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Fiscal policy and economic growth: Evidence from Central and Eastern Europe

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ABSTRACT
This study aims to estimate the impact of three fiscal instruments (direct tax revenue, indirect tax revenue and government consumption expenditure) on the economic growth of ten new European Union member states from Central and Eastern Europe – Bulgaria, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. We examine the hypothesis about the effect of expansionary fiscal policy on economic growth. The study employs a vector autoregression and annual Eurostat data for the period 2007–2019. Four control variables (the shares of gross capital formation, household consumption, exports in GDP, and the economic growth in the euro area) are included in the model to account for the influence of non-fiscal factors on economic growth. The empirical results indicate that the real output growth rate in the ten new member states of the European Union is negatively affected by direct tax revenue, while economic growth in the euro area, exports and gross capital formation are positively related to economic growth. The results also imply that government consumption and indirect tax revenue have no significant impact on the growth rate of real output of the ten studied countries from Central and Eastern Europe. It may be inferred that policymakers in the new European Union member states can raise economic growth by encouraging exports and investment and by lowering the share of direct tax revenue in GDP. From the three analyzed fiscal instruments (direct taxes, indirect taxes and government consumption expenditure), only one has proven to be effective in the case of the new member countries.

KEYWORDS
fiscal policy, taxation, economic growth, Central and Eastern Europe, vector autoregression

JEL E62, F43, H24, H25, O47

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Фискальная политика и экономический рост: данные стран Центральной и Восточной Европы

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АННОТАЦИЯ
Целью исследования является оценка влияния трех финансовых инструментов (прямых налогов, косвенных налогов и расходов на потребление органов государственного управления) на экономический рост в десяти новых государствах-членах Европейского Союза из Центральной и Восточной Европы – Болгарии, Чехии, Эстонии, Венгрии, Латвии, Литвы, Польши, Румынии, Словакии и Словении. Тестируется гипотеза о влиянии стимулирующей налогово-бюджетной политики на экономический рост. В исследовании используется метод векторной авторегрессии и ежегодные данные Евростата за период 2007–2019 гг. Для

учета влияния на экономический рост нефискальных факторов в модель включены четыре контрольные переменные (доля валового накопления капитала, потребление домашних хозяйств, экспорт в ВВП и экономический рост в зоне евро). Эмпирические результаты показывают, что на темпы роста реального производства в десяти новых государствах-членах Европейского Союза отрицательно влияют поступления от прямых налогов, в то время как экономический рост в зоне евро, экспорт и валовое накопление капитала положительно связаны с экономическим ростом. Результаты также означают, что потребление органов государственного управления и поступление косвенных налогов не оказывают значительного влияния на темпы роста реального производства в десяти изученных странах Центральной и Восточной Европы. Можно сделать вывод, что политики в новых государствах-членах Европейского Союза могут повысить экономический рост за счет поощрения экспорта и инвестиций, а также снижения доли прямых налогов в ВВП. Из трех проанализированных финансовых инструментов (прямые налоги, косвенные налоги и потребление органов государственного управления) эффективным оказался только один.

КЛЮЧЕВЫЕ СЛОВА
фискальная политика, налогообложение, экономический рост, Центральная и Восточная Европа, векторная авторегрессия

1. Introduction

The impact of fiscal instruments on economic growth is a key issue of macroeconomic policy, especially for small open economies like the ten new member states of the European Union located in the Central and Eastern Europe (CEE), namely Bulgaria, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia. It is expected that contemporary fiscal policy should ensure stable public finances, boost employment, competitiveness and growth, while contributing to a fair distribution of income by improving the effectiveness and efficiency of the tax system.

The relationship between fiscal policy instruments and real output has been broadly discussed in both theoretical and empirical research. The conventional economic theory predicts that government spending is growth-conductive, while taxation causes distortions and negatively impacts economic growth. Considering a simple production function it is evident that taxation can affect growth through its effects on physical capital, human capital and total factor productivity. Some studies argue that corporate and personal income taxes are the most detrimental to economic growth, while consumption, environment and property taxes are less harmful [1].

Having in mind these assumptions, this paper aims to study the basic trends in the fiscal policy in ten countries from Central and Eastern Europe (Bulgaria, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia) for the period 2007–2019 and its impact on the economic growth. In addition, the paper sheds a light on the distribution of tax burden as a factor for creating a growth-friendly environment. The paper comprises five sections. Section two presents a brief literature review. Section three provides a descriptive analysis, focused on the general trends in fiscal policy and tax structure in the CEE countries, derived through breakdown of the total tax revenues into standard components such as direct taxes, indirect taxes, and social security contributions. Section four presents the empirical methodology and studies the effects of government consumption and taxation on economic growth applying vector autoregression (VAR) of annual panel Eurostat data. Section five draws inferences and formulates advisable macroeconomic policies for encouraging economic growth in the ten EU member states located in Central and Eastern Europe.

In this research, three hypothesis are tested:

H1: Expansionary fiscal policy positively affects economic growth;

H2: Expansionary fiscal policy negatively affects economic growth;

H3: Expansionary fiscal policy do not affect economic growth.

2. Literature review

The empirical studies on the relationship between fiscal policy and economic growth are mainly focused on providing evidence of the impact of government spending, tax level and tax structure on growth. A number of classic and modern studies have investigated the link between the overall level of public spending or total tax burden and economic growth using one-country or cross-country growth regression models covering different periods and various samples of countries. However, the empirical researches on the relation between government size and economic growth have arrived at widely different conclusions.

For example, the authoritative research conducted by Barro [2], using a dataset for a cross-section of 98 countries in the period 1960–1985, presented empirical evidence in favor of the view that a large public sector is growth-impeding. These results have been confirmed by several subsequent studies. Engen and Skinner [3] analyzed data from 107 countries for the period 1970–1985 and found that a balanced-budget increase in government spending and taxation reduces output growth rates. Folster and Henrekson [4] conducted an econometric panel study on a sample of rich countries covering the 1970–1995 period. They revealed a robust negative relationship between government expenditure and growth in rich countries. Moreover, when the rich country sample is extended to non-OECD countries both public spending and taxation are found to be negatively associated with economic growth.

Chu, Hölscher and McCarthy [5] applied ordinary least squares (OLS) and generalized method of moments (GMM) techniques on panel data from 37 high-income and 22 low-to-middle-income countries covering the period 1993–2012. They identified a negative and significant impact of total government expenditure on economic growth for both high-income and low-to-middle-income groups. The expected negative and significant impact of increased tax revenue on growth was confirmed for low-to-middle-income countries, but was not supported by the results for high-income countries.

Esener and Ipek [6] used 1999–2014 annual panel data for 33 countries, classified as upper and lower middle-income countries by the World Bank. The empirical analyses were performed by both the static panel data approach and dynamic GMM techniques. The public expenditure were found to cause significant decreasing effects on economic growth. Ozpence and Mercan, [7] studied the relationship between tax burden and economic growth in Turkey for the period 1970–2018. Applying VAR analysis and Granger causality test they found a negative impact of tax burden on economic growth. This is confirmed by Koester and Kormendi [8], who analyzed data from 63 countries and identified apparent negative effects of tax rates on growth.

However, there are several studies that challenge these results. Kalaš, Mirović and Andrašić [9] studied taxes and economic growth in the United States for the period 1996–2016 and found a strong and positive relationship between tax revenue and GDP growth. A positive impact of taxation on growth is identified by Gashi, Asllani and Boqolli [10], who applied regression analysis on 2007–2015 data for Kosovo. Similar results are observed by Krysovatyy et al. [11], who revealed a positive correlation between the tax burden and GDP growth in Ukraine.

Alzyadat and Al-Nsour [12] found a positive impact of public expenditures on economic growth in Jordan by applying VAR model and Vector Error Correction Model (VECM) on annual data for the period 1970–2019. Moreover, a positive impact on growth was confirmed for tax revenues in the short term, but the

effect turned to negative in the long term. Gemmell, Kneller and Sanz [13] examined the long-run GDP impacts of changes in government expenditure for a sample of OECD countries. They concluded that total spending impact is positive for long-run output levels, if the spending is reallocated towards infrastructure and education. Paparas and Richter [14] studied the relationship between fiscal policy and economic growth in the EU-15 for the period 1995–2008 and found that an increase in government spending on infrastructure has a significant positive impact on the economic growth.

Several research favor the existence of a non-linear relationship between government size and economic growth. Christie [15] used a cross-country growth regression and observed a non-linear relationship between government spending and economic growth. These results are further confirmed by Lupu and Asandului [16]. They applied the auto-regressive distributed lag (ARDL) model using a sample of eight Eastern-European countries for the period 1995–2014. The findings revealed a significant co-integration of public spending and economic growth. Moreover, the results suggest that the optimal level of public spending varies between 37% and 41%.

At the same time there are studies that dispute the existence of an evident relationship between government size and economic growth. Easterly and Rebelo [17] analyzed a dataset of a broad cross-section of countries for the period 1970–1988 and concluded that the effects of taxation are difficult to isolate empirically. They believe that fiscal variables are highly correlated among themselves (countries that have higher tax burden also have higher public spending), so the empirical results are fragile and it is difficult to find a distinct relation between government size and growth. These conclusions are further supported by Oyinlola et al. [18], who applied the GMM estimation technique on 1995–2015 data for 27 sub-Saharan African countries and found that taxation does not have a significant impact on growth.

Agell, Ohlsson and Thoursie [19] share a similar view. They argue that some of the estimated correlations between size of the public sector and economic growth are statistically insignificant and highly unstable across specifications. They concluded that cross-country growth regressions are unlikely to come up with a reliable answer to the question of the growth effects of government spending and taxation.

The literature review demonstrates that there is no consensus about the nature and significance of the relationship between the government size (measured by public spending or total tax burden) and economic growth. This is not surprising, having in mind that the overall size of the public sector has two opposite effects. On the one hand, higher taxes cause potentially higher distortions and hamper economic activity and growth, but on the other hand, higher taxes suppose higher levels of public expenditure, some of which may foster economic growth. The positive impact of tax revenue on public service delivery is empirically proven by a contemporary research conducted by Omodero and Dandago [20].

The discussion on the impact of the tax structure on growth is mainly focused on the relative merits of direct versus indirect taxes, and especially on their ability to create a more growth-friendly environment. The prevailing view favors indirect taxation, and suggests a shift of the fiscal burden towards indirect taxes, especially those on consumption. For example, Myles [21] reviews the findings on the topic and concludes that almost all the results support the claim that a move from income taxation to consumption taxation will raise the rate of growth. Moreover, a general tendency to shift the fiscal burden from direct to indirect taxation, and in particular from labor and capital towards the consumption taxes, has been observed in some of the EU member states over the last years [22; 23].

The results from the empirical analyses of Kneller, Bleaney and Gemmell [24], Widmalm [25], Lee and Gordon [26], Gemmell, Kneller and Sanz [27],

Arnold [28], Schwellnus and Arnold [29], Vartia [30], Dackehag and Hansson [31], Szarowska [32], Bernardi [33], Canavire-Bacarreza, Martinez-Vazquez and Vulovic [34], Ahmad, Ahmad and Yasmeen [35], Stoilova [36], McNabb [37], Korkmaz, Yilgor and Aksoy [38], Oz-Yalaman [39], Ayoub and Mukherjee [40], Nguyen, Huy, Hang, Bui and Tran [41], Chugunov, Makohon, Vatulov and Markuts [42], Hakim [43], Neog and Gaur [44] and Todorov [45] shed a light on the nature and significance of the relationship between tax structure and growth.

Kneller et al. [24] used a panel of 22 OECD countries for the period 1970–1995 and identified a depressing effect of so the called "distortionary taxes", which include taxes on income and property. These findings are further confirmed by the analysis of Gemmell et al. [27], which provided new evidence on the long-run impact of distortionary taxes on growth in OECD countries by updating and extending datasets to cover 1970–2004. Lee and Gordon [26] applied cross-country regressions and found a significant negative correlation between statutory corporate tax rates and growth for 70 countries during the period 1970–1997. Dackehag and Hansson [31] report similar results. They studied how statutory tax rates on corporate and personal income affect economic growth in 25 rich OECD countries by using panel data for the period 1975–2010 and found that both taxation of corporate and personal income negatively influence economic growth. Oz-Yalaman [39] used a panel VAR for 29 OECD countries over the period 1998-2016 and found that corporate tax rate has a significant negative effect on economic growth. The empirical analyses of Schwellnus and Arnold [29] and Vartia [30], based on large datasets of firms and industries across OECD countries, also indicated a negative effect of corporate taxes on productivity and investment.

Widmalm [25] used pooled cross-sectional data from 23 OECD countries, between 1965 and 1990, and found evidence that the proportion of tax revenue raised by taxing personal income has a negative correlation with economic growth. This is further confirmed by McNabb [37], who concluded that revenue-neutral increases in income taxes are associated with lower long-run GDP growth in a panel of 100 countries. Arnold [28] entered indicators of the tax structure into a set of panel growth regressions for a sample of 21 OECD countries over the period 1971–2004 and found that property taxes are the most growth-friendly, followed by consumption taxes and then by personal income taxes. At the same time corporate income taxes appear to have the most negative effect on growth.

Szarowska [32] applied regression analysis on annual panel data for EU-24 member states during the period 1995–2010 and found statistically significant positive effect of consumption taxes on GDP growth. Ayoub and Mukherjee [40] investigated the role of value-added tax (VAT) on the economic growth in China by using time series data for the period 1985–2016 and found a significant positive relationship. Nguyen et al. [41] applied regression analysis and concluded that value added tax and personal income tax have a positive effect on economic growth in the localities of Vietnam for the period 2007–2017.

Hakim [43] used the GMM estimation in a panel of 51 countries over the period 1992–2016 and concluded that tax structure based on direct taxes such as taxes on income, profit and capital gains is harmful to the economic growth, yet more efficient in terms of collecting the tax revenue in a country. Neog and Gaur [44] investigated the relationship between tax structure and economic growth in India for the period 1980–2016 applying ARDL model. They found that personal income tax, corporate income tax and excise tax are harmful to growth in the long-run. Examining Turkey from 2006 to 2018, Korkmaz et al. [38] employed the ARDL approach and found a positive and significant impact of indirect taxes, as well as a negative and significant impact of direct taxes on economic growth.

In contrast to these findings, Bernardi [33] performed an aggregated analysis

of tax trends across euro area (EA-17) member countries, and a disaggregated, country-by-country analysis, with regard to the 2000–2014 period. He found that the gains from a tax shift (from direct to indirect taxes) do not appear to be as straightforward as claimed by the previous researches. On the contrary, he predicts that the tax shift may exacerbate the economic slump spreading across the European Union, particularly as an effect of the general adoption of restrictive fiscal policies by almost all member countries.

Canavire-Bacarreza et al. [34] evaluated the effect of different tax instruments on growth for Latin American countries using vector autoregressive techniques and panel data estimation. They found that personal income tax does not have the expected negative effect on economic growth. For corporate income tax, their results suggest reducing tax evasion and greater reliance on collection may boost economic growth in the region. The reliance on consumption taxes has significant positive effects on growth in Latin America in general, although they found slight negative effects in some of the selected countries.

Stoilova [36] studied the impact of taxation on the economic growth in the EU-28 member states for the period 1996–2013 through regressions on pooled panel data. She found that imposing value added tax affects negatively EU-28 economies and concluded that a tax system based on selective consumption taxes, taxes on personal income and property is more supportive to the economic growth. Ahmad et al. [35] investigated the impact of tax revenue on economic growth of Pakistan by using time series data for the period 1976–2011 and concluded that direct taxes should be increased (rather than indirect taxes) to support the economic prosperity of the country. Chugunov et al. [42] estimated the impact of government revenue on economic growth in Ukraine for the period 2014–2018 using a correlation-regression analysis and the multiplier effect concept. The authors substantiated that the increased share of direct taxes is growth-conductive, whereas the increased share of indirect taxes causes decrease of the real GDP.

3. Tax revenues and government spending in the cee countries (2007–2019)

Government spending in the CEE countries demonstrates cyclical dynamics over the analyzed period, as illustrated by the Fig. 1. The most apparent increase in government spending is seen during the

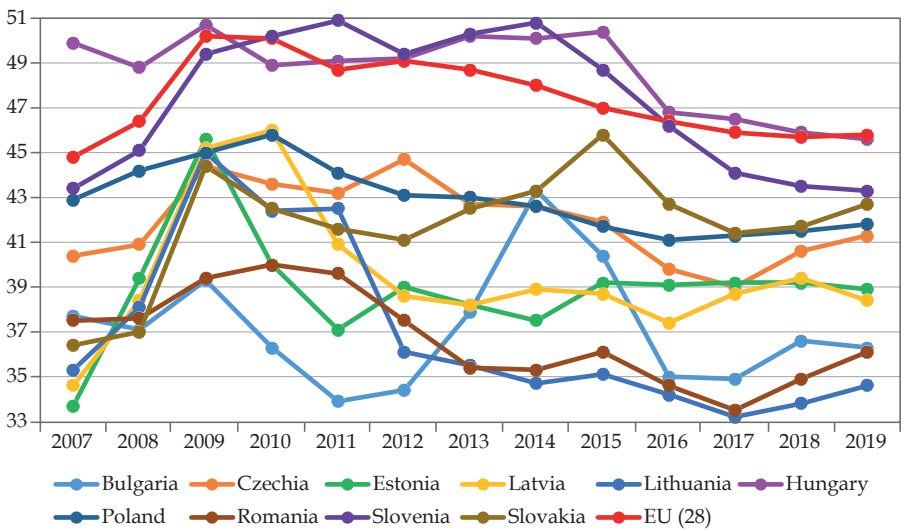

Fig. 1. **Dynamics of Total Government Expenditure in the CEE countries (% of GDP)**

Source: Eurostat http://ec.europa.eu/eurostat

periods of crisis. Although the average for the EU-28 ratio of government spending to GDP ranges within narrow limits (45%–50%), the values of this indicator vary widely from country to country. For example, total government expenditure in Bulgaria, Romania, and Lithuania range around 35% of GDP, which is far below the EU-28 average. At the same time the government spending in Hungary and Slovenia is comparable with and even outpaces the EU-28 average.

The average ratio of total receipts from taxes and social contributions to GDP in the EU-28 is comparatively high (39.5%), due to the traditional strong social protection which entails higher amounts of government expenditure and tax burden (Fig. 2). However, the tax burdens in the new EU members from the Central and Eastern Europe are lower, as a result of liberal economic reforms of democratic transition. As seen, the total tax burden varies considerably from country to country. The lowest average total-tax-to-GDP rates were reported by Romania (27.3%), Bulgaria (28.2%), Lithuania (29.0%), and Latvia (29.4%), while the highest rates were observed in Hungary (38.0%) and Slovenia (37.7%).

During the analyzed period, the mean tax burden in the EU-28 was close to equal distribution between the direct taxes, indirect taxes, and social security contributions. On average, the receipts from direct taxes and social contributions numbered to 13.2% of GDP, while indirect taxes represented 13.1% of GDP. Due to the different patterns of national tax systems, the importance of direct taxes, indirect taxes, and social contributions vary considerably from country to country in terms of the generated revenues. Specific for the EU member states located in the Central and Eastern Europe is the reliance on indirect taxes as a main revenue source. As seen, all of the ten CEE countries report lower than the EU-28 average shares of direct taxes in GDP, while half of them register higher than the EU-28 average levels of indirect taxes-to-GDP ratio. The lowest average direct-taxes-to-GDP ratios among the CEE countries (as well as among all EU member states) were observed in Bulgaria (5.5%), Romania (6.0%), and Lithuania (6.0%). Among the countries, which reported comparatively high relative figures are Czechia, Latvia, and Slovenia, which raised 7.8%–7.9% of GDP through the direct taxes. The biggest average ratios of indirect tax revenue-to-GDP were reported by Hungary (17.5%), Bulgaria (15.1%) and Slovenia (14.2%), while the lowest ratios of the indirect taxes among the CEE countries were detected in Slovakia (11.2%) and Lithuania (11.5%).

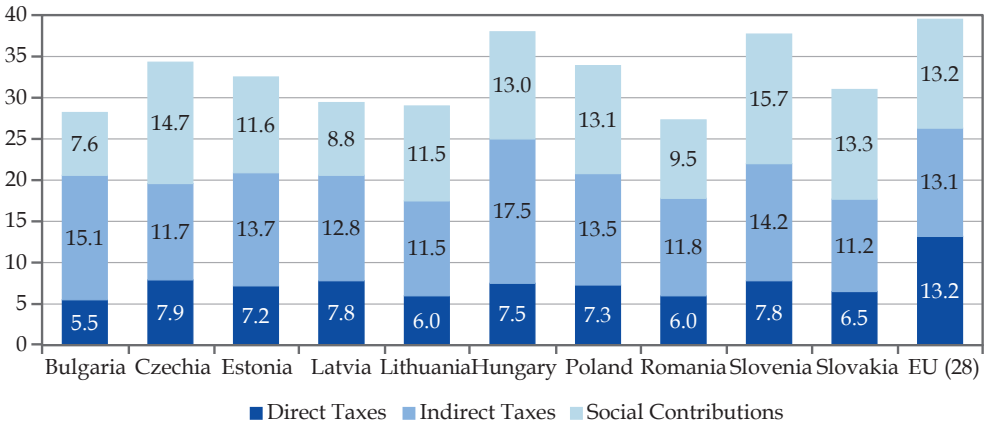

***Fig. 2.* Distribution of total tax burden in the CEE countries, average for the period 2007–2019 (% of GDP)**

Source: Eurostat http://ec.europa.eu/eurostat

4. Empirical estimation of the impact of fiscal policy on the economic growth of the cee countries

4.1. Methodology and data

This research uses a vector autoregression (VAR) and annual Eurostat data over the period 2007–2019. The VAR includes the following variables:

$GDPGR_{ij}$ – growth rate of the real GDP of country i in year j (percentage change on the previous period);

DIR_TAX_{ij} – direct tax revenue of country i in year j (percentage share in GDP);

$EAGR_j$ – growth rate of the real GDP in the euro area in year j (percentage change on the previous period);

EX_{ij} – exports (percentage share in GDP) of country i in year j;

GCF_{ij} – gross capital formation (percentage share in GDP) of country i in year j;

GOV_CONS_{ij} – final government consumption expenditure (percentage share in GDP) of country i in year j;

$HOUS\_CONS_{ij}$ – final consumption expenditure of households (percentage share in GDP) of country i in year j;

IND_TAX_{ij} – indirect tax revenue (percentage share in GDP) of country i in year j.

The target (dependent variable) is *GDPGR*. The independent variable of interest to this research are the fiscal instruments direct tax revenue (*DIR_TAX*), indirect tax revenue (*IND_TAX*) and government consumption expenditure (*GOV_CONS*). GDP growth rate in the euro area (*EAGR*), exports (*EX*), gross capital formation (*GCF*) and consumption expenditure of households (*HOUS_CONS*) are control variables, which reflect the effects of non-fiscal factors of the economic growth of the NMS-10.

4.2. Results and presentation of key research findings

All variables are stationary at level, which requires the application of an unrestricted VAR approach (Table 1). The test for the optimal number of lags in the VAR indicates that according to all information criteria this number is one (Table 2), therefore the VAR is estimated with one lag.

Table 1

Levin, Lin & Chu Unit Root Test on the level values of variables in the VAR

Variable	Probability
GDPGR	0.0000
DIR_TAX	0.0002
EAGR	0.0000
EX	0.0010
GCF	0.0000
GOV_CONS	0.0001
HOUS_CONS	0.0000
IND_TAX	0.0000

Source: Authors' calculations

The equation for the target variable *GDPGR* in the VAR is as follows:

$$\begin{aligned} GDPGR = {} & C(1) + C(2) \cdot GDPGR(-1) + \\ & + C(3) \cdot DIR\_TAX + C(4) \cdot EAGR + \\ & + C(5) \cdot EX + C(6) \cdot GCF + \\ & + C(7) \cdot GOV\_CONS + \\ & + C(8) \cdot HOUS\_CONS + \\ & + C(9) \cdot IND\_TAX. \end{aligned} \quad (1)$$

Table 2

Optimal lag length in the VAR

Number of lags	FPE	AIC	SC	HQ
0	1.362021	3.145844	3.402815	3.247916
1	1.257905*	3.065894*	3.354986*	3.180725*
2	1.294544	3.094068	3.415282	3.221658
3	1.332253	3.122123	3.475458	3.262472
4	1.371193	3.150139	3.535596	3.303247
5	1.399726	3.169793	3.587370	3.335660
6	1.398010	3.167462	3.617161	3.346087

Note: * Shows the optimal number of lags according to the respective criterion
Source: Authors' calculations

The results from the econometric estimation of Equation (1) are reported in Table 3.

The real GDP growth rate in the CEE countries is influenced by shares of direct tax revenue, exports and investment in the output of the analyzed countries as well as by the economic growth in the euro area. The signs of all significant coefficients in Equation (1) are as predicted by the economic theory (the coefficient before *DIR_TAX* is negative, while the coefficients before *EX*, *GCF* and *EAGR* are positive). The highest absolute value of the coefficient before *EAGR* implies that external factors have stronger impact on the economic growth of the CEE countries than internal factors, which confirms the theoretical expectations for small open economies. The value of the regression coefficient before *DIR_TAX* (–0.554720) suggests that if all other variables are held constant, a 1% change in the share of direct tax revenue in GDP will lead to a 0.55% change in the real GDP growth rate of the CEE countries in the opposite direction.

The value of the coefficient of determination (R-squared = 0.74) shows that 74% of the variation of the economic growth in the CEE countries can be explained by changes in the independent variables in Equation (1). The probability of the F-statistic (0.00) implies that the alternative hypothesis of adequacy of the model used is confirmed. It should be made clear that this does not mean that the model is the best possible, but simply adequately reflects the relationship between the dependent and the independent variables.

The AR roots graph (Figure 3) indicates that the VAR is stable since there are no roots out of the unit circle.

Although the literature does not provide a consensus about the nature and significance of the relationship between fiscal policy instruments and economic growth, our results are in compliance with those of several studies. Confirmation of the depressing effects of direct taxes on the economic growth is found by Kneller et al. [24], Widmalm [25], Gemmell et al. [27], Arnold et al. [46], Dackehag and Hansson [31], Macek [47], McNabb [37], Korkmaz et al. [38], Hakim [43], Neog and Gaur [44]. On the opposite side are the results of Canavire-Bacarreza et al. [34], Bernardi [33], Ahmad et al. [35], Havránek et al. [48], and Chugunov et al. [42], which estimate direct taxes as growth-conductive.

Our results show that government consumption expenditure in the CEE countries does not have a significant effect on economic growth, which suggests low efficiency of public spending. Although non-conventional, our results are in line with several studies, which find no discernible relation between government consumption spending and growth. For example, Bose et al. [49] examined the impact of public expenditure on economic growth in a sample of 30 developing countries using 1970s and 1980s data. Applying panel data techniques,

Table 3

Results from the econometric estimation of Equation (1)

Variable	Coefficient	Standard error	t-Statistic	Probability
C	–20.71839	12.75415	–1.624444	0.1074
GDPGR(–1)	0.103607	0.062498	1.657751	0.1004
DIR_TAX	–0.554720	0.278132	–1.994448	0.0488
EAGR	1.078060	0.149379	7.216956	0.0000
EX	0.217343	0.050692	4.287552	0.0000
GCF	0.438833	0.090405	4.854082	0.0000
GOV_CONS	–0.042410	0.339150	–0.125048	0.9007
HOUS_CONS	0.034863	0.170731	0.204196	0.8386
IND_TAX	–0.038543	0.286398	–0.134580	0.8932

Source: Authors' calculations

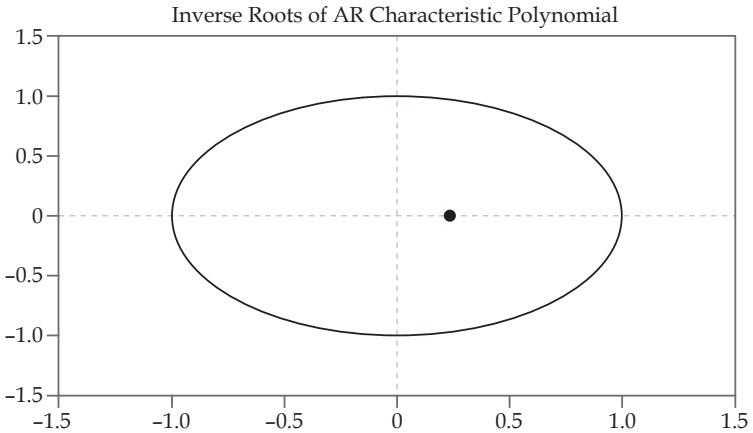

Fig. 3. **AR roots graph of the VAR**

Source: Authors' calculations

they found that current expenditure had no significant impact on economic growth. Taban [50] investigated government expenditure-economic growth nexus for the Turkish economy using quarterly data for the period 1987–2006. Based on the ARDL bounds testing approach, the results claimed that there is no significant relationship between government consumption spending and economic growth. Wahab [51] explored the impact of both aggregated and disaggregated government spending on economic growth using two samples – one for aggregated government spending in 97 developing and developed countries during the period 1960–2004 and another for disaggregated government spending in 32 countries during the period 1980–2000. The study revealed that government consumption spending has no significant output growth effects. Hasnul [52] explored the relationship between government expenditure and economic growth in Malaysia for the period spanning from 1970 to 2014. The study used an OLS technique and confirmed that operating government expenditure had no impact on economic growth.

At the same time, there are studies that challenge our results. For example Barro [2], Gupta et al. [53], Schaltegger and Torgler [54], Gemmell et al. [13], and Okoye et al. [55] estimated a negative impact of consumption spending on growth, while Devarajan et al. [56], Ghosh and Gregoriou [57], Attari and Javed [58], Al-Fawwaz [59], and Leshoro [60] found that current government expenditure has positive and statistically significant growth effects.

5. Conclusion

Our results show that government consumption expenditure in the Central and Eastern Europe countries does not have a significant effect on economic growth, which suggests low efficiency of public spending.

The empirical results from this study reveal that policy-makers in the Central and Eastern Europe countries can raise economic growth by decreasing the share of direct tax revenue in GDP and by encouraging an increase in the shares of exports and investment in GDP. Indirect tax revenue and government's final consumption expenditure do not affect the growth of real output in the analyzed countries, while the economic growth in the euro area, although supportive, is beyond the control of the policy-makers in Central and Eastern Europe.

From the three hypotheses tested in this research, **H1** was found to hold true for direct tax revenue, while **H3** was confirmed for government consumption and indirect tax revenue.

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