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THE IMPACT OF GOVERNMENT CONSUMPTION ON GROWTH – GLOBAL EVIDENCE

ABSTRACT

The effects of government consumption on economic growth are investigated in this study in a panel of world economies. Renewed attention has been recently paid to exploring this important relationship, especially in the aftermath of the global economic and financial crisis which resulted in unprecedented fiscal interventions globally. Despite the numerous attempts at investigating it, the literature still seems lacking in providing a unison answer to the question on the appropriate role of government in an economy. Theoretically the effects of government consumption on growth may be both positive and negative, with a lot of ambiguity also present in empirical studies. Given this uncertainty supplementary evidence is needed to further investigate the link between government consumption and economic growth. To tackle this important question this paper applies panel data techniques in a broad sample of as many as 178 world economies covering the period since 1990 until 2020. Overall, this study reports consistent and robust evidence on the negative impact of government consumption and tax revenues on economic growth.

Keywords: *government consumption, economic growth, panel data*

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1. INTRODUCTION

The appropriate role of government in an economy has been a hot and long standing issue in economic literature. Despite the numerous attempts at investigating it, the literature still seems lacking in providing a unison answer to this important question. This question gains in importance in particular with public expenditure increasing strongly in the last 60-70 years, practically in all countries around the world. Global economic and financial crisis in 2008 and the COVID 19 pandemics only add to this importance with huge fiscal interventions and new rounds of government involvement in the economies globally. Not surprisingly renewed attention was paid to exploring the relationship between government spending and economic growth. Theoretical and empirical literature provide evidence supporting both the positive as well as the negative impact of government on economic growth. Theoretically the positive effects on growth might be realized through the so called productive public expenditures (e.g. infrastructure projects) or contribution to human capital through government financed education. The negative effects might be coming through distortions caused by higher taxes or the often cited crowding-out effects. Empirically the effects related to government spending and its impact on economic growth are also mixed. Given the uncertainty present in the theoretical and empirical literature supplementary evidence is needed to further investigate the link between government consumption and economic growth. Therefore, the main research question investigated in this paper is how government consumption affects economic growth, positively or negatively and whether at all. To tackle this important question this paper applies panel data techniques in a broad sample of world economies covering the period since 1990 until 2020. With as many as 178 countries application of advanced econometric techniques allows this study to provide an important contribution to the empirical literature investigating the role of government consumption in economic growth. The empirical findings from this study also have important policy implications further adding to its significance.

This paper has the following structure. A brief review of related literature and paper background are presented in Section 2. Section 3 outlines the research methodology and describes the data used in empirical investigation. Econometric results and their discussion follows in Section 4. Section 5 provides the concluding remarks and outlines policy implications and avenues for future research.

2. RELATED LITERATURE AND PAPER BACKGROUND

Theoretical arguments can be found to provide both the positive and negative effects of government spending on economic growth. In their survey of the literature on the relationship between government spending and growth Marica and Piras (2018) suggest that at the theoretical level an increase in government spending may result in positive, negative or no effect on growth. Thus, within the neoclassical growth

setting in which the long-run growth rate is determined by exogenous technological progress there is no role for government and its policies in affecting growth. However, the works by Romer (1986), Barro (1990) and the subsequent class of endogenous growth models resulted in many applications which produce strong effects of government on long-term growth. Usually, the relationship in the literature is graphically depicted by the inverted-U shaped curve (see for example Asimakpoulos and Karavias, 2016). On one hand, the channel for positive effects on growth are related to the so called productive public spending (e.g. infrastructure projects, better enforcement of property rights and stronger institutions), whereby public spending might result in higher private capital marginal productivity. Human capital accumulation, as financed by public spending might be an additional channel. On the other hand, government consumption which is financed by higher taxes may play a distortionary role. Taxes distort the incentives in market economies, thus producing less effective allocation of resources and hindering long-term economic growth. It should be added that the positive effects of higher government spending are possible if the government is successful in correcting market failures, but it should be also noted that higher public spending may also result in state failures and the net result may be overall negative. Additional reasons resulting in the negative effects of higher public spending could be related to crowding-out effects, effect of tax on market transaction costs, rent-seeking, political transaction costs and bureaucratic costs (Marica and Piras, 2018). Thus, theoretically it is possible that higher public expenditure leads to different outcomes and empirical studies will have to step in to bridge the gap in theoretical arguments. Unfortunately, a lot of ambiguity is also present in empirical studies, some finding positive and some finding negative effects, or no effects at all. A recent study by Arawatari et al. (2023) provides a consistent framework based on endogenous growth models strongly accounting for R&D activities which relates to the inverted-U shaped curve and allows the theoretical explanation for both the positive and negative effects found by empirical studies. Thus, in their model high government expenditure increases monopolistic profits and thereby stimulates the entry of intermediate-good firms suggesting the positive effect on growth. Conversely, high government expenditure indicates a high tax rate, depressing the R&D activity and in consequence results in negative effect on growth. A particular additional feature of this R&D-based model of endogenous growth is an extension allowing for an inverted-U shaped curve with a flat top which also provides an explanation for no effects between government size and growth.

As mentioned previously, empirical literature is rather mixed on this important relationship. Early literature on the topic predominantly reported the negative effects of government size on economic growth (see for example Romer, 1990 or Folster and Hendrekson, 1999). However, the studies finding also the positive effects of government spending should be mentioned. Among the earlier studies is Ram (1986)

who investigated 115 countries and concluded that government size has a positive effect on economic performance and growth. Kneller et al. (1999) find for the sample of OECD economies that an increase in public productive expenditures raises GDP growth. At the same time, they find that increasing distortionary taxes decrease growth. Colombier (2009) finds also positive effects of government size for the sample of OECD countries. Bose et al. (2007) find a positive relationship between public expenditure and economic growth for developing countries. Among the more recent studies, with the focus on the studies published after 2010, Bergh and Hendrekson (2011) conclude from their review of the literature that empirical studies typically report the negative link between government size and growth. For a panel of 108 countries from 1970-2008 Afonso and Jalles (2011) also report the negative effect of the size of government on growth and government consumption is consistently detrimental to output growth irrespective of the country sample considered, be it OECD or emerging and developing countries. This study is also interesting as it accounts for the importance of institutional quality for growth finding positive effects, but more importanly it has found that the negative effect of government size on growth is stronger the lower institutional quality. Gemmel et al. (2016) also find that total government expenditures affect GDP negatively. Nguyen and Bui (2022) find the negative effects of government expenditures and corruption control on economic growth for the 16 Asian economies, but do suggest that the interaction between government expenditure and corruption control can reduce the negative impact. At the other spectrum reporting the positive effects Morozumi and Veiga (2016) find in the sample of 80 countries that when institutions make governments to be accountable to citizens public capital spending promotes growth. Kimaro et al. (2017) also find the positive effects of government expenditure on economic growth for low income Sub-Saharan African countries. Additional positive effects are reported in Arestis et al. (2021) and Arvin et al. (2021).

The intention of this section was to present only a brief review of theoretical and empirical studies to provide an introduction to the empirical study conducted in this paper. It should be, however, noted that a number of additional studies could be listed and commented upon, but we refrain from doing so. To summarize this brief review of related literature it appears that both the negative as well as the positive effects of government consumption on economic growth can be found in empirical literature. This also suggests that it might take a while until a consensus is reached and until that happens new studies investigating this important relationship are needed.

3. RESEARCH METHODOLOGY AND THE DATA

In order to investigate the relationship between government consumption and economic growth the starting growth model in our paper is set quite broadly. Building on the simple Solow growth model, which explains growth with accumulation of physical capital and exogenous labour and technological progress, Mankiw et al. (1992) suggest that when this model is extended with human capital and population growth, majority of growth experiences around the world can be well explained with this type of a growth model. This model serves as a basis in many empirical studies investigating growth, but typically additional determinants are allowed for. To show the variety of growth determinants that may be used in empirical studies Durlauf et al. (2008) recognise almost 150 possible determinants. These range from the basic determinants mentioned above like physical and human capital, demographics, (trade) openness to monetary and financial conditions, fiscal policy (government spending and taxes), quality of institutions, as well as geographical factors, natural resources and so on. Following this literature in addition to government consumption we also allow for the impact of investment, population growth, human capital as represented by years of schooling, openness (as represented by trade openness), and institutions as potential growth determinants. As an addition to government consumption, we also use tax revenues as percent of GDP as our alternative government variable. The data are annual and are collected for the period from 1990 to 2020. As a robustness check we also employ the 5-year averages of our data starting also in 1990. Depending on the available dataset and the chosen model we cover a broad sample of world economies mounting from 97 to 178 countries.

The baseline model of the following form is econometrically estimated:

$$GDPgit = \beta 1INVit + \beta 2POPit + \beta 3SCHOOLit + \beta 4OPENit + \beta 5GOVit + \beta 6\ INSTit + \varepsilon it \qquad (1)$$

where i denotes a country and t a time period. In this model GDP growth (GDPg) is potentially determined by investment as percent of GDP (INV), population growth (POP), expected years of schooling (SCHOOL) as a representative of human capital, government consumption as percent of GDP (GOV), trade openness as represented by trade as percent of GDP (OPEN), and institutions (INST). As an alternative the impact of government on economic growth is estimated by substituting government consumption with tax revenues as percent of GDP (TAX). The variables used in our empirical estimations are described in Table 1 below.

Table 1: *Description of variables*

Variable	Explanation	Source
GDPg	GDP growth rate (%)	World Bank World Development Indicators
INV	Investment - Gross fixed capital formation (% of GDP)	World Bank World Development Indicators
POP	Population growth (%)	World Bank World Development Indicators
SCHOOL	*Schooling* - Expected years of schooling	UNDP - Human development report
SEC	*Secondary education* - Secondary education completed, percent of population aged 25 and over	Barro and Lee (2013), v. 2.2, 2018
GOV	General government final consumption expenditure (% of GDP)	World Bank World Development Indicators
TAX	Tax revenue (% of GDP)	World Bank World Development Indicators
OPEN	*Trade openness* – Exports plus imports (% of GDP)	World Bank World Development Indicators
INST	*Institutions* Autocracy-democracy index (polity2) ranging between -10 (total autocracy) and 10 (total democracy)	Polity IV dataset (Marshall et al. 2014)

The model explained above is estimated econometrically using the panel data estimation techniques. Before reporting the results each model was estimated and the Hausman test was calculated to decide about the appropriateness of the fixed or random effects. The chosen model is reported at the bottom of each column in tables reporting the main findings in the next section.

4. ECONOMETRIC RESULTS AND DISCUSSION

In this section we report our econometric results. The importance of government for economic growth is first estimated by the model which focuses on government consumption as an indicator representing government. Later on we substitute government consumption with tax revenues to provide additional evidence on this important relationship. We first estimate the effects of government consumption on economic growth and these results are reported in Table 2.

Table 2 reports three models presented in columns (1) to (3). In each model the dependent variable is the rate of GDP growth which is regressed on different determinants among which we are primarily interested in the government variable. In this table that variable is government consumption as percent of GDP. Model 1 (Column 1) is the most comprehensive one and in accordance with our discussion at the beginning of this section the growth regression is broadly set to account for the effect of physical capital (investment) and human capital (population growth and schooling), but in addition we allow for the impact of trade openness, government consumption and institutions. Columns 2 and 3 are set less broadly excluding the impact of institutions and schooling. The reason for these exclusions lies in the fact

that it is rather difficult to measure institutions, the same applying to human capital, and different proxies are used in empirical investigations to allow for their impact. Often these effects are imprecise and are not too reliable. In addition, we also check whether the impact of government consumption on growth is affected by exclusion of these variables (proxies) which further strengthens our findings if the effect of government consumption is robust and consistent across different specifications. Furthermore, if this effect is consistent it puts us at the safe side that our models are not misspecified.

Table 2: *Econometric results 1 - Government variable: Government consumption (% of GDP)*

	Government variable: Government consumption (% of GDP)		
	(1)	(2)	(3)
Investment	0.121*** (0.016)	0.112*** (0.014)	0.099*** (0.014)
Population growth	0.346*** (0.085)	0.465*** (0.084)	0.519*** (0.085)
Schooling	0.034 (0.062)	-0.109* (0.056)	
Trade openness	0.019*** (0.005)	0.021*** (0.004)	0.021*** (0.004)
Government consumption	-0.267*** (0.026)	-0.295*** (0.0.23)	-0.290*** (0.023)
Institutions	0.102*** (0.034)		
Countries (observations)	153 (3931)	171 (4643)	178 (4798)
Hausman test (p-value)	73.29 (0.00)	105.62 (0.00)	109.68 (0.00)
Fixed effects/Random effects	FE	FE	FE

*Standard errors in parentheses; *** - 1 % statistical significance, ** - 5 % statistical significance, * - 10 % statistical significance*

As for the results reported in Table 2 we can see that across all three models investment is found to exert a positive and statistically significant effect on GDP growth, as theoretically expected and in accordance with previous studies. The same applies to population growth and trade openness with both being statistically significant and exerting also positive impact on growth. In Model 1 institutions are found to have a positive and statistically significant effect on growth. Expected years of schooling, as a representative of human capital, on the other hand, is found to be positive in Model 1, but this effect is not statistically significant. In Model 2 schooling is estimated to have a negative effect, but being statistically significant only at 10% of statistical significance. Now we turn our attention to the main variable of interest and in Table 2 it is the government consumption. Across all three models government consumption is estimated to have a negative effect on growth and is

strongly statistically significant. This effect is consistent across different specifications (Models 1 to 3) and suggests that a stronger government (higher share of government consumption in GDP) impedes growth. A look at the bottom of Table 2 indicates that the size of the sample varies from 153 (Model 1) to 178 (Model 3) countries suggesting evidence representative of the whole world. The data start in the beginning of 1990s and having 30 years of data only add to the confidence of our findings. Although the evidence so far suggests that government consumption has detrimental effects on economic growth, we want to be on the safe side and check further whether these effects can be additionally confirmed. To that end we first estimate the same models as in Table 2 but substitute government consumption with tax revenues expressed as percent of GDP. Tax revenues can be seen as an additional variable representing the role of government in an economy and we check for the importance of this in an empirical investigation reported below in Table 3.

Table 3: *Econometric results 2 - Government variable: Tax revenues (% of GDP)*

	Government variable: Government consumption (% of GDP)		
	(1)	(2)	(3)
Investment	0.145*** (0.018)	0.154*** (0.017)	0.127*** (0.017)
Population growth	0.035 (0.119)	0.215* (0.119)	0.409*** (0.126)
Schooling	-0.142** (0.060)	-0.408*** (0.058)	
Trade openness	0.021*** (0.005)	0.029*** (0.004)	0.019*** (0.004)
Tax revenues	0.008 (0.026)	-0.052*** (0.0.18)	-0.041*** (0.019)
Institutions	-0.057 (0.036)		
Countries (observations)	122 (2438)	135 (2874)	136 (2912)
Hausman test (p-value)	20.30 (0.00)	36.69 (0.00)	10.45 (0.00)
Fixed effects/Random effects	FE	FE	FE

*Standard errors in parentheses; *** - 1 % statistical significance, ** - 5 % statistical significance, * - 10 % statistical significance*

Table 3 provides additional evidence on the impact of government on economic growth. Before commenting on the estimated effects of tax revenues on GDP growth, let us briefly mention the other estimated coefficients. Investment is again estimated positively and the effect is statistically significant. Population growth is estimated positively, but in Model 1 it loses statistical significance, whilst in Model 2 and Model 3 the positive effect is statistically significant at 10 % and 1 % of statistical significance, respectively. Schooling is estimated negatively and the effect is statistically significant. This is contrary to expectations, and this effect will be

additionally investigated later. Trade openness remains statistically significant and the effect on growth is positive across all models as was the case earlier. This suggests that trade openness is consistently beneficial for growth. The coefficient on institutions changes sign, but the effect is not statistically significant. As for our main variable of interest, tax revenues as percent of GDP in Model 1, it is estimated with the positive sign but the effect is not statistically significant. In Model 2 and Model 3 the tax revenues appear to impact on growth negatively and in both cases the effect is statistically significant. Given the evidence in Table 3, where the government (as represented by the tax revenues as percent of GDP), in two out of three cases, has a negative and statistically significant effect on growth, and also given the evidence from Table 2 where in all models government consumption was found to have a negative and statistically significant effect on growth, the findings so far appear supportive of the detrimental effects of government on economic growth.

4.1. TESTS OF ROBUSTNESS

The evidence presented so far suggests that government exerts a negative impact on economic growth in a broad sample of countries. In what follows we test our findings for robustness in two ways. First, we repeat our estimations using the five-year averages of our data and compare these new findings with those based on the annual data reported above. Second, with the outburst of the global financial crisis in 2008 the governments around the world intervened heavily, possibly outlining a new and stronger role played by the government in the post-crisis world. To check this we run new estimations of our models using the annual data but focusing on the 2008-2020 period and we check if the governments' effects on economic growth might be different.

Let us start with the first test of robustness. Table 4 reports the new estimations based on the data averaged over five year periods. This exercise is not only relevant as a robustness check, but it is also relevant in its own right. This is because economic growth should be treated as a long-run phenomenon and using the five-year averages might be helpful in possibly smoothing the short-run fluctuations and depicting important long-run relationships, in particular when we are interested in the determinants of economic growth. An additional reason might be listed here and it deals with the problems spotted above related to the human capital variable. When found to be statistically significant, the expected years of schooling was of a wrong sign, suggesting that the effect of human capital on growth might be negative. This is contrary to expectations and might raise a few eyebrows. In addition, this variable may suffer from shortcomings which could be circumvented if we use the typically employed human capital variable as for example elaborated and provided by Barro and Lee (2013, version 2018). Among other variables, Barro and Lee (2013) provide a rich database on secondary school education completed around the world and the

data are reported in five-year intervals. Hence, we organize our data averaged over five years and set the database to include 1990 (average 1990-1994), 1995 (average 1995-1999), and so on. The estimations based on five-year averages are reported in Table 4 below.

Table 4: *Econometric results 3 - Government variable: Government consumption (% of GDP) and Tax revenues (% of GDP) – five year averages*

	Government variable: Government consumption (% of GDP)			**Government variable: Tax revenue (% of GDP)**		
	(1)	(2)	(3)	(4)	(5)	(6)
Investment	0.139*** (0.032)	0.151*** (0.020)	0.139*** (0.016)	0.257*** (0.037)	0.182*** (0.023)	0.172*** (0.020)
Population growth	1.265*** (0.223)	0.697*** (0.013)	0.600*** (0.085)	-0.047 (0.241)	0.594*** (0.137)	0.450*** (0.100)
Secondary education	0.035 (0.024)	0.006 (0.009)		-0.020 (0.020)	-0.004 (0.010)	
Trade openness	-0.001 (0.008)	0.002 (0.002)	0.003 (0.002)	-0.002 (0.008)	0.005* (0.003)	0.004* (0.003)
Government variable	-0.143** (0.060)	-0.113*** (0.024)	-0.050*** (0.016)	-0.058 (0.056)	-0.036* (0.020)	-0.035** (0.018)
Institutions	0.185*** (0.057)			0.167** (0.066)		
Countries (observations)	126 (577)	138 (635)	175 (921)	97 (367)	106 (395)	134 (552)
Hausman test (p-value)	24.73 (0.00)	8.59 (0.13)	2.12 (0.71)	26.75 (0.00)	9.21 (0.10)	8.24 (0.08)
Fixed effects/Random effects	FE	RE	RE	FE	RE	RE

*Standard errors in parentheses; *** - 1 % statistical significance, ** - 5 % statistical significance, * - 10 % statistical significance*

Table 4 provides additional evidence on the importance of government variables for economic growth. In order to preserve space, the estimations are organized across two sets of results – columns 1 – 3 related to government consumption as percent of GDP, and columns 4 – 6 related to tax revenues as percent of GDP as the main variables of interest. From the evidence based on five-year averages we are particularly interested in the government variables. Other variables are only briefly commented in comparison to our previous evidence reported in Table 2 and Table 3. The comparison with these two tables confirms the positive and statistically significant effects of investment and population growth. Institutions are also confirmed as a statistically significant variable and the effect is positive. Secondary education completed (the human capital variable from Barro and Lee, 2013, version 2018) is estimated with the positive sign in the first set of results (columns 1 - 3) and with the negative sign in the second set of results (columns 4 – 6), but in no case the effect is statistically significant. Trade openness loses statistical significance in most cases, and in cases where it is statistically significant it is only at the 10 %, the effect

remains positive. Now we turn our attention back to the effects of government on economic growth. It appears that in all three cases (the first set of results – columns 1 – 3) government consumption is estimated to have a statistically significant effect and it is negative. The variable tax revenues remains negative as before but the effect is statistically significant in two out of three cases. Overall, this additional evidence based on five-year averages suggests that our baseline findings (as reported in Table 2 and Table 3) passes the robustness test successfully and confirms the distorting effects of government effects on economic growth reported previously.

An additional robustness test is conducted focusing on the estimations based on annual data but covering the period after the outburst of the global financial crisis. This robustness check is meant to provide supplementary evidence on the role of government in economic growth, especially given the huge fiscal expansion that took place globally. Following these interventions there is a possibility that this also impacted on the relationship between government consumption and economic growth. It should be, however, noted that this exercise is conducted to provide an additional robustness test, and not to investigate the nature of the government-growth nexus after the crisis. That investigation is out of scope of this paper and should be conducted more deeply. Notwithstanding these caveats, the results are reported in Tabele 5 below as to provide an additional robustness check.

Table 5: *Econometric results 4 - Government variable: Government consumption (% of GDP) and Tax revenues (% of GDP) – annual data; post-crisis period*

	Government variable: Government consumption (% of GDP)			**Government variable: Tax revenue (% of GDP)**		
	(1)	(2)	(3)	(4)	(5)	(6)
Investment	0.058** (0.029)	0.062*** (0.023)	0.037 (0.024)	0.035 (0.025)	0.076*** (0.023)	0.034 (0.026)
Population growth	-0.041 (0.136)	0.137 (0.127)	0.174 (0.131)	0.038 (0.162)	0.354** (0.165)	0.454** (0.185)
Schooling	0.202 (0.193)	-0.356** (0.170)		0.178 (0.166)	-0.490*** (0.010)	
Trade openness	0.081*** (0.010)	0.102*** (0.009)	0.102*** (0.009)	0.090*** (0.009)	0.115*** (0.009)	0.114*** (0.010)
Government variable	-0.249** (0.042)	-0.384*** (0.036)	-0.440*** (0.037)	-0.000 (0.022)	-0.084*** (0.022)	-0.048* (0.025)
Institutions	0.263*** (0.082)			0.0,19 (0.078)		
Countries (observations)	150 (1591)	168 (2075)	174 (2141)	116 (1160)	129 (1504)	130 (1520)
Hausman test (p-value)	85.80 (0.00)	213.58 (0.13)	237.37 (0.71)	107.56 (0.00)	162.49 (0.10)	134.67 (0.08)
Fixed effects/Random effects	FE	RE	RE	FE	RE	RE

*Standard errors in parentheses; *** - 1 % statistical significance, ** - 5 % statistical significance, * - 10 % statistical significance*

Evidence in Table 5 appears generally supportive of our findings reported previously. In particular, we are interested here in and comment only on the variables representing government. The first set of results (columns 1 – 3) related to government consumption as percent of GDP indicates that the effects of a larger government consumption on economic growth are negative and statistically significant. This is in accordance with our evidence reported in Table 2 and Table 4, but it should be noted that the estimated coefficients are larger. This might be recognized as a stronger negative effect, but we refrain from interpreting this that powerfully as we have a shorter sample and less observations and there is a possibility that the coefficients are estimated less precisely. Probably this invites a whole new study and we leave this for some future research project. As for the second set of results (columns 4 – 6) the tax revenues are estimated to exert a negative effect, but the effect is in two out of three cases statistically significant, albeit only in one case with 5 % of statistical significance. These findings again confirm the findings from earlier estimations concerning the impact of tax revenues on economic growth. To summarize the evidence presented, it appears that both the larger government consumption (as percent of GDP) and larger tax revenues (as percent of GDP) have detrimental effects on growth. This general finding is robust and consistent across different time periods and different models tested and provides an important contribution to the empirical literature.

5. CONCLUDING REMARKS, POLICY IMPLICATIONS AND AVENUES FOR FUTURE RESEARCH

Investigation of the effects of government consumption on economic growth was in the focus of this study. A novel empirical evidence was provided on this important relationship. The review of the main theoretical arguments suggested that the effects may be both positive and negative and thus from a purely theoretical point of view we could not reach a unison conclusion as to how desirable the government involvement in the economy is. Empirical studies therefore seemed the next step to look for the answer to our research questions. Although numerous studies exist in the empirical literature again no clear conclusion could be reached, with studies providing both positive and negative effects. This ambiguity in theoretical and empirical literature invites additional studies on the relationship between government and economic growth.

The present study's contribution is the contribution to the empirical literature. We do it in several ways. First, we collected a very broad data base covering as many as 178 countries around the world. Coverage of so many countries coupled with the data starting in 1990 provide a strong basis on which we can draw our conclusions. Application of advanced econometric techniques and the use of panel data add to reliability of our findings. As for the findings we provide strong evidence on the

negative effects of government consumption on economic growth. Different models were tested and in all of them the coefficients on government consumption were found to be statistically significant and negative. Regarding the other growth determinants, investment, population growth, trade openness and institutions were found to be statistically significant and exerting positive effects on economic growth. An additional set of results further supporting the negative effects of government consumption is based on an alternative government variable which is tax revenues as percent of GDP. In large majority of models tested tax revenues were also found to be statistically significant and negative.

To check consistency of our findings two tests of robustness were conducted. The first one was based on using five-year averages of our data which is a sensible approach when investigating the growth determinants. The results reported previously were confirmed also with the data organized as five-year averages. Another robustness check was applied on the annual original data but covering the period after the global economic and financial crisis. Again our findings related to the negative effects of government consumption and tax revenues on economic growth were supported. Overall, this study thus reported consistent and robust evidence on the negative impact of government consumption and tax revenues on growth in a wide sample of countries.

These findings have strong policy implications directing the policy makers to approach the decision to increase government consumption and tax revenues with extreme caution. Based on the findings from this study increases in overall government consumption (as percent of GDP), as well as increases in tax revenues (as percent of GDP) might be coming back as a boomerang strongly hindering economic growth. While the evidence provided advises against increases in total government consumption, this need not necessarily mean that in each and every case and in all circumstances government intervention is undesirable. Specific country's conditions or rare but unprecedented events like the recent global economic and financial crisis or COVID 19 pandemics might again require a swift and strong government intervention.

Although the contribution of this study to the empirical literature is an important one, the study might have followed a few additional tracks and that is where we see valuable avenues for further research. It would be interesting to investigate empirically, in this broad sample of countries, the difference, if any, in the effects of government consumption across different groupings of countries. This might include the regional criterion, for example whether the effects in European and African countries are any different, or by splitting the sample of countries using the World Bank classification across low income (poor) countries, lower-middle income, upper-middle income and high income (rich) countries. In addition, it would be

interesting to investigate the composition of government spending and its effects on growth or test whether alternative functional forms may better explain the growth dynamics and effects of government on growth. Going for it would be out of scope of the present study and probably each of these avenues deserves a study of its own.

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UTJECAJ DRŽAVNE POTROŠNJE NA RAST – GLOBALNI DOKAZI

SAŽETAK

Efekti državne potrošnje na ekonomski rast istražuju se u ovoj studiji na panelu svjetskih ekonomija. Nedavno je snažno obnovljen interest za istraživanje ovog važnog odnosa, posebno nakon izbijanja globalne ekonomske i financijske krize koja je rezultirala fiskalnim intervencijama bez presedana na globalnoj razini. Unatoč brojnim pokušajima čini se da literatura još uvijek ne daje jednoznačan odgovor na pitanje o odgovarajućoj ulozi države u ekonomiji. Teoretski, efekti državne potrošnje na rast mogu biti i pozitivni i negativni, s mnogo nejasnoća prisutnih i u empirijskim studijama. S obzirom na ovu nesigurnost, potrebni su dodatni dokazi o povezanosti između državne potrošnje i ekonomskog rasta. Kako bi se uhvatio u koštac s ovim važnim pitanjem, ovaj rad primjenjuje tehnike panel analize na širokom uzorku od čak 178 svjetskih ekonomija, a analiza pokriva razdoblje od 1990. do 2020. godine. Ukupno, ova studija donosi dosljedne i robustne dokaze o negativnom utjecaju državne potrošnje i poreznih prihoda na ekonomski rast.

Ključne riječi: *državna potrošnja, ekonomski rast, panel podaci*

JEL: *F43, H11, O47*