Economic Growth and Budget Composition: The Influence of Social Protection Spending in CEE Economies

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This paper examines the relationship between the structure of budgetary spending and economic growth, with a particular focus on allocations for social protection in Central and Eastern European countries (CEE). Due to the lack of consensus in the academic literature regarding the direct and indirect economic effects of social protection, this study employs the Autoregressive Distributed Lag (ARDL) model to analyze data from 11 CEE countries over the period 2000–2022. The results indicate that, in both the short and the long run, social protection spending has a statistically significant positive impact on GDP. The key transmission channels include increased aggregate demand, reduced income inequality and enhanced productivity through more substantial investments in human capital. The findings further suggest that, in the specific context of transitional economies facing demographic challenges, social transfers primarily acted as stabilizing mechanisms. Given the limited number of studies examining the functional composition of public expenditure in post-transition European economies, this research offers new empirical insights into the role of social spending in growth strategies. The policy recommendations emphasize the importance of maintaining sustainable public finances while promoting productive social protection systems aligned with labor market dynamics.

Keywords: social protection, economic growth, Central and Eastern European countries (CEE).

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INTRODUCTION

In recent decades, the structure of public spending has become a focal point in debates on how governments can foster long-term economic growth. Particularly in the context of Central and Eastern European (CEE) countries, characterized by post-transition challenges, fiscal consolidation efforts and demographic shifts, the composition of government expenditures, especially in the area of social protection, warrants closer investigation.

The allocation of public funds – how resources are distributed among different sectors of the economy – has long been a subject of interest in economic theory and public finance (Morrison, 1982; Helpman et al., 1988; Poterba, 1997; Wildavsky, 2018; Chugunov et al., 2020). As a discipline, economics emphasizes the principles of efficiency and effectiveness in maximizing output from limited resources. In parallel with the development of the modern state, fiscal policy has evolved to address increasingly complex demands, including those driven by technological change and demographic trends. The complexity of economic systems and policy trade-offs makes the structure of budget expenditure not only a technical matter but also a key instrument in shaping long-term development outcomes.

While much of the economic literature about economic growth has focused on the size of government spending, more recent studies emphasize the importance of its composition - i.e., how resources are allocated across functional categories such as health, education, defense and social protection (Gemmell, Kneller & Sanz, 2016; Cusack, 2019; Barrios & Schaechter, 2008). These studies suggest that not all public expenditures have the same effect on growth, and that specific categories, particularly social protection, may yield positive outcomes through indirect mechanisms, such as reducing inequality and promoting social stability.

Building on this perspective, a core principle in economics is that a good economist knows how to multiply and divide. Among the primary responsibilities of economic policymakers is the realization of so-called non-economic goals. The key non-economic goals of economic policy, in addition to the current and widespread topic of sustainable development, encompass the entire spectrum of budget activities aimed at promoting social justice, reducing inequality, and ensuring the social security of citizens. Reports by international organizations such as the International Labor Organization (ILO) show that although there is a well-developed system of social protection at the global level, strengthening the fiscal capacity of the state in order to allocate additional funds to this area is a necessity, especially in conditions of economic crises, such as the emergence of the Covid-19 pandemic. That is a result of wars, conflicts and other disruptions in supply chains.

Analyzing the situation at the European Union level, official Eurostat data show that expenditure on social protection amounted to 26.9% of GDP. By further analyzing the social protection structure, the most significant share (46%) pertains to old age and survivors' functions, followed by spending on the healthcare sector (30%). By comparison, expenditures in the remaining categories make up less than 10%. Of course, the data vary across different member states, but substantial expenditures on these categories were observed. One of the theoretical postulates in public finance and macro-fiscal stability says that it is important to distinguish between so-called productive and non-productive expenditures. Productive public expenditures should have a direct or indirect positive impact on economic growth

and create long-term benefits for all citizens.

This paper aims to examine the extent to which the structure of public expenditure, particularly allocations for social protection, affects economic growth in Central and Eastern European (CEE) countries. The study focuses on examining the short-run and long-run effects of social protection spending by applying the ARDL model with the Pooled Mean Group (PMG) estimator, which enables differentiation between short- and long-run dynamics in heterogeneous country panels.

In line with this objective, the paper seeks to answer the following research questions:

- Does increased public spending on social protection contribute to GDP growth in CEE countries?
- Are the effects of social protection spending more prominent in the short run or the long run?

The following section provides a review of the relevant literature, highlighting key theoretical and empirical contributions related to the composition of public spending and its impact on economic growth.

LITERATURE REVIEW

Although the relationship between social protection and economic growth has attracted considerable academic attention, the scientific community still lacks a clear consensus (Nijkamp & Poot, 2004). This is a highly complex, multi-layered, and multi-factorial relationship, which can both influence, and result from, various internal and external factors at the national level.

Theoretically, the relationship between public expenditure and economic growth has been examined through various lenses. Keynesian economics emphasizes the positive short-term effects of public spending on aggregate demand and employment, particularly during economic downturns. By contrast, neoclassical and endogenous growth theories emphasize the importance of spending composition, suggesting that investments in education, health, and infrastructure are more likely to foster long-term growth than redistributive transfers. This theoretical dichotomy underpins much of the empirical debate.

Recent multi-country studies (e.g., Cardoso et al., 2023) using structural VAR techniques confirm that across 42 countries from 1985 to 2020, the cumulative GDP multiplier of social protection often exceeds unity, especially in more unequal societies. These findings are complemented by global assessments from the IMF (2021) and the OECD (2024), which emphasize the potential for stabilization and inclusive growth through social spending in the post-Covid era. Nonetheless, most of this literature focuses on high-income countries or uses standard panel methods, leaving a gap when it comes to dynamic estimation in CEE economies. In addition to macroeconomic effects, other studies focus on the social development outcomes of social protection expenditures. For instance, Halásková & Bednář (2020) conducted a panel data analysis on 27 EU countries between 2007 and 2015, examining the relationship between social protection spending and various socio-economic indicators. Their findings revealed a positive association between such expenditures and the Human Development Index and unemployment rates, alongside a negative relationship with poverty among the elderly and income inequality (measured via the Gini coefficient). These results reinforce the view that social protection plays a dual role, not only as a redistributive mechanism but also as a contributor to broader developmental goals.

There are also interpretations that a higher level of social justice and allocation of funds for social protection can indirectly contribute to economic growth (Ahmad et al., 1991). Korpi (1985), Castles (2005) and Herce et al. (2000) argue that social protection, provided through the budgetary spending system, enables individuals to take more risks in their economic activities, thereby contributing to economic growth.

Recent evidence from Ul Mustafa et al. (2022), which utilizes a combination of Granger causality testing and machine learning tools, further underscores the methodological complexity of the social spending – growth nexus. Their empirical reassessment across EU and OECD countries confirms that the impact of public social expenditures on GDP growth varies significantly depending on the type of expenditure and country-specific characteristics. These findings underscore the importance of disaggregated analyses, particularly in the context of post-transition economies, where structural conditions and policy environments diverge significantly.

The ILO and the International Trade Union Confederation (ITUC) (2021) analyzed the impact of investments in social protection on GDP in a group of eight heterogeneous countries. The study's results indicated that investing 1% of GDP in social protection has a multiplier effect on GDP, ranging from 0.7 to 1.9, implying that each of the analyzed countries achieved a return on investment. Certain economies have also seen direct economic benefits. Mathers & Slater (2014) analyzed the triple role of allocations for social protection on economic growth, observing this at the micro, meso and macro levels. The obtained results showed that a higher level of allocations for social protection contributes to household productivity and increases individuals' participation in the labor market, which stimulates economic growth. Additionally, at the micro level, the multiplicative effect of higher population consumption on macroeconomic performance can be observed.

Using Granger causality tests, Khan & Bashar (2015) analyzed the relationship between social expenditures and sustainable economic growth in Australian and New Zealand samples, aiming to ascertain how rapidly growing ASEAN economies can further boost their economic growth. The results obtained from a sample that included annual data from 1980 to 2012 indicate that social expenditures have had a direct impact on the economic growth of the analyzed group of countries. Focusing on the group of 18 OECD countries, Alper & Demiral (2016) also concluded that the application of the Feasible generalized least squares method shows that expenditures for social protection in all three dimensions (education, health and social spending) contribute significantly to economic growth.

The situation in the scientific field becomes even more complex when an additional analysis of individual categories of social protection expenditure is included in the equation. Arjona et al. (2003), through research conducted on a sample of 21 OECD countries using data from 1970 to 1998, conclude that the impact of social spending on GDP depends on the structure of social expenditure. Namely, they promote the idea of active social spending, which refers to policies aimed at the labor market and employment, as well as family protection, that can contribute positively to social and economic growth, unlike other categories of social protection.

When reviewing the literature, one additional important aspect related to the effect of decentralizing social protection expenditures should not be overlooked.

Namely, in their research, Ezcurra & Rodriguez-Pose (2011) analyzed the impact of decentralizing expenditures for social protection on economic growth in a group of 20 OECD countries. The results confirm that a higher degree of decentralization of this type of expenditure contributes positively to economic growth.

According to empirical research, in the Visegrad Group and the Benelux countries, the growth of expenditure on social protection has had a dual effect on GDP (Piekut & Rybaltowicz, 2024). A higher degree of social security encourages personal consumption, a critical component of economic growth, and reduces inequality. However, excessive expenditure in this sector can create unsustainable fiscal pressure, which reduces the funds available for investments in sectors that achieve higher rates of return. Finding a balance is the key to achieving stable economic growth rates. A key question in the realm of scientific knowledge is whether it is more effective to combat social inequality by promoting economic growth or increasing expenditures on social protection. A study analyzing 28 EU countries suggests that there is no linear relationship between higher expenditures on social protection and the reduction of inequality at the national level (Fonayet et al., 2020).

Empirical evidence from the CEE region remains limited. Notable exceptions include Afonso & Jalles (2015), who, using panel data for CEE countries, find that the impact of public spending on growth depends on its composition and the institutional quality of the economy. Similarly, Koczan (2015) highlights that redistributive spending in post-transition economies yields mixed results, depending on the labor market structure and social policies.

Despite the growing body of literature on the nexus between social protection and economic growth, empirical studies remain fragmented and often rely on standard panel methods, overlooking the dynamic nature of these relationships. This gap is particularly relevant given the heterogeneity of post-transition economies and the complexity of their fiscal dynamics. Moreover, while many studies emphasize the redistributive role of social protection, far less attention has been paid to its potential efficiency-enhancing effects through human capital investment and macroeconomic stabilization. To address this shortfall, the present study applies a dynamic econometric framework to examine both short- and long-term effects of budget composition on economic growth, with a specific focus on social protection expenditures. By doing so, it aims to provide more nuanced insights into the fiscal-growth relationship within the CEE context.

DATA AND METHODOLOGY

In terms of location, the research implementation was defined based on a sample of 11 countries from Central and Eastern Europe, namely: Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. The selection of Central and Eastern European (CEE) countries is motivated by their shared characteristics as post-socialist transition economies that have undergone substantial institutional, fiscal and structural reforms over the past three decades. These economies provide a unique testing ground for assessing the role of public spending composition in growth dynamics, given their varied pace of convergence, EU accession timelines, and differing approaches to social protection. Their common historical legacies, yet diverse reform outcomes, make them particularly relevant for comparative empirical analysis. The data and necessary information were collected from secondary

sources using publicly available databases from the World Bank, the International Monetary Fund, and Eurostat. From a frequency perspective, the data is annual, and in terms of time, the analysis spans the period from 2000 to 2022. The time frame from 2000 to 2022 was chosen to capture the whole trajectory of post-transition economic consolidation, EU integration and significant global shocks affecting the region, including the 2008–2009 financial crisis, the European debt crisis, and the Covid-19 pandemic. This period allows for analysis of both pre- and post-crisis dynamics, providing a comprehensive overview of fiscal-growth interactions in a changing institutional context.

The next step in the analysis was defining the appropriate methodology. Given that the goal was to examine how, not only in the short term but also in the long term, the structure of budget spending on different functions contributes to economic growth, a decision was made to choose the Autoregressive Distributed Lag model (ARDL). It is an approach that enables analysis of the relationship dynamics between the analyzed variables, even when they are integrated across different rows. The approach is widely used in macroeconomic research because it enables the identification of realities that emerge over both short and long periods. Starting from the research subject defined in our work, the primary goal was to distinguish between short-term and long-term effects, especially given that the review of the literature revealed disagreement concerning the conclusion regarding the interdependence of the influence of the analyzed phenomena. The choice of the PMG estimator, developed by Pesaran, Shin and Smith (1999), is particularly appropriate for this study due to the heterogeneous nature of CEE economies. It enables country-specific short-run dynamics while imposing homogeneity on long-run coefficients, allowing for both flexibility and comparability. The ARDL-PMG framework has been widely applied in macroeconomic analyses involving fiscal variables, as seen in studies such as Samargandi et al. (2015) and Loizides & Vamvoukas (2005), further supporting the methodological fit for this research design.

In accordance with Pesaran et al. (1999), the ARDL (p, q) model, including the long-term relationship between variables, is as follows:

$$\Delta Y_{l,it} = \alpha_{li} + \gamma_{li} Y_{l,it-1} + \sum_{l=2}^{k} \gamma_{li} X_{l,it-l} + \sum_{j=1}^{p-1} \delta_{lij} \Delta Y_{l,it-j} + \sum_{j=0}^{q-1} \sum_{l=2}^{k} \delta_{lij} X_{l,it-j} + \varepsilon_{l,it} \quad (1)$$

where Y_l is the dependent variable and X_l is the exogenous variable, with $l = 1,2,3,4,5,6$. $\varepsilon_{l,it}$ is the error term, and Δ is the first difference operator.

Given that the goal of the work is to analyze budget spending, that is, to answer the question of how specific segments in the structure of budget spending contribute to economic growth, the list of variables used in the analysis is presented in the following table. In this context, the classification of government expenditure follows the COFOG (Classification of the Functions of Government).

Table 1
Variables

Variable name	Abbreviation	Abbreviation – log values	Source
GDP growth (annual %)	g	lg	Eurostat
COFOG – Transport – % of GDP	tran	ltran	Eurostat
COFOG – General public services – % GDP	gps	lgps	Eurostat
COFOG – Defence – % GDP	def	ldef	Eurostat
COFOG – Agriculture, forestry, fishing, and hunting – % of GDP	agr	lagr	Eurostat
COFOG – Social protection – % of GDP	social	lsocial	Eurostat

Source: Author's representation.

The GDP growth rate is the primary dependent variable. In contrast, the independent variables include budget spending segments in various sectors, such as transport, general public services, social protection, and defense, as well as agriculture, forestry, fishing and hunting. All variables are given as percentage values of GDP. GDP growth refers to the annual growth rate of real GDP per capita, measured in constant 2015 U.S. dollars, in line with World Bank methodology. The selection of the five expenditure categories listed in Table 1 was guided by a review of prominent empirical studies that disaggregate public spending. For instance, Alper & Demiral (2016) offer a structured overview of categories commonly employed in fiscal-growth models, many of which overlap with our selection. Other studies, such as those by Moreno-Dodson (2008), Gupta et al. (2005) and Devarajan et al. (1996), also highlight the economic implications of sectoral expenditures, particularly in transportation, defense and social services. Rather than aiming for exhaustiveness, this study adopts a focused analytical framework designed to capture both productive (e.g., transport, agriculture) and redistributive (e.g., social protection) dimensions of fiscal policy. The chosen categories reflect a balance between theoretical relevance, policy salience and empirical precedence in the literature. Our selection thus ensures interpretability while maintaining methodological rigor and cross-country comparability.

Although the dataset is complete, it constitutes an unbalanced panel due to the presence of a small number of missing observations for specific countries or years. Nonetheless, these omissions are limited in scope and do not significantly affect the consistency or reliability of the empirical analysis. Standard econometric practice in macroeconomic panel research was followed, including the logarithmic transformation of variables and the application of descriptive statistics, as shown below.

Table 2
Descriptive statistics

Variable	Obs	Mean	Std. dev.	Min	Max
lg	253	2.4040	0.3616	0.1989	3.3958
ltran	249	1.1173	0.3199	0.1823	1.9741
lgps	253	1.6094	0.2860	1.0296	2.4159
lsocial	253	2.6079	0.1814	2.0669	2.9755
ldef	253	0.2689	0.3161	-0.5108	1.1632
lagr	249	-0.3845	0.4509	-1.6094	0.9555

Source: Authors' calculation.

Table 3 presents the correlation matrix among the explanatory variables. The coefficients are generally low, suggesting that multicollinearity is unlikely to pose a serious problem in the estimations.

Table 3
Correlation matrix

Variable	lg	ltran	lgps	lsocial	ldef	lagr
lg	1					
ltran	0.1455	1				
lgps	0.1766	0.0360	1			
lsocial	0.4168	0.0317	0.4514	1		
ldef	-0.0468	-0.2102	-0.2764	-0.1439	1	
lagr	-0.0179	-0.0940	0.0098	-0.1601	0.1705	1

Source: Authors' calculation.

Prior to the implementation of panel unit root testing, cross-sectional dependence was assessed using the Pesaran CD test (Pesaran, 2015). This step is crucial as it informs the appropriate choice between first generation and second-generation panel unit root tests. The results presented below indicate the presence of cross-sectional dependence for most variables, thus justifying the application of the CADF test, which accounts for such dependencies.

Table 4
Pesaran's CD test

Variable	CD-test	p-value	average joint T	Mean ϱ	mean abs(ϱ)
lg	21.583	0.000	23.00	0.61	0.61
ltran	1.867	0.062	22.38	0.05	0.36
lgps	6.049	0.000	23.00	0.17	0.37
lsocial	11.609	0.000	23.00	0.33	0.47
lagr	15.579	0.000	22.38	0.44	0.46
ldef	5.282	0.000	23.00	0.15	0.39

Source: Authors' calculation.

Following the confirmation of cross-sectional dependence, the Pesaran CADF (Pesaran, 2007) unit root test was applied to assess the stationarity of the variables at both the level and the first difference.

Table 5
Pesaran CADF test

Variable	Z (t-bar)	P value
lg	0.062	0.525
d(lg)	-6.666	0.000
ltran	-1.059	0.145
d(ltran)	-5.522	0.000
lgps	1.282	0.900
d(lgps)	-4.452	0.000
lsocial	1.564	0.941
d(lsocial)	-2.984	0.001
lagr	-1.533	0.063
d(lagr)	-5.999	0.000
ldef	-0.738	0.230
d(ldef)	-5.603	0.000

Source: Authors' calculation.

From this previous analysis, we notice that the time series for each of the variables is non-stationary at the level but becomes stationary by transformation or differentiation, i.e., they are all integrated of order 1. This confirms the correctness of the econometric approach, indicating that, in this particular case, the ARDL approach is suitable for analyzing both short-term and long-term relationships between the variables.

The subsequent step involved performing a cointegration Kao test to assess the long-run relationship between the variables.

Table 6
Kao test for cointegration

	Statistic	p-value
Modified Dickey-Fuller t	-14.6579	0.0000
Dickey-Fuller t	-10.9057	0.0000
Augmented Dickey-Fuller t	-6.9246	0.0000
Unadjusted modified Dickey-Fuller t	-16.8186	0.0000
Unadjusted Dickey-Fuller t	-11.1085	0.0000

Source: Author's calculation.

The results show very low statistical test values, indicating a firm rejection of the null hypothesis of no cointegration. This indicates that there is cointegration between the variables in the model, meaning a long-term relationship exists between them. This confirms the thesis that the ARDL approach can be used to model long-term and short-term effects.

To ensure the robustness of the cointegration analysis, the Pedroni (1999) test was also applied. Unlike the Kao test, the Pedroni test allows for heterogeneity in the cointegrating vector across panel units and is well-suited for panels with potential structural diversity. The test results are presented in the table below.

Table 7
Pedroni test for cointegration

	Statistic	p-value
Modified Phillips–Perron t	1.0763	0.1409
Phillips–Perron t	-7.5003	0.0000
Augmented Dickey–Fuller t	-7.0368	0.0000
Modified variance ratio	-1.9792	0.0239
Modified Phillips–Perron t	0.0658	0.4738
Phillips–Perron t	-6.6887	0.0000
Augmented Dickey–Fuller t	-6.7103	0.0000

Source: Authors' calculation.

The majority of the test statistics reject the null hypothesis of no cointegration, supporting the existence of a long-term relationship between the variables. These findings are consistent with the Kao test results and further validate the use of the ARDL model in this study.

The ARDL model can be formulated as follows:

$$\Delta \ln gdp_{it} = \alpha_{1i} + \varphi_{1i} \sum_{j=1}^{p} \Delta \ln gdp_{it-j} + \varphi_{2i} \sum_{i=0}^{q} \Delta \ln tran_{it-j} + \varphi_{3i} \sum_{i=0}^{q} \Delta \ln gps_{it-j} + \varphi_{4i} \sum_{i=0}^{q} \Delta \ln def_{it-j} + \varphi_{5i} \sum_{i=0}^{q} \Delta \ln agr_{it-j} + \varphi_{6i} \sum_{i=0}^{q} \Delta \ln soc_{it-j} + \lambda_{1i} \ln gdp_{it-1} + \lambda_{2i} \ln tran_{it-1} + \lambda_{3i} \ln gps_{it-1} + \lambda_{4i} \ln def_{it-1} + \lambda_{i5} \ln agr_{it-1} + \lambda_{i6} \ln soc_{it-1} + \varepsilon_{lit} \quad (2)$$

where i=1,…, N denotes the country, and t=1, …, T denotes time period. Δ represents operator difference, while $\lambda_1, \lambda_2, \lambda_3$, λ_4 and λ_5 represent the coefficients of long-term impact, p and q denote the maximum number of lags and ε_{lit} is the error term.

In the third step, we obtain the short-term dynamic relationship by estimating an error correction model (ECM). The ECM is defined as follows:

$$\Delta Y_{l,it} = \alpha_{li} + \sum_{j=1}^{p-1} \beta_{lij} \Delta Y_{l,it-j} + \sum_{j=0}^{q-1} \sum_{l=2}^{k} \beta_{lij} X_{l,it-j} + \mu_{li} ETC_{l,it-1} + \varepsilon_{l,it} \quad (3)$$

where the residuals $\varepsilon_{l,it}$ are independent and normally distributed with zero mean and constant variance, and $ETC_{l,it-1}$ is the error correction term defined by the long-term relationship. The parameter μ indicates the speed of adjustment to the equilibrium level.

In addition, if GDP is the dependent variable, using the example of Attiaoui et al. (2017), the ECM model is as follows:

$$\Delta \ln gdp_{it} = \alpha_{li} + \sum_{j=1}^{p-1} \beta_{1ij} \Delta \ln gdp_{it-j} + \sum_{i=0}^{q-1} \beta_{2ij} \Delta \ln tran_{it-j} + \\ + \sum_{i=0}^{q-1} \beta_{3ij} \Delta \ln gps_{it-j} + \sum_{i=0}^{q-1} \beta_{4ij} \Delta \ln def_{it-j} \\ + \sum_{i=0}^{q-1} \beta_{5ij} \Delta \ln agr_{it-j} + \sum_{i=0}^{q-1} \beta_{6ij} \Delta \ln soc_{it-j} + \\ + \mu_{li} ETC_{l,it-1} + \varepsilon_{lit} \quad (4)$$

Results and Discussion

By specifying the model and performing calculations using the Stata software tool, the following results were obtained:

Table 8
PMG model results

D. lg	Coefficient	Std. err.	Z	P> |z|
Long Run				
ltran	0.1736	0.0632	2.74	0.006
lgps	0.1246	0.0853	1.46	0.144
lsocial	1.5770	0.1475	10.69	0.000
ldef	-0.2119	0.0538	- 3.94	0.000
lagr	-0.0331	0.0386	- 0.86	0.390
Short Run				
_ec	-1.0331	0.0625	-16.54	0.000
ltran	-0.0300	0.1194	-0.25	0.802
lgps	0.1872	0.3710	0.50	0.614
lsocial	2.3589	0.4356	5.42	0.000
ldef	0.2474	0.1246	1.99	0.047
lagr	0.1065	0.0763	1.40	0.163
_cons	-2.1366	0.1649	-12.96	0.000

Source: Authors' calculation.

The source presented below indicates no significant heterogeneity of long-term effects among the panels; that is, the value of the statistic is not significantly higher than 0.05. This implies that rejecting the null hypothesis is not possible and that the PMG estimator is both consistent and efficient in conducting the analysis.

Table 9
Hausman test

Variables	(b-B) Difference	Sqrt(diag (V_b-V_B)) Std. err.	P value (Prob>chi2)
ltran	-0.2124	0.3515	
lgps	-0.1215	0.7503	
lsocial	0.1931	0.5144	
ldef	0.1185	0.7323	
lagr	0.1088	0.1883	
Chi2(5)			2.48
Prob>chi2			0.7800

Source: Authors' calculation.

The allocation of budget funds in the agriculture, forestry and fishing sectors has no significant impact on the economic growth rates of the analyzed group of CEE countries, neither in the short nor the long term. A similar pattern is observed in the case of general public services. Interesting results were obtained within the category of spending in the national defense sector. In the short term, spending in the national defense sector has a positive contribution to economic growth. Nevertheless, in the long term, the growth of government spending harms the macroeconomic performance of the analyzed CEE group. This also corresponds with the findings of Rahman & Siddiqui (2019), who applied the GMM method on a sample of 85 countries, concluding that higher spending on defense harms economic growth because less money remains available for investments in other sectors such as infrastructure, education and the health system. When it comes to investing in the transport sector, the model presented in the paper indicates that this type of investment has no impact on economic growth in the short term.

Transport expenditures exhibit a time-dependent impact on economic growth: while the short-run effect appears statistically insignificant, the long-run effect is both significant and positive. These

findings are based on economic theory, which considers that the increase in public fixed funds, resulting from the moderating factor, creates preconditions for long-term growth and development. Adequate transport policies and development positively impact economic growth, particularly among the most developed countries in the world (G20), according to research by Pradhan (2019). Investments in the transport sector play a significant role in the direct development of economic activities, as the costs associated with the location of business activities are a fundamental indicator of economic growth and development (Maparu et al., 2017).

What is particularly interesting, however, is that the social protection variable, both in the short and the long term, makes a significant positive contribution to the GDP of the analyzed group of CEE countries.

Table 10 presents a robustness check of the previously estimated ARDL model, using two alternative estimators: Fully Modified Ordinary Least Squares (FMOLS) and Dynamic OLS (DOLS). Both estimators confirm the main findings from the ARDL model. The variables ldef, lndef, and lsocial remain statistically significant and retain the same signs across both methods, reinforcing the stability and reliability of the initial long-run estimates.

What do these results show us regarding economic theory and previous empirical research? Social protection through programs such as pensions, healthcare and compensation for unemployed persons increases an individual's income. This way, it directly affects consumption, especially among the lower-income strata of the population. From a theoretical perspective, they have a greater propensity to spend, which affects the shift in the aggregate demand curve and, consequently, GDP growth. From an economic perspective, these results reflect the role of social protection in sustaining consumption during downturns, thus stabilizing aggregate demand. This channel of influence is especially relevant in CEE economies, where social vulnerabilities remain pronounced and domestic demand is a key driver of GDP growth. These results are consistent with the findings of Lindert (2004), who emphasizes that social spending contributes to economic stability, and Šućur (2016), who highlights the developmental impact of well-structured social protection systems.

Additionally, a robust social protection system contributes to reduced social inequality and increased cohesion, which in turn leads to economic and political

Table 10
Robustness Check Using FMOLS and DOLS Estimators

Method: Panel Fully Modified Least Squares (FMOLS)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ldef	-0.1762	0.0698	-2.5266	0.0122
lsocial	1.8466	0.1696	10.8860	0.0000
ltran	0.1869	0.0824	2.2691	0.0242
Method: Panel Dynamic Least Squares (DOLS)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ldef	-0.2730	0.0963	-2.8339	0.0055
lsocial	2.0472	0.2174	9.4186	0.0000
ltran	0.3071	0.1086	2.8269	0.0056

Source: Authors' calculation.

stability. Economic stability is a key step in attracting foreign direct investments. In support of this, the ILO (2019) research indicates that, particularly in countries with higher levels of institutional development, social protection positively contributes to economic growth.

Investments in the social protection system also contribute to increases in human capital, that is, to greater resource utilization, which contributes to economic growth. In that regard, the OECD (2024) report emphasizes that sustained social protection systems, when adapted to emerging megatrends and financed sustainably, play a critical role in enabling inclusive and resilient economic structures.

A narrative often creates the impression that social protection is a category which only represents a burden because its quantitative contributions to economic growth are not very visible and prominent. That is why economic decision-makers often favor investments exclusively in infrastructure and/or sectors that quickly reject higher rates of economic growth, neglecting the indirect effects of the social protection system. Research conducted in North Macedonia also showed that over the last decade, there have been tendencies to reduce social benefits and move toward neoliberalization. This can also be linked to negative tendencies, such as reduced aggregate demand and social cohesion, which have long-term implications for economic growth (Ollogu, 2024). Social protection systems are not unambiguously defined and are not adequately taken into account when analyzing costs and benefits. The need to quantify the results goes beyond the indirect qualitative effects on society.

On the other hand, investments in policies that promise immediate economic returns on invested funds are easier to measure and more visible, which can be very significant in the sphere of political cycles and the state phase. Finally, the neoliberal system of understanding the economy and economic flows also tends to diminish the role of state investments, focusing instead on the market and market processes. Probably driven by an inadequate social protection system, economic decision-makers are specifically instructed to give it a cost character. Tamai (2023) noted in his work that specific systems of social design for social protection can positively affect economic growth, while others can have a deteriorating effect. This is a danger in countries with a lower level of institutional development, where socio-economic circumstances and the political moment can influence decisions that are neither based on economic logic nor the direct or indirect effects of economic well-being.

What do these results tell us from the perspective of the specific group of CEE countries? In the CEE group of countries, a significant portion of the population, due to the ongoing transition processes, still relies on the social protection system. These transfers have multiplier effects on economies, as they stimulate aggregate demand and enable greater inclusion of the population. Negative demographic tendencies also characterize these countries. Population decline, emigration, and population aging demonstrate the significant impact of social protection on economic flows and processes over time, highlighting its crucial role in maintaining social stability. However, although the results are currently adequate, decision-makers should be cautious regarding macro-fiscal stability and cost optimization. More social protection should be linked with support for employment, reduced administrative costs, and increased availability of services. The negative economic trends pose a challenge to the sustainability of pension systems.

CONCLUSION

In the area of economic analysis and politics, the question of the structure of budget spending and the allocation of public funds occupies a central place in debates among scientific economists and the general public. Although the topics vary concerning different aspects of budget spending, the question of the effects of the social protection system and its impact on economic growth has remained the subject of disagreement among the scientific community for an extended period of time. While some argue that it is predominantly a limiting factor of economic growth, others contend that it has a supportive influence.

In this paper, the impact of the budget spending structure in 11 Central and Eastern European countries is analyzed using the ARDL approach and the PMG estimator to assess the short-term and long-term effects of social protection on the economic growth rate. The results indicate that allocations for social protection, both in the short and long term, have a significant impact on economic growth rates. The background of the results tells us that in this group of specific transition economies, transfers for social protection enabled the stabilization of aggregate demand, especially in periods of crisis, and that the redistributive role of this system contributed to the reduction of inequality and the increase in the size of the population that, at least through the character of its consumption, participates in economic activities. Demographic changes and the challenges of constant economic crises indicate that in the coming period, care must be taken to ensure fiscal sustainability. Social protection programs should be directed more towards the labor market to encourage employment and focus on activities that directly strengthen the health sector and the population's education, while also indirectly promoting increased productivity and inclusiveness in economic growth.

Based on the obtained results, several policy directions can be proposed. First, since social protection expenditures show a consistent positive effect on economic growth, particularly through stabilizing aggregate demand, fiscal policies should prioritize employment-focused programs. This includes active labor market measures, job training and activation schemes, especially in countries with high unemployment and numerous vulnerable groups. Furthermore, the link between education, healthcare and long-term productivity should inform budget allocations, with an emphasis on inclusive and sustainable growth.

Additionally, given demographic shifts and economic vulnerabilities, fiscal sustainability must be ensured. Reforms in social protection systems should safeguard their redistributive and stabilizing roles while maintaining financial viability. Considering the diverse institutional and economic conditions among CEE countries, tailored approaches that reflect national specificities, such as labor market dynamics and administrative capacities, are essential. These findings underscore the need for targeted, efficient and context-sensitive public spending strategies to maximize growth effects.

The limitations of the conducted research indicate that as the data pertain to 11 CEE countries, it would be beneficial to include other groups in the analysis, particularly developed countries, for comparative purposes. Additionally, the analysis utilized data on total allocations for the social protection sector, rather than specific categories. In this context, the recommendation for future research would be that it is necessary to analyze how different components within the system of social protection expenditure affect the

macroeconomic performance of the analyzed group of countries. Future studies could benefit from disaggregated analysis of subcategories within social protection (e.g., pensions, healthcare, family benefits) and comparative research, including both CEE and Western European countries, using panel methods that account for structural breaks or nonlinearities.

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Sažetak

PRIVREDNI RAST I SASTAV PRORAČUNA: UTJECAJ POTROŠNJE NA SOCIJALNU ZAŠTITU U PRIVREDAMA CENTRALNE I ISTOČNE EUROPE

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Ovaj rad bavi se ispitivanjem odnosa između strukture budžetske potrošnje i privrednog rasta, s posebnim fokusom na izdvajanja za socijalnu zaštitu u državama Centralne i istočne Europe (CIE). Odsustvo suglasja u znanstvenoj zajednici o direktnim i/ili indirektnim ekonomskim efektima socijalne zaštite na privredni rast potaklo je primjenu metodološkog okvira zasnovanog na modelu Autoregressive Distributed Lag (ARDL), uz korištenje procjene Pooled Mean Group (PMG), kako bi se analiziralo kratkoročne i dugoročne efekte u panelu od 11 država CIE za period 2000.–2022. Rezultati modeliranja pokazuju da kako u kratkom, tako i u dugom roku, izdvajanja za socijalnu zaštitu značajno pozitivno doprinose BDP-u država CIE. Ključni mehanizmi preko kojih se prelijeva pozitivan utjecaj su rast agregatne potražnje, smanjenje nejednakosti i jačanje produktivnosti kroz veća ulaganja u ljudski kapital. Specifičnost analiziranih tranzicijskih država i demografski izazovi ukazuju na to da su socijalni transferi dominantno igrali ulogu stabilizacijskih faktora. S obzirom na ograničen broj studija koje razmatraju funkcionalnu kompoziciju javne potrošnje u post-tranzicijskim europskim privredama, ovo istraživanje donosi nove empirijske uvide u ulogu socijalne potrošnje u strategijama rasta. Preporuke za javne politike idu u pravcu osiguravanja održivog sustava javnih financija, uz fokus na produktivnoj socijalnoj zaštiti koja je usklađena s potrebama tržišta rada.

Ključne riječi: socijalna zaštita, ekonomski rast, zemlje Centralne i istočne Europe (CIE).