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RELATIONSHIP BETWEEN GOVERNMENT EXPENDITURE AND ECONOMIC GROWTH IN VISEGRAD GROUP

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Abstract

The goal of the article is to examine the relationship between government expenditure and economic growth in the Visegrad Group in the period 2000-2020. Economic theory as well as published studies have suggested that government expenditure is an important factor in ensuring economic growth, which has been the subject of increased interest in recent years. The article focuses on development of government expenditure, changes in its composition in individual countries during the analyzed period, and also on the direction of influence between these variables. Real GDP time series were cyclically adjusted as well as annual data on government expenditure which were used in compliance with the COFOG international standard. The results suggest that government expenditure and their composition are similar in the Visegrad Group despite the existing differences in the size of the public sector. On the other hand, the cyclicality of government expenditure differs across the countries. Results suggest that countries of the Visegrad Group did not use government expenditure as a stabilizer in the monitored period. Government expenditure was acyclical in Slovakia and procyclical in other countries of the Visegrad Group. Applied Granger causality methodology provides mixed conclusions about the relationship between government expenditure and economic growth. Nevertheless, unidirectional Granger causality from GDP growth to government expenditure and its divisions predominates, which means that economic growth comes first, followed by government expenditure.

JEL classification: C32, H50, E62

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Introduction

Recently, the increasing interest of many governments is focused on the question of how to ensure economic growth. Government expenditure and factors behind its growth are a serious problem in many countries. The importance of this problem is related to exhausted public budgets after the covid pandemic and the need to ensure the development of economies in the future. It is important to note that government expenditure plays an important role in the fiscal policy of each country as a possible stabilizer as well as a tool for the implementation of individual government policies and the provision of public goods and services. In spite of the fact that many studies have been focused on the relationship between government expenditure and economic growth, it cannot be unequivocally claimed that increase of government expenditure has a positive effect on economic growth (for details look at Nyasha and Odhiambo, 2019). Previously published studies are weakly supported, especially by data from the Central European countries, therefore this analysis is focused on the Visegrad countries, in which the results may differ.

The Visegrad Group, also called the Visegrad Four or V4, is an alliance of four Central European states – the Czech Republic (CZ), Hungary (HU), Poland (PL) and Slovakia (SK) – for the purposes of cooperation and furthering their European integration. All of the Visegrad countries have a developed free market economy and have enjoyed more or less steady economic growth since the revolutions of 1989. In 2009, Slovakia adopted the euro as official currency, the other countries have their national currencies. Despite their similar histories, the individual countries of the Visegrad Group have differently structured and oriented economies and social preferences, which are also reflected in the structure of government expenditure.

The goal of the article is to examine the relationship between government expenditure and economic growth in the Visegrad Group in the period 2000-2020, including the direction of influence between the variables. The intention is also to analyze acyclicality and the structure of government expenditure according to COFOG classification.

Literature review

A country's economy is largely influenced by the level and the structure of government expenditure as government expenditure is an important tool for national governments for realizing individual government policies and to mitigate uneven economic development and economic shocks. In the theoretical scientific literature, there are two opposing views on the relationship between government expenditure and economic growth. The Keynesian view claims that government expenditure is an exogenous factor that affects economic growth and can be used as a policy instrument. On the other hand, Wagner's view states that government expenditure is an endogenous factor or result (not a cause) of economic growth (Romer, 1986; Nyasha & Odhiambo, 2019).

From a Keynesian perspective, government expenditure should act as a stabilizer and move in a counter-cyclical direction. Procyclical fiscal policy is conversely policy expansionary in booms and contractionary in recessions. Servén (2013) draws attention to the fact that procyclical fiscal policy is generally regarded as potentially damaging for welfare. If a government respects the basic prescription that fiscal tools should function in a manner which is counter-cyclical, the optimal fiscal policy involves decreasing of government expenditure in “good times” and increasing of government expenditure in “bad times.” Contrary to the theory, a number of studies found evidence that government expenditure is procyclical (Fiorito & Kollintzas, 1994; Lane, 1998; Hercowitz & Strawczynski, 2004; Alesina et al., 2008; Rajkumar & Swaroop, 2008; Woo, 2009). Lane (2003) writes that the level of cyclicality varies across spending categories and across OECD countries. Later analysis of Talvi and Vegh (2005) shows that fiscal procyclicality is evident in a much wider sample of countries. Alesina et al. (2008) formulate the conclusion that the procyclicality of fiscal policy is more pronounced in more corrupt democracies. Abbott and Jones (2011) tested differences in the cyclicality of government expenditure across functional categories. Their evidence from 20 OECD countries suggests that procyclicality is more likely in smaller functional budgets, but capital spending is more likely to be procyclical for the larger spending categories

Despite the fact that many studies have focused on the relationship between government expenditure and economic growth, it cannot be clearly stated that an increase in government expenditure has a positive effect on economic growth. Empirical studies provide mixed and unclear conclusions about the effect of government expenditure on economic growth, as studies with positive, negative, and even zero effects can be found. The first studies can be found in the 1980s when Romer (1986) confirmed a positive effect of a higher government expenditure creating higher economic growth as a result of expansionary fiscal policy. Alexiou (2009) empirically estimates the relationship between economic growth and government expenditure using

panel data model. The results proved that government expenditure had a strong positive impact on economic growth in the South Eastern European countries from 1995 to 2005. Afonso and Alves (2016) assess public expenditure and economic growth using data of 14 European countries over the period of 1996-2013. They found that some functions of government spending in Austria, France, the Netherlands and Portugal support the approach that an increase in national income causes more government spending.

A contrary, negative impact appeared in a study of Lupu et al. (2018) who investigated the effect of public expenditure on economic growth in 10 selected Central and Eastern European countries. Their research found that public expenditures on defence, economic affairs, general public services, and social welfare had a negative impact on economic growth in the analyzed countries in the period 1995–2015.

Pula and Elshani (2018a, 2018b) used a Granger causality test for identifying the direction of flow between variables in Kosovo (2002–2015) and discovered a unidirectional causality between government expenditures and economic growth.

Sáez et al. (2017) also tested the relationship between government expenditure and economic growth using regression and panel data analysis. But they revealed mixed results for 15 selected European Union countries between 1994 and 2012. The effect of government expenditure on economic growth was found positive in Portugal, the United Kingdom, France, Greece and Luxembourg. On the other hand, the effect of government expenditure on economic growth was negative in Austria, Belgium, Denmark, Germany, Finland, Ireland, Italy, Netherlands, Spain and Sweden.

Similarly, mixed conclusions were noted by Dudzevičiūtė et al. (2018) who indicated using correlation analysis and Granger causality testing, that eight European Union countries showed a significant relationship between 1995-2015. Specifically, a unidirectional causal relationship from economic growth to government expenditure was found in France, Belgium, Germany, Portugal and Cyprus; a uni-directional causal relationship from government expenditure to economic growth in Sweden and Slovakia, and no causality relationship was found between government expenditure and economic growth in Poland.

Different results can be seen in a study of Roşoiu (2015) who found a bidirectional causality relation between government expenditure and economic growth using Granger causality methodology in Romania (1998 -2014).

Nyasha and Odhiambo (2019) provided a comprehensive review of previous empirical evidence with ambiguous results across various countries focused on the relationship between public expenditure and economic growth and conclude the impact of government expenditure on economic growth is not clear cut. Alqadi and Ismail (2019) also assessed theoretical and empirical literature on the relationship between government expenditure and economic growth. The article finds that neither the theoretical literature nor the empirical literature provides conclusive evidence about the nature of this relationship.

Many studies focus on African or South Asian economies, but these are not the subject of investigation and literature review due to very different characteristics. This article follows the study by Szarowská (2011, 2018) who analyzed the Czech Republic and V4 in a transition period which makes it possible to obtain information about the differences in the later development of these economies.

Methodology and data

The goal of the article is to examine the relationship between government expenditure and economic growth in the Visegrad Group in the period 2000-2020 which is why the methodology consists of several steps. Firstly, it is necessary to examine government expenditure, its composition and changes in the analyzed period. The dataset consists of annual data on GDP and government expenditure in compliance with the COFOG international standard in the period 2000-2020 (latest available data). All the data were collected from the Eurostat database. The time series for GDP, total government expenditure and its subcomponent are adjusted at constant prices. Most of the results were calculated in econometric program Eviews 12.

Many studies point out that using a non-stationary macroeconomic variable in time series analysis causes superiority problems in regression. Thus, a unit root test should precede any empirical study employing such variables. We decided to make the decision on the existence of a unit root through the Augmented Dickey –Fuller test (ADF test). The equation (1) is formulated for the stationary testing:

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \sum_{j-1}^{p} (\delta_j \Delta Y_{t-j}) + \varepsilon_t \qquad (1)$$

ADF test is used to determine a unit root x_t at all variables in the time t. Variable Δx_{t-i} expresses the lagged first difference and ut estimate autocorrelation error. Coefficients δ_0, δ_1, δ_2 and αi are estimated. Zero and the alternative hypothesis for the existence of a unit root in the x_t variable are specified in (2). The result of the ADF test, which confirms the stationary of all time series on the first difference, is available on

$$H_0 : \delta_2 = 0,\ H_\varepsilon : \delta_2 < 0 \quad (2)$$

The Hodrick-Prescott (HP) estimates an unobservable time trend for time series variables. Let y_t denote an observable macroeconomic time series. The HP filter decomposes y_t into a nonstationary trend g_t and a stationary residual component c_t, that is:

$$y_t = g_t + c_t \quad (3)$$

We note that g_t and c_t are unobservables. Given an adequately chosen, positive value of λ, there is a trend component that will minimize:

$$\sum_{t=1}^{T} (y_t - g_t)^2 + \lambda \sum_{t=2}^{T-1} ((g_{t+1} - g_t) - (g_t - g_{t-1}))^2 \quad (4)$$

The first term of the equation is the sum of the squared deviations which penalizes the cyclical component. The second term is a multiple λ of the sum of the squares of the trend component's second differences. This second term penalizes variations in the growth rate of the trend component. The larger the value of λ, the higher the penalty. Hodrick and Prescott advise that, for annual data, a value of λ = 100 is reasonable.

Next, cross-correlation to all combinations of GDP – total value of government expenditure is applied. Cross correlation assesses how one reference time series correlates with another time series, or several other series, as a function of time shift (lag). Cross correlation does not yield a single correlation coefficient but rather a whole series of correlation values. Like all correlations, cross correlation only shows statistical associations not causation. Consider two financial series and, then the cross-correlation at lag (lead) k is defined as follows:

$$p(y_{t+k}, x_t) = \frac{T \sum_{t=k-1}^{T} (y_{t+k} - m_y)(x_t - m_x)}{\sqrt[(T+k)]{\sum_{t=k}^{T} (y_{t+k} - m_y)^2 \sqrt{\sum_{t=k}^{T} (x_t - m_x)^2}}} \quad (5)$$

Where: p - correlation coefficient and m_x, m_y - the means of corresponding series.

The series can be related in three possible ways:
1) y_t can lead $x_t (p(y_{t-k}, x_t) \neq 0)$
2) y_t can lag $x_t (p(y_{t+k}, x_t) \neq 0)$
3) series can be related to each other $(p(y_t, x_t) \neq 0)$

The standard Granger causality test developed by Granger (1980) is commonly used to test whether past changes in one variable help explain current changes in other variables as well as being used in the majority of empirical studies for testing relationships between economic growth and government expenditure (Zamanian et al., 2012; Roşoiu, 2015; Dudzevičiūtė et al., 2018; Lupu et al. 2018; Pula & Elshan, 2018a, 2018b; Nyasha & Odhiambo, 2019). That's why the Granger causality test is applied for modeling the relationship and for the estimation of causality between all COFOG government expenditure divisions and economic growth. The Granger causality test assumes that only time series data can expound the information needed for a relationship between variables (Gujarati 2003). A time series X is said to Granger-cause Y if it can be shown, usually through a series of t-tests and F-tests on lagged values of X (and with lagged values of Y also included), that those X values provide statistically significant information about future values of Y.

Results and discussion

Development of government expenditure

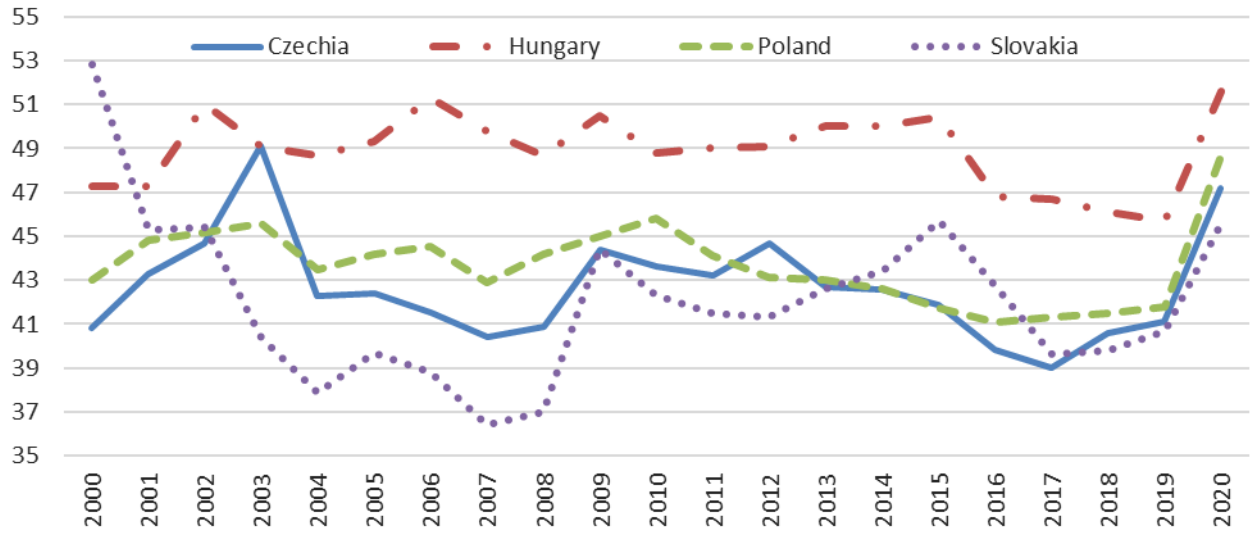
Government expenditure can help in smoothing out cyclical fluctuations in the economy and influences the level of employment and price stability. Thus, government expenditure plays a crucial role in the economic growth of a country. Government expenditure can be classified into four categories:

1) Functional Classification or Budget Classification
2) Economic Classification
3) Cross Classification
4) Accounting Classification.

Each classification of government expenditure serves one objective or other, i.e., financial control, economic growth, price stability, etc. Functional classification in compliance with the COFOG international standard (Classification of the Functions of Government) is used in this analysis. Government expenditure is divided into 10 basic divisions:
C: Total function
C10: General public services
C20: Defense
C30: Public order and safety
C40: Economic affairs
C50: Environment protection
C60: Housing and community amenities
C70: Health
C80: Recreation; culture and religion
C90: Education
C100: Social protection

Firstly, the total value and composition of government expenditure is analyzed in each individual country in the period 2000-2020. In Figure 1, data indicates a highly volatile development of government expenditure in individual countries in the monitored period.

Figure 1: Development of total government expenditure in V4 (% GDP)



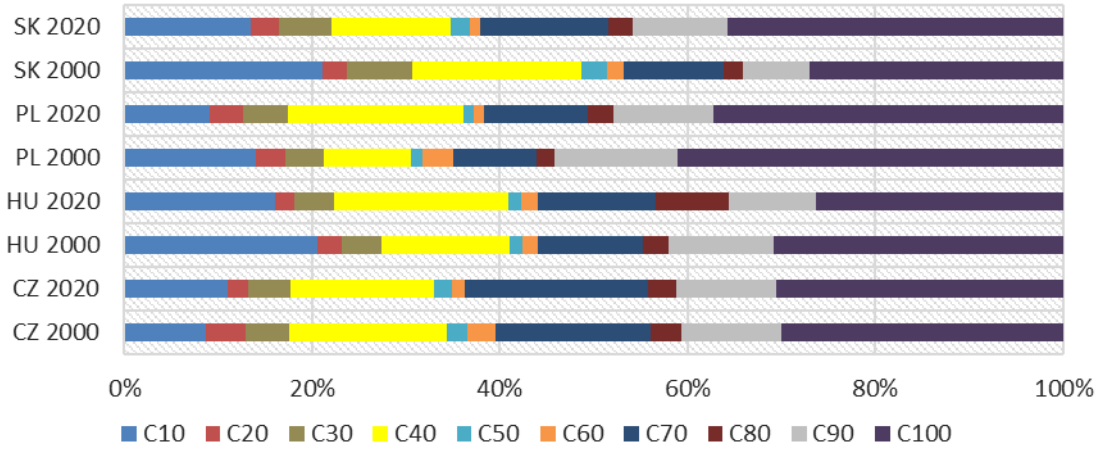
Source: Author´s elaboration based on data from Eurostat.

Shares of percentage GDP demonstrate existing differences in the role of the public sector in the Visegrad countries. From this point of view, Hungary is the country with the highest role of government and its redistribution, although its role has also decreased (except in the pandemic period). Average share of government expenditure is 48.9% GDP. Contrarily, Slovakia is the country with the lowest share of government expenditure on GDP (average value is 42.1% GDP) and it means the smallest size of the public sector. The most volatile government expenditure (with average 42.7% GDP) was recorded in the Czech Republic in the selected period. Government expenditure is the most stable in Poland with average value of 43.7% GDP. Despite these variations, the final trend of a sharp increasing weight of government expenditure on GDP caused by the covid pandemic is common to the entire V4 Group.

The intention is also to analyze the structure of government expenditure according to COFOG classification. Figure 2 briefly summarizes the structure of COFOG expenditures and its changes in each country at the beginning and end of the monitored period. The common trend is that Social protection (C100) has the highest average share of government expenditure across the V4 although the difference between the maximum (38.3% in Poland) and the minimum (30.1% in the Czechia) share of total government expenditure is more than eight percentage points.

In the Czech Republic, the data demonstrates Social protection (C100) as the highest and the most stable item of government expenditure over the period (30% share in 2000 and 30.5% in 2020) though its share of total government expenditure is the lowest in the Visegrad Group. Economic affairs (C40) were second and Health expenditure (C70) in the third place till the year 2003. From 2004 the second and the third position of the largest share has changed (average share of C40 is 16.1% and C70 17.4%).

Figure 2: Changes in structure of COFOG expenditure



Source: Author´s calculations based on data from Eurostat.

The order of the highest average shares on government expenditure is the following in Hungary: Social protection (C100 - average 31.7%), General public services (C10 - average 18.9%) and Economic affairs (C40 - average 14.3%). In Poland there can be seen a different structure of COFOG expenditures. The first position belongs also to Social protection (C100 41.1% in 2000 and 37.3% in 2020) and its share is higher than in the Czech Republic, Hungary and Slovakia. In 2000 and on average, the second position belongs to General public services (C10 – 14% in 2000, 12.4% on average) and the third to Education (C90 – 13.1% in 2000 and 12.4% on average). In 2020, the composition changed significantly due to the covid pandemic and the order was as follows: Social protection C100 (37.3%), Economic affairs C40 (18.7%) and Health C70 (11.1%).

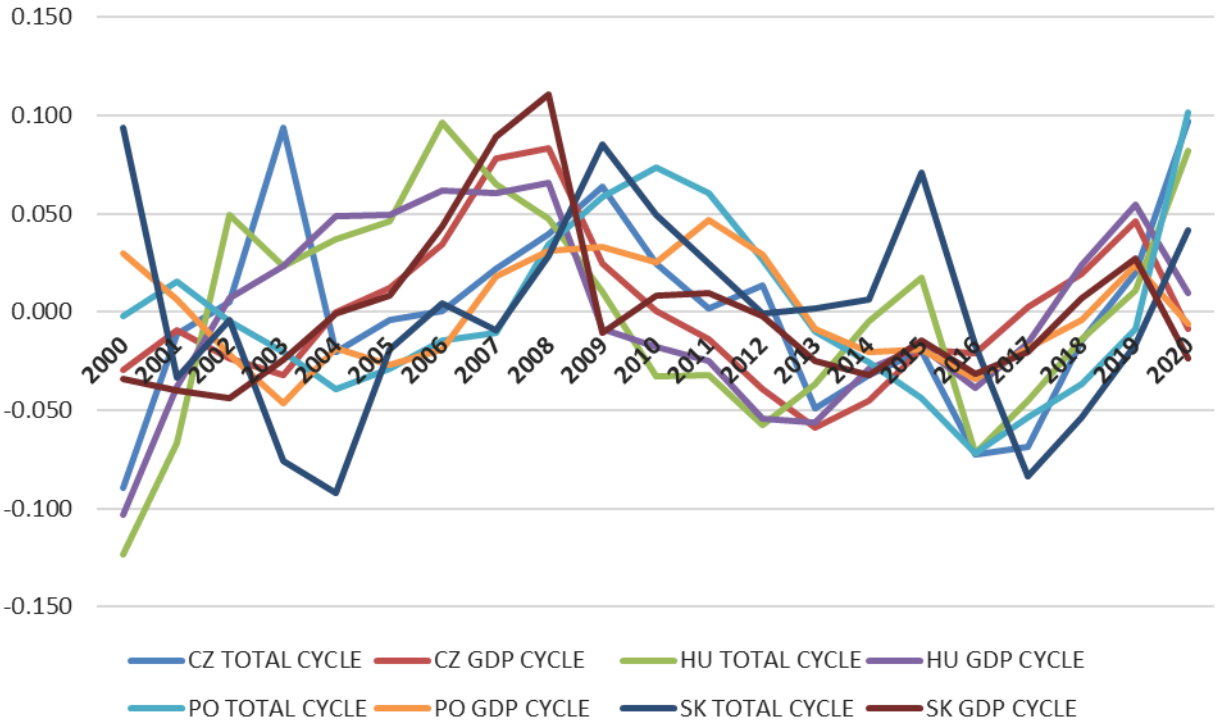
As already mentioned, Slovak total government expenditure is the lowest of all the analyzed countries. Social protection (C100 - average 34.4%) has the highest share of total government expenditure in all years, and its share increased from 27% in 2000 to 36.7% in 2020. General public services (C10 - 21.1% in 2000 and 13.5% in 2020), Economic affairs (C40 - 18% and 12.8%) and Health (C70 - 10.6% and 13.7%) alternately placed in the 2nd and the 3rd positions.

The results suggest that the composition of government expenditure is similar in the Visegrad Group despite the existing differences in the size of the public sector. Data confirms unstable and cyclical development of total government expenditure on GDP in all V4 members. Expenditure on Social protection C100 has the highest share of total government expenditure in all countries. Five of the highest COFOG expenditure divisions, on average, account for more than 80% of the total expenditure: Social protection (C100), Economic affairs (C40), Health (C70), General public services (C10) and Education (C90).

The cyclicality of government expenditure

As already mentioned, government expenditure is a possible stabilizer. From this point of view, government expenditure should move in a countercyclical direction. Time series are cyclically adjusted for the purpose of analysis. Firstly, logarithms of variables were calculated and then the cycle components were extracted using the Hodrick-Prescott filter. Figure 3 shows adjusted GDP and total government expenditure in each individual country of the Visegrad Group. Separate figures are available for each country on request.

Figure 3: Adjusted GDP and total government expenditure



Source: Author´s calculations based on data from Eurostat.

Correlation is a statistical technique that can show whether and how strongly pairs of variables are related. The correlation coefficient can vary from -1 to +1. The correlation coefficient -1 indicates perfect negative correlation, and +1 indicates perfect positive correlation. Its value smaller than 0.1 means zero correlation, from 0.1 to 0.35 weak correlation, from 0.35 to 0.7 moderate correlation and higher than 0.7 expresses strong correlation. A positive correlation coefficient indicates the procyclicality of government expenditure, negative value means that variables are countercyclical, and values close to zero express acyclicality. Table 2 presents the summary of correlation analysis.

The results significantly vary across countries. In the Czech Republic, Hungary and Poland, correlation coefficients are positive and express procyclical development. Differences can be seen in the value of correlation coefficients – weak positive correlation is found in the Czech Republic, moderate procyclical development in Poland and strong procyclical government expenditure in Hungary. Only in Slovakia does a correlation coefficient describe a zero correlation between total government expenditure and GDP and it means that government expenditure is acyclical.

Table 1: Cyclicality of GDP and total government expenditure

Country	Correlation coefficient	Correlation	Cyclicality
Czech	0.312	Weak positive	Procyclical
Hungary	0.884	Strong positive	Procyclical
Poland	0.645	Moderate positive	Procyclical
Slovakia	0.035	Zero correlation	Acyclical

Source: Author´s calculations.

It can be stated that, compared to the expectations and recommendations of the theoretical literature, the countries of the Visegrad Group did not use government expenditure as a stabilizer in the monitored period. Moreover, compared to Szarowska´s papers (2011), cyclicality has changed since the transition period, when a countercyclical movement was detected in Slovakia and as well as lower values of correlation coefficients in other countries.

The results of the empirical evidence are in line with the findings of other empirical studies which confirmed that government expenditure is procyclical (e.g. Fiorito & Kollintzas, 1994; Lane, 1998; Hercowitz & Strawczynski, 2004; Alesina et al., 2008; Rajkumar & Swaroop, 2008; Woo, 2009; Abbott & Jones, 2011; Servén, 2013). Results for Czech, Hungary and Poland confirm the statement of Talvi and Vegh (2005) that fiscal procyclicality is evident in a wider sample of countries. From this point of view, Slovak development is an exception compared to most of the previously analyzed countries.

Granger causality

As mentioned above, the Granger causality refers to a specific notion of causality in time-series analysis. The Granger causality test is applied to a time-series data to determine the causality between total as well as individual COFOG government expenditure (C10…C) and economic growth (GDP). It is important to mention that the statement for example "C10 Granger causes GDP" does not imply that GDP is the effect or the result General public services (C10). Granger causality measures precedence and information content but does not by itself indicate causality in the more common use of the term. The null hypothesis should be rejected if probability is less than 0.05. Table 2 summarizes results for lags of one or two years (number of observations for each country is 20, resp. 19). GC means Granger cause; bold values indicate a hypothesis which should be rejected.

The analysis presented in Table 2 shows the direction of causality between the analyzed macroeconomic variables. One can find two examples of unidirectional Granger causality from government expenditure to GDP growth, namely from Public order and safety (C30) and Recreation, culture and religion (C80) to GDP growth, both reported in Hungary for 1year lag, and so it provides support for the validity of the Keynesian view. Therefore, it can be stated that Public order and safety expenditure was a very important factor for the economic growth in Hungary in the period under review. The results of our evidence are parallel to findings of Alexiou (2009), Afonso and Alves (2016), Korkmaz and Güvenoğlu (2021) and Dudzevičiūtė et al. (2018) for Sweden and Slovakia, although our results of analysis differ in the case of Slovakia.

Table 2: Results of Granger causality

Null Hypothesis	Czech (lag 2 years)		Hungary (lag 1 year)		Poland (lag 2 years)		Slovakia (lag 1 year)	
	F-Stat	Prob.	F-Stat	Prob.	F-Stat	Prob.	F-Stat	Prob.
GDP does not GC C10	3.412	0.062	8.766	0.009	4.351	0.034	17.691	0.001
C10 does not GC GDP	0.410	0.671	2.678	0.120	0.836	0.454	0.249	0.624
GDP does not GC C20	3.057	0.079	2.354	0.143	3.393	0.063	0.796	0.385
C20 does not GC GDP	0.419	0.666	0.038	0.847	0.828	0.457	0.078	0.783
GDP does not GC C30	3.934	0.044	0.010	0.921	6.310	0.011	14.896	0.001
C30 does not GC GDP	0.795	0.471	11.414	0.004	0.458	0.642	1.621	0.220
GDP does not GC C40	4.213	0.037	5.146	0.037	4.690	0.028	10.044	0.006
C40 does not GC GDP	0.131	0.879	0.138	0.715	3.958	0.043	0.073	0.790
GDP does not GC C50	4.142	0.039	4.567	0.047	2.900	0.088	18.248	0.001
C50 does not GC GDP	0.259	0.775	0.014	0.907	0.942	0.413	0.070	0.795
GDP does not GC C60	0.053	0.949	21.264	0.000	0.891	0.432	3.811	0.068
C60 does not GC GDP	1.874	0.190	3.043	0.099	1.261	0.314	0.151	0.703
GDP does not GC C70	2.596	0.110	7.540	0.014	5.423	0.018	3.899	0.065
C70 does not GC GDP	0.402	0.676	0.481	0.497	0.147	0.865	0.270	0.610
GDP does not GC C80	8.495	0.004	1.372	0.258	3.494	0.059	4.605	0.047
C80 does not GC GDP	4.372	0.034	16.118	0.001	2.090	0.161	1.664	0.214
GDP does not GC C90	7.274	0.007	2.827	0.111	6.643	0.009	8.068	0.011
C90 does not GC GDP	0.687	0.519	0.013	0.912	0.304	0.743	0.011	0.919
GDP does not GC C100	5.501	0.017	25.049	0.001	2.289	0.138	17.587	0.001
C100 does not GC GDP	0.226	0.801	1.878	0.188	0.802	0.468	0.085	0.774
GDP does not GC C	5.502	0.017	25.049	0.000	2.289	0.138	17.588	0.001
C does not GC GDP	0.226	0.801	1.878	0.188	0.802	0.468	0.085	0.774

Source: Author´s calculations.

On the other hand, there are reported many cases of unidirectional Granger causality from GDP growth to government expenditure and its divisions, concretely four in Poland, seven in Czech and Hungary, and eight in Slovakia. The results mean that economic growth comes first followed by government expenditure. Deeper analysis focused on direct impact of the variables will follow in the next paper. The same direction of causality running from economic growth to government expenditure is also reported in studies by Afonso and Alves (2016), Sáez et al. (2017) or Dudzevičiūtė et al. (2018) in the case of 5 selected countries,

A bidirectional Granger causality is revealed only between these two variables: Economic affairs (C40) and GDP growth in Poland with the lag of 2 years. This result is similar to the earlier findings of Roşoiu (2015) who found a bidirectional causality relation between government expenditure and economic growth in Romania.

The empirical evidence provides mixed conclusions about the relationship between government expenditure and economic growth in the Visegrad Group, which is in line with Nyasha ad Odhiambo (2019) just like Alqadi and Ismail (2019) who researched the theoretical and empirical literature. The variety is generated due to differences in the econometric models used, country samples, observation periods and considered variables.

Conclusion

The goal of the article was to examine the relationship between government expenditure and economic growth in the Visegrad Group in the period 2000-2020, including the direction of influence between variables. The intention was also to analyze acyclicality and the structure of government expenditure according to COFOG classification.

Descriptive analysis showed the main differences across the countries. Firstly, the total value and structure of government expenditure was analyzed in each country of the Visegrad Group in the period 2000-2020. Data indicates unstable and cyclical development of total government expenditure on GDP in all countries. The empirical evidence confirms the differences in the size of the public sector in Visegrad countries. Hungary emerged as the country with the highest role of government, although its role has also decreased (except during the pandemic period). Contrarily, Slovakia was found as the country with the lowest share of government expenditure on GDP and data confirms its decreasing trend. The composition of government expenditure is similar in all Visegrad countries. Expenditure on Social protection has the highest share of total government expenditure and five spending functions, on average, account for more than 80% of the total government expenditure: Social protection, Economic affairs, Health, General public services and Education.

However, the results of correlation analysis significantly vary across countries. In Czech, Hungary and Poland, correlation coefficients are positive and express procyclical development. Only in Slovakia, findings indicate acyclical development of government expenditure. It can be stated that, compared to the expectations and recommendations of the literature, the countries of the Visegrad Group did not use government expenditure as a stabilizer in the monitored period. At any rate, the results of the analysis are only the first step for a complex analysis and interpretation of procyclical behavior of fiscal policy in the Visegrad Group.

Finally, Pairwise Granger causality tests were applied to examine the relations between GDP growth and government expenditure. The empirical evidence provides mixed conclusions about the relationship between government expenditure divisions and its individual and economic growth in the Visegrad Group. The analysis identified the direction of causality between the analyzed macroeconomic variables. One can find only two examples of unidirectional Granger causality from government expenditure to GDP growth, namely from Public order and safety (C30) and Recreation, culture and religion (C80) to GDP growth, both reported in Hungary Next, there are reported many cases of unidirectional Granger causality from GDP growth to government expenditure and its divisions, concretely four in Poland, seven in Czech and Hungary, and eight in Slovakia. The results mean that economic growth comes first followed by government expenditure.

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