"Public funding of social protection: Impact on social indicators in Eurozone countries"

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NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
29	2	8

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PUBLIC FUNDING OF SOCIAL PROTECTION: IMPACT ON SOCIAL INDICATORS IN EUROZONE COUNTRIES

Abstract

Social protection has long been a relevant subject of scientific debate. Its development is interrelated with the study of fiscal factors (collection of social contributions), establishment of major social protection vectors, and confirmation of hypotheses about the link between social protection policy and the resulting socio-economic indicators.

The purpose of the paper is to study the impact of public funding of social protection on social indicators using the example of Eurozone countries. To this end, a number of economic and mathematical methods of analysis were applied to process panel data of seventeen countries for the last fifteen years, including the calculation of the relative rate of variation, regression dependence statistics, and cluster analysis.

The study established the irrelevance between the scope of the funding of spending on social protection and social contributions (coefficient of determination R2=0.255). As illustrated, social indicators are determined not only by the amount of funding of social spending, but also by the structure of the social protection system, in particular, the focus on assistance to families with children and disability compensation (coefficient of determination R2>0.3). The general level of public funding for social spending items results in the 69% income inequality index and is behind 58% of non-economic parameters affecting life quality. The information outlined in the paper can serve as a basis for the formation of social and budgetary policy, as well as the revision of the structure and scope of social protection funding to ensure an efficient impact on the quality of life of the population.

Keywords	social contributions, social spending, the Gini coefficient, social progress index, social indicators, quality of life
JEL Classification	H22, H53, H55

INTRODUCTION

Sustainable development is considered a crucial goal around the world and includes economic, social and environmental aspects. The activities of politicians and international organizations are aimed at ensuring the comprehensive advancement of opportunities for a decent life for all population segments achievable through effective social protection systems.

As part of public policy, social protection is aimed at preventing the loss of livelihood caused by adverse social circumstances or age, reducing poverty, increasing income and effective demand, and restoring working capacity and productivity, thus facilitating gross output.

Public funding is mainly provided by the contributions of employers, employees and self-employed individuals. However, the decline in social spending, shadow economy and concealment of income limit the prospects for receiving public social benefits. The necessity of social spending is inadequately understood by its payers due to the lack of

a strategic view on social risk assessment, as well as on understanding the consequences of a failure to pay not only for themselves, their relatives and friends, but also for the macroeconomic situation in the country. In European countries, social security contributions constitute 9-15% of GDP (Organization for Economic Cooperation and Development, 2021a), while social benefits account for 16% to 30% of GDP (Organization for Economic Cooperation and Development, 2021b). This data reflects the shortage of financial support for social programs, their debt-funded nature, insufficiency of international assistance and the lack ofadequate social guarantees.

Therefore, studying the social protection funding and analyzing its relationship with social indicators, the improvement of which is a prerequisite for the economic welfare, remain important and relevant not only for the formation of public social protection policy, but also for the subsequent awareness by social contribution payers of the need for a responsible attitude to such funding.

1. LITERATURE REVIEW

Social protection policy can beregarded as a determinant of the country's macroeconomic status and the welfare of future generations (Cardoso, 2019). Given this, it is emphasized that the implementation of public social protection faces a number of issues associated with insufficient income generation through the system of taxes and contributions, the need for policy reform (Scholz, 2015; Fehr, 2016; Sánchez-Romero & Prskawetz, 2019); inadequate recognition and basic misunderstanding by society of the positive consequences of paying social contributions or raising contribution rates, opposition to the social protection system (Scholz, 2015); inefficiency and opacity of public social protection policy (Bailey, 2004); ineffective planning and management, and inappropriate external intervention or adverse political circumstances (Bailey, 2004).

Based on the abovementioned arguments, the importance and mechanism of the formation of public social protection policy is improperly communicated to the public, thus causingdistrust in the system and limiting the participation of employers, employees and self-employed individuals in the formation of its financial base, which is evident in evasion of contributions and other consequences of such limitation. Public social protection policy should be based on the responsible interaction of stakeholders, including contribution payers, benefitrecipients, and those who manage such policies through social dialogue (Bailey, 2004).

Empirical studies on the social protection system funding are connected with the justification of the role of fiscal capacity. Sánchez-Romero and Prskawetz (2019) derive the equation for the pension fund debt through the determinants of total pension contributions, birth rate, retirement age, life expectancy, population growth rate, the amount of old-age pension benefits, and incomes of the working population. Studies on the distributive impact of taxes and other contributions serving as a financial source for social protection benefits (in terms of individual social security contributions levied by governments and the European Union) proved that social protection is a progressive process in modern economic systems (Soares & Bloch, 2019).

Empirical studies of the positive impact of fiscal potential on the indicators of acountry's economic development and the government's ability to implement policy are presented in a number of scientific works(Rogers & Weller, 2013; Dincecco & Katz, 2016; Papadia, 2016). On the one hand, such statement is absolutely correct, since greater financial opportunities generate greater benefits, including those entailed by social protection programs.On the other hand, the growth of fiscal potential occurs due to an increase in the base of contributions accrual (rate-induced capacity growth is limited by the Laffer curve),i.e. revenues. Therefore, with a constant ratio of the Gini coefficient (inequality) to the system of contributionaccrual, the need for social benefits should decrease. Therefore, the relationship between the receipt of social contributions and social spending is debatable and requires comprehensive empirical research.

A separate area of research on social protection

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funding is scientific work devoted to the study of international financial assistance programs (Global Coalition for Social Protection Floors, 2019; Universal Social Protection, 2021). Romilly et al. (2015) and Barry (2018) specifically focus on the role of international financial organizations, including the IMF, in implementing reforms aimed at the coverage of the deficit of social protection programs caused by financial and economic instability and global social risks. The focus of international organizations on social needs is attributed to the fact that their provision has a positive effect on the economic situation and assists in overcoming barriers to economic growth.

The link between social protection funding and economic development indicators is emphasized by many scientists. It is assumed that social protection promotes economic growth, conditions structural reforms aimed at ensuring economic development, encourages investment, increases productivity and stimulates economic activity (Bailey, 2004; Alderman & Yemtsov, 2021; Barrientos, 2013). Contrarily, in countries showing insufficient social protection funding, economic development is constrained. Murshed et al. (2017) identify the nature and scale of the relationship between social spending and economic growth in OECD countries to conclude that increased social benefits lead to GDP growth per capita. However, the application of correlation-regression analysis only indicates a link between the factors rather than its causal vector, since GDP growth can be attributed to income growth, that is, the base of contribution accrual, and, as a consequence, to an increase in social security opportunities, and not vice versa. The ambivalence of this issue can be viewed from the angle of a logical connection: optimization of social protection funding → improvement of social status indicators with an increase in GDP. Therefore, the primary focus should be put on the analysis of the impact of social protection funding on social factors.

Adequate social protection funding can be regarded as a driver of intellectual development and advancement of human and social capital (Bailey, 2004). Population incomes, including social benefits, are also considered a factor of life expectancy (Chetty et al., 2016; Sánchez-Romero et al., 2019). Reducing poverty and inequality, enhancing human development through the implementation of the social protection system, and reducing child mortality through public spending on health care are among the outcomes confirmed in the study (Gebregziabher & Niño-Zarazúa, 2014). However, the scientific literature lacks a comprehensive analysis of the impact of public social protection policy and its alternative voluntary options on social indicators.

In view of the above, determining the impact of social security contributions on public social benefits with regard to the factors of inequality (the Gini coefficient) and social progress index remains debatable.

2. AIMS AND HYPOTHESES

The aim of the study is to explore the impact of public funding of social protection on social indicators using the example of Eurozone countries. To this end, the following steps should be taken:

- Evaluation of the relationship between public funding and fiscal factors (in the circumstances of low variability of income inequality) and appropriate justification.

- Establishment of the impact of the scope of public funding on social indicators and substantiation of fiscal policy directions for social contributions in a particular country.

Hypothesis (H1) is that at the constant level of the Gini coefficient and the system of social contributions accrual, their increase should not be accompanied by a proportional increase in social protection spending, since such process is caused by an expansion of the base of contributions accrual, i.e., populations' income, and is associated with their corresponding increase in all population groups.

Justification of *H1* suggests that the scope of social protection funding should not be directly correlated with fiscal factors (in the circumstances of low variability of income inequality) and should be determined exclusively by the need of the vulnerable groups in assistance with regard to the established standards.

Therefore, the subsequent hypothesis (*H2*) is an as-

sumption about the existing relationship between the level of public funding of social protection and the Gini coefficients and social progress. The results of the analysis of this relationship make it possible to substantiate the fiscal policy with regard to the social contributions of a particular country.

3. METHODS

3.1. Research data

The sample of countries selected for the analysis conducted in the study includes 17 positions: Austria, Belgium, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Portugal, the Slovak Republic, Slovenia, and Spain. This research data covers fifteen years (2005–2019). The above listed states are Eurozone countries, which reduces the impact of inflation factors for different currencies during the statistical analysis of financial indicators. Data for Cyprus and Malta, which are Eurozone countries, is not available in the Organisation for Economic Cooperation and Development database used in research to compile panel data on indicators of social contributions (Organisation for Economic Cooperation and Development, 2021a), social spending on items (Organisation for Economic Cooperation and Development, 2021b, 2021d, 2021e, 2021f, 2021g, 2021h), and the Gini coefficient (Organisation for Economic Cooperation and Development, 2021c). The informational base for the social progress index is represented by the data provided inthe Social Progress Index Executive Summary (2019).

3.2. Research methods

To evaluate the stability of the panel series of the Gini coefficient data (Organisation for Economic Cooperation and Development, 2021c) for fifteen years for Eurozone countries, the relative rate of variation (by the standard deviation of the data series) was calculated, and the countries whose index variability did not exceed 15% (stability criterion for data series) were selected.

The extent of the relationship for the selected countries is assessed using the statistics of regression

dependence among panel data on fiscal factors, in particular, social security contributions (mandatory payments to public funds and entitlement to future social benefits (Organisation for Economic Cooperation and Development, 2021a)), and social spending (unemployment, accident, injury and sickness, old-age pensions, disability, and family benefits (Organisation for Economic Cooperation and Development, 2021b)). The data is measured as a percentage of GDP, thus reflecting the scope of contributions to the country's economy.

To explore the relationship between the scope of public funding of social protection and the Gini coefficient of social progress, cluster analysis was applied (Ward and Euclidean distance methods). The statistical basis for this analysis is the 15-year average for social spending (Organisation for Economic Cooperation and Development, 2021b), the Gini coefficient (Organisation for Economic Cooperation and Development, 2021c), which measures income inequality, and social progress index data, which comprehensively and systematically reflects the non-economic dimension of social characteristics (ability of society to meet basic human needs of citizens, improve and maintain their quality of life) based on 12 components and 51 indicators (Social Progress Index Executive Summary, 2019) (Table 1).

The purpose of further evaluation is to determine the pair correlation between social indicators (y_1 – Gini coefficient; y_2 – social progress index) and social spending items:

x_1 pension payments measured as a percentage of GDP(Organization for Economic Cooperation and Development, 2021d);

x_2 – unemployment benefits measured as a percentage of GDP (Organization for Economic Cooperation and Development, 2021e);

x_3 – payments for families and children, including: cash payments to families with children, including child allowances; cash payments for the period of child care leave and for single parents; spending on services for families (in-kind payments) with children, including direct funding and subsidies for providers of childcare and early education facilities, public support for childcare through targeted parental benefits, government expendi-

Table 1. Average values of the scope of social spending for 2005–2019 and the Gini coefficient and social progress index for 2019

Source: Created by the authors based on OECD (2021b, 2021c) and Social Progress Index Executive Summary (2019).

Country	Average value of public social spending, % of GDP	Average value of Gini coefficient (0 = complete equality, 1 = complete inequality)	Social progress index
Austria	26.86	0.28	86.40
Belgium	28.00	0.26	86.77
Estonia	16.03	0.33	83.98
Finland	27.46	0.26	89.56
France	30.61	0.30	87.79
Germany	25.25	0.29	88.84
Greece	23.78	0.33	82.48
Ireland	18.05	0.31	87.97
Italy	26.75	0.32	85.69
Latvia	15.27	0.36	80.42
Lithuania	16.33	0.35	81.30
Luxembourg	21.88	0.31	87.66
Netherlands	17.17	0.29	88.31
Portugal	23.47	0.34	87.12
Slovak Republic	16.79	0.25	80.43
Slovenia	22.03	0.24	85.80
Spain	23.91	0.34	87.47

tures on youth assistance and services provided to families (e.g. home help for families in need) measured as a percentage of GDP(Organisation for Economic Cooperation and Development, 2021f);

x_4– cash social benefits to households measured as a percentage of GDP (OECD, 2021g);

x_5 – incapacity benefits (sick pay, special allowances, sickness, disability and occupational injury benefits, paid leave necessitated by illness or inju-

ry of a dependent child) measured as a percentage of GDP (Organisation for Economic Cooperation and Development, 2021h).

4. RESULTS

Correctly assessing the impact of the scope of social contributions on the funding allocated to-spending on social protection requires adherence to the condition of low variability of the Gini coef-

Table 2. Evaluation of the stability of the panel series of the Gini coefficient data for 2005–2019

Country	Average value of Gini coefficient for 15 years	Average standard deviation of panel series	Relative indicator of panel series
Austria	0. 28	0. 004	2%
Belgium	0. 26	0. 000	0%
Estonia	0. 33	0. 021	6%
Finland	0. 26	0. 004	1%
France	0. 30	0. 005	2%
Germany	0. 29	0. 003	1%
Greece	0. 33	0. 010	3%
Ireland	0. 31	0. 009	3%
Italy	0. 32	0. 006	2%
Latvia	0. 36	0. 014	4%
Lithuania	0. 35	0. 019	5%
Luxembourg	0. 31	0. 010	3%
Netherlands	0. 29	0. 007	2%
Portugal	0. 34	0. 017	5%
Slovak Republic	0. 25	0. 017	7%
Slovenia	0. 24	0. 006	2%
Spain	0. 34	0. 009	3%

ficient (income inequality). Table 2 presents data on the assessment of Gini coefficient panel series stability for fifteen years in the Eurozone countries.

Based on the calculated data, the Gini coefficient variation within the cluster of countries for 15 years is insignificant, that is, the data for all 17 countries was included in the calculation of regression statistics based on the panel data on social security contributions and social spending (Table 3).

Table 3. Coefficients of determination based on the social security contributions and social spending data

Regression statistics	
Multiple *R*	0,505334
Multiple *R*²	0,255362
Adjusted *R*²	0,252419
Std.err. of estimate	4,406975

The results of the performed cluster analysis presented inTable 1 made it possible to distinguish

three groups of countries by the scope of social spending and the Gini coefficient (Figure 1).

The characteristics of the formed clusters are shown in Table 4.

The results of cluster analysis based on the data from Table 1 (Figure 2) also allowed distinguishing three groups of countries in terms of the social spending scope indicators and the social progress index.

The characteristics of the obtained clusters are shownin Table 5.

An estimate of the pair correlation between social indicators (y_1 – Gini coefficient; y_2 – social progress index) and social spending items is presented in Tables 6 and 7.

Table 8 presents regression statistics for the concurrent impact of the scope of funding for social spending items on social indicators.
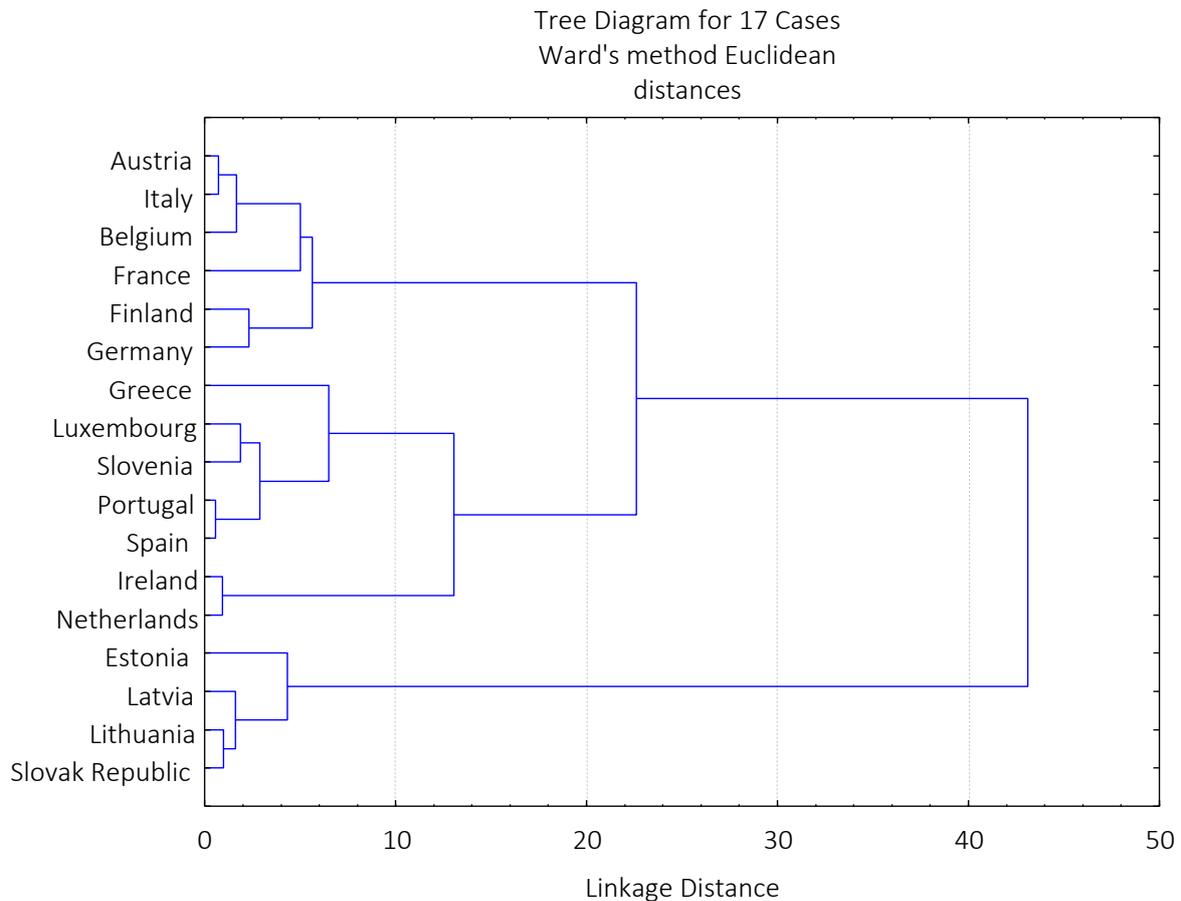

Figure 1. Country dendrogram for social spending and the Gini coefficient

Table 4. Composition of clusters based on the indicators of the scope of social spending and the Gini coefficient and their average values

Countries	Public social spending, % of GDP	Gini coefficient	Cluster average value of public social spending, % of GDP	Cluster average value of Gini coefficient
Cluster 1				
Austria	26.86	0.28		
Belgium	28.00	0.26		
Finland	27.46	0.26	27.93	0.28
France	30.61	0.30		
Italy	26.75	0.32		
Cluster 2				
Germany	25.25	0.29		
Greece	23.78	0.33		
Luxembourg	21.88	0.31	23.39	0.31
Portugal	23.47	0.34		
Slovenia	22.03	0.24		
Spain	23.91	0.34		
Cluster 3				
Estonia	16.03	0.33		
Latvia	15.27	0.36		
Lithuania	16.33	0.35	16.61	0.31
Ireland	18.05	0.31		
Netherlands	17.17	0.29		
Slovak Republic	16.79	0.25		

Tree Diagram for 17 Cases
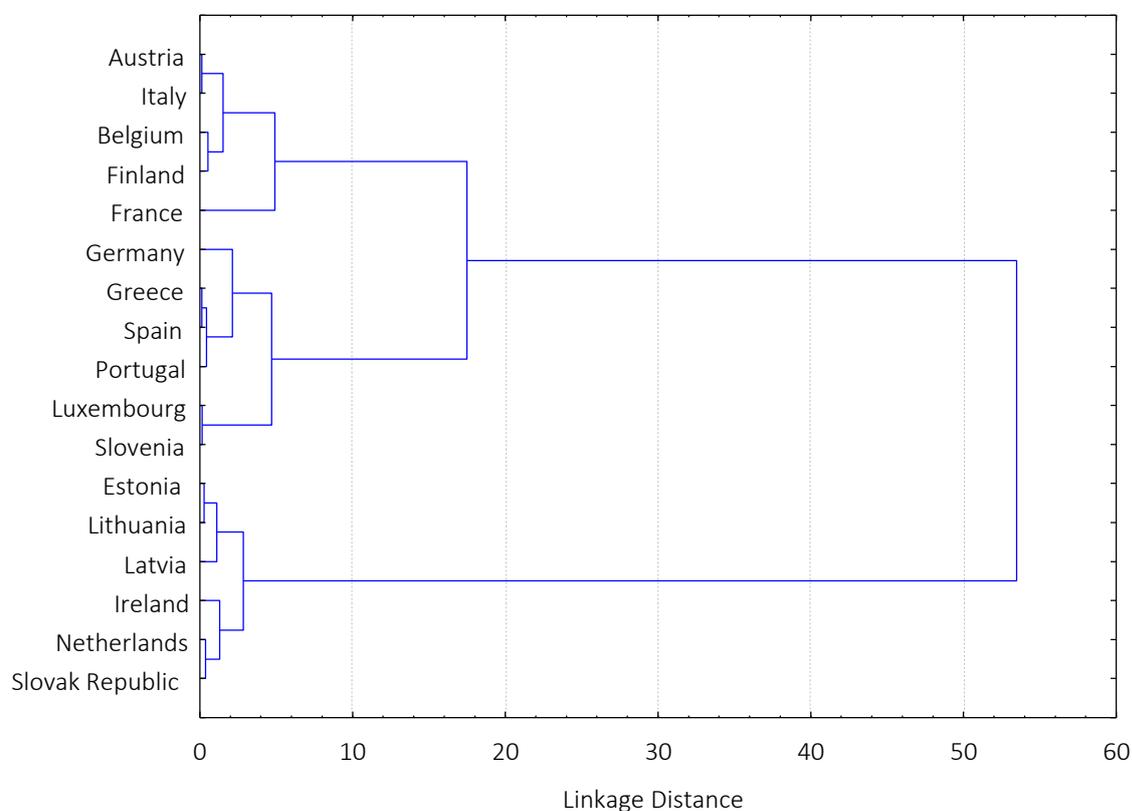Ward's method
Euclidean distances

Figure 2. Country dendrogram based on social spending indicators and the social progress index

Table 5. Cluster composition based on social spending scope indicators and the social progress index and their average values

Country	Public social spending, % of GDP	Social progress index	Cluster average value of public social spending, % of GDP	Cluster average value of social progress index
Cluster 1				
Austria	26.86	86.40		
Belgium	28.00	86.77		
Finland	27.46	89.56	27.49	87.51
France	30.61	87.79		
Germany	25.25	88.84		
Italy	26.75	85.69		
Cluster 2				
Greece	23.78	82.48		
Ireland	18.05	87.97		
Luxembourg	21.88	87.66		
Netherlands	17.17	88.31	21.47	86.69
Portugal	23.47	87.12		
Slovenia	22.03	85.80		
Spain	23.91	87.47		
Cluster 3				
Estonia	16.03	83.98		
Latvia	15.27	80.42	16.10	81.53
Lithuania	16.33	81.30		
Slovak Republic	16.79	80.43		

Table 6. Matrix of pair correlation indices of the Gini coefficient (y1) and social spending items

	y_1	x_1	x_2	x_3	x_4	x_5
y_1	1					
x_1	−0.01304	1				
x_2	−0.26635	0.04057	1			
x_3	−0.34228	−0.11185	0.277445	1		
x_4	−0.31962	0.918753	0.215653	0.167158	1	
x_5	−0.32448	−0.29418	0.462616	0.407723	−0.06461	1

Table 7. Matrix of pair correlation indices of the social progress index (y2) and social spending items

	y_2	x_1	x_2	x_3	x_4	x_5
y_2	1					
x_1	0.146046	1				
x_2	0.638211	0.04057	1			
x_3	0.387866	−0.11185	0.277445	1		
x_4	0.356732	0.918753	0.215653	0.167158	1	
x_5	0.556074	−0.29418	0.462616	0.407723	−0.06461	1

Table 8. Regression statistics for the concurrent impact of the scope of funding for social spending items on social indicators

Regression statistics index	Concurrent impact of the scope of funding for social spending items on the Gini coefficient (y_1)	Concurrent impact of the scope of funding for social spending items on the social progress index (y_2)
Multiple R	0.830982525	0.764223
Multiple R^2	0.690531957	0.584037
Adjusted R^2	0.549864664	0.394963
Std.Err. ofEstimate	0.023968396	2.300856

5. DISCUSSION

The obtained results of assessing the extent of relationship between the scope of social contributions and social spending (Table 3) reflected the low dependence of the latter on fiscal capacity (coefficient of determination R^2 = 0.255). Considering this, the statement that strengthening fiscal capacity is crucial to increase social sector spending (Rogers & Weller, 2013; Dincecco & Katz, 2016; Papadia, 2016), whilecontribution rates should be increased or accrued through a progressive system (for example, the one applied to high-income or multinational companies), is not entirely correct.

In terms of mathematical logic, in conditions of GDP growth, the population's welfare will grow, whichwill be especially evident in an increase in income. Accordingly, the level of social contributions (as well as their ratio to GDP) may remain stable, while the scope of revenues can increase. The issue of shadow income remains equally important. Efficient accrual of contributions is likely to exacerbate the negative tendencies towards the partial concealment of income aimed atmaintaining a lower rate of social contributions, while the amount of their receipt in relation to GDP can be further reduced. Therefore, the only appropriate option for achieving social welfare is not to strengthen fiscal capacity by raising contribution rates, but to promote income transparency, ensure responsible attitude to social contribution payments, and establish optimal social standards in the context of strengthening the macroeconomic situation, since fiscal revenues are comparable by their scope to per capita income.

The obtained results of analyzing the relationship between the scope of public funding for social protection and the Gini coefficient (Table 4) show that countries with high levels of social benefits have the lowest level of income inequality (Cluster 1: Austria, Belgium, Finland, France, Italy), while there is no substantial difference in the achieved Gini coefficient between countries with medium (Cluster 2: Germany, Greece, Luxembourg, Portugal, Slovenia, Spain) and low levels of social security within the sample (Cluster 3: Estonia, Latvia, Lithuania, Ireland, the Netherlands, and the Slovak Republic).

Therefore, it would be incorrect to assert that advancement of social standards reduces income inequality. The matrix of pair correlation coefficients of the Gini coefficient and social spending items (Table 6) clearly shows that the greatest impact on the reduction of income inequality (R^2> 0.3) is exerted by payments to families with children, cash social benefits payable to households and disability benefits. Notably, no correlation between the Gini coefficient and pension and unemployment benefits was established. At the same time, the concurrent impact of the scope of funding for social spending items on income inequality is relatively significant (Table 8: R^2 = 0.69). This indicates that the policy of social protectionfunding aimed at reducing income inequality should have an optimal balance in the structure of payment items and concurrently ensure correspondence of their scope to high social standards (conclusion from the cluster analysis).

The empirical analysis of the impact of the scope of social spending funding on the social progress index revealed that countries with high and medium levels of social spending show almost similar non-economic indicators of the quality of life. Notably, the Netherlands and Ireland, which have a relatively low level of social benefits in relation to GDP, are characterized by high social progress indices. This fact can be attributed to the results of the regression analysis shown in Table 7, which reflects the close relationship between the social development index andunemployment and disability benefits, which are among the highest onesin these countries. Importantly, pension benefits do not have a considerable effect on overcoming income inequality. Both the Netherlands and Ireland have well-developed systems of cumulative pension funds.

Thus, more than 30% of the financial assets of households in these countries (in Ireland – by 34%, in the Netherlands – by 59% as of 2019 (Organization for Economic Cooperation and Development, 2021i)) are represented by such accumulations that allow them to receive social benefits and ensure a high standard of living after retirement.

The concurrent impact of fundingfor social spending items on the social progress index is limited

compared to its effect on the Gini coefficient, but clearly defined (Table 8). The findings suggest that the 58% of social protection finding determined the quality of life in terms of non-economic parameters. At the same time, the structure of social protection for spending items is no less important.

CONCLUSION

This study is devoted to the idea of developing a system of public funding for social protection, which could improve the quality of life in the country. In the paper, the hypothesis of irrelevance between the scope of funding for social protection spending and social contributions (at a low variability of income inequality) was confirmed by the example of panel data for Eurozone countries. In contrast to the prevailing view that increasing fiscal capacity, increasing contribution rates and applying a progressive system of their accrual are advisable strategies, it was argued that the best option for achieving social welfare is to promote income transparency, ensure responsible attitude to the payment of the respective social contributions, and establish optimal social standards in the face of improving macroeconomic conditions.

Assumptions about the link between the scope of public fundingfor social protection and the Gini coefficient and social progress have been justified using economic-mathematical modeling and analysis. Based on the study results, it can be established that social indicators are determined not only by the scope of the fundingfor social spending, but also by the structure of the social protection system. This study shows that the prevalence of pension benefits and neglecting cumulative pension funds reduce social indicators. It is important to emphasize that the results obtained justified the advisability of channelingsocial spending into the provision of assistance to families with children, compensation for working incapacity, and the development of systems of voluntary cumulative provision of social protection.

The aggregate of the results obtained can be considered as a prerequisite for the formation of social and macroeconomic policy based on innovative approaches to social protection, as well as a revision of the structure and scope of public funding for social protection to ensure an effective impact on the quality of life of the population.

At the same time, this study creates the basis for further development of scientific discussion about the relationship between public social protection systems and private voluntary investments in pension, trust and insurance funds.

AUTHOR CONTRIBUTIONS

Conceptualization: Igor Chugunov.
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Formal analysis: Olha Nasibova.
Funding acquisition: Olha Nasibova.
Investigation: Igor Chugunov.
Methodology: Igor Chugunov.
Project administration: Olha Nasibova.
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Validation: Olha Nasibova.
Visualization: Olha Nasibova.
Writing – original draft: Igor Chugunov.
Writing – review & editing: Olha Nasibova.

REFERENCES

1. Alderman, H., & Yemtsov, R. (2021, April 1). *Productive Role of Safety Nets.* Retrieved from https://openknowledge.world-bank.org/handle/10986/13551

2. Bailey, C. (2004). *Extending social security coverage in Africa.* Retrieved from http://www.ilo.int/public/english/protection/socsec/pol/campagne/files/ad-dispaper.pdf

3. Barrientos, A. (2013). Social Transfers and Growth: What Do We Know? What Do We Need to Find Out? *World Development, 40*(1), 11-20. https://doi.org/10.1016/j.world-dev.2011.05.012

4. Cardoso, T. (2019). *Social Security financing: equity and sustainability issues* (CFP Occasional Paper no. 01/2019). Portuguese Public Finance Council. Retrieved from https://www.cfp.pt/uploads/publicacoes_ficheiros/cfp-po-1-2019-financiamento-da-seguranca-social1.pdf

5. Chetty, R., Stepner, M., Abraham, S., Lin, S., Scuderi, B., & Turner, N., Bergeron, A., &Cutler, D. (2016). The Association Between Income and Life Expectancy in the United States, 2001-2014. *Journal of the American Medical Association, 315*(16), 1750-1766. https://doi.org/10.1001/jama.2016.4226

6. Dincecco, M., & Katz, G. (2016). State Capacity and Long-run Economic Performance. *Economic Journal, 126*(590), 189-218. https://doi.org/10.1111/ecoj.12161

7. Fehr, H. (2016). CGE modeling social security reforms. *Journal of Policy Modeling,38*(3), 475-494. https://doi.org/10.1016/j.jpolmod.2016.02.007

8. Gebregziabher, F., & Niño-Zara-zúa, M. (2014). *Social spending and aggregate welfare in developing and transition economies.* UNU-WIDER.

9. Global Coalition for Social Protection Floors. (2019). *The IMF's New Policy Framework on Social Protection.* Retrieved from http://www.socialprotectionfloorscoalition.org/2019/01/the-imfs-new-policy-framework-on-social-protection/

10. Greenhill, R., Carter, P., Hoy, C., & Manuel, M. (2015). *Financing the future: how international public finance should fund a global social compact to eradicate poverty*. Overseas Development Institute.

11. Herman, B. (2018). *Sustainably financing social protection floors.*Berlin: Brotfür die Welt. Retrieved from https://www.brot-fuer-die-welt.de/themen/fachpublikationen/armut-sozi-alpolitik

12. Murshed, S. M., Badiuz-zaman, M., &Pulok, M. H. (2017). *Fiscal capacity and social protection expenditure in developing nations* (WIDER Working Paper No. 2017/60). https://doi.org/10.13140/RG.2.2.20714.52168

13. Organisation for Economic Cooperation and Development. (2021a). *Social security contributions (indicator).* https://doi.org/10.1787/3ebfe901-en

14. Organisation for Economic Cooperation and Development. (2021b). *Social spending (indicator).* https://doi.org/10.1787/3ddf51bf-en

15. Organisation for Economic Cooperation and Development. (2021c). *Income inequality (indicator).*https://doi.org/10.1787/459aa7f1-en

16. Organisation for Economic Cooperation and Development. (2021d). *Pension spending (indicator).* https://doi.org/10.1787/a041f4ef-en

17. Organisation for Economic Cooperation and Development. (2021e). *Public unemployment spending (indicator).* https://doi.org/10.1787/55557fd4-en

18. Organisation for Economic Cooperation and Development. (2021f). *Family benefits public spending (indicator).* https://doi.org/10.1787/8e8b3273-en

19. Organisation for Economic Cooperation and Development. (2021g). *Social benefits to households (indicator).* https://doi.org/10.1787/423105c6-en

20. Organisation for Economic Cooperation and Development. (2021h). *Public spending on incapacity (indicator).* https://doi.org/10.1787/f35b71ed-en

21. Organisation for Economic Cooperation and Development. (2021i). *Household financial assets (indicator).* https://doi.org/10.1787/7519b9dc-en

22. Papadia, A. (2016). *Fiscal Capacity, Tax Composition and the (in) Stability of Government Revenues in the Interwar Period.* London School of Economics, Department of Economic History (mimeo). https://doi.org/10.13140 / RG.2.1.3926.1529

23. Rogers, M. Z., & Weller, N. (2013). Income Taxation and the Validity of State Capacity Indicators. *Journal of Public Policy, 34*(3), 183-206. Retrieved from https://www.cambridge.org/core/journals/journal-of-public-policy/article/abs/income-taxation-and-the-validity-of-state-capacity-indicators/98E01239F560DDAC03C960FC271A234F

24. Sánchez-Romero, M., Lee, R., &Fürnkranz-Prskawetz, A. (2019). *Redistributive effects of different pension structures when longevity varies by socioeconomic status in a general equilibrium setting.* National Bureau of Economic Research, Inc.

25. Sánchez-Romero, M., &Pr-skawetz, A. (2019). Social Security: Long-Term Financing and Reform. In D. Gu & M. Dupre (Eds), *Encyclopedia of Gerontology and Population Aging.*https://doi.org/10.1007/978-3-319-69892-2_535-1Springer.

26. Scholz, W. (2015). Financing social security out of contributions: About origins, present discussions and prospects of a success

story. *International Social Security Review, 68*(4), 3-24. https://doi.org/10.1111/issr.12085

27. Soares, S., & Bloch, C. (2019). *Distributive impacts of social security financing in Brazil* (Discussion Paper No. 244). Institute for Applied Economic Research. Retrieved from https://www.econstor.eu/bitstream/10419/220330/1/dp_244.pdf

28. The Social Progress Imperative. (2019). *Social Progress Index Executive Summary*. Retrieved from https://www.socialprogress.org/static/9d3cd3204599ff2cdf87248edc2b1242/2019-social-progress-index-executive-summary-v2.0.pdf

29. Universal Social Protection 2030 (2021). *Global partnership for universal social protection to achieve the sustainable development goals*. Retrieved from https://www.usp2030.org/gimi/USP2030.action