that play a critical role in mitigating social risks and constitute core expenditure components in social policy. Social protection expenditures in European countries have frequently been the subject of analysis in the literature. Studies that examine the tendency for differences in social protection expenditures to differentiate across countries in terms of various variables are particularly noteworthy. These variables are mostly macroeconomic variables such as labor market indicators, demographic structure, and gross domestic product, and empirical analyses regarding social protection expenditures have been conducted (Peracchi, 1998; Halaskova, 2018). Social protection can be defined as a set of systems and redistribution mechanism that provide equal opportunities to individuals and ensure an appropriate welfare environment against risks that individuals may encounter throughout their lives (Diamond & Lodge, 2013; Halaskova, 2018, p.8). Research on social protection generally focuses on the expenditure levels and trends in social protection. In this context, the level of social protection expenditure in European countries and its increase over time have been examined. Generally, the focus of these studies is to examine how public expenditure is distributed across different functions, such as health, education, social protection, pensions, family benefits, etc., and its impact on various socioeconomic outcomes (Peracchi, 1998; Puss, Viies & Maldre, 2003; Diamond & Lodge, 2013; Leitner & Stehrer, 2016; Halaskova, 2018; Tashevskva, Trpkova-nestorovska & Makreshanska, 2020, p.33-34; Korzeniowska, 2021; Jacques, 2024). The results in this area differ between countries depending on their welfare state model (Puss et al., 2003; Halaskova, 2018). Factors such as different economic conditions and varying cultural and social attitudes toward welfare contribute to differences in public social expenditures between countries. It is known that social protection expenditures increase as gross domestic product per capita increases. Previous studies have shown that age-related categories such as old age and health account for the highest share of public expenditures, while differences exist between countries in terms of unemployment, family, and disability (Peracchi, 1998, p.1-4; Korzeniowska, 2021, p.8). It is emphasized that the aging population and rising healthcare costs contribute significantly to this increase (Diamond & Lodge, 2013, p.4).

Public health expenditures constitute an important aspect of public social expenditures and represent a significant element of social policy expenditures. Health expenditures refer to the financial resources allocated to health services, and public health expenditures are rapidly increasing in European countries, with health expenditures constituting the second highest expenditure among public expenditures (Piscopo, Groot & Pavlova, 2024, p.2). Health status and access to health services are among the key determinants of a societies well-being, quality of life, and level of development. Social protection measures, ranging from health insurance to social assistance programs, protect individuals and

communities against various risks, including health risks (Bocean & Vărzaru, 2024, p.2). The COVID-19 pandemic, for instance, has highlighted the importance of adequately designing public health policies and ensuring financial sustainability due to the challenges faced in the capacity of healthcare services (Onofrei, 2021, p.2). Consequently, the provision of healthcare services to individuals and the facilitation of access to such services constitute a significant social policy concern. Moreover, the demographic shift towards an ageing population within the European Union has further compounded the sustainability challenges faced by healthcare systems. There are studies examining the characteristics of countries in the European Union in terms of healthcare expenditures. These studies generally analyze healthcare expenditures based on their share of GDP (Leiter & Theurl, 2012; Liang & Mirelman, 2014; Albulescu, Oros & Tiwari 2017; Albulescu, 2022).

Implementing an accessible, high-quality education policy is an important social achievement for governments. The education system plays a significant role in promoting countries' economic structures, social equality, human capital quality, and social mobility. In this context, education organization points to an important social policy expenditure area in terms of long-term economic growth and development. As stated in the World Bank and UNESCO's 2024 Education Financing Watch (EFW) report, total global education spending by governments, households, and endowments has steadily increased over the past decade (World Bank, 2024). Education funding in European countries is generally provided by the government, with private sources playing a more limited role. Sweden has the highest public expenditure on education among European countries, followed by Iceland, Finland and Belgium (Eurostat, 2025a). However, the financing of education varies between countries, influenced by their economic conditions and social factors.

The main objective of this study is to determine the relative positions of European countries in terms of social policy expenditures and to analyze them by visualizing countries that are similar to each other and those that are distant/different. Although the concept of the welfare state has been transformed, welfare state instruments continue to play an important role in the social development of almost every country. Therefore, it is important to evaluate public social expenditures within the scope of social policy elements and to reveal the similarities and differences among European countries. In this study, a multidimensional scaling model was adopted, and public social expenditures within the scope of social policy were analyzed using different sub-parameters such as social protection, education, and health expenditures. Additionally, a separate analysis was conducted that evaluated all key indicators together from a social policy perspective. The study focused on the share in GDP of public expenditures in these areas. The link between social expenditures and economic growth points to an important area for countries' fiscal sustainability, and policymakers must implement significant reforms through policies that balance economic growth with social needs. Determining regional differences and the position of countries in terms of these variables is particularly important for the sustainability and inclusiveness of social policy tools and for shaping future policies.

2. Methodology

2.1. The Research Method

The aim of the study is to determine the positions of European countries relative to each other in terms of social policy expenditures, as well as their similarities and differences. Therefore, the multidimensional scaling analysis (MDS), one of the multivariate analysis methods, has been adopted in the study. Multidimensional scaling analysis is a multivariate data analysis technique that has become increasingly popular in the social sciences, allowing high-dimensional data to be represented in a lower-dimensional space. Multidimensional scaling analysis displays the positions of objects on a spatial map according to input variables and places objects that are dissimilar to each other far apart on the spatial map, while placing similar objects close to each other. Furthermore, this analysis method refers to a statistical technique that allows for the visual evaluation of fundamental relational structures within a complex data set (Özdamar, 2010, p.4; Hout, Papesch, & Goldinger, 2013, p.93; Saeed, et al., 2018, p.1).

Through the analysis, general similarities and differences among countries can be represented in a two-dimensional space based on their expenditure profiles. This allows for the comparison of numerous public expenditure categories across countries simultaneously, making it possible to evaluate patterns of similarity and difference. As an alternative to factor analysis, multidimensional scaling analysis and

the resulting maps are valuable for reducing complex data sets to primary dimensions where the variables differ and presenting them visually. Therefore, multidimensional scaling analysis is one of the statistical methods used in many different disciplines, such as sociology, clinical psychology, psychophysics, marketing, political science, and ecology (Groenen & Velde, 2004, p.389; Hout et al., 2013, p.94). Multidimensional scaling analysis was conducted using the PROXSCAL algorithm in SPSS 27, and two-dimensional analyses were preferred. The dimensions stated in this study (Dimension1 and Dimension2) do not define spending categories; rather, they are coordinates that illustrate how spending profiles vary across countries along these two dimensions. The Pearson correlation coefficient¹ was used to determine the direction and strength of the linear relationship between variables, and results were considered statistically significant when p-values were less than 0.05. This enabled the expenditure categories with stronger ties to each dimension to be defined and, consequently, the associated categories to be interpreted. In this context, positive correlations indicate a relationship with the positive end of the relevant expenditure category's dimension, while negative correlations indicate a relationship with the opposite end of the dimension.

2.2. Data Set

The dataset comprises 2023 public social expenditure data based on the Classification of the Functions of Government (COFOG), retrieved from the 2025 Eurostat database, for the 27 EU member states and three non-EU European countries (Iceland, Norway, and Switzerland). Within the scope of social policy expenditures, “social protection expenditures,” “education expenditures,” and “health expenditures” were selected as the key variables for public expenditures, and analyses were conducted using sub-parameters covering these key variables. Social protection expenditures contain the sub-parameters of “Old age,” “Sickness and disability,” “Family and children,” “Survivors,” “Unemployment,” “Social exclusion n.e.c.,” “Housing” and “Social protection n.e.c.”. Health expenditures cover the sub-parameters of “Hospital services,” “Outpatient service,” “Medical products, appliances and equipment,” “Health n.e.c.,” “Public health services,” “R&D Health”. Finally, education expenditures contain the sub-parameters of “Secondary education,” “Pre-primary and primary education,” “Tertiary education,” “Subsidiary services to education,” “Education n.e.c.,” “Education not definable by level,” “Post-secondary non-tertiary education,” “R&D Education”. However, the study has two significant limitations. First, the study is based directly on 2023 data, and the MDS analysis conducted on this data provides a picture of a specific time period. Second, the dataset focuses on the share of expenditures in GDP and does not provide information on the nature, coverage, or effectiveness of those expenditures.

3. Findings

Public expenditures are significant macroeconomic indicators in European countries. In this context, total public spending in the European Union reached 49.0% of GDP in 2023; the increase observed between 2019 and 2022 due to the COVID-19 pandemic began to decline in 2023, returning to levels close to 2019. Throughout the period examined, “social protection” expenditures, which defines a critical category for this study, constituted the largest expenditure component. “Social protection” expenditures ranked first at 19.2%. “Health” expenditures followed with 7.3%, while “Education” expenditures ranked fifth with 4.7%. “Environmental Protection” occupied the last place in the public expenditures with 0.8 share of the total expenditures (Eurostat, 2025b). As the study aimed to provide an overview of social policy expenditures, the analysis was limited to the expenditure categories of social protection, health, and education.

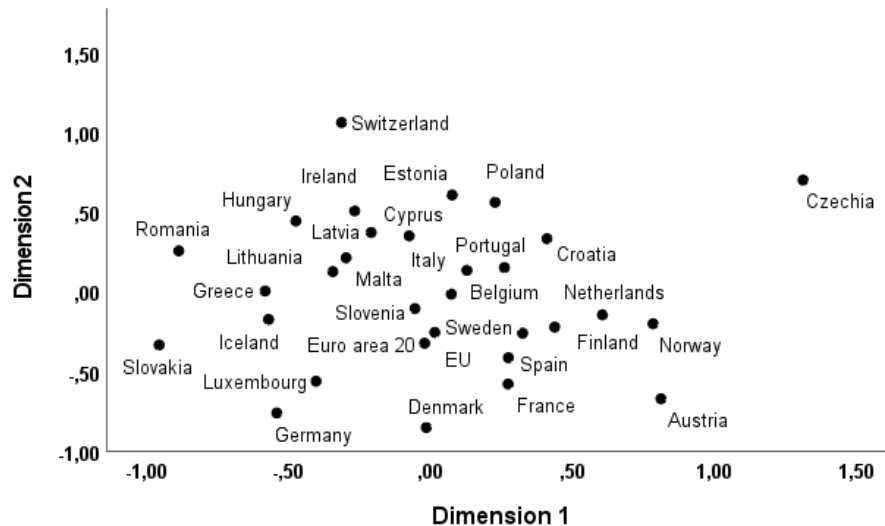
This study provides a visual presentation of the similarities and differences among European countries in terms of social policy expenditures. In this context, the study does not point to similarities in social policy practices or welfare policies, but rather tracks the relevant positions based on the ratios of current public social expenditures within GDP. Although this does not reveal similarities in terms of policy practices, seeing the ratios of public expenditures within GDP in the establishment of different policies

¹ The Pearson correlation coefficient (r) was interpreted as follows: values between 0.00 and 0.19 indicate no or negligible correlation, values between 0.20 and 0.39 indicate a weak correlation, values between 0.40 and 0.69 indicate a moderate correlation, values between 0.70 and 0.89 indicate a strong correlation, and values between 0.90 and 1.00 indicate a very strong correlation (Alpar, 2016, p.419).

points to an important social policy parameter in terms of economic efficiency in policy-making processes.

3.1. Health Expenditures

Figure 1. Multidimensional Scaling Analysis Results Based on Health Expenditures



The two-dimensional PROXSCAL solution of the MDS analysis regarding health expenditures exhibits a high level of fit. The result of the analysis showed that the Normalized Raw Stress value was 0.070, the D.A.F. value was 0.929, and Tucker's Coefficient of Congruence was 0.964 (Table 1). These values indicate that the two-dimensional configuration represents the distance relationships among countries with a high degree of accuracy. The analysis of health expenditures includes six parameters: "Hospital services," "Outpatient services," "Medical products, appliances, and equipment," "Health n.e.c.," "Public health services," and "R&D Health." The most significant aspect of health expenditures is the variation between countries. Within the context of the figure, Czechia and Switzerland stand out from other European countries. Moreover, in terms of health expenditures, Romania, Slovakia, Germany, Denmark, Austria, Norway, Poland, and Croatia are positioned relatively on the periphery. In the remaining countries, a general pattern of individual clustering is observed. It is also noteworthy that Sweden, Slovenia, and Spain cluster relatively close to the EU average.

Table 1. Stress and Fit Measures (Figure 1.)

Stress and Fit Measures	
<i>Normalized Raw Stress</i>	.07022
<i>Stress-I</i>	.26499 ^a
<i>Stress-II</i>	.59048 ^a
<i>S-Stress</i>	.16321 ^b
<i>Dispersion Accounted For (D.A.F.)</i>	.92978
<i>Tucker's Coefficient of Congruence</i>	.96425
PROXSCAL minimizes Normalized Raw Stress.	
a. Optimal scaling factor = 1.076.	
b. Optimal scaling factor = .922.	

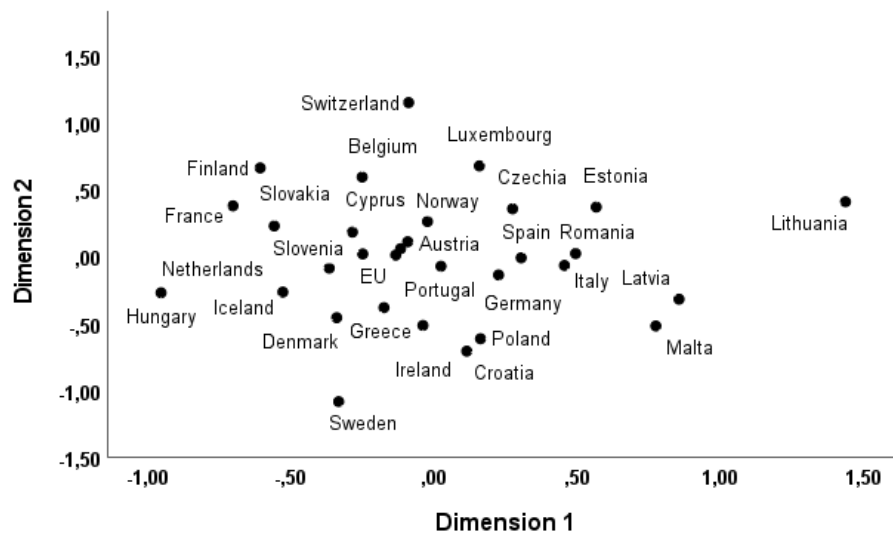
Table 2. Correlations Between Health Expenditure Subcategories and MDS Dimensions

Variables		Dimension1	Dimension2
Medical Products, Appliances and Equipment	r	-0.139	-0.591*
	p	0.457	<0.001
Outpatient Services	r	0.433*	-0.474*
	p	0.015	0.007
Hospital Services	r	0.382*	-0.242
	p	0.034	0.189
Public Health Services	r	0.631*	0.209
	p	<0.001	0.259
R&D Health	r	0.600*	-0.497*
	p	<0.001	0.004
Health n.e.c.	r	-0.397*	-0.354
	p	0.027	0.051

*: Statistical significance was evaluated at the 0.05 level using Pearson correlation coefficients.

According to the results of the Pearson correlation analysis, for the Health subcategories, the “Medical Products, Appliances, and Equipment” variable shows a moderate correlation with Dimension 2; “Outpatient Services” shows a moderate correlation with both Dimension 1 and Dimension 2; “Hospital Services” shows a weak correlation with Dimension 1; and “Public Health Services” shows a moderate correlation with Dimension 1; “R&D Health” shows a moderate relationship with both dimensions; and finally, a weak relationship is observed between “Health n.e.c.” and Dimension 1. In terms of countries’ positioning regarding health expenditures, a generally homogeneous pattern is observed across variables; regarding Dimension 1, Public Health Services and R&D Health are found to be significant variables, while regarding Dimension 2, the strongest relationship is observed with the “Medical Products, Appliances and Equipment” variable.

3.2. Education Expenditures

Figure 2. Multidimensional Scaling Analysis Results Based on Education Expenditures

The analysis of education expenditures involves eight subcategories: “Secondary education,” “Pre-primary and primary education,” “Tertiary education,” “Subsidiary services to education,” “Education n.e.c.,” “Education not definable by level,” “Post-secondary non-tertiary education,” and “R&D Education.” The results of the analysis showed that the Normalized Raw Stress value was 0.067, the D.A.F. value was 0.932, and Tucker’s Coefficient of Congruence was 0.965 (Table 3). These values suggest that the two-dimensional configuration represents the distance relationships among countries

with a high degree of accuracy. Regarding education expenditures, a similar pattern of distinct distribution is observed as in health expenditures. The countries demonstrate a relatively diverse distribution on the plot, with no strong homogeneous clusters. Switzerland occupies a distinct position in terms of education expenditures, similar to its position in health, while Lithuania and Sweden also occupy distinct locations. In addition, when education-related expenditures are evaluated based on the EU average, it is notable that Slovenia, Austria, Portugal, and Greece cluster closely around the average.

Table 3. Stress and Fit Measures (Figure 2.)

Stress and Fit Measures	
<i>Normalized Raw Stress</i>	.06770
<i>Stress-I</i>	.26020 ^a
<i>Stress-II</i>	.56574 ^a
<i>S-Stress</i>	.15288 ^b
<i>Dispersion Accounted For (D.A.F.)</i>	.93230
<i>Tucker's Coefficient of Congruence</i>	.96556
PROXSCAL minimizes Normalized Raw Stress.	
a. Optimal scaling factor = 1.073.	
b. Optimal scaling factor = .919.	

Table 4. Correlations Between Education Expenditure Subcategories and MDS Dimensions

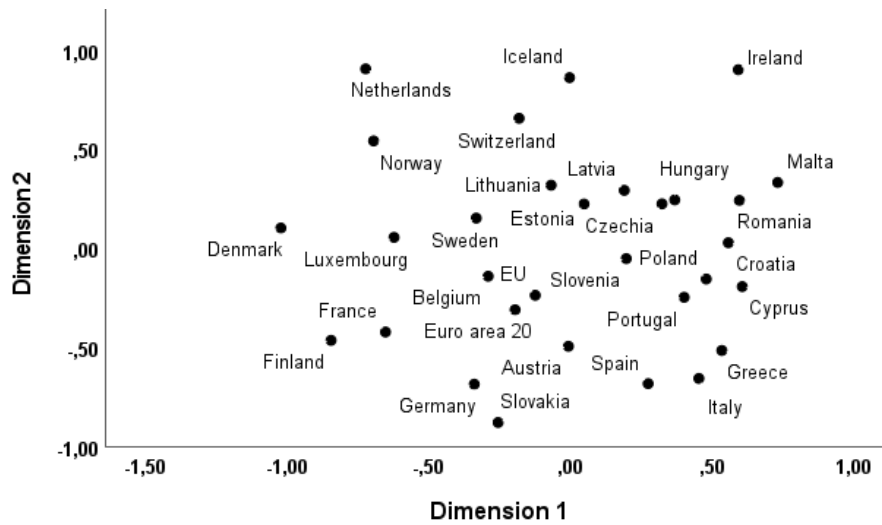
Variables		Dimension1	Dimension2
Pre-primary and Primary Education	r	-0.175	-0.430*
	p	0.345	0.016
Secondary Education	r	-0.173	0.658*
	p	0.351	<0.001
Post-Secondary Non-Tertiary Education	r	0.599*	0.249
	p	<0.001	0.177
Tertiary Education	r	-0.426*	-0.119
	p	0.017	0.524
Education not Definable by Level	r	0.031	0.663*
	p	0.870	<0.001
Subsidiary Services to Education	r	-0.345	0.144
	p	0.057	0.441
R&D Education	r	0.749*	-0.084
	p	<0.001	0.654
Education n.e.c.	r	0.682*	-0.110
	p	<0.001	0.556

*: Statistical significance was evaluated at the 0.05 level using Pearson correlation coefficients.

Considering the association between education expenditure subcategories and countries' positioning in terms of Dimension 1, "Post-Secondary Non-Tertiary Education" and "Education n.e.c." exhibit a moderate positive relationship, while "Tertiary Education" shows a moderate but negative relationship. In addition, regarding countries' positioning within Dimension 1, "R&D Education" exhibits a positive and strong relationship. A different picture emerges for Dimension 2: moderate positive relationships are observed in the subcategories "Secondary Education" and "Education not Definable by Level." "Pre-primary and Primary Education" exhibits similarly moderate but negative relationships.

3.3.Social Protection Expenditure

Figure 3. Multidimensional Scaling Analysis Results Based on Social Protection Expenditures



Social protection expenditures were analyzed under eight categories, including parameters such as “Old age”, “Sickness and disability”, “Family and children”, “Survivors”, “Unemployment”, “Social exclusion n.e.c.”, “Housing” and “Social protection n.e.c.”. The results of the analysis showed that the Normalized Raw Stress value was 0.053, the D.A.F. value was 0.946, and Tucker’s Coefficient of Congruence was 0.972 (Table 5). These fit indices indicate that the two-dimensional configuration provides a very good representation of the distance relationships among countries. It is noteworthy that the results of this analysis reveal a relatively different pattern in social protection expenditures compared to health and education expenditures. Although social protection expenditures are clustered at a more dispersed level, it is possible to say that Northern European countries are clustered in a specific area of the plane. Additionally, the clustering of Southern European and Eastern European countries stands out in the context of the graph. It is also noteworthy that Sweden, Belgium, and Slovenia cluster close to the EU average, while Denmark, Netherlands, Iceland, and Ireland are located relatively on the periphery and in a more distinct position.

Table 5. Stress and Fit Measures (Figure 3.)

Stress and Fit Measures	
<i>Normalized Raw Stress</i>	.05330
<i>Stress-I</i>	.23086 ^a
<i>Stress-II</i>	.54670 ^a
<i>S-Stress</i>	.13469 ^b
<i>Dispersion Accounted For (D.A.F.)</i>	.94670
<i>Tucker's Coefficient of Congruence</i>	.97299
PROXSCAL minimizes Normalized Raw Stress.	
a. Optimal scaling factor = 1.056.	
b. Optimal scaling factor = .931.	

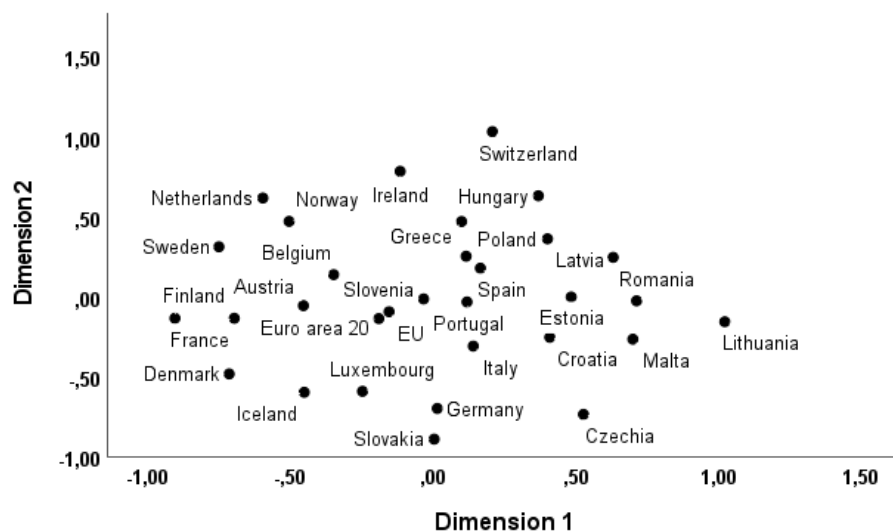
Table 6. Correlations Between Social Protection Expenditure Subcategories and MDS Dimensions

Variables		Dimension1	Dimension2
Sickness and Disability	r	-0.846*	0.192
	p	<0.001	0.302
Old Age	r	-0.121	-0.814*
	p	0.517	<0.001
Survivors	r	0.375*	-0.753*
	p	0.038	<0.001
Family and Children	r	-0.688*	-0.152
	p	<0.001	0.414
Unemployment	r	-0.579*	-0.397*
	p	0.001	0.027
Housing	r	-0.397*	0.210
	p	0.027	0.257
Social Exclusion n.e.c.	r	-0.592*	0.197
	p	<0.001	0.288
Social Protection n.e.c.	r	-0.222	-0.164
	p	0.231	0.377

*:Statistical significance was evaluated at the 0.05 level using Pearson correlation coefficients.

Evaluating the relationship between subcategories of social protection expenditures and countries' positions on Dimension 1 and Dimension 2, it is observed that the most notable result in Dimension 1 is the "Sickness and Disability" variable, with a strong and negative relationship. Additionally, in Dimension 1, the variables "Family and Children," "Social Exclusion n.e.c.," and "Unemployment" are also found to have a moderate negative relationship with country positioning. Finally, for Dimension 1, "Housing" expenditures indicate a weak negative relationship, while "Survivors" points to a weak positive relationship. Regarding Dimension 2, a different picture emerges: specifically, "Survivors" and "Old Age" exhibit a strong negative relationship, while "Unemployment" shows a negative but weak relationship.

3.4. Total Social Policy Expenditures

Figure 4. Multidimensional Scaling Analysis Results Based on Total Social Policy Expenditures

The analysis of total social policy expenditures includes all subcategories of education, health, and social protection expenditures. The results of the analysis showed that the Normalized Raw Stress value was 0.094, the D.A.F. value was 0.905, and Tucker's Coefficient of Congruence was 0.951 (Table 7). These fit indices indicate that the two-dimensional configuration provides a good representation of the distance relationships among countries. This analysis provides important insights into the similarities and differences between countries, not only by classifying public expenditures in specific areas but also by showing the overall results of social policy expenditures. According to the analysis, which evaluates public expenditures covering all subcategories of social policy combined, the results reveal a distribution where countries are positioned on a much flatter plane compared to the other categories examined. However, the far more significant point is that, when expenditures are evaluated as a whole, a relative clustering of Northern European, Southern European, and Eastern European countries can be observed. The results of this analysis, which takes all variables into account, reveal that Slovenia and Belgium are positioned close to the EU average, similar to their expenditure on social protection. Furthermore, Switzerland and Lithuania are located relatively isolated on the periphery.

Table 7. Stress and Fit Measures (Figure 4.)

Stress and Fit Measures	
<i>Normalized Raw Stress</i>	.09406
<i>Stress-I</i>	.30669 ^a
<i>Stress-II</i>	.74351 ^a
<i>S-Stress</i>	.22083 ^b
<i>Dispersion Accounted For (D.A.F.)</i>	.90594
<i>Tucker's Coefficient of Congruence</i>	.95181
PROXSCAL minimizes Normalized Raw Stress.	
a. Optimal scaling factor = 1.104.	
b. Optimal scaling factor = .896.	

Table 8. Correlations Between Total Social Policy Expenditure Subcategories and MDS Dimensions

Variables		Dimension1	Dimension2
Medical products, appliances and equipment	r	-0.091	-0.477*
	p	0.627	0.007
Outpatient services	r	-0.630*	-0.123
	p	<0.001	0.511
Hospital services	r	-0.267	-0.362*
	p	0.146	0.046
Public health services	r	0.109	-0.250
	p	0.558	0.175
R&D Health	r	-0.489*	0.105
	p	0.005	0.574
Health n.e.c.	r	0.021	-0.445*
	p	0.912	0.012
Pre-primary and primary education	r	-0.386*	-0.099
	p	0.032	0.598
Secondary education	r	-0.239	-0.310
	p	0.196	0.089
Post-secondary non-tertiary education	r	0.348	-0.286
	p	0.055	0.119
Tertiary education	r	-0.145	0.358*

	p	0.437	0.048
Education not definable by level	r	-0.018	0.277
	p	0.924	0.131
Subsidiary services to education	r	-0.010	-0.312
	p	0.958	0.088
R&D Education	r	0.691*	-0.102
	p	<0.001	0.583
Education n.e.c.	r	0.650*	-0.123
	p	<0.001	0.511
Sickness and disability	r	-0.508*	-0.040
	p	0.004	0.831
Old age	r	-0.264	-0.170
	p	0.151	0.360
Survivors	r	0.086	-0.068
	p	0.646	0.718
Family and children	r	-0.513*	-0.456*
	p	0.003	0.010
Unemployment	r	-0.567*	-0.123
	p	0.001	0.510
Housing	r	-0.504*	-0.026
	p	0.004	0.888
Social exclusion n.e.c.	r	-0.593*	0.320
	p	<0.001	0.079
Social protection n.e.c.	r	-0.083	-0.683*
	p	0.657	<0.001

*: Statistical significance was evaluated at the 0.05 level using Pearson correlation coefficients.

The latest analysis, which evaluates social policy expenditures as a whole, examined the associations between all sub-variables related to health, education, and social protection expenditures and countries' positioning. In this context, the "R&D Education" and "Education n.e.c." variables showed a moderate positive relationship with Dimension 1. However, when the negative relationship with Dimension 1 is evaluated, the picture changes, and the social protection expenditures are particularly noteworthy. In this context, a moderate negative relationship is observed between Dimension 1 and the variables "Unemployment," "Family and Children," "Sickness and Disability," "Housing," and "Social Exclusion n.e.c." Additionally, the variables "Outpatient Services" and "R&D Health," which are part of health expenditures, also exhibit a moderate negative relationship with Dimension 1. Finally, a weak negative relationship is observed between "Pre-Primary and Primary Education" and Dimension 1. Regarding Dimension 2, a relatively heterogeneous structure is observed; while there is a weak positive relationship between "Tertiary Education" and Dimension 2 in terms of country positioning, there is a moderate negative relationship among the variables "Social Protection n.e.c.," "Medical Products, Appliances and Equipment," "Family and Children," and "Health n.e.c." On the other hand, "Hospital Services" exhibits a weak negative relationship.

4. Conclusion

Public expenditures in European countries are complicated and wide-ranging in terms of social policy. In particular, how countries approach welfare affects the scale and distribution of expenditures, and the social and economic consequences of this situation have created a significant field of debate regarding long-term sustainability. The welfare policies of European countries and the differences in this area determine the diversity and quality of their social policy systems. In this context, it is important to

examine the differences and similarities in countries' expenditures on education, health, and social protection.

In this study, a multidimensional scaling (MDS) analysis was conducted to determine the positions of European countries in terms of similarities and differences in their social policy expenditures. As part of the analysis, expenditures on health, education, and social protection were evaluated individually. In addition to the individual analysis of these variables, a further analysis was conducted in which all three variables were evaluated together, in order to examine the social policy expenditures across countries. According to the results of the analysis, it was found that public expenditures in the areas of health, education, and social protection among European countries lead to differing patterns. It appears that health expenditures exhibit a relatively heterogeneous structure across countries. Similar to health expenditures, the education expenditures category also exhibits relatively diverse patterns, with no strong homogeneous clusters observed. This indicates divergent expenditures trends among countries. This diversity in education and health expenditures reflects differing national priorities and investment strategies in these areas. Furthermore, according to the analysis results, Switzerland stands out as the country in a relatively outlier position; in three of the four analyses conducted, it is situated on the periphery in a relatively outlier position. Moreover, the analyses show that while Germany and Denmark do not have positions that are significantly more distinct from other countries, they tend to be situated on the periphery. However, the most significant results are clearly seen in the analysis of social protection expenditures and in the analysis that includes social policy expenditures as a whole.

The structure of social protection expenditures, however, is quite different, and more distinct regional clusters are observed, particularly among the countries of Northern, Southern, and Eastern Europe. This suggests that social protection expenditures, on their own, are more closely linked to welfare state typologies compared to health or education expenditures. The fact that such a pattern is observed in social protection expenditures is particularly noteworthy, as these expenditures constitute the largest expenditure category. Considering the variables related to social policy together reveals a more distinct clustering consistent with traditional welfare typologies (Northern, Southern, and Eastern Europe), and the expenditure profiles related to social policy provide a much clearer framework. This suggests that, although differences may be observed in individual expenditure categories, the overall social policy expenditure profile reflects the characteristics of the welfare state and its economic context in a broader sense. Moreover, the patterns observed within the scope of this study do not imply certainty, but rather present a temporary picture within the context of the relevant parameters. Furthermore, the diverse and differentiated nature of classifications related to welfare (Bambra, 2007, p. 1099) prevents a direct and definitive classification of welfare typologies. Factors such as legal interventions and changes in the socioeconomic structure can lead to differences in the interpretation of these patterns. In fact, the study (Tkacova, Gavurova & Toth, 2024) evaluating clusters formed by European countries highlights that, although there is evidence of periodic convergence among countries, the divergence between the north and the south remains prominent. This situation reveals similarities with the findings of this study when considering distinctions in welfare policies. Although public expenditures constitute a single component in terms of welfare typologies, the influence of institutional structure on expenditure compositions provides a meaningful framework for interpreting the positions derived from the MDS.

Furthermore, in the analysis where social policy expenditures are evaluated as a whole, the key point that emerges is the relationship between countries' positioning and social protection expenditures. In the analysis where all variables are evaluated together, social protection variables feature relatively high correlation coefficients in the multidimensional scaling of countries' positioning. This situation implies that social protection expenditures play a significant role in the ranking of countries. Indeed, it is evident that the relative clustering similarities in social protection expenditures among countries are also reflected in the overall evaluation of social policy expenditures. However, the study does not directly test the compliance of countries' positions with welfare typologies; rather, it is observed that the emerging patterns fit within a framework that is relatively consistent with existing classifications. Therefore, the findings of the study do not indicate a direct correlation, but rather reflect a pattern consistent with traditional welfare state typologies. In addition, the requirement for further analysis to explain particular cases such as Switzerland, Denmark, and Germany highlights an additional limitation

of the study. MDS analysis reveals a pattern of positioning through various/unique expenditure combinations, but it does not test the institutional or socioeconomic causes of this differentiation.

The situation, in fact, necessitates evaluating various variables related to welfare in a historical and cultural context. This study aims to identify similarities and differences among countries by analyzing relevant public expenditures in terms of their shares of GDP. Indeed, countries may differ in terms of their economic scales, the composition of their expenditures, and the reflection of these in their social structures; however, such analyses are beyond the scope of this study. The multidimensional scaling approach provides a robust visual and statistical framework for understanding the relationships between social policy expenditure variables and countries. This method facilitates comparative analysis and supports the development of policy implications. Social policy expenditures in European countries are closely related to welfare state typologies and socioeconomic conditions. However, the relevant analysis presents a view of a specific moment in time in terms of specific variables and, consequently, has certain limitations. Therefore, it is possible to say that further studies which present more detailed policy approaches, while taking into account regional differences and the multidimensional nature of social expenditures, are also required.

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Araştırma Makalesi**Patterns of Social Policy Expenditures in European Countries: A Multidimensional Scaling Analysis of Education, Health, and Social Protection Expenditures**

Avrupa Ülkelerinde Sosyal Politika Harcamalarının Örüntüleri: Eğitim, Sağlık ve Sosyal Koruma Harcamalarının Çok Boyutlu Ölçekleme Analizi

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Genişletilmiş Özet

Sanayi Devrimi'nin yarattığı ekonomik ve sosyal dönüşüm sonucu, yaşama ve çalışma güvencesinin toplumdaki vatandaşlar için bir hak, devlet için ise ödev temelli kabul edildiği bir yapı, sosyal politika uygulamaları ile şekillenmiştir (Alcock, May ve Rowlingson, 2011, s.8). Özellikle 19.yüzyıl sonları ve 20.yüzyıl başlarında yaşanan sosyoekonomik sorunlar ve eşitsizlikler, sosyal devletin temellerinin atılmasını sağlamıştır. Sosyal devletin toplumsal barış ve kalkınmadaki en önemli aracı, sosyal politika özelinde kamu sosyal harcamaları olmuştur. Kamu harcamaları, toplumsal refahı yükseltmeyi hedefleyen, başta dezavantajlı gruplar olmak üzere sosyal gruplar arasında uyumu ve adil bir gelir dağılımını sağlamayı hedefleyen bir politika aracıdır. Böylece toplumsal sorunlara devlet müdahalesi ile çözüm getirme imkânı veren bir sistemi işaret etmektedir. Devlet, toplumsal faydayı maksimize etmek için kamusal mal veya hizmet sunumu yapmakta, bu amaç doğrultusunda ekonomik göstergelerin yanı sıra sosyal göstergeleri de iyileştirme çabası içinde olmaktadır (Koç, 2019, s.67). Bu hedef doğrultusunda sosyal alanlara yönelik devlet müdahalesi kurumsallaşmaya başlamış ve işçi haklarının genişletilmesi, sosyal güvenlik sisteminin oluşturulması gibi uygulamalar hayata geçmiştir. Ekonomik koşullardaki çeşitlilik ve refaha yönelik kültürel ve sosyal tutumun farklılaşması, kamu sosyal harcamalarının ülkeler bazında da farklılaşmasına neden olmaktadır. Eğitim, sosyal harcamalar ve yaşlanan nüfus ile artan sağlık hizmetleri maliyetlerinin kamu sosyal harcamalarındaki artışta önemli rol oynadığı vurgulanmaktadır (Diamond & Lodge, 2013, s.4). Ancak teknolojik, siyasi, ekonomik ve sosyo-demografik değişim hızı 21. yüzyılın ilk yıllarından itibaren refah sistemleri üzerindeki baskıyı yoğunlaştırmış, Avrupa sosyal modelinin geleceği hakkındaki tartışmalara hız kazandırmıştır (Hantrais, 2017).

Çalışmanın temel amacı, sosyal politikaya ilişkin kamu harcamaları açısından Avrupa ülkelerinin konumlarının belirlenmesi ve birbirine yakın/benzeyen ülkeler ile uzak/farklılaşan ülkelerin değerlendirmesini yapmaktır. Sosyal devlet anlayışında önemli ölçüde çözülme olmuş olsa da toplumsal kalkınmada sosyal devlet araçları önemini korumaktadır. Bu nedenle kamu sosyal harcamalarının Avrupa ülkeleri açısından benzerlik ve farklılıklarının değerlendirilmesi önem arz etmektedir. Özellikle bölgesel farklılıkların belirlenmesi ve ülkelerin bu değişkenler açısından konumlarının görülmesi, sosyal politika araçlarının sürdürülebilirliği, kapsayıcılığı ve geleceğe yönelik politikaların şekillenmesinde rol oynayabilmektedir.

Çalışma kapsamında sosyal politikaya ilişkin kamu sosyal harcamaları, sosyal koruma, eğitim ve sağlık kategorilerindeki alt parametrelerle analiz edilmiş ve genel olarak sosyal politika açısından tüm bu temel göstergelere göre durum değerlendirilmiştir. Bu alanlardaki kamu harcamalarının GSYİH içindeki payı esas alınmıştır. Araştırmanın veri seti, 27 Avrupa Birliği üyesi ülke ile Avrupa Birliği üyesi olmayan üç Avrupa ülkesine (İzlanda, Norveç ve İsviçre) ait 2023 yılı kamu sosyal harcama verilerinden oluşmaktadır. Classification of the Functions of Government (COFOG) temelinde düzenlenen söz konusu veriler, 2025 yılında Eurostat veri tabanından elde edilmiştir. Kamu harcamaları açısından temel değişkenler olarak “sosyal koruma harcamaları”, “eğitim harcamaları” ve “sağlık harcamaları” tercih edilmiş olup, bu temel değişkenleri kapsayan alt parametreler ile analizler gerçekleştirilmiştir. Sosyal koruma harcamaları, “yaşlılık”, “hastalık ve engellilik”, “aile ve çocuklar”, “ölüm sonrası hak sahipleri”, “işsizlik”, “sosyal dışlanma (diğer kategorilerde sınıflandırılmayan)”, “konut” ve “sosyal koruma (diğer kategorilerde sınıflandırılmayan)” alt parametrelerini içerir. Sağlık harcamaları, “hastane hizmetleri”, “ayakta tedavi hizmetleri”, “tıbbi ürünler, cihazlar ve ekipmanlar”, “sağlık (diğer kategorilerde sınıflandırılmayan)”, “halk sağlığı hizmetleri”, “sağlık Ar-Ge” alt parametrelerini kapsamaktadır. Son olarak, eğitim harcamaları, “ortaöğretim”, “okul öncesi ve ilköğretim”, “yükseköğretim”, “eğitime yönelik yardımcı hizmetler”, “eğitim (diğer kategorilerde sınıflandırılmayan)”, “seviyeye göre tanımlanamayan eğitim”, “orta öğretim sonrası eğitim hizmetleri (yükseköğretim dışı)”, “eğitim Ar-Ge” alt parametrelerini içermektedir. Çalışmada çok boyutlu ölçekleme modeli tercih edilmiştir. Çok boyutlu ölçekleme analizi, SPSS 27’deki PROXSCAL algoritması kullanılarak gerçekleştirilmiş ve iki boyutlu analizler tercih edilmiştir. Çok boyutlu ölçekleme analizi, nesnelerin girdi değişkenlere göre konumlarını uzamsal bir haritada gösterir ve mekânsal haritada birbirine benzemeyen nesneleri birbirinden uzakta, benzer nesneleri ise birbirine yakın konumda yerleştirir. Ayrıca bu analiz yöntemi, karmaşık bir veri kümesinin içinde bulunan temel ilişkisel yapıların görsel olarak değerlendirilmesine izin veren bir istatistiksel tekniği ifade etmektedir (Özdamar, 2010, s.4; Hout, Papesh, & Goldinger, 2013, s.93; Saeed, vd., 2018, s.1). Böylece çalışmada, sosyal politikayı içeren harcamalar kapsamında Avrupa ülkelerinin birbirine göre konumları, benzerlikleri ve farklılıkları belirlenmiştir.

Kamu harcamaları ve bu harcamaların dağılımı, Avrupa ülkelerinde önemli makroekonomik göstergelerdir. Bu bağlamda, Avrupa Birliği’ndeki toplam kamu harcamaları, 2023 yılında GSYİH’nin %49’una ulaşmıştır; COVID-19 pandemisi nedeniyle 2019 ile 2022 yılları arasında gözlemlenen artış, 2023 yılında azalmaya başlamış ve 2019 yılına yakın seviyelere geri dönmüştür. İncelenen dönem boyunca, bu çalışma için kritik bir kategoriye oluşturan “sosyal koruma” harcamaları, en büyük harcama bileşenini oluşturmaktadır. “Sosyal koruma” harcamaları %19,2 ile ilk sırada yer almıştır. “Sağlık” harcamaları %7,3 ile ikinci sırada yer alırken, “Eğitim” harcamaları %4,7 ile beşinci sırada yer almıştır. “Çevre Koruma” ise toplam harcamaların %0,8’ini oluşturarak kamu harcamaları arasındaki en düşük harcama oranına işaret etmektedir (Eurostat, 2025b). Çalışma, sosyal politika harcamalarına genel bir bakış sunmayı amaçladığından, analiz sosyal koruma, sağlık ve eğitim harcama kategorileriyle sınırlı tutulmuştur. Bu değişkenlerin ayrı ayrı analiz edilmesinin yanı sıra, ülkeler genelinde sosyal politika harcamalarının toplam görünümünü incelemek amacıyla, üç değişkenin bir arada değerlendirildiği ek bir analiz de gerçekleştirilmiştir.

Analiz sonuçlarına göre, Avrupa ülkeleri arasında sağlık, eğitim ve sosyal koruma alanlarındaki kamu harcamalarının farklı eğilimler sergilediği tespit edilmiştir. Bulgulara göre, sağlık harcamaları ülkeler arasında görece heterojen bir yapı sergilemektedir. Sağlık harcamalarına benzer şekilde, eğitim harcamaları kategorisi de ülkeler arasında heterojen bir dağılım göstermekte, belirgin homojen kümeler gözlemlenmemektedir. Bu durum, ülkeler arasında farklı harcama eğilimlerinin olduğunu göstermektedir. Eğitim ve sağlık harcamalarındaki çeşitlilik, bu alanlardaki farklı ulusal öncelikleri ve yatırım stratejilerini yansıtmaktadır. Ayrıca, analiz sonuçlarına göre İsviçre, nispeten aykırı bir konumda bulunan ülke olarak öne çıkmaktadır; yapılan dört analizden üçünde, İsviçre nispeten aykırı bir konumda, çevrede yer almaktadır. Almanya ve Danimarka ise diğer ülkelerden önemli ölçüde farklı konumlara sahip olmasa da genellikle çeperlerde yer alarak diğer ülkelerden ayrılmaktadır. Bununla birlikte, en önemli sonuçlar açıkça sosyal koruma harcamalarının analizinde ve sosyal politika harcamalarının bir bütün olarak ele alındığı analizde görülmektedir. Sosyal koruma harcamalarının

yapısı oldukça farklıdır ve özellikle Kuzey, Güney ve Doğu Avrupa ülkeleri arasında daha belirgin bölgesel kümelenmeler gözlemlenmektedir. Bu durum, sosyal koruma harcamalarının, tek başına ele alındığında, sağlık veya eğitim harcamalarına kıyasla refah devleti tipolojileriyle görece daha uyumlu bir görünüm sergilediğini göstermektedir. Ayrıca, sosyal politika harcamalarının bir bütün olarak değerlendirildiği analizde, ülkelerin konumlanmasında sosyal koruma önemli bir harcama kategorisi olarak ön plana çıkmaktadır. Tüm değişkenlerin birlikte değerlendirildiği analizde sosyal koruma değişkenleri nispeten yüksek korelasyon katsayıları sergilemektedir. Bu durum, sosyal koruma harcamalarının ülkelerin konumlanmasında önemli bir rol oynadığını göstermektedir. Nitekim, ülkeler arasında sosyal koruma harcamalarına ilişkin göreceli kümelenme benzerliklerinin, sosyal politika harcamalarının genel değerlendirilmesine de yansıdığı açıktır.

Sonuç olarak, Avrupa ülkelerindeki sosyal politika harcamaları, refah devleti tipolojileriyle ve sosyoekonomik koşullarla yakından ilişkilidir. Bununla birlikte, söz konusu analiz belirli değişkenler açısından belirli bir zaman dilimine ilişkin bir bakış açısı sunmaktadır ve dolayısıyla bazı sınırlamaları bulunmaktadır. Bu nedenle, bölgesel farklılıkları ve sosyal harcamaların çok boyutlu yapısını göz önünde bulundurarak daha ayrıntılı politika yaklaşımları sunan ve farklı dönemler açısından bu harcama yapılarının takip edileceği ilave çalışmalara ihtiyaç duyulacağı açıktır.

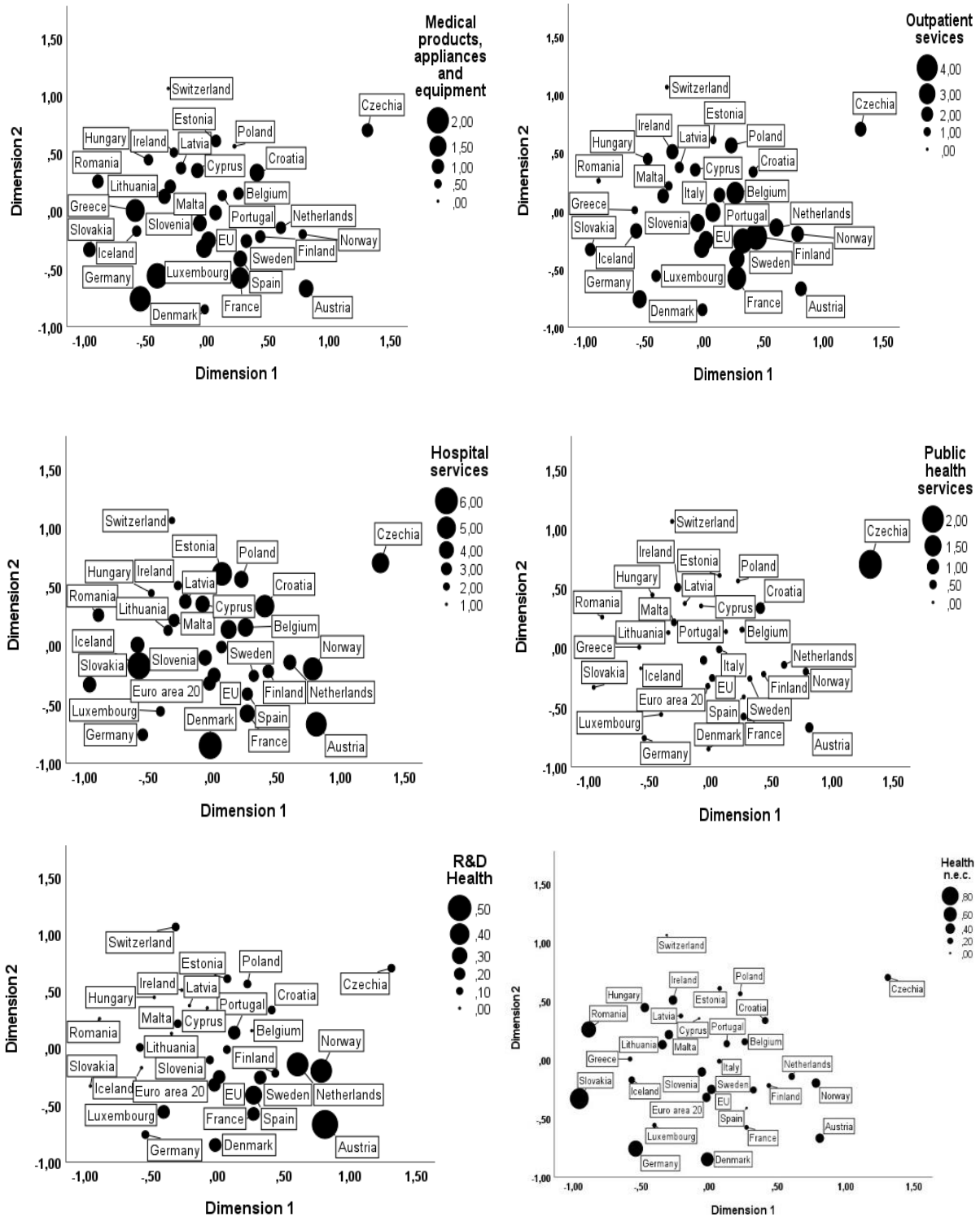
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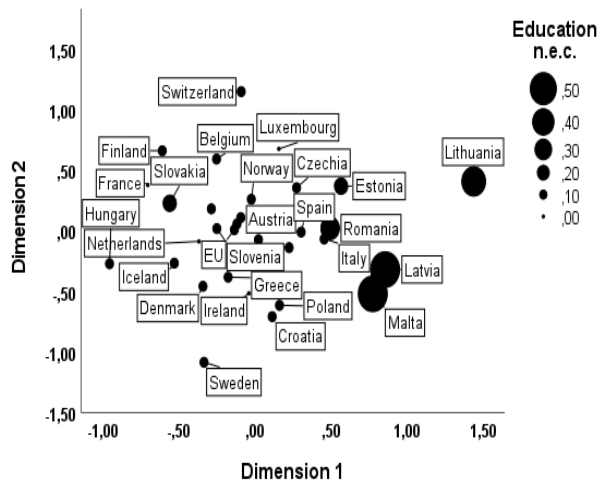
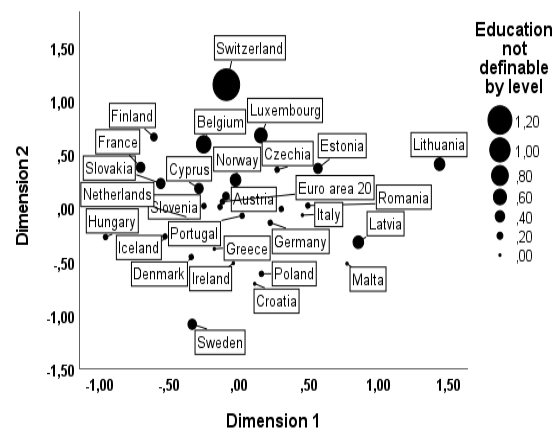
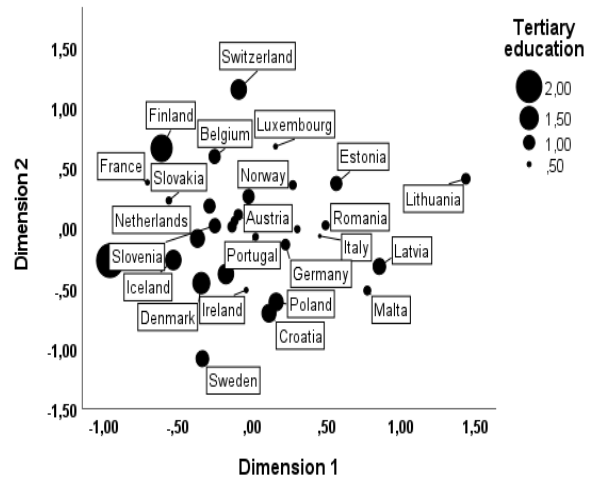
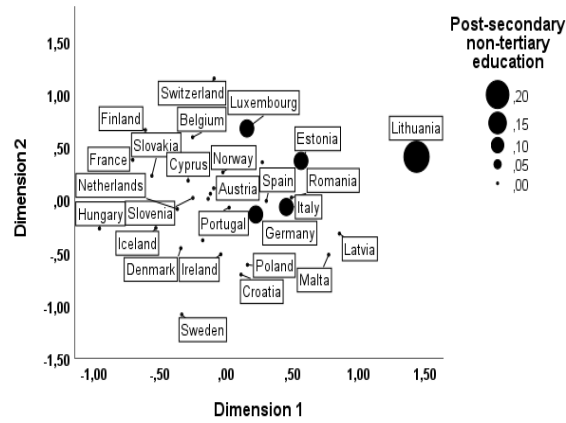
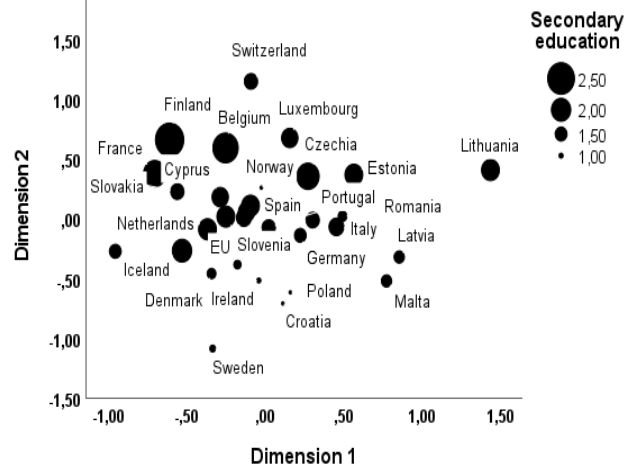
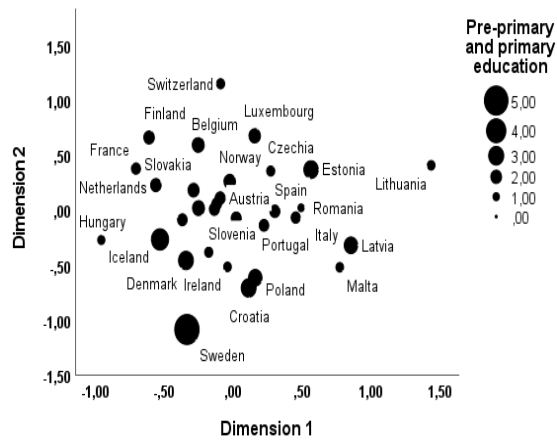
Appendix A

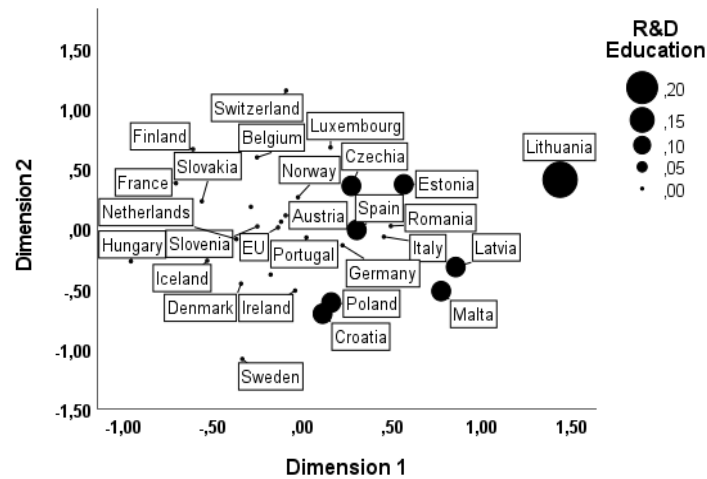
Bubble Plot of Multidimensional Scaling Results

1.Health Expenditures

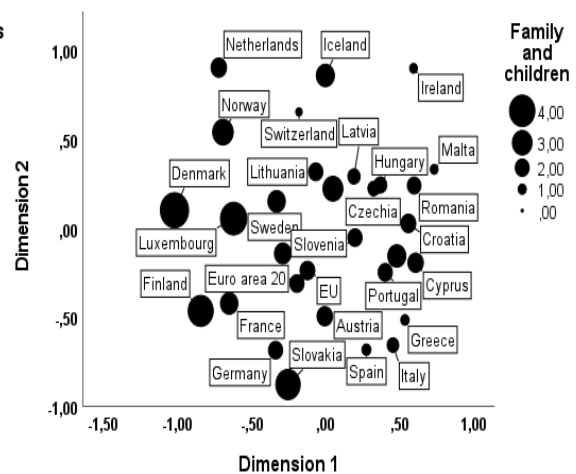
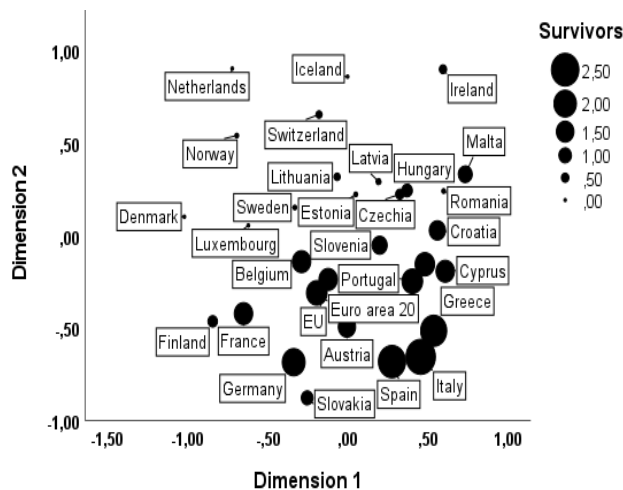
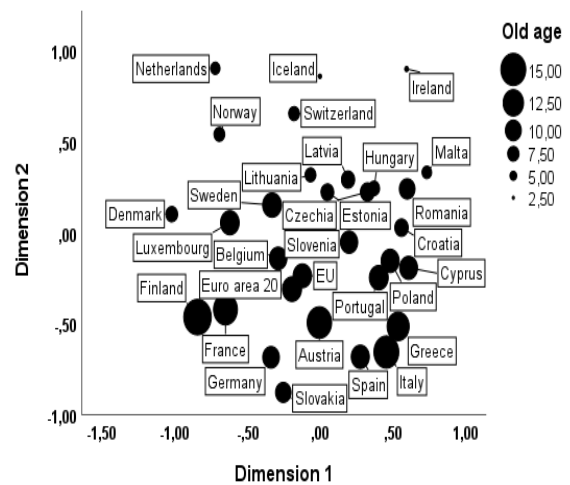
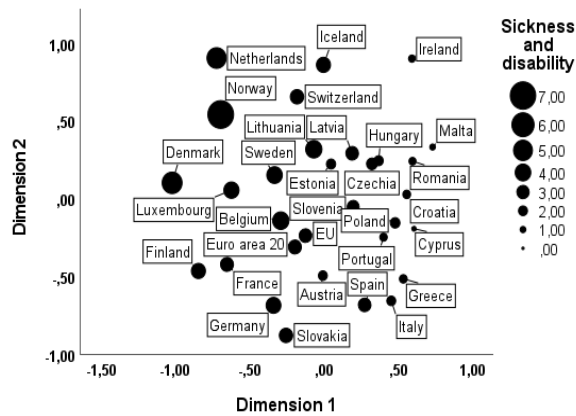


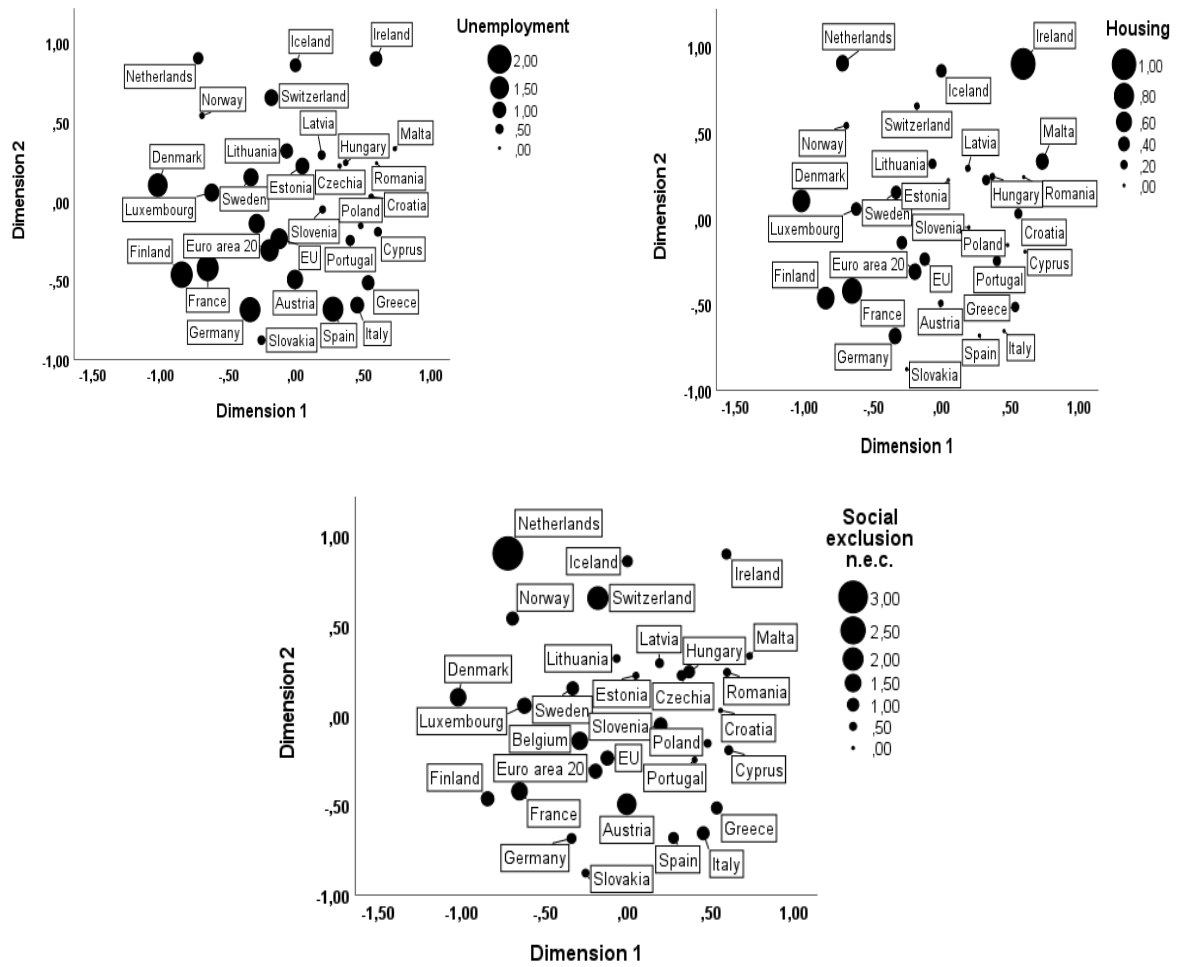
2.Education Expenditures





3.Social Protection Expenditures





4.Total Social Policy Expenditures

