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Determinants of Government Debt in the Member States of the European Union: Sources of Fiscal Risk

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Abstract. *In times when the national economy needs increased financial support from governments, the fiscal space they have and the determinants of public debt come to the fore. Sudden increases in public spending or significant decreases in public revenue represent fiscal risks, and the level of sovereign debt is a measure to quantify fiscal risk. At international level, banking crises, government guarantees, public-private partnerships, companies with majority state capital, and non-performing loans are revealed by history as the main sources of financial crises and fiscal risk. This study aims to identify whether social assistance expenditures, government guarantees, public-private partnerships, non-performing loans, or tax revenues influence the evolution of the government debt of the Member States of the European Union. The data used were taken from Eurostat and were organised as panel data, the analysed period is 2010-2018. To estimate the regressions, we used the Eviews software, and the results obtained revealed that social assistance is the variable that most strongly influences, in the same sense, the public debt. This points to the fact that changes in pension and social assistance spending, for example, topics with greater social impact, are capable of further indebtedness and have long-term effects on government spending on interest.*

Keywords: government debt, social assistance, governmental guarantees, non-performing loans, fiscal revenues.

Introduction

In the absence of public finances and sovereign debt, the economic evolution of the states would be blocked. Public debt allows states to make investments, impossible otherwise. However, a large public debt does not mean a large capacity to finance the national economy, but "when debt ratios rise beyond a certain level, financial crises become both more likely and more severe" (Reinhart and Rogoff, 2009). Ceccheti et al. (2011) explains the importance of prudent use of public debt: "Used wisely and in moderation, it clearly improves welfare. But, when it is used imprudently and in excess, the result can be a disaster". One goal of governments is to calculate the security level of sovereign debt and identify the variables that influence it, in order to minimise the fiscal vulnerability to which they are exposed. Studies on the determinants of public debt are becoming more numerous, and it must first be admitted that the factors affecting sovereign debt are macroeconomic, political, institutional and structural variables (Omrane & Omrane, 2017), hence the complexity of the phenomenon to be studied.

Literature review

Authors from the International Monetary Fund (2008) present the fiscal risks as the expenditure margin that appears between the actual budgeted expenditures and those estimated by planning or other forecasts. This means that unforeseen or component expenditures also occur during budget

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execution, which, although taken into account, change their volume. In this sense, fiscal risks represent a cause of increased financial requirements or a source of financing pressure that fiscal authorities have to deal with (Brixi and Schick, 2002). In addition to banking crises, natural disasters, and public-private partnerships, mismanaged state-owned enterprises, government guarantees are among the most common sources of unforeseen fiscal costs and constitute fiscal risks. As the European Commission (2011) explains, the public debt of states is an indicator of fiscal vulnerability and is therefore also a tool for assessing fiscal risk. Mirdala (2014) considers it worrying when the growing sovereign debt is coupled with an excessive government deficit, hence the importance of analysing the variables that constitute public spending and public revenue, opinions also shared by Everaert et al. (2009). As Petrie (2013) points out, one of the responsibilities of governments is to manage fiscal risk - failure to fulfil this mission is itself a fiscal risk (Porumboiu and Brezeanu, 2019). The purpose of this article is to identify the impact of several public expenditures and public revenues (government guarantees, non-performing loans, public-private partnerships, social assistance expenditures, tax revenues) over the governmental debt in European Union Member States.

According to the fiscal risk matrix, government guarantees represent explicit, contingent liabilities for public authorities. First of all, they are contingent because their realisation is not independent and certain, but depends on the occurrence of another event. In other words, the fact that the guarantees issued become due depends on the breach of the obligations of the debtor for whom it was guaranteed. Therefore, the actual value of these risks cannot be known from the outset, as it is not known whether and when the need to make a payment for a guarantee issued in favour of a beneficiary will arise. Secondly, they are explicit expenses as they are stipulated in contracts and other official guarantee documents that explicitly mention the obligation of the public authority to make payments on meeting certain conditions.

Government guarantees are financial instruments by which the government takes over the obligation to cover the expenses of a debtor, if he fails to cover them in full or within the set time (Bajo and Primorak, 2011). Considered as security instruments, guarantees have been designed and are used to assure the creditor that the debtor's obligation will be fulfilled, in case of impossibility, by a third party / institution (in case of state guarantees, by the latter), thereby reducing or eliminating the risk of default. By their purpose, government guarantees are welfare improving because they allow banks to provide greater liquidity transformations (Allen et al., 2017) and lead to increased bank leverage and risk taking (Cordella et al., 2017). The contribution of government guarantees to banks' lending activity was felt even in a downward phase of the economic cycle (European Communities, 2006).

Loans become non-performing in situations where, due to micro and macroeconomic factors, interest payments are not made according to the established schedule. When non-performing loans are not just isolated cases, but become recurrent, they affect the whole economy: banks are declining profits, have less capacity and availability to provide loans, credit access initiatives and the repayment capacity of the population and economic agents decrease; Overall, investments are declining. In other words, the non-performing loans situation is a reflection in the banking field of the unfavourable macroeconomic conditions, and the consequences it has had repercussions on the economy as well, hence the importance of a balanced monetary policy. To the extent that the proportion of non-performing loans in total loans does not affect the ability of banks to direct savings to investments, allocate risks and deliver monetary policy impulses to the real economy, this feedback effect on the economy does not occur (European Commission, 2017). The

European Commission also notes that non-performing loans are a sign of the persistence of credit risk in the economy that is holding back economic growth.

Studies on the influence of non-performing loans on the public debt stock have shown that there is a positive and significant impact of this category of contingent debt expenditure (Rinaldi & Sanchis-Arellano, 2006; Makri et al., 2014; Gargouri & Ksantini, 2016).

The public-private partnership (PPP) is a tool used to achieve public interest objectives for which a mix of public and private resources is used. Known mainly for its use in expanding road infrastructure, PPPs are currently used for several public services in the field of education, research, telecommunications, financial support and have the advantage of providing: additional capital; implementation and management skills different from those in the public system; added value to the consumer / population served; better allocation of resources; rapid implementation; lowering costs for the state (European Commission, 2003). Hemming et al. (2006) summarises the benefits of PPP as follows: "can facilitate increased infrastructure investment without immediately adding to government borrowing and debt, and user charges can be a source of revenue for the government". Despite the undeniable benefits of a coherent implementation of a PPP, Muehlenkamp (2014) states that they can be used by politicians and as a measure to avoid budgetary constraints, especially in the context of deteriorating road infrastructure and increased pressure on the public budget. Buso et al. (2016) also argue that PPPs can also be a way of tax evasion, in the sense that, amid increased budget constraints, PPPs are preferred over other forms of public procurement, without having negative consequences on public debt.

At the international level, in order to reduce poverty in many of the severely affected countries, the morality of allocating budget sums to the payment of public debt has been called into question instead of directing them to anti-poverty programs. In support of this idea, the World Bank and the International Monetary Fund have stated that exempting interest on public debt in the case of heavily indebted poor countries (ISPs) is a solution to increase social spending. There are studies that follow the inverse correlation to the one followed by our regression, which estimates the influence of public debt on the level of social assistance expenditures. The results confirmed that a high degree of indebtedness reduces the volume of funds allocated to social spending, and not because it would increase the public debt stock, but because it would reduce the fiscal space and subsequent indebtedness (Lora & Olivera, 2006).

Intuitively, it is considered that increasing public spending generates more public debt, and when public debt is high, it has the opposite effect on social spending, as primary public spending is more limited. However, when public debt is rising in times of recession, the need to support the population through social measures is expected to be high and therefore social spending will increase. This creates a spiral - a need for higher public spending, a growing public debt (Chun-Ping et al., 2016). A study on the Czech Republic (Raisova et al., 2016) confirmed that the evolution of spending on social purposes has the same meaning as the evolution of public debt. Chung-Ping et al. (2016) analysed the correlation between public debt and social spending in 13 OECD countries and concluded that the increase in social spending leads to an increase in public debt, while the reverse relationship is uncertain.

Tax revenues represent the state's collection of taxes on income, profit, consumption, property and transfers, social contributions, etc. Unlike the other exogenous variables included in the analysis, tax revenues are the only category that refers to government financial resources, the other variables are included in the category of expenditures.

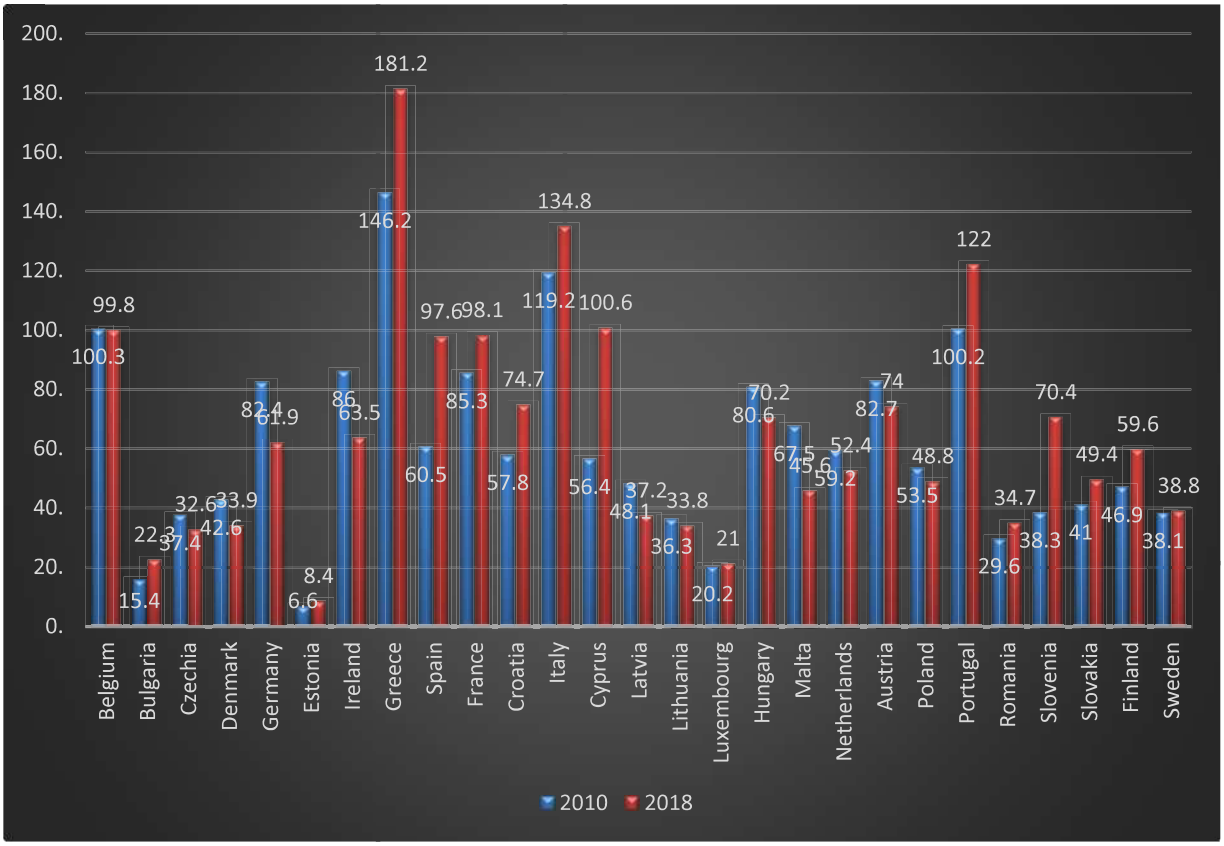

Figure 1. Evolution of public debt (% of GDP)

Source: Author's graphical representation using Eurostat data.

Figure 1 shows the situation of the government debt of the Member States of the European Union, in 2010 and 2018. There are countries with a low share of debt, below 30% of GDP (Estonia, Bulgaria, Luxembourg), but also countries for which the share exceeds 100 % (Greece, Italy, Portugal). Between 2010-2018, government debt almost doubled in the case of Cyprus, Slovenia, or increased considerably (Greece, Spain, Croatia), but the same period was a good time for countries such as Germany, Ireland, Malta, which have considerably reduced the level of government debt.

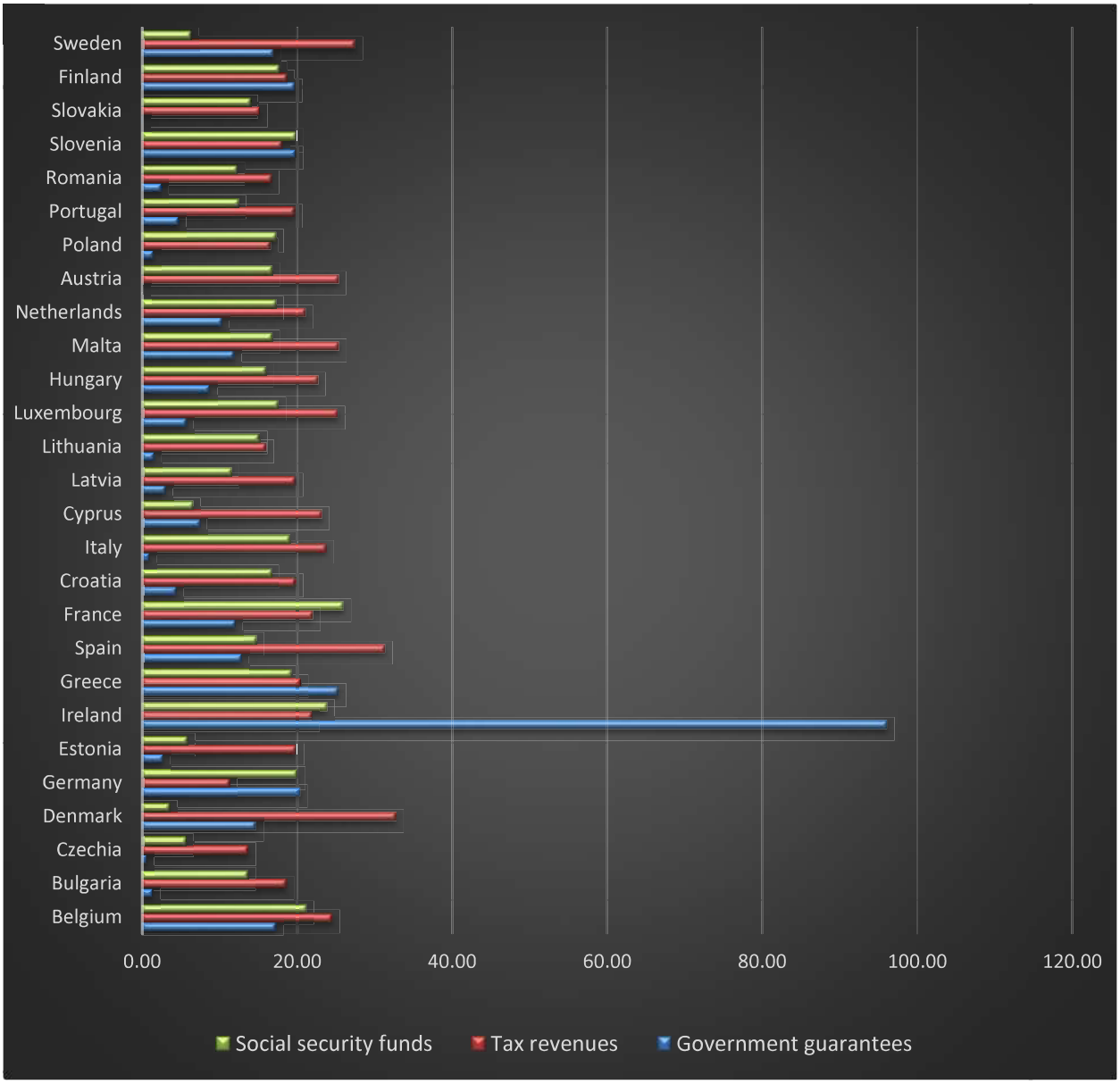

Figure 2.The share of government guarantees, social assistance expenditures and fiscal revenues in GDP, 2010

Source: Author's graphical representation using Eurostat data.

Figure 2 and Figure 3 show the inclination of each state to allocate funds for government guarantees and social assistance, and can be compared with the success of governments in terms of tax revenue. Denmark is the country that spends the least amount (relative to GDP) on social assistance, and instead receives considerable tax revenue, which can be allocated to other types of expenditure, including government guarantees, a similar situation for Sweden. At the same time, in terms of tax revenues, compared to 2018, Spain, followed by Denmark and Sweden have the highest tax revenues (relative to GDP) in the European Union (34.6% of GDP, 32.18% of GDP respectively 27.91% of GDP.

On the other hand, Germany, France, Ireland, Poland, Slovenia allocate amounts of social assistance in excess of tax revenues, the source of which is worth studying separately as this is not in all cases the loan (as we mentioned, Germany managed to reduce public debt between 2010-2018). In terms of government guarantees, in 2018, Finland is the country that spent the largest amounts with this destination, with a value of 32.56% of GDP, followed by Austria (16.26% of GDP) and Denmark (14.75% of GDP), consistent differences from the arithmetic mean at the level of the analysed states, of only 6.65% of GDP.

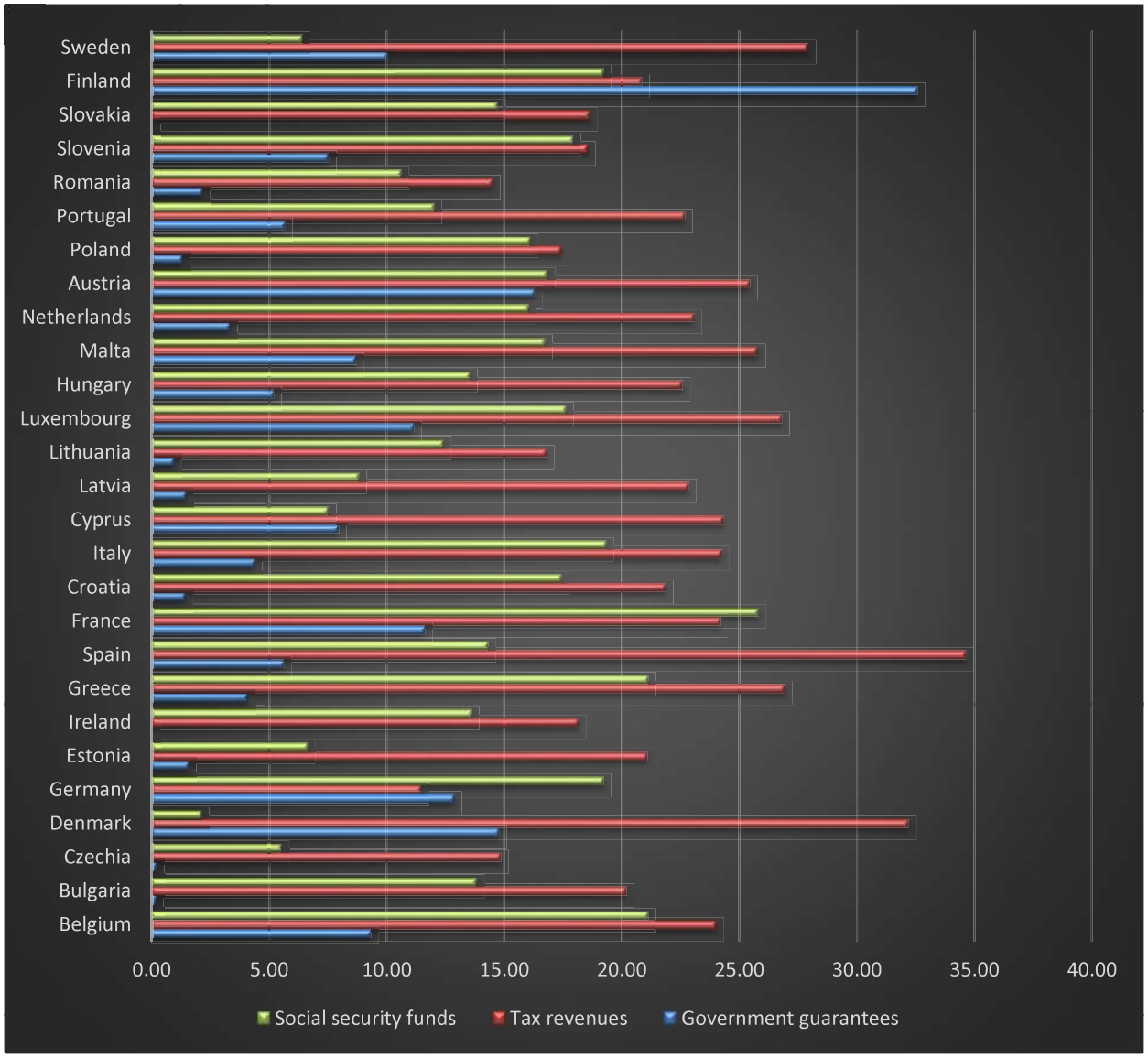

Figure 3. The share of government guarantees, social assistance expenditures and fiscal revenues in GDP, 2018

Source: Author's graphical representation using Eurostat data.

Methodology

This study aims to identify the influence of the following explanatory variables: government guarantees, non-performing loans, public-private partnerships, social assistance expenditures, tax

revenues, on the dependent variable represented by government debt. The data used in the analysis refer to the period 2010-2018, are taken entirely from Eurostat and are expressed as a percentage of national GDP. The variables analysed correspond to the current 27 Member States of the European Union. The data was organised as panel data and the software used for computations is Eviews.

In order to determine the stationariness of the series used, we ran unit root tests for panel data in Eviews. The results illustrated in Table 1 show the stationarity of the series corresponding to government debt, non-performing loans, tax revenues and social assistance expenditures. However, by applying the Augmented Dickey Fuller test to the PPP variable, it is found that the null hypothesis cannot be rejected (the probability value of 0.62 is greater than 5%), which means that the series is not stationary. In addition, given that some Member States of the European Union did not provide information on PPPs during the period under review, we decided to exclude this variable from the analysis so as not to affect the results obtained.

Table 1. Unit root test results in Eviews

Variable	DG	GG	ÎN	PPP	VF	AS
Method	Statistic Prob.**					
Null hypothesis: There is unit root						
*Levin, Lin & Chu t**	-16.2430 0.0000	-5.55164 0.0000	-9.24968 0.0000	0.32038 0.6257	-7.12509 0.0000	-12.9130 0.0000
Null hypothesis: There is unit root						
Im, Pesaran & Shin W-stat	-3.34897 0.0004	-1.21269 0.1126	-2.32978 0.0099	1.90578 0.9717	-1.49276 0.0677	-3.64763 0.0001
ADF – Fisher Chi-square	108.751 0.0000	70.8072 0.0621	75.5349 0.0039	14.9755 0.9899	73.8567 0.0376	114.961 0.0000
PP - Fisher Chi-square	80.7690 0.0106	161.401 0.0000	60.2811 0.0770	13.9803 0.9944	87.6067 0.0026	90.7742 0.0007

Source: Authors' own research.

The estimated regression is as follows, where the index *i* denotes the cross-sectional dimension, and the index *t* illustrates the temporal dimension (Baltagi, 2008):

$DG_{it} = c + \ _1 * GG_{it} + \ _2 * \hat{I}Np_{it} + \ _3 * AS_{it} + \ _4 * VF_{it} + a_i + \varepsilon_{it}$, where:

DG_{it}= general government debt in the country *i* in year *t*;

GG_{it}= governmental guarantees in the country *i* in year *t*;

$\hat{I}Np_{it}$= non-performing loans in the country *i* in year *t*;

AS_{it}= social assistance expenditures in the country *i* in year *t*;

VF_{it}= fiscal revenues in the country *i* in year *t*;

c = intercept;

a_i= individual effects;

ε_{it}= error.

In order to identify possible correlations between the variables under analysis, we determined the correlation matrix, whose values are found in Table 2.

Table 2. Correlation matrix results

Variable	*GG*	*ÎN*	*VF*	*AS*	*DG*
GG	1				
ÎN	0,006	1			
VF	0,209	-0,022	1		
AS	0,348	-0,043	-0,106	1	
DG	0,340	0,099	0,239	0,505	1

Source: Authors' own research.

There are weak and very weak correlations between the explanatory variables, which means that it is not necessary to eliminate them from the analysis.

Results and discussions

We continued to apply the Ordinary Least Square (OLS) method to estimate the parameters in Equation 1. Panel data can be analysed under several types of models, but the best-known categories are fixed effects models (FEM) and models with random effects (REM). In the case of the fixed effects model, it is considered that there may be a correlation between the component of error a_i and the explanatory variables, without any correlation between the error ε_{it} and regressors. As for the random effects model, individual effects are considered to be included in the error term, without being correlated with endogenous variables (Baum, 2001). Estimated OLS models with fixed effects and random effects can be found in Table 3.

Table 3. Regression estimation models using Eviews

Independent variable	OLS	Fixed effects	Random effects
C	-31.02845	-45.35743	-44.18686
Probability	0.0044	0.0001	0.0004
Government guarantees	0.342515	-0.067074	-0.069521
Probability	0.0657	0.3670	0.3270
Non-performing loans	1.975597	0.749881	0.763350
Probability	0.0133	0.0005	0.0004
Social assistance expenditures	3.400870	3.332811	3.436673
Probability	0.0000	0.0000	0.0000
Fiscal revenues	2.041761	2.950209	2.827575
Probability	0.0000	0.0000	0.0000
R^2	0.373401	0.968668	0.379146
R^2Adj.	0.362870	0.964235	0.368711
F	35.45712	218.4784	36.33569
Probability	0.000000	0.000000	0.000000
Number of observations	243	243	243

Source: Authors' own research.

If we compare the three models according to R^2, isolated, we will take into account that the closer the value of R^2 is to 1, the better the regression is specified. The value of R^2 in the fixed effects model is the highest for the three models used, which shows that the fixed effects model would best estimate the influence of the independent variables. However, we also ran the Hausman test (Table 4) to see which of the fixed-effects and random-effects models is more appropriate in this case.

Table 4. Hausman test results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	2.458180	4	0.6521

** WARNING: estimated period random effects variance is zero.

Period random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
Government guarantees	-0.067074	-0.069521	0.000495	0.9124
Non-performing loans	0.749881	0.763350	0.000118	0.2149
Social assistance expenditures	3.332811	3.436673	0.090745	0.7303
Fiscal revenues	2.950209	2.827575	0.038177	0.5302

Source: Authors' own research.

The probability that the Hausman test provides is 0.65 (> 5%) which means that the null hypothesis is not rejected, so the individual effects are random. The random effects model is the right one. Given that R^2 is 0.379, we deduce that the change in government debt is 37.9% due to changes in the endogenous variables under analysis. This shows that government debt is under the impact of several other factors, which also need to be identified.

The estimated regression from the values of the random effects model is as follows:

$$DG_{it} = -44{,}18 - 0{,}06 * GG_{it} + 0{,}76 * \hat{I}Np_{it} + 3{,}43 * AS_{it} + 2{,}82 * VF_{it}$$

To confirm that the results are not affected by multicollinearity, we proceeded to verify the relationships between the explanatory variables for each of the three estimated models, by calculating the variance inflation factor (VIF). Since the results are around 1 (as indicated in Table 5), it is found that the variables are not correlated or poorly correlated with each other, for each model. In general, values approaching 4 or 5 are considered to be signs of an average correlation, but in the case of the models used, all VIF values are less than 2.

Table 5. Variable's variance inflation factor results for each estimated model

VIF values	OLS	Fixed effects	Random effects
Government guarantees	1.224669	1.726835	1.580961
Non-performing loans	1.003903	1.011943	1.010720
Social assistance expenditures	1.188991	1.865822	1.650529
Fiscal revenues	1.091355	1.119221	1.071148

Source: Authors' own research.

The results of the regression show that the most significant influence on government debt is social assistance expenditure, expressed as a percentage of GDP (3.43). With the exception of

government guarantees, the explanatory variables analysed representing expenditures (non-performing loans, social assistance expenditures) exert a similar influence on government debt, which means that any increase in these public expenditures entails an additional financing need that governments do not meet. they can only insure through loans. The results of the studies mentioned in the first part are therefore confirmed, namely that the supplementation of social assistance expenditure or that caused by non-performing loans increases the government debt. The study also shows a similar influence on the dependent variable in the case of tax revenues. This is due to the fact that in times when tax revenues are higher, governments tend to initiate even higher expenditures through programs that exceed the volume of the additional revenue contribution and the funding is again obtained. by loan. Returning to government guarantees, they have a very small and inverse impact on government debt, which illustrates that overall, government guarantees offered to the population by the governments of the Member States of the European Union during the period under review did not owe governments (funds allocated to government guarantees had an appropriate volume, correlated with the payment capacity of the beneficiaries).

Starting from the same series of variables used, we continued with the estimation of other models: the polynomial model. It estimates the influence of a single explanatory variable on the dependent variable and has the following general form:

$$y = \alpha_0 + \alpha_1 x + \alpha_2 x^2 + \cdots + \alpha_p x^p + \varepsilon$$

To estimate polynomial models that measure the influence of the four explanatory variables used on government debt, we calculated the second and third powers for the value of each of the exogenous variables, which we then considered independent variables and continued with the estimation of the models with fixed and random effects, respectively. Table 6 indicates the coefficient estimates for the governmental guarantees' polynomial regression models, Table 7 for the non-performing loans polynomial regression models, Table 8 for social assistance expenditures polynomial regression models and Table 9 for fiscal revenues polynomial regression models.

GG^2 polynomial regression model: $DG = c + \alpha_1 GG + \alpha_2 GG^2 + \varepsilon$
GG^3 polynomial regression model: $DG = c + \alpha_1 GG + \alpha_2 GG^2 + \alpha_3 GG^3 + \varepsilon$

Table 6. Polynomial regression models estimations related to government guarantees

Independent variable	Fixed effects	Random effects	Fixed effects	Random effects
Intercept **Probability**	64.80074 0.0000	63.89244 0.0000	68.27310 0.0000	66.84593 0.0000
Government guarantees **Probability**	0.378790 0.0340	0.536358 0.0035	-0.441980 0.1994	-0.169517 0.6400
Government guarantees^2 **Probability)**	-0.119759 0.5798	-0.388651 0.0866	2.936644 0.0095	2.268519 0.0613
Government guarantees^3 **Probability**	- -	- -	-0.241810 0.0060	-0.211015 0.0261
R^2	0.962979	0.061857	0.964321	0.081073
R^{2}Adj.	0.956509	0.054039	0.957882	0.069538
F **Probability**	148.8441 0.000000	7.912221 0.000470	149.7491 0.000000	7.028647 0.000151
Hausman test	-	0.1525	-	0.2819

Source: Authors' own research.

$\hat{I}N^2$ polynomial regression model: $DG = c + \alpha_1 \hat{I}N + \alpha_2 \hat{I}N^2 + \varepsilon$
$\hat{I}N^3$ polynomial regression model: $DG = c + \alpha_1 \hat{I}N + \alpha_2 \hat{I}N^2 + \alpha_3 \hat{I}N^3 + \varepsilon$

Table 7. Polynomial regression models estimations related to non-performing loans

Independent variable	Fixed effects	Random effects	Fixed effects	Random effects
Intercept	66.59594	66.43531	66.02498	65.85613
Probability	0.0000	0.0000	0.0000	0.0000
Non-performing loans	4.106296	4.576150	6.922890	7.496234
Probability	0.0000	0.0000	0.0001	0.0000
Non-performing loans^2	-11.44685	-13.01857	-53.95365	-58.10489
Probability	0.0000	0.0000	0.0173	0.0095
Non-performing loans^3	-	-	10.46473	11.16656
Probability			0.0582	0.0415
R^2	0.964613	0.133292	0.965228	0.146862
R^2Adj.	0.958428	0.126070	0.958952	0.136153
F	155.9799	18.45501	153.7984	13.71412
Probability	0.000000	0.000000	0.000000	0.000000
Hausman test	-	0.5615	-	0.7507

Source: Authors' own research.

AS^2 polynomial regression model: $DG = c + \alpha_1 AS + \alpha_2 AS^2 + \varepsilon$
AS^3 polynomial regression model: $DG = c + \alpha_1 AS + \alpha_2 AS^2 + \alpha_3 AS^3 + \varepsilon$

Table 8. Polynomial regression models estimations related to social assistance expenditures

Independent variable	Fixed effects	Random effects	Fixed effects	Random effects
Intercept	-39.76607	-22.93304	-30.78617	-15.03624
Probability	0.0179	0.1473	0.1013	0.4125
Social assistance expenditures	10.33470	8.344840	6.879943	5.452919
Probability	0.0000	0.0000	0.0769	0.1450
Social assistance expenditures^2	-17.91161	-12.87273	12.62212	12.26266
Probability	0.0025	0.0152	0.6691	0.6670
Social assistance expenditures^3	-	-	-7.511869	-6.138772
Probability			0.2920	0.3674
R^2	0.972126	0.290767	0.972277	0.292788
R^2Adj.	0.967255	0.284856	0.967273	0.283910
F	199.5656	49.19680	194.3115	32.98218
Probability	0.000000	0.000000	0.000000	0.000000
Hausman test	-	0.9277	-	0.8164

Source: Authors' own research.

VF^2 polynomial regression model: $DG = c + \alpha_1 VF + \alpha_2 VF^2 + \varepsilon$
VF^3 polynomial regression model: $DG = c + \alpha_1 VF + \alpha_2 VF^2 + \alpha_3 VF^3 + \varepsilon$

Table 9. Polynomial regression models estimations related to fiscal revenues

Independent variable	Fixed effects	Random effects	Fixed effects	Random effects
Intercept **Probability**	14.31396 0.6023	9.876432 0.7179	110.2652 0.1662	97.53735 0.2059
Fiscal revenues **Probability**	1.313040 0.5843	1.854166 0.4232	-11.35865 0.2631	-9.875257 0.3156
Fiscal revenues^2 **Probability**	4.967223 0.3421	3.498758 0.4871	57.98744 0.1637	53.04700 0.1911
Fiscal revenues^3 **Probability**	-	-	-7.054306 0.1991	-6.629721 0.2183
R^2	0.966707	0.171515	0.966974	0.181418
R^2Adj.	0.960889	0.164611	0.961014	0.171143
F **Probability**	166.1523 0.000000	24.84275 0.000000	162.2243 0.000000	17.65606 0.000000
Hausman test	-	0.6885	-	0.6372

Source: Authors' own research.

For all estimated polynomial models, the Hausman test indicates that random effects models are suitable for estimation. Comparing the value of R^2 in the case of polynomial models of random effects model type, we notice that 29.27% of the change in government debt is explained by the evolution of social assistance expenditures. In the case of polynomial models based on non-performing loans, tax revenues, the values of R^2 are between 6% and 18%, which results in a small influence of these explanatory variables. We therefore retain the polynomial model according to AS^3 according to the regression coefficients obtained:

$$DG = -15.03 + 5{,}45AS + 12{,}26AS^2 - 6{,}13AS^3$$

Therefore, the spending that governments make through social assistance programs also affects public debt, hence the importance of studying the impact of each type of social assistance on public spending in general, and then on debt. Intuitively, we can say that the phenomenon will gain momentum in many states amid the demographic trend of an ageing European population, in view of the fact that pensions are an essential pillar in the category of spending mentioned. The functioning of the pension system (age criteria, contribution period, amounts, etc.) must be correlated with the standard of living, with the evolution of purchasing power, but also with the ability of governments to support these expenditures in the long run, without endangering sustainability. public finances. At the level of the average of the 27 states of the European Union studied, it is observed that the share of social assistance expenditures varied slightly in the period 1995-2019, the values being on average between 16.3% and 18.6% of the average GDP. However, the growth rate of social assistance expenditures, on average, remains below the GDP growth rate, compared to the overall situation of the Member States studied, as Figure 4 shows. Since 2020, with the outbreak of the covid-19 pandemic, amid the need for financial support from the population and businesses by governments, the share of social spending has increased significantly and the trend of indebtedness of states is increasing, but the phenomenon cannot be analysed rather than distinct, as it is a response to an unforeseen shock.

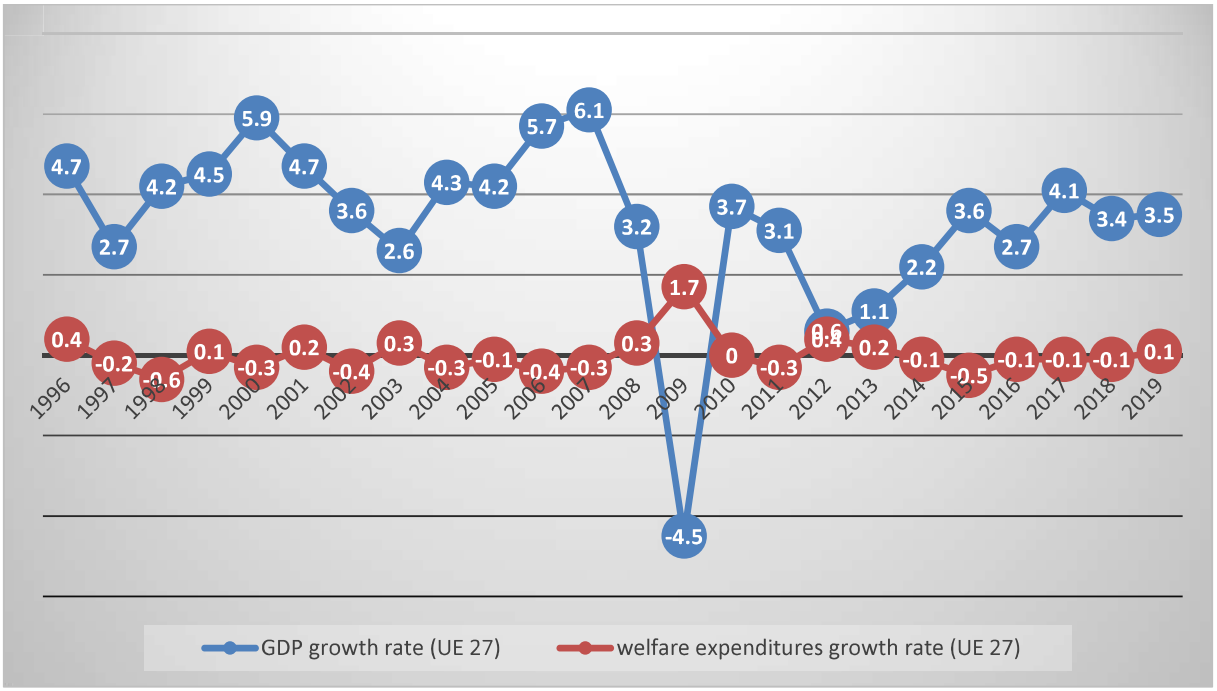

Figure 4. Evolution of GDP growth rates and social assistance expenditures in the EU 27
Source: Author's graphical representation using Eurostat data.

The estimated model can be criticised mainly for the lack of long data sets, but this study aimed to identify whether and which of the variables under analysis are able to change the amount of government debt at Member State level. To identify the specifics of each country and to estimate the parameters , it is recommended to use longer time series, and to include in the analysis other variables as well. One of the problems that the authors face regarding the variables with potential impact on the fiscal risk is the lack of data: "the complexity and the lack of transparency become apparent in particular during crises and disasters" (Raad voor het Regeringsbeleid & Scientific Council for Government Policy, 2009).

Conclusion

Government debt, considered an indicator of fiscal risk, is a challenge for government budgets, the evolution of which must be taken into account when planning budget execution. The estimated impact of different types of debt and expenditure on debt will be taken into account by governments when launching programs, in order to be able to compare the expected effects with government debt efforts. According to empirical evidence of this study over the period 2010-2018, social assistance is the variable that significantly influences the public debt of the Member States of the European Union. This confirms the conclusions of other authors that programs with a significant social impact are those that "entail large government expenditures and, hence, higher tax distortions in bad times, adding to fiscal risk" (Hansom et al., 2019).

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