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MILITARY EXPENDITURE, POLITICAL STABILITY AND ECONOMIC GROWTH IN THE WESTERN BALKAN COUNTRIES

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The Western Balkan countries have invested considerable resources in order to achieve peace, establish political stability and sustain economic growth. This study aims to empirically assess the impact of military expenditure on economic growth in a panel of five Western Balkan countries from 2001 to 2022. The research uses a panel autoregressive distributed lag (ARDL-PMG) model to estimate the short-run and long-run relationships between the variables of interest. In addition, the fully modified least squares method is applied to ensure the reliability of the findings. A positive relationship was identified between military spending, and economic growth. The results strongly indicate that military expenditure is beneficial for economic growth. The empirical findings of the study provide support for the view that policymakers should increase investment in the military defense sector so as to contribute to economic growth.

Keywords: military expenditure, economic growth, panel, Western Balkans, ARDL-PMG

JEL Classification: C50, H56, 011

INTRODUCTION

The study of the economic and social impacts of military expenditure and political risks remains a fascinating and important field of research in defense economics. One of the basic issues every country is faced with regardless of its development is how to preserve its security and perform the optimal allocation of resources for military purposes. It attracts considerable attention from politicians, economists, military and security structures, as well as researchers in the field of defense and security economics. According to traditional reasoning, military and security expenditures represent a financial burden and, first of all, a burden for underdeveloped economies. There is always a possibility of resource allocation imbalances, with a greater emphasis on increasing combat readiness and defense investments over investments in education, health, or research and development activities. These sectors, which include investments in human capital, are crucial for long-term economic growth and create the basis for socio-economic development.

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It is broadly accepted that, in an unstable region, including the Western Balkans, some countries deliberately allocate increased parts of their limited economic resources for non-productive purposes in the form of investments in the military and security. In the absence of international cooperation to alleviate political pressure, military expenditure may escalate within the Balkans as each country tends to outdo its neighbors in order to protect its security, which results in an overall increase in regional defense spending with a diversified impact on overall security. There are various mechanisms through which increased military expenditure can have an impact on economic growth performance. Any initial increase in defense and security spending potentially reduces current resources, which are allocated to other uses in the domestic economy. The primary economic goals of both underdeveloped and developed countries are to achieve long-term sustainable economic growth and prosperity.

There is a significant body of research in the economic implications of military expenditures. However, there is no consensus on whether military spending is beneficial or detrimental to economic growth. One of the starting points in the literature is the Keynesian perspective, according to which military expenditure is justifiably treated as a component of government spending. Government expenditures are a part of the aggregate demand that the government can stimulate with its measures in the short-term determination of income (Obradović & Lojanica, 2019). Some relatively recent studies have consistently found the evidence consistent with the Keynesian perspective on the positive impact of military expenditure on a country's total output (Khalid & Noor, 2018; Raju & Ahmed, 2019).

Figure 1 shows the analysis of the trend of military expenditure in the Western Balkan countries. Military expenditure is stated in the current value of US dollars. The trend analysis indicates a significant increase in the expenditures and significantly higher expenditures for defense from 2001 to 2022 in the case of Serbia. There is also a consistently sustainable share of defense allocations for all the other countries, which has been in a slight increase during the beginning of this decade.

This study primarily aims to conduct an objective analysis and objectively quantify the effects of military expenditure on economic growth in a panel of Western Balkan countries. All the sample countries were assumed to have comparable attributes. This study contributes to the growing body of research in

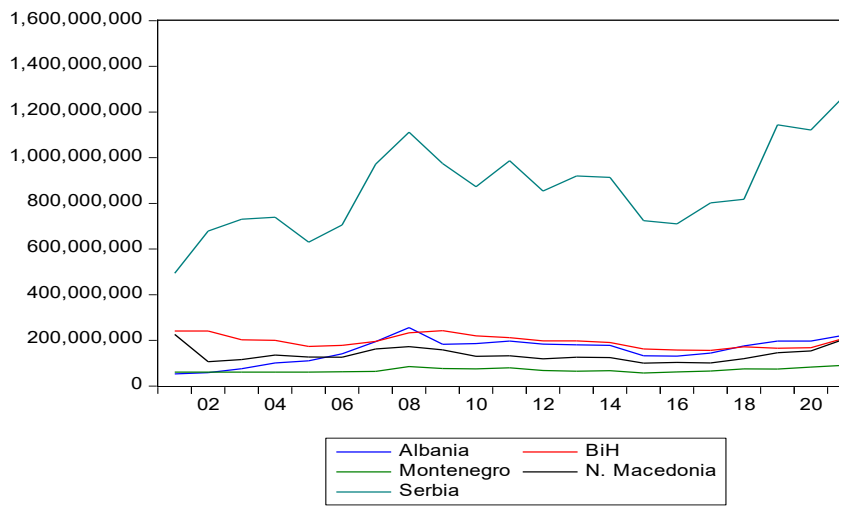

Figure 1 The trends in the military expenditure for the period from 2001 to 2022 in the Western Balkan countries

Source: Author

the impact of defense spending on economic growth in several ways. The research examines the impact of military expenditure and political (in)stability in relation to economic performance for a group of 5 non-EU countries, where there was a significant increase in the military expenditure during the investigated period. None of the current studies address this group of non-EU countries in this line of inquiry.

In the study, the panel ARDL-PMG technique was used as the key, and the methodology of unit root tests was implemented in order to ensure the reliability and accuracy of the results. In addition, the modified least-squares method is used to identify the relationships between the variables. Additionally, this model is used to prevent any potential errors in specifying the equations of significance. Finally, this study represents an attempt to thoroughly understand the complex situation in the Balkans from another angle. Therefore, the lack of information through such research is overcome, which increases the body of the knowledge about the impact of military expenditure on economic growth. The subject matter of this research study is the primary examination of the impact of military expenditure on economic growth in the Western Balkan countries, with a special focus on the identification of the long-term and short-term effects in the period from 2001 to 2022.

The hypotheses tested in the paper are as follows:

The basic hypothesis H1: Military expenditure has a positive and statistically significant impact on economic growth in the Western Balkan countries, especially in the long run.

Auxiliary H1: There is a long-term equilibrium (cointegration) relationship between military expenditure and economic growth.

Auxiliary H2: The impact of military expenditure on economic growth differs in the short run and in the long run.

Auxiliary H3: Political stability has a positive and statistically significant effect on economic growth.

The rest of the paper is structured as follows: After the literature review, the third part focuses on the practical approach and data analysis techniques, including the findings obtained through the empirical research and a subsequent analysis and interpretation. The last section is the conclusion of the research procedure.

LITERATURE REVIEW

Multiple studies have been conducted so far to empirically confirm the relationship between the variables of interest applying different models, estimation methodologies, country samples and data periods. Different types of government spending have different effects on economic growth. Public infrastructure, research and development activities, as well as education, are usually considered the public goods that contribute positively to economic growth, which is basically consistent with endogenous growth theories (Aschauer, 1989; Barro, 1990; Morrison & Schwartz, 1996). Conversely, there is also a hypothesis that some government spending increases, especially in non-productive areas, leading to a decrease in the output growth. S. Devarajan, V. Swaroop and H. F. Zou (1996) conducted a study to model the relationship between different components of government expenditure, taking into account their initial share. They found a positive correlation between the current government spending and economic growth. However, they also found that the physical capital components of government spending had a negative impact. Although the theory emphasizes the importance of productive government investment in achieving a better stable growth rate of the economy, some evidence does not support this relationship. This hypothesis is supported by the observations of G. Glomm and B. Ravikumar (1997). According to S. Deger and S. Sen (1995), if the burden in the form of military expenditure is a small share of the total economy, it is possible to have benefits that exceed the costs and result in a positive impact on the growth rate.

Military spending has a significant impact on economic growth through a variety of possible pathways. A study by O. R. Lobont, O. R. Glont,

L. Badea and S. Vatavu (2019) found that military expenditure had several beneficial effects on capital, labor, economic growth, and an efficient use of the existing resources in the overall economy. H. S. Atesoglu (2002) found a strong and positive correlation between the military spending and the total economic output in the United States between 1947 and 2000. C. Borch and M. Wallace (2010) found that the states with higher levels of military spending were better equipped to mitigate the negative effects of economic downturns compared to the states with lower levels of military spending in 49 US states from 1977 to 2004. When there is a decrease in aggregate demand compared to expected supply, an increase in military expenditure generally leads to higher capacity utilization, increased profitability, and subsequently to improved investment and the overall output (Faini, Annez & Taylor, 1984). In their study, M. A. Khalid and Z. M. Noor (2018) found a direct positive relationship between military spending and economic growth in 67 developing countries from 2002 to 2010. J. Malizard (2010) discovered a reciprocal causal relationship between military expenditure and economic growth in France from 1960 to 2008. M. R. Farzanegan (2014) found the evidence that military expenditure had a beneficial effect on economic growth in Iran from 1959 to 2007. In their empirical study, P. K. Narayan and B. Singh (2007) confirmed ta Granger causal relationship between defense spending and exports, and between exports and national income (GDP), which suggests that defense spending indirectly affects national income in the short run. An empirical analysis conducted by J. Yildirim, S. Sezgin and N. Öcal (2005) finds that military expenditure has a positive impact on the national GDP of the Middle Eastern countries and Turkey during the period between 1989 and 1999.

On the other hand, increased military spending may tend to reduce economic productivity as it diverts more revenue to cover military-related costs. Contrary to the basic hypothesis, a part of the literature starts from the assumption that military expenditure can harm economic growth due to the crowding-out effect, which represents an alternative theoretical framework. R. Faini *et al* (1984) found that the countries with higher military burdens experienced slower economic growth between 1952 and 1970. Specifically, a 10% increase in military spending resulted in a 0.13% loss in annual economic growth. This forces the government to raise taxes or borrow money from the capital market so as to keep the budget under control. This alternative is harmful to economic development as it leads to an increase in interest rates, a fall in investment and consumer demand, and inhibits economic growth (Borch & Wallace, 2010). In their study, C. Shaaba Saba and N. Ngepah (2019) found a causal relationship between military spending and economic growth in 35 African countries from 1990 to 2015. The researchers found the following patterns: (i) there was no causal relationship between the seven nations; (ii) in two countries, there was unidirectional causality from military expenditure to economic growth; (iii) in 14 countries, there was a unidirectional relationship from economic growth to defense spending, and (iv) in 12 countries, there was a two-way relationship between defense investment and economic growth. In short, the GMM method indicated that military expenditure had a significant negative impact on economic growth in Africa.

C. C. Lee and S. T. Chen (2007) analyzed the long-term causality of the links between defense expenditures and the national GDP using the panel data for 62 non-OECD countries from 1988 to 2003. These countries established bidirectional causality between the observed variables. Similarly, research by J. P. Dunne (2000) shows that military spending does not positively affect economic growth. In fact, it is more likely to have a negative effect. In their study, G. D'Agostino, J. P. Dunne and L. Pieroni (2017) found a significant negative relationship between military expenditure and economic growth in a large panel of countries between 1970 and 2014. T. Klein's (2004) empirical research shows that military expenditure had a detrimental effect on the growth rate in Peru from 1970 to 1996. S. Abu-Bader and A. S. Abu-Qarn (2003) found that military spending hindered economic growth, while civilian spending had a beneficial effect on growth in Egypt, Israel, and Syria during the periods from 1975 to 1998, from 1967 to 1998, and from 1973 to 1998. H. C. Chang, B. N. Huang and C. W. Yang (2011) found that military expenditure had a detrimental effect on economic growth in low-income countries. H. C. Chang *et al* (2011) observed

this effect in a sample of 90 countries from 1992 to 2006. In a study conducted by S. Deger (1986), military expenditure was found to have had a negative impact on economic growth and development in a group of 50 developing countries between 1965 and 1973, which suggests that disarmament undoubtedly represents an opportunity to increase economic performance. Therefore, there is no completely clear evidence that would indicate that defense investments or expenditures of this type contribute to economic growth.

METHODOLOGY AND ESTIMATION STRATEGY

In this research study, the growth equation proposed by R. M. Solow (1956) is used as the basis. The equation includes material capital and labor as inputs for formatting the aggregate production function. The Solow model includes three inputs, namely: capital (K), labor (L), and the total factor productivity (A), where the output is Y. Military expenditure is included in the growth equation of the empirical model, as in the previous study by J. P. Dunne and N. Tian (2013). The economy creates production using certain amounts of labor, capital, and the element of the total factor productivity, within which different elements can be approximated, e.g. from technical progress to the institutional quality of the system. The model can be expressed in its basic form as follows:

$$Y=F(MiEx, Empl, PoSt) \quad (1)$$

This study uses a multivariate model to empirically determine the impact of military expenditure in the current dollar terms (MiEx), along with the other control variables (employment relative to the total population (Empl), the index of political stability (PoSt)) on economic growth in terms of the GDP per capita (GDP) for the Western Balkan countries (Serbia, Montenegro, Bosnia and Herzegovina, North Macedonia, and Albania). The data were taken from the World Bank's website for the period from 2001 to 2022 (World Bank, 2024). The description and origin of the variables are given in Table 1.

Previous research projects, such as those conducted by J. P. Dunne and E. Nikolaidou (2012), O. R. Lobont *et al* (2019) and R. K. Mohanty, S. Panda and B. Bhuyan (2020), and, also used similar growth models that include military expenditure as a proxy for defense investment or military power. The multivariate regression equation used in this study can be represented symbolically as follows:

$$lnGDP_{i,t} = \alpha_0 + \alpha_{mi} lnMiEx_{i,t} + \alpha_{si} lnPoSt_{i,t} + \alpha_{qi} lnEmpl_{i,t} + \varepsilon_{i,t} \quad (2)$$

In the equation with the dependent and independent variables, α symbolizes the coefficients, *ln* is the logarithmic value, $\varepsilon_{i,t}$ is the error expression, while *i* and *t* take values from 1 to 5, i.e. from 1 to 22. The two basic methodological procedures of analysis are applied in the paper: the autoregressive distributed lag technique and the least squares technique.

M. H. Pesaran, Y. Shin and R. P. Smith (1999) introduced the error-corrected pooled mean autoregressive distributed lag (ARDL) analytical model as a new cointegration test. M. H. Pesaran *et al* (1999) found that the panel ARDL method can be

Table 1 The description of the variables

Abbreviation	Variable	Detail	Sources (2024)
GDP	Economic growth	GDP per capita (the current US$)	WDI (World Development Indicators, 2024)
Empl	Employment	Employment to the population ratio, 15+, total (%)	
MiEx	Military expenditure	Military expenditure (the current US$)	
PoSt	Political stability	Political stability and the absence of violence/ terrorism	WGI (Worldwide Governance Indicators, 2024)

Source: Author

used for variables with different levels of integration, whether integrated in order I(0) or in order I(1). A model structured in this way produces reliable coefficients even in the presence of endogeneity. This is because it includes the lagged values of the dependent and independent variables.

$$LnGDPi,t = \alpha_0 + \sum_{j=i}^{p} \alpha_{pi} LnGDP_{i,t-j} + \sum_{j=i}^{q} \alpha_{qi} LnEMPL_{i,t-j} + + \sum_{j=i}^{m} \alpha_{mi}\, LnMiEx_{i,t-j} + \sum_{j=i}^{s} \alpha_{si}\, LnPoSt_{i,t-j} + \varepsilon_{i,t} \quad (3)$$

This study uses the panel ARDL approach in order to investigate the long-term relationship between the variables of interest. Furthermore, the model estimates the impact of military expenditure on economic growth. The error correction model offers an insight into the equilibrium adjustment mechanism in the behavior of the model parameters. This strategy offers the advantage of using a compact Equation (3), as opposed to alternative cointegration approaches. ARDL is particularly helpful for representing both the current and long-term changes inside a unified framework. It enables the analysis of how the variables react to sudden changes in the short run, simultaneously capturing the longer-term equilibrium between them. The ARDL model can be described by a log-linear form, where Δ and ε are the first difference operators and the error terms for white noise, respectively. The coefficient of ECM (β) tells us how quickly the variables come together to form an equilibrium. For a long-term relationship to exist, this coefficient must be statistically significant. The equation can be specified as follows:

$$\Delta lnGDP_{i,t} = \alpha_0 + \sum_{j=i}^{p} \alpha_{pi} \Delta lnGDP_{i,t-j} + + \sum_{j=i}^{q} \alpha_{qi} \Delta lnEMPL_{i,t-j} + + \sum_{j=i}^{m} \alpha_{mi}\, \Delta lnMiEx_{i,t-j} + + \sum_{j=i}^{s} \alpha_{si} \Delta lnPoSt_{i,t-j} + \beta ecm_{t-1} + \varepsilon_{i,t} \quad (4)$$

As an additional econometric verification, Fully Modified Ordinary Least Squares (FMOLS) was used, which provides numerous benefits in comparison to alternative econometric methodologies, particularly when used for time series analysis and the estimation of long-term relationships. The FMOLS method was initially created by P. C. Phillips and B. E. Hansen (1990), and only to be refined later by P. Pedroni (1999) for the method to be applicable to panel data. It is a robust strategy for dealing with linked variables since it considers the endogeneity of regressors and produces consistent estimates of long-term coefficients. Not only does this technique provide efficient and reliable estimates but it also ensures that the results are unaffected by simultaneity biases that may occur throughout the cointegration process. This methodology enables an accurate and streamlined estimation of the cointegration vector. It is crucial to consider this aspect in order to accurately capture the patterns and prevent any distortion in estimations due to possible autocorrelation in the data. This method is recognized for its relatively high efficiency, particularly when dealing with small sample sizes.

DISCUSSION

Table 2 presents the summary, descriptive statistics of the panel data. In addition, the lower part of the table presents the pairwise series correlation results. The results show that all the variables follow a normal distribution, while the mean value of the error term is within the tolerance limits and the finite variance, as is shown by the Jacques-Berra statistic. The correlation analysis reveals that there is a negative relationship between military expenditure and political stability. In contrast, there is a positive relationship between the employment rates and the economic growth, as well as between military expenditure and the basic elements of the production function. The correlation analysis indicates that there is no indication of multicollinearity between the series.

Before applying the basic methodological procedures of panel data analysis, it is essential to determine and understand the integration properties of the observed

variables. Đ. Kotarac and Z. Popović (2025) believe that panel stationarity check tests are necessary to obtain robust results.

First-generation panel unit root tests were employed in this research, specifically those by G. S. Maddala and S. Wu (1999), A. Levin, C.-F. Lin and C.-S. James Chu (2002) and K. S. Im, M. H. Pesaran and Y. Shin (2003). The stationarity-related results obtained in this analysis are shown in Table 3, where one variable is stationary at the level, whereas the others are stationary after the first difference.

For further analysis, T. Breusch and A. Pagan's (1980) and M. H. Pesaran's (2004, 2007) techniques were applied in order to assess the presence of cross-sectional dependence in the panel data. To mitigate the issue of reliance on cross-sectional studies, it is important to consider that it may result in incomplete outcomes. Table 4 presents the findings of the cross-

Table 2 The descriptive statistics and the correlation matrix of the variables

Variables	lnGDP	lnEmpl	lnMiEx	lnPoSt
Mean	8.434	3.703	19.098	3.605
Median	8.517	3.737	18.970	3.610
Max.	9.199	3.970	21.078	4.304
Min.	7.155	3.367	17.790	1.945
Std. dev.	0.465	0.154	0.867	0.366
Jarque - Bera	13.108	6.077	10.263	46.900
Probability	0.001	0.047	0.005	0.000
lnGDP	1.000			
lnEmpl	0.257	1.000		
lnMiEx	0.129	0.136	1.000	
lnPoSt	0.523	0.356	-0.180	1.000

Source: Author

Table 3 The unit root tests

Test	Variables	Level		First difference	
		Stat.	Prob.	Stat.	Prob.
Levin, Lin and Chu t*	lnGDP	-5.742***	0.000	.	.
	lnEmpl	1.171	0.879	-4.246***	0.000
	lnMiEx	0.711	0.761	-2.686***	0.003
	lnPoSt	0.835	0.798	-2.123**	0.016
Im, Pesaran and Shin W-stat	lnGDP	-3.302***	0.000	.	.
	lnEmpl	1.721	0.957	-3.738***	0.000
	lnMiEx	0.250	0.598	-3.130***	0.000
	lnPoSt	0.068	0.527	-5.116***	0.000
ADF – Fisher Chi-square	lnGDP	28.399***	0.001	.	.
	lnEmpl	4.929	0.895	32.521***	0.000
	lnMiEx	7.472	0.680	27.218***	0.002
	lnPoSt	6.959	0.729	43.373***	0.000
PP – Fisher Chi-square	lnGDP	64.534***	0.000	.	.
	lnEmpl	3.024	0.980	47.185***	0.000
	lnMiEx	14.673	0.144	59.386***	0.000
	lnPoSt	23.262	0.009	143.349***	0.000

Notes: (***) designates significance at the 1% significance level. (**) designates significance at the 5% significance level.

Source: Author

sectional dependence test. The results provide strong evidence to reject the null hypothesis of no cross-sectional dependence, as is indicated by statistically significant p-values. The findings support the presence of cross-sectional interdependence for the variables (military expenditure, employment relative to the total population, the political stability index, and the GDP per capita).

The CADF test was formulated to overcome ambiguity in the presence of cross-sectional dependence (Pesaran, 2007). The results of the panel unit root test in the data modeling of this study are given in Table 5. The results are the basis for testing cointegration within the panel set. The final outcomes of the first difference unambiguously indicate stationarity.

Table 4 The cross-sectional dependence tests

Variable	Breusch-Pagan LM	Pesaran scaled LM	Pesaran CD
lnGDP	216.076***	46.080***	14.699***
lnEMPL	93.633***	18.701***	18.582***
lnMiEx	67.859***	12.937***	6.991***
lnPoSt	43.840***	7.566***	1.328

Note: (***) designates significance at the 1% significance level.

Source: Author

Table 5 The stationarity test

Variable	CADF Statistika
lnMiEx	-2.221
lnGDP	-1.804
lnEmpl	-1.973
lnPoSt	-3.092***
Δ lnMiEx	-3.525***
Δ lnGDP	-2.993***
Δ lnEmpl	-3.174***
Δ lnPoSt	-3.517***

Note: (***) indicates significance at the 1% level.

Source: Author

This research study examines the cointegration relationship among all the variables by employing Kao's residual cointegration tests and Pedroni's panel cointegration tests. The empirical findings in the Western Balkan countries provide the evidence that all the variables are cointegrated, therefore supporting the hypothesis of cointegration. Hence, the empirical findings validate the presence of a stable, long-term equilibrium involving military expenditure, employment relative to the total population, the political stability index, and the GDP per capita (Tables 6 and 7).

All the variables used in the research study are combined in terms of the order of integration, i.e. in the outcome, they are I(1) in the panel. There are no I(2) variables in the model. The approach of the ARDL-PMG technique is useful in such cases for the purpose of empirical evaluation. In order to provide verified and reliable results, this study additionally used the fully modified least squares technique. The technique of autoregressive distributed lag based on the pooled mean group investigates the long-term balance and the short-term parameters between the variables. The data presented in Table 8 clearly show that certain empirically examined explanatory variables have a significant impact on the economic growth of the Western Balkan economies. The results of the ARDL analysis show that most regressors are statistically significant, which confirms and indicates that the estimated model is both theoretically and statistically acceptable. All the regressors show likely signs of their coefficients.

The findings presented in Table 8 show that there is a positive relationship between military expenditure and economic growth over a long period of time. The empirical evidence supports the likely positive impact of military expenditure on economic growth. The military expenditure variable has a statistically significant estimated coefficient of 0.385 in the long run, with the significance level of 1%. In other words, the empirical findings show that a 1% increase in military spending will increase economic growth by 0.385%. The findings are consistent with the results of P. K. Narayan and B. Singh (2007), M. R. Farzanegan (2014) and O. R. Lobont *et al* (2019), whose studies

Table 6 Pedroni's cointegration test

Tests	statistic	p - value	Weighted statistic	p - value
Panel v-statistic	-0.718	0.763	-0.422	0.664
Panel rho-statistic	0.359	0.640	0.261	0.603
Panel PP-statistic	-1.542*	0.061	-1.918**	0.027
Panel ADF-statistic	-1.831**	0.033	-2.416***	0.007
Group rho-statistic	1.180	0.881		
Group PP-statistic	-2.293**	0.010		
Group ADF-statistic	-2.842***	0.002		

Notes: The null hypothesis: no cointegration. The trend assumption: the deterministic intercept and the trend. Lag selection: automatic SIC with the max lag of three. The Newey–West bandwidth selection with the Bartlett kernel is used. The use of the asterisks: (***) denotes the statistical rejection level of the null hypothesis, which states that there is no cointegration, at the significance level of 1%; (**) designates the significance level at 5%, and (*) represents the significance level of 10%.

Source: Author

Table 7 Kao's cointegration test

	t-statistic	p - value
ADF	-4.076***	0.000
Residual variance	0.010	
HAC variance	0.018	

Notes: The null hypothesis: no cointegration. The trend assumption: no deterministic trend. The automatic lag selection based on SIC with the max lag of three. The Newey-West automatic bandwidth selection and the Bartlett kernel. The use of the asterisks: (***) designates significance at the 1% significance level.

Source: Author

showed a positive relationship between military spending and economic growth, which is consistent with the principles of the Keynesian approach. The Western Balkan countries, which allocate significant funds for their military expenditures, also engage in the export of weapons to other countries, thus strengthening their foreign exchange reserves and hence the positive connection in terms of economic growth. However, the findings of this study contradict the research conducted by G. D'Agostino *et al* (2017) and C. Shaaba Saba and N. Ngepah (2019).

The Western Balkan countries face numerous obstacles and must prioritize the promotion of economic development and political stability, which in turn improves their social well-being. When these countries achieve the desired level of political stability and economic growth, their respective governments can also allocate increased funds for military purposes. Table 8 clearly shows that political stability has no effect on economic growth, and with statistical significance. Therefore, in the long run, the obtained estimated coefficient, which indicates that an increase in political stability, i.e., a decrease in political risk, results in no statistically significant influence on economic growth. On the other hand, the employment ratio is an approximation of labor as a factor input in the production function, which is one of the key components of the production process. The results of the ARDL-PMG analysis indicate that this ratio has a positive effect on long-term economic growth. The computed coefficient is 1.002, which is statistically significant at the 1% level in the long run. The empirical research demonstrates that a one-unit increase in this variable results in a 1% rise in economic growth.

The findings accounted for in Table 9 validate the relative reliability and neutrality of the obtained results as various econometric methods do not produce completely identical outcomes. The results of the fully modified least squares estimators confirm that military expenditure has a positive impact on the

Table 8 The ARDL-PMG results; the selected model: ARDL(1,1,1,1)

Variable Long run equation	Coefficient	Std. error	p-values
LEMPL	1.002***	0.227	0.000
LMIEX	0.385***	0.101	0.000
LPOST	-0.027	0.094	0.770
Short run equation			
ECM t-1	-0.294***	0.092	0.002
Δ(LEMPL)	0.512***	0.138	0.000
Δ(LMIEX)	0.332***	0.049	0.000
Δ(LPOST)	0.001	0.033	0.953
C	-0.611***	0.137	0.000

Note: (***) designates significance at the 1% significance level.

Source: Author

economic growth of the Western Balkan countries. There is no evidence suggesting any detrimental effect of military expenditure on economic growth. All the calculated coefficients exhibit strong statistical significance and provide robust support for the empirical findings of the ARDL-PMG technique.

CONCLUSION

Extensive studies are conducted so as to analyze the relationship between military expenditure and economic growth. However, they suggest that no final decision can be reached based on the findings. The objective of this research is to experimentally assess the influence of military expenditures, along with the other control variables, on economic growth. The analysis was performed on a sample consisting of five nations outside the European Union, covering the period from 2001 to 2022. The panel data were analyzed using unit root tests to determine the integration order for each variable. The results provide a synthesis of the findings regarding the integration order, particularly the orders I(0) and I(1). Consequently, the panel ARDL-PMG technique was employed. Subsequently, the modified least squares method approach was used so as to validate the obtained findings. It is a useful analytical approach for a more complete parameter estimation and the validation of results.

The results of the long-term equation indicate the existence of a positive and statistically significant impact of military expenditure on economic growth, which confirms the basic research hypothesis. The coefficient of the military expenditure variable is positive and statistically significant at the 1% level, which suggests that an increase in military expenditure contributes to the growth of the economic activity in the long run. Furthermore, the statistically significant and negative coefficient of the error correction mechanism (ECM) confirms the existence of a long-term equilibrium between the observed variables, i.e. the cointegration relationship between military expenditure and economic growth. In this way, the auxiliary hypothesis that there is a long-term relationship between the variables is confirmed. In the short run, military expenditure also shows a positive and statistically significant impact on economic growth, but with a lower intensity compared to the long-term effect, which indicates differentiated effects over time and confirms the hypothesis of different short-term and long-term impacts. Unlike military expenditures, the political stability variable does not show a statistically significant impact either in the

Table 9 The results of the alternative econometric technique

FMOLS			
Variables	Coefficient	Std. error	p-value
LEMPL	1.599***	0.332	0.000
LMIEX	0.648***	0.123	0.000
LPOST	0.422***	0.117	0.000
Statistics			
R^2	0.755		
Adj.R^2	0.736		

Note: (***) designates significance at the 1% significance level.

Source: Author

short term or in the long term, which implies that its role in explaining economic growth in the observed sample cannot be fully empirically confirmed by the primary econometric technique, i.e. the auxiliary hypothesis that there is a positive impact of political stability is not confirmed by applying the panel ARDL-PMG methodology.

Overall, the empirical findings indicate the existence of a stable and positive relationship between military expenditure and economic growth, with this effect being more pronounced in the long run. These results are consistent with the Keynesian approach, according to which government spending, including military spending, can stimulate aggregate demand and economic growth. These data indicate that military expenditure has a promising and consistently favorable effect on economic growth. This phenomenon is especially noticeable in some nations within the observed sample. As these economies grow, their respective governments may contemplate augmenting military expenditure in order to enhance their military powers and capabilities. Policymakers must not restrict military investment exclusively to security reasons. Governments should emphasize allocating their resources in a way that maximizes possibilities for exporting military defense products. Furthermore, it is imperative to implement incremental actions in order to embrace a strategic and prudent approach that fosters expansion. An increase in military expenditure is expected to significantly bolster an economy. Hence, it is crucial to refrain from diminishing military expenditure while simultaneously upholding investments in other domains of development, such as healthcare and education.

Future research ought to encompass the European Union member nations situated in the Balkan region. Performing a regression analysis for these countries would enable a comparison of the empirical findings. A forthcoming comparative analysis would unquestionably offer decision-makers invaluable insights. From this, it can be inferred that there is a crucial threshold at which military expenditure has a substantial influence on economic growth. Furthermore, it is important to employ other sophisticated econometric methods so as to carry out a relevant analysis to confirm these findings.

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