

AGATA SZYMAŃSKA*

Determinants of General Government Social Spending: Evidence from the Eurozone¹

Introduction

An increase in public spending is a phenomenon observed in many countries regardless of the level of development (e.g. developing, developed or advanced countries). Recently, a particular attention has been paid to social spending. This type of spending is affected by different socioeconomic determinants and it also represents a large share of total general government spending. The wide aggregated category of social spending includes, among others, spending in relation to age (e.g. non-contributory pensions), health, education, housing subsidies, unemployment compensation, or social protection in the form of basic assistance to poor families (Lindert 2010).

The review of empirical literature indicates that most of the existing studies aim at identifying factors that determine government spending. These studies vary in terms of the type of spending under consideration, the level of spending (aggregated or disaggregated), datasets, the countries analysed, or the econometric techniques adopted. Most of the studies are based on the sample of the OECD countries and investigate the importance of factors influencing such aggregated or disaggregated spending. However, the OECD consists of a group of countries which vary with respect to their regions or different economic levels.

The study is based on an example of the eurozone countries. The countries grouped in the euro area are listed as high-income countries and developed countries in the European region (UN, 2019). The focus on the eurozone countries makes it possible to study and investigate the strength of the effects of selected

* Dr Agata Szymańska – Institute of Economics, University of Łódź; ORCID: <https://orcid.org/0000-0001-5184-931X>; e-mail: agata.szymanska@uni.lodz.pl

¹ The research was supported by the National Science Centre in Poland (2017/27/N/HS4/01878).

determinants on social-type spending across a specific single-currency region that operates within similar frameworks for macroeconomic policies. Moreover, in recent years these countries have experienced many changes in public spending, mainly due to the consequences of the Great Recession or serious demographic changes which affected the eurozone. Thus, the comparison of the magnitude and significance of social spending determinants may contribute to the literature and further research.

The motivations of the study are various for several important reasons. Firstly, the existing literature mainly focuses on total spending or spending categorised by its functions (for example, the determinants of health spending or education spending). Secondly, existing studies pay less attention to the determinants of social protection spending and social protection benefits. Thirdly, most studies are based on panel data related to the OECD countries, European Union countries, regional groups of countries (e.g. Latin America, Africa), smaller groups of countries or one single country. There is a lack of analyses for the eurozone countries, which recently have faced growing consequences of economic and financial problems or negative demographic processes (EC, 2017). Finally, the problem of social spending and its determinants also arises due to the growing importance of, and interest in, the changes in public spending in the eurozone countries and their policy implications. One such reason is the demographic change and its impact on public spending in European countries, including the euro area region (EC, 2015, 2017; Spasova and Ward 2019).

With this motivation, the paper aims to contribute to the existing literature and provide some new insights. The paper offers a comparison of the impact of socioeconomic factors on social spending at different level of aggregation. The time sample covers annual data of 1996–2017. The panel data include 17 out of the current 19 eurozone countries (excluding Slovenia and Malta). The paper compares the role and importance of selected factors determining social spending in the eurozone over the last 20 years.

The structure of the paper is as follows. The first section provides a short literature review focused on theoretical background and presents a survey of selected studies. The second section informs about the data and empirical approach used in the study. The next section presents the results of the analysis. The final part provides conclusions.

1. Theoretical background and a brief survey of selected studies

The literature provides a set of theories explaining public spending and its growth. One such explanation is Wagner's Law (Wagner 1893), according to which an increase in income is strongly and positively associated with an increase in public spending. Thus, in other words, an increase in demand for public spending (es-

pecially consumption spending) is affected by the increase in income *per capita* (Biehl 1998). The popularity of this theory has resulted in many empirical analyses of its legitimacy. Examples of works testing and supporting Wagner's Law for different countries include: Facchini and Melki (2013), Jalles (2019), Kumar et al. (2012), Sagdic, Sasmaz and Tuncer (2019). However, some studies, e.g. Hayo (1994) and Durev and Henrekson (2011), provide the evidence of a negative relationship between income and public expenditure; thus, Wagner's hypothesis has not always been confirmed.

Another popular theory is provided in the context of Baumol's Law (Baumol 1967). The hypothesis of Baumol's cost disease is related to the existing difference in productivity in the service-producing sector (e.g. public services such as health and education) and the goods-producing sector. The growth of salaries in the higher-productivity sector of material goods, due to economic causalities, affects the growth of salaries in sectors with lower productivity (mainly service or art-type sectors). Therefore, public spending will rise with the growth of the economy. The significance of Baumol's Law may be explained by the higher labour intensiveness of the public sector, which is more resistant to technological progress. Empirical support for Baumol's Law was investigated by, for example, Ferris and West (1999) and Neck and Getzner (2007).

The review of different theories aimed at explaining the level or growth of government spending is presented, among others, by Neck and Schneider (1988), Lybeck (1988) and Facchini (2014). In their works they point to theories, including: Wagner's Law (Wagner 1893), Baumol's Law (Baumol 1967), bureaucracy theory and its inefficiency (Tullock and Buchanan 1972, Buchanan and Tullock 1977), theories related to the presence of interest groups (Becker 1983, Buchanan and Tullock 1977), explanations related to the cost of taxation (Kau and Rubin 1981, 2002; Winer et al. 2008), the importance of a political regime (Persson and Tabelini 1999, 2004), fiscal illusion (Wagner 1976, Ross and Yan 2013, Young 2009, Christopoulos et al. 2003), theories based on fiscal decentralisation (Nelson 1986, Marlow 1988, Prohl and Schneider 2009, Golem 2010), political fragmentation and ideological polarisation (Eslava and Nupia 2010, Le Maux et al. 2011), electoral rules (Sheleton 2007, Persson et al. 2007, Milesi-Feretti et al. 2002), political rights (Sheleton 2007, Aidt et al. 2006), inequality and pre-tax income distribution (Borge and Rattso 2004, Shelton 2007), ethnic diversity (McCarty 1993), income volatility (Lindbeck 1976, Rodrick 1998), social trust (Bergh and Bjornskov 2011), political ideology (Swank 1988, Garrett 1995, Pickering and Rockey 2011), or the displacement effect (Goff 1999, Bohl 1996, Carter 2012).

The presented theories aim to show the numerous theoretical explanations and, as argued by Facchini (2014), the applied econometrics is not a perfect way of finding explanations of the spending evolution. Moreover, the theories tested by many authors have led to ambiguous conclusions – some works support the theories tested, whereas some other reject them. As a result, the literature often

combines many determinants. Therefore, analyses of public spending determinants are often based on a set of theories.

The literature review provides many conclusions with regard to the impact of selected determinants on general public spending and its disaggregated components. These determinants mainly concern factors associated with the general macroeconomic situation, institutional components, or demographic aspects.

Recent literature points to the socioeconomic determinants of public spending. In the works of Kiettel and Obinger (2003) and Schuknecht and Zemanek (2018), for example, the important determinants of public spending are economic growth, GDP, unemployment, and population ageing. Swank (2002) confirms a positive effects of a set of variables (e.g. GDP, unemployment rate, or the share of the elderly in the total population) on social spending. The study of Lora and Oliviera (2007), based on panel data, examines, among others, how debt-to-GDP ratio leads to a decline in social spending. However, Chang et al. (2016) suggest that higher public debt may be perceived to be a reasonable determinant of higher social expenditure, mainly in recession periods, when many countries face fiscal deficits. This correlation is reasonable, as a reduction in economic activity generates an additional demand for public spending, especially social spending. A similar conclusion is formulated by others, for example Schunknecht and Zemanek's (2018), who state, under a similar assumption, that an increase in debt may lead to an increase in social spending. But, in their work the obtained relationships between lagged debt-to-GDP-ratio and variables expressing the change in social-type spending are negative. Taking into account other fiscal variables, the importance of government revenues in explaining government spending is tested, among others, by Mutascu (2016, 2017) and Saunoris (2015).

Considering institutional aspects, important determinants include democracy, institutions, and electoral rules. The relationship between democracy and public spending or disaggregated public spending was tested, among others, by Aidit et al. (2010), Besley and Kudamatsu (2006), and Acemoglu et al. (2011). The relationship between political institutions and spending constitutes the main interest of Besley and Persson (2009), and Acemoglu (2005).

The analysis of relationships between social spending and demography is based on a wide set of determinants. For example, the old-age dependency ratio is an important demographic factor. It is the ratio of the number of economically inactive persons (as a rule, aged 65 or above) to the number of persons aged between 15 and 64 (i.e., an economically active group of the population). In the literature, the impact of the “overall” age-dependency ratio on *per capita* social transfers is tested, for example, by Disney (2007). Moreover, Sanz and Velázquez (2007) use variables describing the share of elderly in total population and the share of the young in total population in order to analyse the role of ageing in social welfare spending. On the other hand, the total dependency ratio is used by Razin et al. (2002) in the analysis of determinants of the size of the welfare state.

However, these studies lead to different conclusions with respect to the effects of ageing on social-type spending.

Beblavý (2011) compares the factors potentially affecting social protection expenditure in the “old” and “new” European Union member states, taking into account a set of determinants, including, among others, income *per capita*, old-age dependency ratio, employment rate, unemployment rate or a variable capturing the risk of poverty before social transfers. He concludes that difference in patterns of social protection spending in the “new” and “old” EU member states is related not only to structural factors but also policy choices, and he points out that the welfare expenditures of the ten “new” European Union countries are much smaller than those in the western, “old” part of the European Union.

2. Data and empirical approach

This analysis concerns the eurozone countries except for Malta and Slovenia (due to the lack of many observations). The fiscal data (spending, revenue, budget balance, and debt) cover the sector of general government and are based on the Eurostat database. Social protection expenditure comes from the COFOG (Eurostat’s Classification of the Function of Government), whereas the data concerning social protection benefits are derived from the Eurostat’s social protection database. In this paper, aggregated social (welfare) spending consists of a sum of COFOG data: health spending, education spending, and social protection spending. This definition is similar to that presented by Lindert (2010). The derived fiscal data and GDP data for each country are expressed in millions of euros. These data are deflated by the price index (implicit deflator) for GDP (expressed in euro), for which 2010 is the base year. The original data cover the period of 1996–2017.

Demographic data used in this study (old-age dependency ratio, fertility rate, average population) come from the Eurostat database. The World Development Indicators (WDI) database is the source for the following data: trade openness as a percentage of GDP, unemployment rate, and population density.

In this study, the analysis of spending determinants is based on panel data. Taking into account the literature review (e.g. Lindert 2010), the decision has been made to estimate the specifications with dependent variables expressed as a share of GDP. Thus, the derived spending data have been recalculated as a share of GDP.

The baseline analyses provide a comparison of determinants for three categories of spending: the aggregate social-type (welfare) spending expressed as a percentage of GDP ($cofog_welfare_{i,t}$), social protection spending as a percentage of GDP ($cofog_sp_{i,t}$), and aggregated spending on social protection benefits as a percentage of GDP ($spb_{i,t}$). As mentioned, the $cofog_sp_{i,t}$ variable is based on the spending derived from the Eurostat’s Classification of the Function of Government (COFOG). The variable includes social protection spending linked

to sickness and disability, old age, survivors, family and children, unemployment, housing, social protection and social exclusion, R&D related to this aggregated category, and not elsewhere classified social protection-type spending. The $spb_{i,t}$ variable concerns the aggregated spending on social protection benefits. Finally, the $cofog_welfare_{i,t}$ variable reflects the sum of welfare spending, i.e., education spending, health spending and social protection spending, expressed as a percentage of GDP.

The analysis is compliant with the investigation into the impact of socio-economic factors on social spending (macroeconomic determinants including, among others, trade openness, total revenue of the general government, and the real GDP growth rate, which are complemented by the selected demographic factors). The list of all used variables and their descriptive statistics are presented in Table A1 and Table A2 in the Appendix.

The econometric approach employed in this study is based on panel data. The original sample consists of 17 objects (countries, N) and 22 annual observations (T). The sizes of T and N are quite similar and rather not large; however, the baseline number of observations is larger than the number of panels. Taking into account the sample, its length and the number of heterogeneous countries, the decision has been made to use Parks' (1967) feasible generalised least squares estimator (see also Davidson and McKinnon 1993, and Greene 2012) and to incorporate unique serial correlation parameter for each panel and include heteroscedasticity across panels. The robustness of the estimator is checked by Beck and Katz's (1995) panel-corrected standard errors procedure. The empirical part of the study also includes analyses of the robustness checks for the baseline specifications.

3. Results and discussion

The parameter estimates evaluate the effects of different determinants on general government social spending expressed in this study as a percentage of GDP. The estimations of parameters and some statistics are presented in Table 1. In each model the macroeconomic determinants (related to the economic situation of each country) and demographic determinants are used to explain the size of the analysed social spending.

Table 1 presents estimates of the parameters for four specifications with three different dependent variables. Despite the type of spending under consideration, there is a negative and statistically significant effect of the real GDP growth rate on the dependent variables. Such a result is consistent with theory – according to the stabilisation function of fiscal policy, government spending should be lower during booms and higher during recessions. Furthermore, if statistically significant, the presented in Table 1 relationship between the share of trade in GDP and analysed social spending is negative.

Table 1
Estimated parameters of baseline models

| Variables | cofog_welfare _{<i>i,t</i>} | | | cofog_spi _{<i>i,t</i>} | | | spbi _{<i>i,t</i>} | | | |
|------------------------------------|-------------------------------------|----------------------------------|---------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-----------------------------------|----------------------------------|
| | | | | | | | | | | |
| <i>real_gdp_rate_{i,t}</i> | -0.212 ^{***} (0.016) | -0.215 ^{***} (0.015) | | -0.130 ^{***} (0.012) | | -0.131 ^{***} (0.011) | | -0.176 ^{***} (0.015) | | -0.177 ^{***} (0.015) |
| <i>un_rate_{i,t}</i> | | 0.194 ^{***} (0.038) | 0.212 ^{***} (0.038) | | 0.182 ^{***} (0.024) | | 0.184 ^{***} (0.024) | | 0.181 ^{***} (0.033) | |
| <i>trade_op_{i,t}</i> | -0.002 (0.002) | -0.005 [*] (0.003) | | 0.001 (0.002) | 0.002 (0.002) | | | -0.001 (0.002) | -0.005 ^{**} (0.002) | |
| <i>rev_{i,t}</i> | 0.421 ^{***} (0.032) | 0.586 ^{***} (0.032) | 0.590 ^{***} (0.033) | 0.400 ^{***} (0.022) | 0.487 ^{***} (0.021) | 0.380 ^{***} (0.022) | 0.476 ^{***} (0.021) | 0.424 ^{***} (0.027) | 0.553 ^{***} (0.025) | 0.423 ^{***} (0.027) |
| <i>balance_{i,t-1}</i> | -0.161 ^{***} (0.022) | -0.067 ^{**} (0.028) | -0.071 ^{**} (0.028) | -0.115 ^{***} (0.017) | -0.041 ^{**} (0.019) | -0.119 ^{***} (0.016) | -0.042 ^{**} (0.019) | -0.168 ^{***} (0.022) | -0.107 ^{***} (0.027) | -0.171 ^{***} (0.021) |
| <i>av_pop_rate_{i,t}</i> | 0.352 ^{**} (0.144) | 0.524 ^{***} (0.171) | 0.470 ^{***} (0.170) | 0.380 ^{***} (0.105) | 0.525 ^{***} (0.116) | 0.279 ^{***} (0.106) | 0.456 ^{***} (0.117) | 0.591 ^{***} (0.140) | 1.170 ^{***} (0.164) | 0.516 ^{***} (0.136) |
| <i>old_age_dr_{i,t}</i> | 0.191 ^{***} (0.044) | 0.148 ^{***} (0.046) | 0.169 ^{***} (0.046) | 0.122 ^{***} (0.032) | 0.105 ^{***} (0.028) | 0.140 ^{***} (0.032) | 0.107 ^{***} (0.029) | 0.345 ^{***} (0.035) | 0.332 ^{***} (0.035) | 0.352 ^{***} (0.033) |
| <i>constant</i> | 4.715 ^{***} (1.614) | -2.441 (1.756) | 4.353 ^{***} (1.533) | -3.813 ^{***} (1.113) | -8.941 ^{***} (1.095) | -3.440 ^{***} (1.064) | -8.394 ^{***} (1.011) | -4.638 ^{***} (1.156) | -11.573 ^{***} (1.243) | -5.000 ^{***} (1.049) |
| No. obs. | 374 | 357 | 357 | 374 | 357 | 374 | 357 | 354 | 345 | 354 |
| Wald statistic | 576.07 | 499.41 | 480.98 | 726.02 | 774.48 | 654.24 | 699.88 | 948.10 | 1370.93 | 947.56 |

Standard errors in parentheses. ***, **, and * denote significance at 0.01, 0.05 and 0.1 per cent, respectively. Feasible generalised least squares with heteroscedastic error structure and panel-specific autocorrelation structure.

Source: own calculations.

The link between trade openness and government spending is ambiguous. For example, Rodrik (1998) and Dong-Hyeon et al. (2018) found generally positive relation – more open countries have a larger-sized government. However, as argued by Lindert (2010), trade openness by itself has a negative impact on social spending, but when it interacts with the movements of terms of trade it has a strongly positive effect. Generally, Lindert's (2010) study confirms statistically significant and positive effects of trade openness on social spending and social transfers; however, the use of fixed country effects shows no positive impact of trade openness on the dependent variables in his study. What is interesting is that the estimated negative relation between social spending and trade openness in the eurozone countries is consistent with the results obtained for example by Kaufman and Segura-Ubiergo (2001) for Latin America (in their study, they extended the efficiency hypothesis and compensation hypothesis regarding the effects of globalisation on social spending). A negative relation between the change in trade openness and change in social spending was observed by Busemeyer (2009) for OECD countries.

The time series analysis informs that during the analysed period most of the eurozone countries experienced deficits. The inclusion of the lagged budget balance shows its negative effects on analysed spending. Taking into account the budget balance in the previous period, the governments try to spend less in the period under consideration. Such a result is also consistent with the quality of the eurozone fiscal policy and the fiscal (domestic and supranational) frameworks. The negative effect of the lagged budget balance is lower in the case of specifications with social protection spending derived from the COFOG database.

The replacement of the real GDP growth rate with the unemployment rate shows a positive impact of the unemployment rate on spending; however, taking into account the model specification, the estimated effect of the unemployment rate on dependent variables is strongest in the case of general welfare spending.

As presented, the role of demographic factors in explaining social spending has been emphasized. However, the obtained results are affected by the estimated equation and the type of dependent variable. For example, the effect of the old-age dependency ratio on analysed social spending is positive and statistically significant. The strength of this relationship depends on the set of control variables included in the estimated equations. A similar relation is also observed with respect to the population growth rate. Moreover, taking into account the specifications and the estimation technique, there is a positive and statistically significant relationship between the average population growth rate and the analysed spending.

The results of the robustness checks are presented in Table A3 in the Appendix. Beck and Katz's (1995) approach is applied to the same equations as analysed in Table 1. The estimations provide a negative relationship between the analysed macroeconomic variables (GDP growth rate, lagged budget balance)

and the dependent variables. The effect of government revenues is positive and statistically significant. The estimated coefficients for the relationship between the old-age dependency ratio and social spending are significant and positive. This relation applies to all categories of spending considered. The same conclusion can be formulated towards the results presented in Table 1 for estimates based on the feasible generalised least squares.

The comparison of both approaches (feasible generalised least squares with a panel-corrected standard errors) shows that regardless of the employed estimator, the effect of the GDP growth rate on social spending is negative. When the GDP growth rate is replaced by the unemployment rate (as an indicator of the macroeconomic condition of the eurozone economies), then the effect of the unemployment rate is positive and statistically significant for all analysed specifications. The signs of the effect of the trade openness variable on social spending are the same as in the previously estimated equations presented in Table 1 (obtained by the use of feasible generalised least squares). Moreover, the values of the estimated coefficients for trade openness are nearly the same. In the case of Beck and Katz's (1995) method, the absolute values of the obtained coefficients for the relationships between the macroeconomic conditions (negative effects of real GDP growth rate, positive effects of the unemployment rate) and $spb_{i,t}$ are lower than in the case of the feasible generalised least squares method (compare Table 1 with Table A3 in the Appendix). The estimated coefficients for the relationship between the average population growth rate and $spb_{i,t}$ are lower in the case of the use of feasible generalised least squares.

Table A4 in the Appendix presents the results with the lagged debt-to-GDP ratio and a set of other control variables included in the specifications. Regardless of the set of explanatory variables chosen, there is a negative relationship between trade openness and spending under consideration. The estimates presented in Table A4 provide rather insignificant effects of the population growth rate on social spending in the eurozone. The inclusion of the fertility rate shows its positive impact on the analysed spending. However, if significant, the effect of the fertility rate is the strongest in the case of the equations with aggregated welfare spending ($cofog_welfare_{i,t}$) as a dependent variable. In the case of the old-age dependency ratio, the estimated coefficients are higher in the specifications for social protection benefits ($spb_{i,t}$) than in the case of social protection spending distinguished based on the COFOG ($cofog_sp_{i,t}$). Furthermore, the effects of population density are higher on social protection benefits than on the COFOG's social protection spending ($cofog_sp_{i,t}$) or on the welfare spending. The estimated coefficients inform about the positive relationship between the lagged debt-to-GDP ratio and the analysed spending-to-GDP-ratio. Thus, an increase in debt in the previous period might have caused higher spending on social programs during the period under consideration.

It can be concluded that the intensified ageing in the eurozone countries could undermine the sustainability of public finance, especially by increasing spending

on social protection benefits. The statistical significance of the effects of the average population growth rate on social-type spending is ambiguous; the results may be affected by the specifications used, set of control variables or the time span of the available data.

The obtained results are worth noting in the context of wider aspects of the issues regarding the funds spent on social protection, as well as challenges and policy implications. One important issue that has appeared in the context of the aim of the study, is the problem of social protection benefits and the size of the financial support by the state. This issue is related, among others, to problems concerning demographic changes and population ageing, and it is also emphasized by the results of the study. Especially, the conclusion is confirmed by the positive and statistically significant impact of the old-age dependency ratio, regardless of the specification used or estimation approach. The changes in the structure of population may strongly affect the system of financing these benefits and the eurozone countries may respond in a different way to social problems, due to the structural determinants of individual economies, different demographic trends, or economic conditions.

Important challenges are also related to external factors, and one of the most current challenges for social spending is the COVID-19 pandemic and its impact on the population and the response of social policy. The pandemic resulted in one of the most severe worldwide economic crises. The economic forecast for the eurozone (EC, 2020) emphasises that the euro area economy might experience a significant contraction in 2020 in response to lockdowns caused by the pandemic. This unprecedented contraction is a challenge for social policy, labour market, public finances, and welfare state. Due to the scale of the crisis, there will be a potential risk of poverty, with which Europe has been fighting for years. In the context of the recent situation, it seems that the role of social protection and social protection benefits in solving social problems in the eurozone will increase, especially due to the nature of the latest pandemic shock that has affected all eurozone countries.

Furthermore, the objective of the study and the obtained results make it possible to indicate directions for future research, regarding for example the recognition of changes in response of the country-specific social policy to demographic or economic shocks, as highlighted in the above discussion.

Conclusions

The study compares and evaluates the effects of demographic and macroeconomic factors on social spending at different level of aggregation in the eurozone countries. Due to the data availability, the empirical part concerns 17 eurozone countries over the period between 1996 and 2017. The baseline estimates are obtained using the feasible generalised least squares method. The results

indicate that social spending in the eurozone is negatively and significantly affected by the GDP growth rate. Alternatively, there is a positive relationship between the unemployment rate and spending. Thus, better macroeconomic conditions negatively affect social spending. Based on the specifications of the models, the effects of the lagged debt-to-GDP ratio on the analysed categories of social spending are positive. Moreover, the obtained estimates of parameters show a statistically significant negative link between trade openness and the social spending-to-GDP ratio. The baseline models indicate that the impact of trade openness on analysed social spending, even if statistically significant, is very small; however, the magnitude or significance of this effect depends on the set of control variables used.

In this study, as in many similar studies discussed in the literature review, the results obtained for the eurozone are also ambiguous when the relationship between social spending and demographic factors is considered. Despite this, the positive relationship between old-age dependency ratio and social-type government spending indicates the impact of ageing on the analysed spending. The estimates are higher for the relationship between old-age dependency ratio and spending on social protection benefits. For the sample of the eurozone countries and with the econometric methods used for parameter estimates, the empirical analysis shows rather ambiguous effects of the population growth rate on social-type spending.

Taking into account the obtained results, a contribution has been made to the debate about social spending policy and the growing role of demography in macroeconomic policy, especially due to the unfavourable demographic forecasts for many countries. This study may also stimulate further research, because of the growing interest in (and importance of) socioeconomic factors and their impact on government spending, not only for the eurozone. The results are valuable especially in the context of the demographic changes and the challenges related to them.

Received: 10 November 2020

(revised version: 12 July 2021)

Bibliography

- Acemoglu D. (2005), *Politics and Economics in Weak and Strong States*, “Journal of Monetary Economics”, no. 52(7).
- Acemoglu D., Ticchi D., Vindigni A. (2011), *Emergence and Persistence of Inefficient States*, “Journal of the European Economic Association”, no. 9(2).
- Aidt T.S., Daunton M., Dutta J. (2008), *The Retrenchment Hypothesis and the Extension of the Franchise in England and Wales*, “The Economic Journal”, no. 120(547).
- Aidt T.S., Dutta J., Loukoianova E. (2006), *Democracy Comes to Europe: Franchise Extension and Fiscal Outcomes 1830-1938*, “European Economic Review”, no. 50(2).
- Avelino G., Brown D.S., Hunter W. (2005), *The Effects of Capital Mobility, Trade Openness, and Democracy on Social Spending in Latin America, 1980-1999*, “American Journal of Political Science”, no. 49(3).

- Baumol W.J. (1967), *Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis*, “American Economic Review”, no. 57(3).
- Beblavý M. (2011), *Comparative Analysis of Determinants and Effects of Social Protection Spending in the New EU Member States*, in: P. Saunders, R. Sainsbury (eds.), *Social Security, Poverty and Social Exclusion in Rich and Poorer Countries*, Intersentia Publishing.
- Beck N.L., Katz J.N. (1995), *What to do (and not to do) with Time-Series Cross-Section Data*, “American Political Science Review”, no. 89(3).
- Becker G.C. (1983), *A Theory of Competition Among Pressure Groups for Political Influence*, “Quarterly Journal of Economics”, no. 98(3).
- Bergh A., Bjørnskov C. (2011), *Historical Trust Levels Predict the Current Size of the Welfare State*, “Kyklos”, no. 64(1).
- Besley T., Kudamatsu M. (2006), *Health and Democracy*, “American Economic Review”, no. 96(2).
- Besley T., Persson T. (2009), *Repression or Civil War?*, “American Economic Review”, no. 99(2).
- Biehl D. (1998), *Wagner’s Law: An Introduction to and a Translation of the Last Version of Adolph Wagner’s Text of 1911*, “Public Finance/Finances Publiques”, no. 53(1).
- Bohl M.T. (1996), *Some International Evidence on Wagner’s Law*, “Public Finance”, no. 51(2).
- Borge L.E., Ratto J. (2004), *Income Distribution and Tax Structure: Empirical Test of the Meltzer–Richard Hypothesis*, “European Economic Review”, no. 48(4).
- Buchanan J.M., Tullock G. (1977), *The Expanding Public Sector: Wagner Squared*, “Public Choice”, no. 31.
- Bussemeyer M.R. (2009), *From Myth to Reality: Globalisation and Public Spending in OECD Countries Revisited*, “European Journal of Political Research”, no. 48(4).
- Carter J. (2012), *The Displacement Effect of Interstate War*, SSRN Paper.
- Christopoulos D.K., Efthymios T. (2003), *Testing the Buchanan–Wagner Hypothesis: European Evidence from Panel Unit Root and Cointegration Test*, “Public Choice”, no. 115(3–4).
- Davidson R., McKinnon J.G. (1993), *Estimation and Inference in Econometrics*, Oxford University Press, New York.
- Disney R. (2007), *Population Ageing and the Size of the Welfare State: Is there a Puzzle to Explain?*, “European Journal of Political Economy”, no. 23(2).
- Dong-Hyeon K. et al. (2018), *Government Size, Government Debt and Globalization*, “Applied Economics”, no. 50(25).
- Durevall D., Henrekson M. (2011), *The Futile Quest for a Grand Explanation of Long-Run Government Expenditure*, “Journal of Public Economics”, no. 95(7–8).
- EC (2015), *The 2015 Ageing Report. Economic and Budgetary Projections for the 28 EU Member States (2013–2060)*, “European Economy”, no. 3/2015.
- EC (2017), *The 2018 Ageing Report. Underlying Assumptions & Projection Methodologies*, Institutional Paper 065, Brussels.
- EC (2020), *Spring 2020 Economic Forecast: A Deep and Uneven Recession, an Uncertain Recovery*, European Commission Press Release, Brussels, 6 May 2020.
- Eslava M., Nupia O. (2010), *Political Fragmentation and Government Spending: Bringing Ideological Polarization into the Picture*, Documento CEDE no. 2010-03.
- Facchini F. (2014), *The Determinants of Public Spending: A Survey in a Methodological Perspective*, MPRA Paper no. 53006.

- Facchini F., Melki M. (2013), *Efficient Government Size: France in the 20th Century*, “European Journal of Political Economy”, no. 31.
- Ferris J.S., West E.G. (1999), *Cost Disease versus Leviathan Explanations of Rising Government Cost: An Empirical Investigation*, “Public Choice”, no. 98(3–4).
- Garrett G. (1995), *Capital Mobility, Trade, and the Domestic Politics of Economic Policy*, “International Organization”, no. 49(4).
- Gatsi J.G., Appiah M.O., Gyan J.A. (2019), *A Test of Wagner’s Hypothesis for the Ghanaian Economy*, “Cogent Business & Management”, no. 6(1).
- Goff B. (1999), *Persistence in Government Spending Fluctuations: New Evidence on the Displacement Effect*, “Public Choice”, no. 97(1–2).
- Golem S. (2010), *Fiscal Decentralization and the Size of Government: A Review of the Empirical Literature*, “Financial Theory and Practice”, no. 34(1).
- Greene W.H. (2012), *Econometric Analysis*, 7th edition, Prentice Hall, Pearson.
- Hayo B. (1994), *No Further Evidence of Wagner’s Law for Mexico*, “Public Finance/Finances Publiques”, no. 49(2).
- Jalles J. (2019), *Wagner’s Law and Governments’ Functions: Granularity Matters*, “Journal of Economic Studies”, no. 46(2).
- Kau J.B., Rubin P.H. (1981), *The Size of Government*, “Public Choice”, no. 37(2).
- Kau J.B., Rubin, P.H. (2002), *The Size of Government: Sources and Limits*, “Public Choice”, no.113(3–4).
- Kaufman R.R., Segura-Ubiergo A. (2001), *Globalization, Domestic Politics, and Social Spending in Latin America: A Time-Series Cross-Section Analysis, 1973–97*, “World Politics”, no. 53(4).
- Kittel B., Obinger H. (2003), *Political Parties, Institutions, and the Dynamics of Social Expenditure in Times of Austerity*, “Journal of European Public Policy”, no. 10(1).
- Kumar S., Webber D.J., Fargher S. (2012), *Wagner’s Law Revisited: Cointegration and Causality Tests for New Zealand*, “Applied Economics”, no. 44(5).
- Le Maux B., Rocaboy Y., Goodspeed T. (2011), *Political Fragmentation, Party Ideology and Public Expenditures*, “Public Choice”, no. 147(1–2).
- Lindbeck A. (1976), *Stabilization Policy in Open Economies with Endogenous Politicians*, “American Economic Review”, no. 66(2).
- Lindert P.H. (2010), *Growing Public. Social Spending and Economic Growth Since the Eighteenth Century*, Cambridge University Press, New York.
- Lora E., Olivera M. (2007), *Public Debt and Social Expenditure: Friends or Foes?*, “Emerging Markets Review”, no. 8(4).
- Lybeck J.A. (1988), *Comparing Government Growth Rates: The Non-Institutional vs. the Institutional Approach*, in: J.A. Lybeck, M. Henrekson (eds.), *Explaining the Growth of Government*, Elsevier Science Publishers B.V., North-Holland, pp. 29–47.
- Marlow M.J. (1988), *Fiscal Decentralization and Government Size*, “Public Choice”, no. 56(3).
- McCarty T.A. (1993), *Demographic Diversity and the Size of the Public Sector*, “Kyklos”, no. 46(2).
- Milesi-Ferretti G.M., Perotti R., Rostagno M. (2002), *Electoral Systems and Public Spending*, “The Quarterly Journal of Economics”, no. 117(2).
- Mutascu M. (2016), *Government Revenues and Expenditures in the East European Economies: A Bootstrap Panel Granger Causality Approach*, “Eastern European Economics”, no. 54(6).

- Mutascu M. (2017), *The Tax–Spending Nexus: Evidence from Romania Using Wavelet Analysis*, “Post-Communist Economies”, no. 29(3).
- Neck R., Schneider F. (1988), *The Growth of the Public Sector in Australia: An Exploratory Analysis*, in: J.A. Lybeck, M. Henrekson (eds.), *Explaining the Growth of Government*, Elsevier Science Publishers B.V., North-Holland, pp. 231–263.
- Neck R., Getzner M. (2007), *Austrian Government Expenditures: Wagner’s Law or Baumol’s Disease?*, “International Business & Economics Research Journal”, no. 6(11).
- Nelson M.L. (1986), *An Empirical Analysis of State and Local Government. Tax Structure in the Context of the Leviathan Model of Government*, “Public Choice”, no. 49(3).
- Parks R.W. (1967), *Efficient Estimation of a System of Regression Equations when Disturbances are both Serially and Contemporaneously Correlated*, “Journal of the American Statistical Association”, no. 62(318).
- Person T., Tabellini G. (1999), *The Size and Scope of Government: Comparative Politics with Rational Politicians*, “European Economic Review”, no. 43(4–6).
- Persson T., Tabellini G. (2004), *Constitutional Rules and Fiscal Policy Outcomes*, “American Economic Review”, no. 94(1).
- Persson T., Roland G., Tabellini G. (2007), *Electoral Rules and Government Spending in Parliamentary Democracies*, “Quarterly Journal of Political Science”, no. 2(2).
- Pickering A.C., Rockey J. (2011), *Ideology and the Growth of Government*, “The Review of Economics and Statistics”, no. 93(3).
- Prohl S., Schneider F. (2009), *Does Decentralization Reduce Government Size? A Quantitative Study of the Decentralization Hypothesis*, “Public Finance Review”, no. 37(6).
- Razin A., Sadka E., Swagel P. (2002), *The Ageing Population and the Size of the Welfare State*, “Journal of Political Economy”, no. 110(4).
- Rodrik D. (1998), *Why do More Open Economies Have Bigger Governments?*, “Journal of Political Economy”, no. 106(5).
- Ross J.M., Yan W. (2013), *Fiscal Illusion from Property Reassessment? An Empirical Test of the Residual View*, “National Tax Journal”, no. 66(1).
- Sagdic E.N., Sasmaz M.U., Tuncer G. (2019), *Wagner versus Keynes: Empirical Evidence from Turkey’s Provinces*, “Panoeconomicus”, no. 67(5).
- Sanz I., Velázquez F.J. (2007), *The Role of Ageing in the Growth of Government and Social Welfare Spending in the OECD*, “Journal of Political Economy”, no. 23(4).
- Saunoris J.W. (2015), *The Dynamics of the Revenue–Expenditure Nexus: Evidence from US State Government Finances*, “Public Finance Review”, no. 43(1).
- Schuknecht L., Zemanek H. (2018), *Social Dominance*, CESifo Working Paper no. 6894.
- Shelton C.A. (2007), *The Size and Composition of Government Expenditure*, “Journal of Public Economics”, no. 91(11–12).
- Spasova S., Ward T. (2019), *Social Protection Expenditure and its Financing in Europe. A Study of National Policies 2019*, European Social Policy Network (ESPN), European Commission, Brussels.
- Swank D. (2002), *Global Capital, Political Institutions and Policy Change in Developed Welfare States*, Cambridge University Press, New York.
- Swank D. (1988), *The Political Economy of Government Domestic Expenditure in the Affluent Democracies, 1960–1980*, “American Journal of Political Science”, no. 32(4).
- Tullock G., Buchanan J.M. (1972), *Review of the Book ‘Bureaucracy and Representative Government’ by W.A. Niskanen. Aldine-Atherton, 1971*, “Public Choice”, no. 12(1).
- UN (2019), *World Economic Situation and Prospects 2019*, United Nations, New York.

- Wagner A. (1893), *Grundlegung der Politischen Oekonomie*, Winter'sche Verlagshandlung, Leipzig.
- Wagner R.E. (1976), *Revenue Structure, Fiscal Illusion and Budgetary Choice*, “Public Choice”, no. 25(1).
- Winer S. et al. (2008), *Trending Economic Factors and the Structure of Congress in the Growth of Government, 1930–2002*, “Public Choice”, no. 135(3–4).
- Young A.T. (2009), *Tax-Spend a Fiscal Illusion*, “Cato Journal”, no. 29(3).

Appendix

Table A1
Raw data and data sources

| Data | Data source |
|--|-----------------|
| Social protection benefits, million euro, general government | Eurostat |
| Social protection spending, million euro, general government | COFOG, Eurostat |
| Health spending, million euro, general government | COFOG, Eurostat |
| Education spending, million euro, general government | COFOG, Eurostat |
| GDP, million euro | Eurostat |
| Price index (implicit deflator), 2010 = 100 | Eurostat |
| Old-age dependency ratio | Eurostat |
| Total revenue, million euro, general government | Eurostat |
| Fertility rate | Eurostat |
| Average population growth rate (%) | Eurostat |
| Trade openness (percentage of GDP) | WDI, World Bank |
| Balance of general government, million euro | Eurostat |
| Debt of general government, million euro | Eurostat |
| Unemployment rate (%) | WDI, World Bank |
| Population density | WDI, World Bank |

Source: as listed in Table A1.

Table A2
Descriptive statistics of all variables used in specifications

| | Variable | No. obs. | Mean | Std. dev. | Min | Max |
|------------------------------------|---|----------|--------|-----------|--------|--------|
| <i>cofog_welfare_{i,t}</i> | Aggregated social (welfare) spending (% GDP), general government | 374 | 27.19 | 5.26 | 14.48 | 40.13 |
| <i>cofog_sp_{i,t}</i> | Social protection spending (% GDP), general government | 374 | 16.14 | 4.11 | 7.47 | 25.57 |
| <i>spb_{i,t}</i> | Social protection benefits (% GDP), general government | 354 | 21.90 | 5.46 | 10.33 | 32.11 |
| <i>rev_{i,t}</i> | Total revenue (% GDP), general government | 374 | 42.12 | 6.27 | 25.76 | 56.26 |
| <i>trade_op_{i,t}</i> | Trade openness (% GDP) | 374 | 112.60 | 65.43 | 37.50 | 416.39 |
| <i>density_{i,t}</i> | Population density | 366 | 138.57 | 119.32 | 16.82 | 508.50 |
| <i>balance_{i,t}</i> | Balance of general government (% GDP) | 374 | -2.56 | 3.73 | -32.10 | 6.90 |
| <i>old_age_dri_{i,t}</i> | Old-age dependency ratio | 374 | 24.13 | 4.37 | 15.60 | 34.80 |
| <i>fer_rate_{i,t}</i> | Fertility rate | 374 | 1.53 | 0.23 | 1.09 | 2.06 |
| <i>un_rate_{i,t}</i> | Unemployment rate (%) | 357 | 9.47 | 4.66 | 1.90 | 27.50 |
| <i>real_gdp_rate_{i,t}</i> | Real GDP growth rate (GDP in million euro deflated by price index 2010 = 100) | 374 | 2.60 | 3.79 | -14.81 | 25.16 |
| <i>debt_{i,t}</i> | Debt of general government (% GDP) | 370 | 62.73 | 36.99 | 3.70 | 178.90 |
| <i>av_pop_rate_{i,t}</i> | Average population growth rate (%) | 374 | 0.32 | 0.86 | -2.23 | 2.93 |

Source: own calculations.

Table A3
Robustness checks for Beck and Katz's (1995) approach

| Variables | <i>cofog_welfare_{i,t}</i> | | | |
|------------------------------------|------------------------------------|---------------------|----------------------|---------------------|
| <i>real_gdp_rate_{i,t}</i> | -0.195*** (0.019) | | -0.198*** (0.018) | |
| <i>un_rate_{i,t}</i> | | 0.199*** (0.042) | | 0.212*** (0.042) |
| <i>trade_op_{i,t}</i> | -0.003 (0.003) | -0.004 (0.003) | | |
| <i>rev_{i,t}</i> | 0.447*** (0.037) | 0.571*** (0.036) | 0.450*** (0.038) | 0.583*** (0.036) |
| <i>balance_{i,t-1}</i> | -0.134*** (0.027) | -0.069** (0.033) | -0.139*** (0.027) | -0.070** (0.033) |
| <i>av_pop_rate_{i,t}</i> | 0.288* (0.167) | 0.520** (0.204) | 0.255 (0.164) | 0.494** (0.202) |
| <i>old_age_dr_{i,t}</i> | 0.148*** (0.052) | 0.145*** (0.053) | 0.157*** (0.051) | 0.154*** (0.053) |
| <i>constant</i> | 4.921*** (1.880) | -2.047 (1.977) | 3.988** (1.830) | -3.477* (1.787) |
| No. obs. | 374 | 357 | 374 | 357 |
| Wald statistic | 391.89 | 380.99 | 374.84 | 370.41 |
| R-squared | 0.9289 | 0.9052 | 0.9304 | 0.9002 |

| Variables | <i>cofog_sp_{i,t}</i> | | | |
|------------------------------------|-------------------------------|----------------------|----------------------|----------------------|
| <i>real_gdp_rate_{i,t}</i> | -0.122*** (0.014) | | -0.120*** (0.014) | |
| <i>un_rate_{i,t}</i> | | 0.184*** (0.027) | | 0.185*** (0.027) |
| <i>trade_op_{i,t}</i> | 0.001 (0.002) | 0.003 (0.002) | | |
| <i>rev_{i,t}</i> | 0.410*** (0.025) | 0.479*** (0.024) | 0.396*** (0.026) | 0.468*** (0.024) |
| <i>balance_{i,t-1}</i> | -0.096*** (0.022) | -0.044* (0.024) | -0.095*** (0.021) | -0.041* (0.023) |
| <i>av_pop_rate_{i,t}</i> | 0.349*** (0.127) | 0.608*** (0.139) | 0.275** (0.129) | 0.568*** (0.141) |
| <i>old_age_dr_{i,t}</i> | 0.106*** (0.038) | 0.110*** (0.034) | 0.112*** (0.040) | 0.102*** (0.035) |
| <i>constant</i> | -3.811*** (1.303) | -9.027*** (1.263) | -3.304** (1.297) | -8.098*** (1.188) |
| No. obs. | 374 | 357 | 374 | 357 |
| Wald statistic | 523.52 | 622.38 | 454.76 | 542.67 |
| R-squared | 0.9077 | 0.9403 | 0.8987 | 0.9357 |

Table A3 cont.

| Variables | <i>spb_{i,t}</i> | | | |
|------------------------------------|--------------------------|-----------------------|----------------------|-----------------------|
| <i>real_gdp_rate_{i,t}</i> | -0.163*** (0.019) | | -0.165*** (0.019) | |
| <i>un_rate_{i,t}</i> | | 0.163*** (0.038) | | 0.173*** (0.038) |
| <i>trade_op_{i,t}</i> | -0.002 (0.002) | -0.005** (0.002) | | |
| <i>rev_{i,t}</i> | 0.415*** (0.032) | 0.547*** (0.029) | 0.418*** (0.031) | 0.546*** (0.028) |
| <i>balance_{i,t-1}</i> | -0.162*** (0.028) | -0.142*** (0.036) | -0.168*** (0.028) | -0.150*** (0.036) |
| <i>av_pop_rate_{i,t}</i> | 0.682*** (0.168) | 1.293*** (0.196) | 0.663*** (0.166) | 1.287*** (0.193) |
| <i>old_age_dr_{i,t}</i> | 0.294*** (0.041) | 0.301*** (0.042) | 0.299*** (0.039) | 0.316*** (0.040) |
| <i>constant</i> | -3.319** (1.389) | -10.616*** (1.490) | -3.783*** (1.269) | -11.677*** (1.227) |
| No. obs. | 354 | 345 | 354 | 345 |
| Wald statistic | 591.97 | 972.59 | 597.64 | 945.69 |
| R-squared | 0.9294 | 0.9362 | 0.9269 | 0.9364 |

Standard errors in parentheses. ***, ** and * denote significance at 0.01, 0.05 and 0.1 per cent, respectively. Panel-corrected standard errors procedure with heteroscedastic error structure and panel-specific autocorrelation structure.
 Source: own calculations.

Table A4

Robustness checks – baseline models and a set of additional explanatory variables

| Variables | <i>cofog_welfare_{i,t}</i> | | | | |
|------------------------------------|------------------------------------|----------------------|----------------------|----------------------|----------------------|
| <i>real_gdp_rate_{i,t}</i> | -0.208*** (0.016) | -0.201*** (0.016) | -0.193*** (0.016) | -0.229*** (0.016) | -0.227*** (0.015) |
| <i>trade_op_{i,t}</i> | -0.009*** (0.003) | -0.027*** (0.005) | -0.032*** (0.005) | -0.002 (0.003) | |
| <i>debt_{i,t-1}</i> | | 0.032*** (0.008) | 0.032*** (0.008) | 0.034*** (0.007) | 0.031*** (0.008) |
| <i>av_pop_rate_{i,t}</i> | -0.020 (0.148) | -0.189 (0.161) | | 0.185 (0.155) | -0.095 (0.165) |
| <i>old_age_dr_{i,t}</i> | 0.237*** (0.052) | 0.176*** (0.061) | 0.163*** (0.062) | 0.161*** (0.056) | 0.193*** (0.063) |
| <i>density_{i,t}</i> | 0.013*** (0.003) | | 0.011*** (0.003) | | 0.006*** (0.003) |
| <i>fer_rate_{i,t}</i> | | 3.746*** (1.028) | 2.764*** (0.016) | | 2.038* (1.066) |
| <i>constant</i> | 20.767*** (1.454) | 18.333*** (2.174) | 18.257*** (2.141) | 21.947*** (1.351) | 16.920*** (2.104) |
| No. obs. | 366 | 369 | 365 | 369 | 365 |
| Wald statistic | 269.55 | 321.85 | 348.26 | 272.51 | 283.16 |

Table A4 cont.

| Variables | <i>cofog_sp_{i,t}</i> | | | | |
|------------------------------------|-------------------------------|----------------------|----------------------|----------------------|----------------------|
| <i>real_gdp_rate_{i,t}</i> | -0.120*** (0.012) | -0.131*** (0.011) | -0.126*** (0.011) | -0.141*** (0.012) | -0.155*** (0.011) |
| <i>trade_op_{i,t}</i> | -0.018*** (0.003) | -0.022*** (0.004) | -0.024*** (0.004) | -0.014*** (0.003) | |
| <i>debt_{i,t-1}</i> | | 0.039*** (0.006) | 0.036*** (0.006) | 0.039*** (0.005) | 0.039*** (0.006) |
| <i>av_pop_rate_{i,t}</i> | -0.167 (0.109) | -0.110 (0.116) | | 0.024 (0.111) | -0.085 (0.119) |
| <i>old_age_dr_{i,t}</i> | 0.193*** (0.041) | 0.098** (0.044) | 0.092** (0.046) | 0.083** (0.040) | 0.126*** (0.047) |
| <i>density_{i,t}</i> | 0.012*** (0.002) | | 0.009*** (0.002) | | 0.005** (0.002) |
| <i>fer_rate_{i,t}</i> | | 1.787** (0.715) | 1.023 (0.693) | | 0.352 (0.740) |
| <i>constant</i> | 11.889*** (1.130) | 11.120*** (1.540) | 10.648*** (1.497) | 13.683*** (0.977) | 9.117*** (1.545) |
| No. obs. | 366 | 369 | 365 | 369 | 365 |
| Wald statistic | 285.28 | 338.28 | 382.72 | 323.29 | 299.50 |

| Variables | <i>spb_{i,t}</i> | | | | |
|------------------------------------|--------------------------|----------------------|----------------------|----------------------|----------------------|
| <i>real_gdp_rate_{i,t}</i> | -0.164*** (0.014) | -0.166*** (0.014) | -0.156*** (0.013) | -0.201*** (0.015) | -0.187*** (0.014) |
| <i>trade_op_{i,t}</i> | -0.011*** (0.003) | -0.022*** (0.004) | -0.028*** (0.004) | -0.002 (0.003) | |
| <i>debt_{i,t-1}</i> | | 0.056*** (0.007) | 0.042*** (0.007) | 0.057*** (0.007) | 0.032*** (0.007) |
| <i>av_pop_rate_{i,t}</i> | 0.158 (0.136) | 0.187 (0.152) | | 0.561*** (0.148) | 0.321** (0.134) |
| <i>old_age_dr_{i,t}</i> | 0.315*** (0.041) | 0.168*** (0.055) | 0.120** (0.049) | 0.195*** (0.052) | 0.251*** (0.056) |
| <i>density_{i,t}</i> | 0.026*** (0.002) | | 0.018*** (0.003) | | 0.013*** (0.016) |
| <i>fer_rate_{i,t}</i> | | 3.415*** (0.908) | 1.909** (0.784) | | 0.834 (0.925) |
| <i>constant</i> | 11.422*** (0.981) | 11.583*** (1.690) | 13.471*** (1.365) | 13.381*** (1.173) | 11.150*** (1.657) |
| No. obs. | 346 | 349 | 345 | 349 | 345 |
| Wald statistic | 540.03 | 435.01 | 632.14 | 341.88 | 420.66 |

Standard errors in parentheses. ***, ** and * denote significance at 0.01, 0.05 and 0.1 per cent, respectively. Feasible generalised least squares with heteroscedastic error structure and panel-specific autocorrelation structure.

Source: own calculation.

DETERMINANTS OF GENERAL GOVERNMENT SOCIAL SPENDING: EVIDENCE FROM THE EUROZONE

Summary

The paper analyses selected determinants of social spending in the eurozone countries. The sample includes 17 eurozone countries (euro area countries except for Malta and Slovenia) analysed over the time sample, which covers annual data between 1996 and 2017. The paper takes into account three categories of social spending: aggregated welfare spending, aggregated social protection spending, and spending on social protection benefits, and evaluates the statistical and quantitative effects of their selected determinants. The set of determinants includes general macroeconomic variables related to the condition of the economy and selected demographic factors. The analysis is based on panel data. The obtained results point out the effects of macroeconomic factors on social-type spending and the effects of old-age dependency ratio on spending, whereas the significance of the rest of the analysed demographic factors is generally ambiguous and depends on the type of spending under consideration, applied approach, specification, as well as the control variables used in the analysis.

Keywords: government spending, panel data, socioeconomic determinants, eurozone, social spending

JEL: E62, H60

DETERMINANTY WYDATKÓW SOCJALNYCH W KRAJACH STREFY EURO

Streszczenie

W artykule poddano analizie wybrane determinanty wydatków socjalnych w krajach strefy euro. Badanie obejmuje 17 krajów strefy euro (kraje strefy euro z wyłączeniem Malty i Słowenii) analizowanych w próbie czasowej opartej na danych rocznych za lata 1996–2017. W artykule uwzględniono trzy kategorie wydatków: ujęte szeroko wydatki na cele socjalne, zagregowane wydatki na ochronę socjalną oraz wydatki na świadczenia z tytułu zabezpieczenia społecznego. Zbiór determinantów uwzględnionych w badaniu obejmuje ogólne zmienne makroekonomiczne związane ze stanem aktywności gospodarczej oraz wybrane czynniki demograficzne. Analiza oparta jest na danych panelowych. Uzyskane wyniki wskazują na znaczenie czynników makroekonomicznych oraz współczynnika obciążenia demograficznego osobami starszymi, natomiast w przypadku innych analizowanych czynników demograficznych uzyskane zależności są niejednoznaczne i zależą od rodzaju rozpatrywanych wydatków, zastosowanego podejścia, specyfikacji modelu, a także zmiennych kontrolnych uwzględnionych w badaniu.

Słowa kluczowe: wydatki rządowe, dane panelowe, czynniki społeczno-ekonomiczne, strefa euro, wydatki socjalne

JEL: E62, H60

ДЕТЕРМИНАНТЫ СОЦИАЛЬНЫХ РАСХОДОВ ГОСУДАРСТВ ЗОНЫ ЕВРО

Резюме

В статье анализируются некоторые определяющие факторы (детерминанты) социальных расходов в странах еврозоны. Исследование охватывает 17 стран (страны еврозоны кроме Мальты и Словении) анализируемых в рамках временной выборки за 1996–2017 гг. В статье были учтены три категории расходов: широко понимаемые расходы на социальные цели, агрегированные расходы на социальную защиту, а также расходы на пособия по социальному обеспечению. Совокупность детерминант, учтенных в исследовании, охватывает общие макроэкономические переменные, связанные с состоянием экономической активности, а также некоторые демографические факторы. Анализ построен на основании панельных данных. Полученные результаты указывают на значение макроэкономических факторов и коэффициента демографической нагрузки лицами пожилого возраста, но в случае других анализируемых демографических факторов полученные зависимости неоднозначны и зависят от вида рассматриваемых расходов, примененного подхода, спецификации модели, а также контрольных переменных, учтенных в исследовании.

Ключевые слова: правительственные расходы, панельные данные, социально-экономические факторы, зона евро, социальные расходы

JEL: E62, H60