State Budget Deficit During Crises: Constraints and Balancing Policy

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Abstract: *The balance between state budget revenue and expenditures represents a challenge for any government, especially in times of crisis. Economic theory has defined different behaviors for managing the budget balance. However, a crisis highlights the constraints and limitations between expectations, the yield of budget receipts, and the efficiency of public budget expenditures. This paper analyzes the relationship between the Romanian state budget revenue and expenditures for 2000-2021. Furthermore, the effects of crises (the financial and the health crises) on revenue, expenditures, and the state budget deficit, are highlighted. The results show statistically significant relationships between variables.*

Keywords: *budget revenue; budget expenditures; budget balance; financial crisis; health crisis*

JEL Classification: *H71; H72*

1. Introduction

The government has the important role of collecting budget revenue and using these resources efficiently and responsibly (in the form of budget expenditures). These processes are planned and carried out through the respective country's budget, representing essential tools of government policy implementation. There is a relationship between revenue and expenditures, between revenue collected from taxpayers and the use of the revenue to reflect their preferences.

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In general, crises cause a significant deterioration in public finances. This calls for a rethink of tax and spending policies once the recovery is underway, generating long-term structural challenges (OECD, 2021, Sarin and Summers, 2019; Orszag et al, 2021). Some essential aspects of the discussions and analyzes regarding the size of budget deficits refers to the perspective of the state's involvement in the economy to adjust the market failure, the efficient allocation of resources, and the use of the "welfare state" concept (Stoian, 2009).

On the other hand, dealing with the budget deficit and choosing an optimal method is an important research topic, and various studies can be found in the literature. Among the methods described is the increase of taxation and the reduction of the budget expenditures, both with advantages and disadvantages.

The process of attracting financial resources from taxpayers through taxes (income that could be used for consumption or investments) can register an unfavorable impact on demand. A significant body of literature shows that "cutting spending is less harmful to growth than raising taxes" (Alesina et al, 2018, Alesina 2019, Gale and Samwick, 2014). Nevertheless, promoting a policy of reducing public spending may be effective in the short term, but in the long term, it may negatively affect economic growth. Such a measure is recommended during crises, when there is an increase in inflation, fluctuations in the exchange rate, etc. In the context of the welfare state, the expenditures for social-cultural actions (education, culture, health, social assistance) registers a significant weight in the total, thus highlighting the connection with public deficits (Stoian, 2009).

Crises have a significant impact on macroeconomic indicators. Thus, influences on budget revenue, expenditures, and deficits can be observed. For example, in 2008 and 2009, in the European Union (EU27), the economic and financial crisis decreased government revenues and increased government expenditures in terms of GDP. This resulted in substantially deteriorated deficits (Wahrig and Gancedo Vallina, 2011). Nevertheless, in the EU, according to Eurostat (2022) data, total general government revenue in 2021 amounted to 46.9 % of GDP (increasing from 46.2 % in 2020), and expenditures amounted to 51.6 % of GDP (decreasing from 53.0 % in 2020).

In the following, the sections of the study consider the review of the literature (section 2), a discussion regarding the measures adopted in Romania to counteract the effects of the crises (section 3), the presentation of the methodology used (section 4), and the presentation of the results obtained (section 5). The last section summarizes the conclusions of this analysis.

2. Theoretical aspects regarding the management of the adverse effects generated by crises: increasing taxes vs. reducing budget expenditures

Analyzing the effects of crises on budget revenue, expenditures and deficit is critical, especially if we consider the measures that policymakers can adopt. For example, in times of crisis, budget expenditures can register a significant increase as a result of the increased need for immediate adjustment (i.e., the increased expenditures for public medical services, research equipment, as well as the need to provide support to sectors affected by various restrictions (if we discuss about the health crisis-Covid-19): education, tourism, transport, etc.). However, these expenses are based on the revenues attracted mainly from taxes, which shows the importance of the analyzes carried out in this area for future decisions and measures which can be adopted by policymakers.

The financial crisis of 2007–2008 significantly impacted EU tax revenue collection. As a result, revenue from taxes and social contributions decreased by 5.6% in 2009 compared to 2008. Only after three years (2011) the EU tax revenue reached a level above the one registered in the years previous to the beginning of the crisis (three years needed to recover from the effects of the crisis) (Țibulcă, 2021).

When declining GDP and tax revenues led to deteriorating government budget deficits and worries about rising sovereign debt, numerous countries abandoned their fiscal stimulus packages. Instead, they adopted fiscal consolidation measures (Ramey, 2019) to reduce government deficits and debt accumulation. In countries of Central and Eastern Europe, the decrease in GDP was accompanied by a reduction in tax revenues and an increase in government spending, resulting in the deterioration of the public finances balance (Dudáš, 2013).

The Covid-19 pandemic also created fiscal pressures for many countries, requiring additional spending to mitigate the health, economic, and social impact while government revenues were falling (World Bank, 2021). For both crises, the combined direct and indirect effects, "the crisis import" through the opening policy, and high dependency of the less developed countries on the international markets generated the prolongation of the crisis period. According to IMF (2020), the Covid-19 crisis increased governments' fiscal demands, including healthcare spending, unemployment benefits, cash transfers, and countercyclical initiatives to revive the activity.

To counteract the adverse effects of the crisis generated by the Covid-19 pandemic, various countries have adopted discretionary fiscal stimulus measures, state guarantees for loans to businesses, efforts to support liquidity, to maintain jobs, health spending, measures to help the unemployed and other vulnerable groups through social transfers; in the revenue area, deferrals of taxes and social security contributions were adopted to support the liquidity in households and businesses (Haroutunian et al, 2020).

3. Measures adopted in Romania to counteract the effects of the crises

During the period represented by the financial crisis, the government adopted some measures to counteract the effects of the recession (Zaman et al, 2010; Stoiciu, 2012; Dornean et al, 2015; Davidson, 2015, 2017). Some of these measures refer to providing support for employees and employers that had to suspend their activity temporarily, and for persons who lost their jobs (Ciutacu, 2009):

- the employees of companies that had to temporarily suspend their activity received a minimum of 75% of the nominal wage. Both employer and employees were exempted from the payment of the social security contributions for a maximum period of three months (Government Emergency Ordinance (GEO) no. 28/2009);

- the amount paid to workers during the temporary suspension of business was income tax-free (GEO no. 28/2009);

- the unemployment benefit period (six months for workers with a contribution record of 1 – 5 years, nine months for contributions of 5 – 10 years, and twelve months for contributions of more than 10 years) increased by three months for all contribution brackets;

- adoption of a non-refundable state aid scheme for small and medium enterprises (in May 2009, with a maximum of 200,000 euros per SME) to maintain the workers on the job and develop the business.

The policymaker also considered some austerity measures. An important example comes from the VAT area where, in July 2010, due to the financial crisis that started in 2007, austerity measures were adopted to reduce the budget deficit, and the standard VAT rate changed from 19% to 24%, in force until January 2016. After this date, the rate dropped to 20%. Another measure adopted in the area of austerity refers to the one aimed at reducing by 25% the wage of employees in the public system (measure adopted by Law no. 118 of June 30, 2010, regarding the steps to restore the budget balance).

In Romania, during the financial crisis, the required fiscal response stipulated a substantial fiscal tightening (Makipaa, 2009). Tight fiscal policy refers to increasing taxes and cutting government spending (deflationary policy), aiming at improving government finances.

The Covid-19 pandemic has brought new challenges for the policymakers. Thus, various countries adopted measures to fight the crisis's adverse effects, including restrictions on the free movement of people and goods (Mathieu et al, 2020, Zaman et al, 2020, Vasile et al, 2020, Hale et al, 2021). These measures have adversely affected economic activity, with global uncertainty eroding confidence (Saint-Amans, 2020). Romania adopted measures such as (KPMG, 2020a):

- waiving interest and late payment penalties for non-payment of taxes on the due date;

- suspension of enforcement measures by seizure of budget receivables;
- extension of the deadline for the payment of the building tax, the land tax, and the tax on means of transport.

The measures adopted in Romania were focused on postponing the payment of taxes and exemptions, making the work schedule more flexible, and providing facilities for the payment of social contributions. Those measures (reductions, deferrals, and tax exemptions) included (KPMG, 2020b):

- offering a discount for timely payments of corporate tax or tax on the income of micro-enterprises;
- exemption from customs duties payments for certain products set up as emergency medical stocks by the Emergency Department of the Ministry of Internal Affairs;
- postponement of VAT payment on imports for goods intended to prevent and combat the spread of coronavirus.

If we analyze the legislation, we can also find other measures adopted, such as:

- during the state of emergency, for the period of temporary suspension of the individual employment contract, at the initiative of the employer, the benefits of employees were set at 75% of the basic wage, but not more than 75% of the average gross wage. The payment of the insertion incentive was guaranteed to all entitled persons for a period of 90 days if the person in question was in situations such as sick leave, paid parental leave, technical unemployment, or with the employment contract suspended due to the state of emergency (GEO (Government Emergency Ordinance) no. 30 of March 18, 2020);
- postponement of the payment of certain taxes and value-added tax (VAT) for import and tax clarifications for the payment of unemployment benefits during the emergency period; exemption from the payment of activity-specific tax (taxpayers do not owe specific tax for the period in which they interrupt their activity (totally or partially) during the state of emergency); the payment of VAT on imports of denatured ethyl alcohol used in Covid-19 products was postponed during the state of emergency (GEO no. 48 of April 9, 2020);
- 5% bonus for the payment of income tax, social security contribution, and health insurance contribution; 5% bonus for income tax, social security contribution, and health insurance contribution to the submission by electronic means of remote transmission of the single income tax return due by individuals; since 2021, a bonus of up to 10% of the annual income tax, and a bonus of up to 10% of the social insurance contribution and health insurance contribution (GEO no. 69 of May 14, 2020);
- in 2020, the taxpayers obliged to pay the activity-specific tax did not owe tax for a period of 90 days; the taxpayers paying the corporate tax, as well as the taxpayers paying the tax on the income of the micro-enterprises, who paid the tax by the due dates, had a 10% bonus calculated on the tax owed (GEO no. 99 of June 25, 2020);

- a reduction between 2% -10% when determining the corporate tax, the tax on the income of micro-enterprises, and the tax for particular activities; extension of the deadline for filing tax returns and payment of corporate tax, tax on the income of micro-enterprises, and specific tax (GEO no. 153 of September 3, 2020).

Some of the measures adopted targeted the area of social protection (related to employment), such as (KPMG, 2020b):

- support provided to employers who full-time and with permanent contracts employed persons over the age of 50 (GEO no. 92 of May 28, 2020); assistance for the employment of young people aged 16 to 29; for each person employed from the categories mentioned above, the employer received 50% of the employee's wage for 12 months, but not more than 2,500 lei per month (about 516 euro per month);

- an allowance was offered during the period with a reduction of the work schedule; the affected employees received an allowance of 75% of the difference between the gross basic wage from the individual employment contract and the gross basic wage corresponding to the hours worked as a result of the reduction of the work schedule;

- in 2020, employers who had employees with individual employment contracts for a fixed period of no more than three months benefited from the payment by the state of 41.5% of the wage of these employees but not more than 41.5% of the gross average wage;

- employers received a single financial support of 2,500 lei (about 516 euros) for each employee who worked remotely as support for the purchase of technological goods and services necessary for the activity; these amounts were given to employers for each employee who worked remotely during the state of emergency for at least 15 working days.

4. The methodology

This study analyzes the impact of financial and health crises on state budget revenue, expenditures, and deficit, using monthly data from January 2000 to December 2021 (latest available data). Thus, models are built and these variables are considered, in turn, dependent variables. The impact of the crises is highlighted by using a dummy variable for the respective periods. The dummy variable is developed considering the period of the Great Recession (December 2007 to June 2009), knowing that it was sparked by the financial crisis of 2007–2008 (Center on Budget and Policy Priorities, 2019). Also, the dummy variable is developed for the period of the Covid-19 pandemic, which started in March 2020 and is still in progress at the time of writing the study. The coefficient of this dummy variable captures the impact of the crises.

Table 1. Government deficit, expenditures, and revenue in Romania (general government)

Indicator	2007	2008	2009	2010	2017	2018	2019	2020	2021
Government deficit/surplus, % of GDP	-2.8	-5.4	-9.5	-7.1	-2.5	-2.8	-4.3	-9.2	-7.1
Government expenditures, % of GDP	37.5	37.7	39.9	39.5	33.6	34.5	36.0	41.5	39.9
Government revenue, % of GDP	34.8	32.3	30.4	32.4	31.1	31.7	31.6	32.3	32.8

Source: Eurostat, https://ec.europa.eu/eurostat/databrowser/view/gov_10dd_edpt1/default/table?lang=en, https://ec.europa.eu/eurostat/databrowser/view/gov_10a_main/default/table?lang=en

In 2019 and 2020, the budget deficit in Romania (general government) registered a significant increase, followed by a decrease in 2021. The methods of dealing with the budget deficit are reducing expenditures or increasing taxation. Both methods have advantages and disadvantages, with an important impact on taxpayers. Also, problems may arise related to the increase in tax evasion. Furthermore, the measures adopted may impact taxpayers' compliance, thus influencing the relationship with tax authority.

Figure 1. Revenue and expenditures of the state budget (logarithmic series)
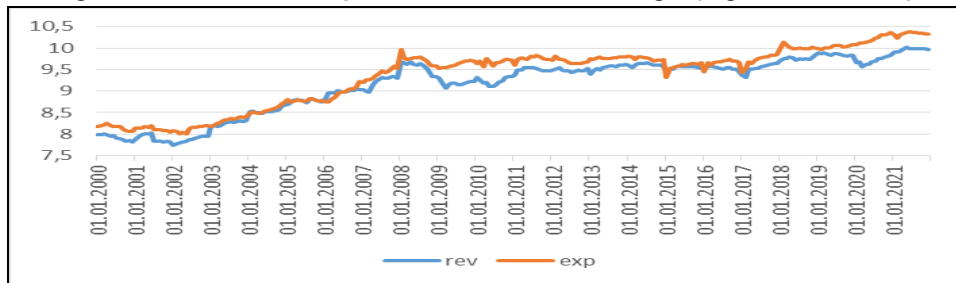
Note: The computations were made with data provided by the National Bank of Romania (NBR) in the monthly bulletins (summed since the beginning of the year)
Source: authors' contribution

In this study, the models are developed using data from the monthly bulletins of the National Bank of Romania (NBR) as follows:

- in the first stage, models were developed with the data provided by the NBR in the monthly bulletins (summed since the beginning of the year);
- in the second stage, the values for each month were calculated, and then the models were developed. The variables used in the analysis are presented in the following table.

Table 2. The variables used in the analysis

Variables	Description (The first stage of the analysis)	Description (The second stage of the analysis)	Source
DEF	Deficit/surplus of the state budget[i]		NBR monthly bulletins
REV	State budget revenue[ii]	State budget revenue[i]	
EXP01	State budget expenditures[ii]	State budget expenditures[i]	
DUMMY	Dummy variable for crises[iii]		authors

[i] *the series is converted from the national currency (lei) to US dollars and adjusted for seasonal components using the Census-X13 methodology*

[ii] *the series is converted from the national currency (lei) to US dollars, adjusted for seasonal components using the Census-X13 methodology, and log transformed*

[iii] *dummy variable, with the value of 1 for the months of the Great Recession (December 2007 to June 2009) and Covid-19 pandemic, which started in March 2020 and is still ongoing at the time of writing the study (latest available data is for December 2021)*

Using the Least Squares Method, the regression model is described as follows:

$$Y_t = \alpha + \beta X_t + u_t \tag{1}$$

In the above equation, Y_t is the dependent variable, and X_t is the set of explanatory variables. The estimation of the regression model parameters is presented in the following section.

5. Results and discussions

The results obtained highlight the existence of statistically significant relationships between the variables. These relationships are outlined in the following table.

Table 3. The relationships between variables

Dependent variables	DEF	REV	EXP01
Independent variables	The first stage of the analysis		
REV	+	n.a.	+
EXP01	-	+	n.a.
DUMMY	-	n.s.	n.s.
Independent variables	The second stage of the analysis		
REV	+	n.a.	+
EXP01	-	+	n.a.
DUMMY	n.s.	-	+

Source: authors' computations

Note: n.a. - not available, n.s. – the coefficient is not statistically significant at 5%

The dummy variable shows the impact of the crises. One can mention that this variable has a negative and statistically significant relationship only with the budget deficit in the first stage of the analysis. However, the models developed in the second stage of the analysis show statistically significant relationships between the dummy variable and state budget revenue (negative relationship) and between this variable and state budget expenditures (positive relationship).

When used in the models as independent variables, the other two variables retain their influences on the dependent variable at both stages of the analysis.

5.1. The first stage of the analysis

In the first analysis stage, various models were developed with data provided by the NBR in the monthly bulletins (summed since the beginning of the year). The dependent variable in the first model is represented by state budget revenues (REV). In analyzing the residuals, it is important to check the hypothesis of independent residuals or uncorrelated errors (Săvoiu, 2011). This hypothesis is checked using the Durbin-Watson test (DW) (Durbin and Watson, 1950, 1951). In the first case, d (the test statistic) = 0.213968, and the values for dL (lower critical value) and dU (upper critical value), for n = 250 (no. of observations), are 1.777 and 1.809, respectively. For the first model, according to the DW value, we reject the null hypothesis of non-autocorrelated errors in favor of the hypothesis of positive autocorrelation.

Table 4. The results from the first stage of the analysis

Model no.	Dependent variable	Independent variables*	Sample	Included observations	RS (R-squared)	DW (Durbin-Watson stat)
1.	REV	DUMMY (-0.121041) [0.0000] EXP01 (0.938086) [0.0000] C (0.393240) [0.0010]	2000M01-2021M12	264	0.959267	0.213968
	REV	REV(-1) (0.887674) [0.0000] DUMMY (-0.018248) [0.0661] EXP01 (0.104635) [0.0000] C (0.058466) [0.2161]	2000M02-2021M12	263	0.993755	1.772899

Model no.	Dependent variable	Independent variables*	Sample	Included observations	RS (R-squared)	DW (Durbin-Watson stat)
2.	EXP01	DUMMY (0.157772) [0.0000] REV (1.017287) [0.0000] C (0.022455) [0.8579]	2000M01-2021M12	264	0.961453	0.221318
	EXP01	EXP01(-1) (0.857251) [0.0000] DUMMY (0.019908) [0.0906] REV (0.145871) [0.0000] C (0.004625) [0.9341]	2000M02-2021M12	263	0.992399	2.352987
3.	DEF	DUMMY (-1834.871) [0.0000] REV (10948.19) [0.0000] EXP01 (-12804.25) [0.0000] C (16814.88) [0.0000]	2000M01-2021M12	264	0.702929	0.582729
	DEF	DEF(-1) (0.700328) [0.0000] DUMMY (-648.0415) [0.0115] REV (4075.389) [0.0000] EXP01 (-4609.493) [0.0000] C (4971.836) [0.0003]	2000M02-2021M12	263	0.862742	1.855326

Source: authors' contribution

*Coefficient value in round brackets; Prob. in square brackets; each model was improved by adding the lagged dependent variable as an independent one

In an attempt to remove the autocorrelation of the errors, the next model considers the lagged dependent variable REV(-1) as an independent variable. In this case, d = 1.772899, and the values for dL and dU, for n = 250, are 1.769 and 1.817, respectively, generating the situation dL ≤ d ≤ dU (indecision). The test is inconclusive for the 0.05 threshold. The significance (all variables are statistically significant) and the sign obtained for each coefficient can be observed. Thus, the dummy variable has a negative influence on state budget revenues. On the other hand, there is a positive relationship between state budget expenditures and revenues.

In the second model, the dependent variable is represented by state budget expenditures (EXP01). In this case, d = 0.221318, and the values for dL and dU, for n = 250, are 1.777 and 1.809, respectively. For the second model, according to the DW value, we reject the null hypothesis of non-autocorrelated errors in favor of the hypothesis of positive autocorrelation.

When we consider the lagged dependent variable EXP01(-1) as an independent one, d = 2.352987, and the values for dL and dU, for n = 250, are 1.769 and 1.817, respectively. If d > dU, there is no statistical evidence that the error terms are positively autocorrelated.

In the third model, the dependent variable is represented by the deficit of the state budget (DEF). In this case, d = 0.582729, and the values for dL and dU, for n = 250, are 1.769 and 1.817, respectively. For the third model, according to the DW value, we reject the null hypothesis of non-autocorrelated errors in favor of the hypothesis of positive autocorrelation.

When we consider the lagged dependent variable DEF(-1) as an independent one, d = 1.855326, and the values for dL and dU, for n = 250, are 1.760 and 1.825, respectively. For this model, if d > dU, there is no statistical evidence that the error terms are positively autocorrelated.

5.2. The second stage of the analysis

In the second analysis stage, the values for each month (for state budget revenue, expenditures, and deficit) were computed, and models were developed. Thus, in the first model, the dependent variable is REV. Compared to the model developed in the first stage, one can mention that the signs of the coefficients are similar, as are the probabilities. The DW value increased, but the value of R-squared (RS) decreased.

In this first case, d = 1.581329, and the values for dL and dU, for n = 250, are 1.777 and 1.809, respectively. For the first model, according to the DW value, we reject the null hypothesis of non-autocorrelated errors in favor of the hypothesis of positive autocorrelation.

Table 5. The results from the second stage of the analysis

Model no.	Dependent variable	Independent variables*	Sample	Included observations	RS (R-squared)	DW (Durbin-Watson stat)
1.	REV	DUMMY (-327.2385) [0.0001] EXP01 (0.645471) [0.0000] C (312.1231) [0.0000]	2000M01-2021M12	264	0.797558	1.581329
	REV	REV(-1) (0.604211) [0.0000] DUMMY (-143.0689) [0.0314] EXP01 (0.259655) [0.0000] C (122.8667) [0.0073]	2000M02-2021M12	263	0.873475	2.535754
2.	EXP01	DUMMY (803.6611) [0.0000] REV (1.197621) [0.0000] C (106.9371) [0.1694]	2000M01-2021M12	264	0.825662	1.657451
	EXP01	EXP01(-1) (0.470331) [0.0000] DUMMY (415.3972) [0.0001] REV (0.637692) [0.0000] C (61.10094) [0.3827]	2000M02-2021M12	263	0.861316	2.585521
3.	DEF	DUMMY (0.817362) [0.9838] REV	2000M01-2021M12	264	0.917807	2.649082

Model no.	Dependent variable	Independent variables*	Sample	Included observations	RS (R-squared)	DW (Durbin-Watson stat)
		(0.934294) [0.0000] EXP01 (-0.953695) [0.0000] C (8.433096) [0.7579]				
	DEF	DEF(-1) (0.008458) [0.7227] DUMMY (4.965772) [0.9059] REV (0.933891) [0.0000] EXP01 (-0.951435) [0.0000] C (8.070418) [0.7705]	2000M02-2021M12	263	0.917706	2.659807

Source: authors' contribution

*Coefficient value in round brackets; Prob. in square brackets; each model was improved by adding the lagged dependent variable as an independent one

When we consider the lagged dependent variable REV(-1) as an independent one, d = 2.535754, and the values for dL and dU, for n = 250, are 1.769 and 1.817, respectively. If d > dU, there is no statistical evidence that the error terms are positively autocorrelated. Compared to the model developed in the first stage, there is an improvement in the probability value for the dummy variable, and its value becomes statistically significant. On the other hand, the RS value has decreased compared to the first stage model.

In the second model, the dependent variable is the state budget expenditures (EXP01). In this case, d = 1.657451, and the values for dL and dU, for n = 250, are 1.777 and 1.809, respectively. According to the DW value, we reject the null hypothesis of non-autocorrelated errors in favor of the hypothesis of positive autocorrelation. Compared to the model developed in the first stage, one can mention that the signs and statistical significance of the coefficients are similar. Also, the DW value increased, but the RS value decreased.

When we consider the lagged dependent variable EXP01(-1) as an independent one, d = 2.585521, and the values for dL and dU, for n = 250, are 1.769 and 1.817, respectively. If d > dU, there is no statistical evidence that the error terms are positively autocorrelated.

Compared to the model developed in the previous stage, one can mention that the influences exerted by the independent variables are similar. An important aspect concerns the probability value obtained for the dummy variable, which is, in this model, statistically significant. As in the previous example, the DW value increased, but the RS value decreased.

In the third case, the DW value indicates the absence of autocorrelation of the residuals. In this case, d = 2.649082, and the values for dL and dU, for n = 250, are 1.769 and 1.817, respectively. If d > dU, there is no statistical evidence that the error terms are positively autocorrelated. Compared to the model developed in the previous stage, one can mention that the influences exerted by the independent variables are similar, except for the dummy variable, which in this case registers a positive sign, but the coefficient is not statistically significant. In this model, the DW and RS values increased compared to the model developed in the previous stage.

Even if in the last model, the value of DW indicates a lack of autocorrelation of the residuals, a variant of the model in which the lagged dependent variable DEF(-1) was included among the independent ones was also developed. Thus, its value, and the value of the dummy variable are not statistically significant. However, the DW and RS values are close to those obtained in the previous model. Moreover, compared to the model developed in the first stage, REV and EXP01 variables show the same influences (signs) on the dependent variable. Also, for almost all models (from both stages), the lagged variables have a positive and statistically significant impact on the dependent ones, except for this last model.

Conclusions

Both the financial crisis (of 2007–2008) and the health crisis (Covid-19 pandemic) severely impacted the economy. In this paper, the effects of these two crises on state budget indicators are analyzed. Both crises brought significant pressure on public finances, and the level of revenue raised to the budget was affected.

Crises significantly change the correlation of budget revenue with expenditures. This is associated with policymakers' decisions to accept more significant financial imbalances in the short term and to transfer the burden of medium and long-term recovery by calling on the increase of external debt. This situation has complex implications for the measures to increase economic resilience. On the other hand, policymakers' decisions to reprioritize budget expenditures, with effects in the short term, deepen the structural imbalances and delay the achievement of sustainable development objectives.

Therefore, budget planning and execution are recommended to be flexible to support immediate response for mitigating the effects of crises. However, the policy should be adapted to resume the pursuit of the long-term strategy's objectives of development for all (OECD, 2021). Fiscal policy should be a fine-tuning tool for balancing the effort to support

public policies to overcome the crisis, and the taxpayers' burden, to avoid tax noncompliance and tax evasion increase. Public spending policy is efficient if it generates specific effects and is not necessarily related only to increased expenditures. However, the lack of correlation between expenditures and their impact is the leading cause of noncompliance in Romania and resistance to the tax burden increase. As a result, a possible future research topic is the detailed analysis of the fiscal policy impact on areas of intervention and applicability at the local level, using case studies and qualitative research.

Policymakers can adopt various measures in times of crisis, which can mitigate the adverse effects exerted on the incomes of households, workers, and businesses. However, after the crisis, improvements to the tax systems are essential to determine the workers and the businesses to leave the underground economy. Also, the need for revenue for the state budget is felt after a crisis. Nevertheless, any attempt to increase taxation should consider the burden on the most affected categories during a crisis, namely the population and small businesses. On the expenditures side, investments should target the sectors and activities that generate the most significant positive effects on the economy, i.e., education, research, health, innovative technologies, and digitalization.

The analysis has its limitations, including the data set used. Future research should expand the set of variables that can influence budget revenue, expenditures, and deficit. Nevertheless, this approach could yield new and exciting results.

References

Alesina, A., Favero, C.A., Giavazzi, F. (2018), Climbing out of debt, IMF, FD https://www.imf.org/Publications/fandd/issues/2018/03/alesina

Alesina, A. (2019), Austerity: When It Works and When It Doesn't, Princeton Univ. Press, 296 p.

Center on Budget and Policy Priorities (2019), Chart Book: The Legacy of the Great Recession, https://www.cbpp.org/research/economy/the-legacy-of-the-great-recession

Ciutacu, C. (2009), Tackling the recession: Romania, European Monitoring Centre on Change, https://www.eurofound.europa.eu/observatories/emcc/comparative-information/national-contributions/romania/tackling-the-recession-romania

Davidson, P. (2015), Post Keynesian Theory and Policy, Edward Elgar Publishing, no. 16559

Davidson, P. (2017), Who's Afraid of John Maynard Keynes?: Challenging Economic Governance in an Age of Growing Inequality, Springer, 162 p.

Dornean, A., Oanea, D.C. (2015), Romanian Fiscal Policy Sustainability during Financial Crisis: A Cointegration Approach, Procedia Economics and Finance, Vol. 20, pp. 163-170, https://doi.org/10.1016/S2212-5671(15)00061-1

Dudáš, T. (2013), The impact of the global economic crisis on the public finances of Central and Eastern European Countries, Niğde Üniversitesi İİBF Dergisi, Cilt: 6, Sayı: 2, s. 184-193

Durbin, J., Watson, G.S. (1950), Testing for Serial Correlation in Least Squares Regression, I, Biometrika, 37 (3–4), 409–428, doi:10.1093/biomet/37.3-4.409

Durbin, J., Watson, G.S. (1951), Testing for Serial Correlation in Least Squares Regression, II, Biometrika, 38 (1–2), 159–179, doi:10.1093/biomet/38.1-2.159

Eurostat (2022), Government finance statistics, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Government_finance_statistics#Government_revenue_and_expenditure

Gale, W.G., Samwick, A. (2014), Effects of Income Tax Changes on Economic Growth, Economic Studies https://www.brookings.edu/wp-content/uploads/2016/06/09_effects_income_tax_changes_economic_growth_gale_samwick.pdf

Hale, T., Angrist, N., Goldszmidt, R., Kira, B., Petherick, A., Phillips, T., Webster, S., Cameron-Blake, E., Hallas, L., Majumdar, S., Tatlow, H. (2021), A global panel database of pandemic policies, Oxford COVID-19 Government Response Tracker, Nature Human Behaviour, 5, pp. 529–538, https://doi.org/10.1038/s41562-021-01079-8

Haroutunian, S., Hauptmeier, S., Leiner-Killinger, N. (2020), The COVID-19 crisis and its implications for fiscal policies, ECB Economic Bulletin, Issue 4/2020, European Central Bank

IMF (2020), World Economic Outlook: A Long and Difficult Ascent, Washington, DC

KPMG (2020a), OUG 29/2020 - Măsuri fiscale pentru perioada stării de urgență determinată de epidemia de COVID-19, https://home.kpmg/ro/ro/home/publicatii/2020/03/oug-29-2020-masuri-fiscale-pentru-perioada-starii-de-urgenta.html

KPMG (2020b), Romania - Government and institution measures in response to COVID-19, https://home.kpmg/xx/en/home/insights/2020/04/romania-government-and-institution-measures-in-response-to-covid.html

Makipaa, A. (2009), Economic Recovery Packages in EU Member States. Compilation of Briefing Papers, DG Internal Policies, European Parliament, IP/A/ECON/RT/2008-30

Mathieu, E., Ritchie, H., Rodés-Guirao, L., Appel, C., Giattino, C., Hasell, J., Macdonald, B., Dattani, S., Beltekian, D., Ortiz-Ospina, E., Roser, M. (2020), Coronavirus Pandemic (COVID-19), https://ourworldindata.org/coronavirus

OECD (2021), Tax and fiscal policies after the COVID-19 crisis, https://read.oecd-ilibrary.org/view/?ref=1112_1112899-o25re5oxnb&title=Tax-and-fiscal-policies-after-the-COVID-19-crisis

Orszag, P., Rubin, R., Stiglitz, J. (2021), Fiscal resiliency in a deeply uncertain world: The role of semiautonomous discretion, PIIE Policy Brief, No. 21-2, Peterson Institute for International Economics, https://www.piie.com/publications/policy-briefs/fiscal-resiliency-deeply-uncertain-world-role-semiautonomous-discretion

Ramey, V.A. (2019), Ten Years After the Financial Crisis, The Journal of Economic Perspectives, Vol. 33, No. 2, pp. 89-114, American Economic Association, https://www.jstor.org/stable/10.2307/26621241

Saint-Amans, P. (2020), Tax in the time of COVID-19, https://www.oecd-forum.org/users/369395-pascal-saint-amans/posts/63721-tax-in-the-time-of-covid-19

Săvoiu, Gh. (2011), Econometrie, Bucureşti, Ed. Universitară

Sarin, N., Summers, L. (2019), Shrinking the Tax Gap: Approaches and Revenue Potential, National Bureau of Economic Research, Cambridge, MA, http://dx.doi.org/10.3386/w26475

Stoiciu, V. (2012), Austerity and Structural Reforms in Romania Severe Measures, Questionable Economic Results and Negative Social Consequences, https://library.fes.de/pdf-files/id-moe/09310.pdf

Stoian, A. (2009), Dezechilibrele bugetului public în contextul economic actual, Ed. ASE, Bucureşti

Vasile V., (coord.), Boboc, C., Ghiță, S., Apostu, S., Pavelescu, F.M., Mazilescu, R. (2020), Efectele pandemiei Sars Cov 2 asupra ocupării. Rolul politicilor publice şi reziliența pieței muncii în contextul adaptării mediului de afaceri, doi: 10.13140/RG.2.2.33243.18723, Projects: COVID-19

Impact - Economic and social evidences, https://acad.ro/SARS-CoV-2/doc/d19-Efectele_pandemiei_asupra_ocuparii.pdf

Țibulcă, I.L. (2021), The impact of the COVID-19 pandemic on tax revenues in the EU, Economic Research - Ekonomska Istraživanja, doi: 10.1080/1331677X.2021.1954967

Wahrig L., Gancedo Vallina I. (2011), The effect of the economic and financial crisis on government revenue and expenditure, Economy and Finance, Eurostat, Statistics in focus, 45/2011

World Bank (2021), An Overview of Potential Impact of COVID-19 Crisis on the Accumulation of Government Expenditure Arrears, MTI Insight, Information and Communications for Development, World Bank, Washington, DC

Zaman, G., Cristea A., (coord.), Vasile, V., Goschin, Z., Surugiu, M.R., Mazilescu, C.R., Chindris-Vasioiu, O., Dumitru, C., Tocan, M. (2020), Rolul statului-națiune în gestionarea crizei Sars Cov-2 din România. Politici de combatere, recuperare şi rezilienţă în domeniul economiei, doi: 10.13140/RG.2.2.23806.00322, Projects: COVID-19 Impact - Economic and social evidences, https://acad.ro/SARS-CoV-2/doc/d10-RolulStatului-Natiune.pdf

Zaman, G., Surugiu, M.R., Surugiu, C. (2010), Propagation effects of taxes in Romania: An input-output analysis, Romanian Journal of Economics, vol. 30, issue 1(39), pp. 76-94

***, OUG nr. 30 din 18 martie 2020 pentru modificarea şi completarea unor acte normative

***, OUG nr. 48 din 9 aprilie 2020 privind unele măsuri financiar-fiscale

***, OUG nr. 69 din 14 mai 2020 pentru modificarea şi completarea Legii nr. 227/2015 privind Codul fiscal, precum şi pentru instituirea unor măsuri fiscale

***, OUG nr. 92 din 28 mai 2020 pentru instituirea unor măsuri active de sprijin destinate angajaţilor şi angajatorilor în contextul situaţiei epidemiologice determinate de răspândirea coronavirusului SARS-CoV-2, precum şi pentru modificarea unor acte normative

***, OUG nr. 99 din 25 iunie 2020 privind unele măsuri fiscale, modificarea unor acte normative şi prorogarea unor termene

***, OUG nr. 153 din 3 septembrie 2020 pentru instituirea unor măsuri fiscale de stimulare a menţinerii/creşterii capitalurilor proprii, precum şi pentru completarea unor acte normative