

Lukasz Augustowski, MSc
Zbigniew Binek, PhD
University of Zielona Góra

<https://doi.org/10.26366/PTE.ZG.2017.96>

The impact of government expenditure on household consumption in V4 countries

Abstract

The article presents the impact of selected categories of government expenditure on private consumption of households in the Visegrad Group countries. The research problem was the answer to the question whether the government spending in V4 countries had a positive impact on consumer spending in households. It was hypothesized that different types of expenditure in V4 countries have a different effect on consumer spending of households. The analysis used a panel regression method with fixed effects. The country of reference was Poland. A statistical analysis of government expenditures was also used, and the relationship between GDP per capita and expenditure to GDP was indicated. The results showed that different types of government expenditure affect household consumption in a variety of ways, with social security spending having the strongest positive impact on consumption.

Keywords: Visegrad Group, government expenditures, consumption.

JEL CODE: C51, F02, G28, H50.

Wpływ wydatków rządowych na konsumpcję gospodarstw domowych w krajach V4

Abstrakt

W artykule przedstawiono wpływ wybranych kategorii wydatków rządowych na konsumpcję prywatną gospodarstw domowych w krajach Grupy Wyszehradzkiej. Problemem badawczym była odpowiedź na pytanie, czy wydatki rządowe w krajach V4 korzystnie wpływają na wydatki konsumpcyjne gospodarstw domowych? Postawiona została hipoteza, że różne rodzaje wydatków w krajach V4 wpływają odmiennie na wydatki konsumpcyjne gospodarstw domowych. Do analizy wykorzystano metodę regresji panelowej z efektami ustalonymi. Krajem odniesienia była Polska. Wykorzystano także analizę statystyczną dla wydatków rządowych i wskazano zależności między PKB per capita a wielkością wydatków do PKB. Otrzymane rezultaty wykazały, że różne typy wydatków rządowych w różny sposób wpływają na konsumpcję gospodarstw domowych, przy czym najsilniejszy dodatni wpływ na konsumpcję wywierają wydatki na zabezpieczenie społeczne.

Słowa kluczowe: Grupa Wyszehradzka, wydatki rządowe, konsumpcja.

Introduction

The Visegrad Group (V4) arose out of a collective initiative of four countries which shared common interests. The resulting cooperation between Poland, Hungary, Slovakia and the Czech Republic covered a number of areas – from economic to environmental policy. Currently (from 01/07/2016 to 30/06/2017), it is Poland that is presiding the group based on rotating presidency. The Visegrad Group was founded in 1991, and since then, several key events have taken place in economic life which had affected the situation of each of the four economies. Importantly, as of 2004, all these countries are members of the European Union. In the face of the financial crisis, Slovakia joined the euro area in 2009.

The aim of this paper is to indicate the impact of government spending on consumption in the Visegrad Group countries. An attempt was made to answer the question of whether government spending in the V4 countries has had a positive impact on household spending among consumers. A hypothesis was put forward that various types of spending in the V4 countries have a different effect on consumers' private spending. A statistical analysis of government expenditure was used in the research, alongside panel regression with effects determined in relation to Poland. To determine the quality of the analyzed model, selected statistical tests and matching measures were used.

The Visegrad Group

The Visegrad Group, or V4, was founded in 1991 as an informal association of three Central and Eastern European countries: Poland, Czechoslovakia, and Hungary (Kobzová 2012, p. 17). The name of the group comes from the town of Vyšehrad located in northern Hungary, a place where the kings of the Czech Republic, Hungary and Poland met in 1335 to discuss the cooperation between their kingdoms in the field of politics and trade. 656 years later, in February 1991, the then presidents of Czechoslovakia, Poland and Hungary met in the same town to embark on joint cooperation, which was named after the place of their meeting (Biuro Spraw ... 2012, p. 3). The cooperation of the members of the Visegrad Group (Poland, the Czech Republic, Slovakia, and Hungary) covers the political, economic, defense, social, ecological and transport sectors (Czyż 2014, p. 14). The first potential area of V4 cooperation concerns the EU forum. The similar level of economic development, coupled with the similarity in the economic structure, affluence of inhabitants, significant importance of financial resources from the EU budget for economic and social development and geographical location are factors that very often make the V4 countries share similar interests

when it comes to the shape of EU policies and decisions made within the EU. This cooperation is possible and desirable in both intergovernmental (European Council and EU Council), and intra-Community institutions (European Parliament and European Commission) (Kubin 2014, p. 29).

The importance of government spending

In 2014, the average share of public spending to GDP (fiscal rate) was at 46.3% in EU countries and at 45.3% in OECD countries, with the range varying from 32.3% in South Korea to 58.3% in Finland. The greatest importance of the public sector measured by the share of public spending to GDP was observed in the Scandinavian countries. In Poland, this share in 2014 was 42.1%, lower than both the average in the EU and OECD countries and the median for all analyzed countries (43.5%) (Sawulski 2016, p. 4).

Government spending may affect economic fluctuations through demand and supply mechanisms. According to the widespread interpretation of the demand-driven impact of fiscal policy on the economy, as presented by Samuelson (1948), increased government spending prompts an exponential growth in aggregate demand and, thus, an increase in production (Krajewski 2017, p. 75).

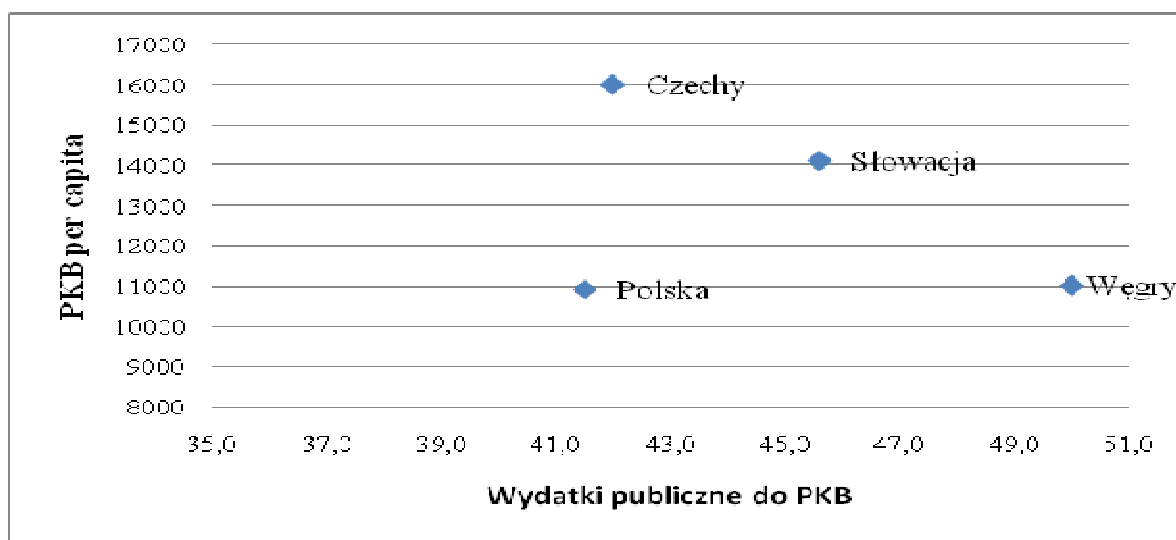
In real business-cycle (RBC) models, the distinction between temporary and sustained growth in government spending is important. The sustainable growth causes a decline in household assets, which translates into an increase in labor supply and reduced consumption. In turn, the increase in employment shifts the curve of the marginal product of capital upwards, which then increases the desired capital stock. In the initial period, due to the slow adjustment of the amount of capital, GDP growth is mainly caused by the increase in labor supply. As a result of changes in labor supply, accompanied by an almost unchanged level of capital, the marginal product of labor decreases and so does the wage rate. Simultaneously, higher labor supply results in an increased marginal capital product and an increased interest rate. In the adjustment period, as the capital increases, the interest rate and wage rate approach the initial level. The shorter the change in government spending lasts, the stronger fiscal policy affects through the substitution of free time, and less so through the impact on the discounted property of households. The crucial difference between the effects of temporary and sustained growth in government expenditure is investment. In the case of a sustained increase in government spending, investments grow following an increase in the desired level of capital. With a temporary increase in government spending, investment expenditures are at

a lower level, so as not to trigger any significant fluctuations in consumption (Krajewski 2017, pp. 75-76).

The most general empirical problem related to the impact that the government can have on the economy is the question of the relationship between the size of the public sector and the long-term growth rate. In this respect, the neoclassical and endogenous theory of growth formulate different predictions. The neoclassical theory argues that the long-term growth rate is independent of the government's redistribution scale, whereas the endogenous theory assumes that both excessive and insufficient public spending act against growth, since the government either fails to provide enough productive public goods or distortions caused by taxes outweigh the benefits from public intervention (Bukowski, Kowal, and others 2005, p. 113).

The amount of government spending is also significant. Adolf Wagner notes that expenditures grow along with social development, while the development of a modern state requires constant growth of public spending (Kańduła 2010, p. 142). Therefore, it can be said that the increase in GDP prompts an increase in the level of activity of the public sector. The correlation between the amount of government spending and GDP per capita is shown in Figure 1.

Figure 1. Government spending and GDP per capita in the V4 countries (2015)



Source: own study based on Eurostat data

In 2015, the Czech Republic had the largest GDP per capita out of the V4 countries, although its level of government spending did not differ significantly from the expenditures reported in Poland, whose GDP per capita did not exceed EUR 11,000. A similar to Poland level of income per capita was observed in Hungary, where public spending was as high as

50% to GDP. As indicated by Joanna Siwińska-Gorzelać, these countries are characterized by quite high public spending with a level of GDP per capita lower than in most OECD countries. This phenomenon is referred to as „a premature welfare state”, in which social solutions tailored to rich countries are adopted despite the fact that the level of development is much lower (Siwińska-Gorzelać 2012, pp. 36-37). The change in the amount of total government spending in the Visegrad Group is presented in Table 1.

Table 1. Total amount of government spending in the V4 countries

GEO/TIME	2010	2011	2012	2013	2014	2015	Avg.	SD	CV	Trailing average
Czech Republic	43,0	43,0	44,5	42,6	42,2	42,0	42,9	0,89088	0,020774	42,96
Hungary	49,5	49,7	48,6	49,3	49,0	50,0	49,4	0,500999	0,010152	49,27
Poland	45,7	43,8	42,7	42,4	42,1	41,5	43,0	1,512173	0,03514	42,92
Slovakia	42,1	40,8	40,6	41,4	42,0	45,6	42,1	1,826928	0,043412	41,73

Notes: Avg. - average, SD – standard deviation, CV –coefficient of variation

Source: own study based on Eurostat data.

In 2015, the highest total government spending to GDP from among the V4 countries was reported in Hungary (50% to GDP), while in Poland this value was at 41.5% to GDP.

In the period under consideration, the spending had a volatility in the range of 2-4%, and its average level measured by both the arithmetic mean and the average change rate did not exceed 50% to GDP. Low values of adopted dispersion measures point to the stable nature of expenditures in the Visegrad Group countries.

Methods and results

The paper uses the panel model with effects determined to assess the impact of government spending measured as a share of GDP on the final household consumption in the Visegrad Group countries. The main source of data was the Eurostat database. The model used 56 observations, and 4 units of cross-sectional data were included. Data from the period of 2002-2015 (time series length 14) were used. The analyzed independent variables also included the real level of GDP per capita. In their disaggregated approach, J. Cartel, R. Craigwell and S. Lowe also studied the impact of variables such as population, openness of the economy, price levels, real government spending and investment relative to real GDP per capita (Carter, Craigwell, Lowe 2013, pp. 9-13). However, these factors were considered as variables that influence economic growth. The panel approach to government spending has been used in many papers, including by M. Mahmoodi and E. Mahmoodi (2014, pp. 38-39).

Given the wide range of state spending in various areas of public life, an attempt was made to disaggregate government spending. This seems justified in light of the possibly different impact of various categories of state expenditure on private consumption. Selected components of government spending on consumption were examined by M.A. Dada, initially by disaggregating total government spending into expenses meant for government administration, education, health, agriculture, construction, public expenditure on transportation and communication, and government spending on social security (Abiodun Dada 2013, pp. 22-28). Meanwhile, Boldenau and Tache analyzed a simple regression in which variables constituted decomposed total government spending on general public services, defense, public order and safety, economic affairs, health, education, and social security (Boldenau, Tache 2015, pp. 116-119). Following the Eurostat methodology, total public spending was broken down into 10 subcategories, which – in addition to those described by F.T. Boldenau and I. Tache – included expenditure on environmental protection, municipal and housing management as well as recreation, culture and religion. According to Y. Chen, F. Luan and W. Huang (2014, p. 2), all variables were transformed using a natural logarithm. The model does not use time delays, which is why the approach presents the problem in a stationary way as far as government spending is concerned. In the initial model, there were 10 subcategories of government spending, but variables with a high *p-value* were removed in the subsequent stage, giving the model the final form of:

$$\ln C_{it} = \alpha_{i0} + \alpha_1 \ln G_{1it} + \alpha_2 \ln G_{2it} + \alpha_3 \ln G_{3it} + \alpha_4 \ln G_{4it} + \ln RPKB + v_{it},$$

where:

C - household spending on consumption

G₁ - spending on public order and safety,

G₂ – spending on health

G₃ - spending on recreation, culture and religion,

G₄ - spending on social security,

RPKB - real GDP per capita¹,

V_{it} - total random error.

The model estimated by panel regression using determined effects and estimated parameters for each of the V4 group countries with respect to Poland is presented in Tables 2 and 3.

¹ Instead of real GDP per capita, Y. Chen, F. Luan and W. Huang (2014) adopted as a variable in their model disposable income.

Table 2. Impact of selected areas of government spending and GDP per capita on household consumption

	<i>Coefficient</i>	<i>Standard error</i>	<i>Student's t-distribution</i>	<i>p-value</i>	
Const	-2,92890	0,365491	-8,014	0,0041	***
G1	-0,330816	0,085428	-3,8725	0,0305	**
G2	0,430283	0,0974779	4,4142	0,0216	**
G3	0,151087	0,0867637	1,7414	0,1800	
G4	0,500657	0,122868	4,0747	0,0267	**
RealGDP	1,71501	0,0885	19,3786	0,0003	***
Hungary	-0,73048	0,0166694	-43,8217	<0,0001	***
Slovakia	-1,02267	0,0202166	-50,5859	<0,0001	***
Czech Republic	-0,875096	0,0220951	-39,6059	<0,0001	***

Legend: * $p < 0,1$; ** $p < 0,05$; *** $p < 0,01$.

Source: own study using the Gretl 2016d software.

Tabela 3. Ocena dopasowania i testy statystyczne modelu

Arithmetic mean of dependent variable	4,822337	Standard deviation of dependent variable	0,314382
Residual sum of squares	0,031295	Residual standard error	0,025804
LSDV R-squared	0,994243	Within R-squared	0,993263
F(8, 3)	1111,809	p-value for F-test	0,000041
Logarithm of likelihood	130,2494	Akaike information criterion	-242,4987
Bayesian information criterion	-224,2705	Hannan-Quinn information criterion	-235,4317
Autocorrelation of residuals	0,240691	Durbin-Watson statistic	1,409526

Source: own study using the Gretl 2016d software.

The presented model indicates that, in the V4 countries, spending on health, recreation, culture and religion as well as social security have a positive impact on household consumption. In the model, government spending has the biggest impact on consumption in Poland. The most significant impact on the increase in consumption is observed for social security spending (the highest value of the coefficient), as it constitutes an additional source of income of households received as a result of transfer payments. Spending on health also had a positive effect on consumption in the analyzed period, although F.T. Boldenau and I. Tache revealed its negative impact on economic growth. Real GDP also positively affects the dependent variable, while expenditures on public order and safety negatively affect consumption in the presented model. Similar conclusions were put forward by Boldenau and Tache in relation to economic growth. It should be noted that, in the analyzed model, apart

from spending on culture, recreation and religion, all variables were statistically significant at 1% or 5%.

Summary and conclusions

Based on the statistical analysis and the results derived from the model, it can be said that various types of government spending have a different impact on household consumption expenditure, which confirms the previously stated research hypothesis. Private consumption, social security as well as religion, culture and recreation all had a positive impact on private consumption. A negative relationship was revealed for spending on public order and safety. In addition, government spending had the strongest impact on consumption in Poland. The presented analysis also shows that, in 2015, selected countries from the Visegrad Group were marked by a similar level of GDP per capita, with a different scale of government expenditure to GDP (Poland-Hungary) or a similar scale of spending against a different income per capita (Poland-Czech Republic).

References

Boldenau F.T., Tache I. (2015), *Public expenditures by subdivision and economic growth in Europe*, „BASIQ 2015 – New Trends in Sustainable Business and Consumption”, Bucharest.

Bukowski M., Kowal P., Lewandowski P., Zawistowski J. (2005), *Struktura i poziom wydatków i dochodów sektora finansów publicznych a sytuacja na rynku pracy. Doświadczenia międzynarodowe i wnioski dla Polski*, NBP, Warszawa.

Carter J., Craigwell R., Lowe S. (2013), *Government Expenditure and Economic Growth in a Small Open Economy: A Disaggregated Approach*, Central Bank of Barbados.

Chen Y., Luan F., Huang W. (2014), *The Effect of Government Expenditure on Private Consumption: Evidence from China*, „Journal of Global Economics”, no. 2: 120, DOI: 10.4172/2375-4389.1000120.

Czyż A. (2014), *Grupa Wyszehradzka – 20 lat współpracy*, „Atheaneum. Polskie Studia Politologiczne”, nr 42.

Dada M.A. (2013), *Composition Effects of Government Expenditure on Private Consumption and Output Growth in Nigeria: a Single-Equation Error Correction Modelling*, „Romanian Journal of Fiscal Policy”, vol. 4, issue 2(7).

http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=gov_10a_exp&lang=en,
(dostęp: 15.03.2017).

http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama_co3_p&lang=en,
(dostęp: 15.03.2017).

<http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tsdec100&plugin=1> (dostęp: 15.03.2017).

Informacja na temat Grupy Wyszehradzkiej (2012), Biuro Spraw Międzynarodowych i Unii Europejskiej, Kancelaria Senatu, Warszawa.

Kańduła S. (2010), *Prawo Wagnera w gospodarce jednostek samorządu terytorialnego*, „Zeszyty Naukowe Uniwersytetu Szczecińskiego”, nr 620, „Ekonomiczne Problemy Usług”, nr 61.

Kobzová J. (2012), *The Visegrad Group in Eastern Europe: An actor, not a leader*, „Visegrad Insight”, nr 2.

Krajewski P. (2017), *Regionalne zróżnicowanie oddziaływania wydatków rządowych na zatrudnienie – wnioski z analizy SVAR*, „Bank i Kredyt”, nr 48 (1).

Kubin T. (2014), *Grupa Wyszehradzka – perspektywy dalszej współpracy*, „Atheaneum. Polskie Studia Politologiczne”, nr 42.

Mahmoodi M., Mahmoodi E. (2014), *Government Expenditure-GDP Nexus: Panel Causality Evidence*, *International Journal of Economy, Management and Social Sciences*, nr 3(1).

Sawulski J. (2016), *Finanse publiczne w Polsce – diagnoza na tle innych krajów*, „IBS Policy Paper”, nr 4.

Siwińska-Gorzelał J. (2012), *Sektor publiczny w gospodarce*, w: Wilkin J. (red.), *Teoria wyboru publicznego. Główne nurty i zastosowania*, Wydawnictwo Naukowe Scholar, Warszawa.