

**EUROPE'S RECOVERY PLAN AND THE CRITERIA OF THE ALLOCATION THE  
RECOVERY PLAN FUNDS AMONG EU COUNTRIES**

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### **Abstract**

In 2020, the European Union reacted to the coronavirus crisis in an unprecedented way which has affected Europe and the world. The base is a stimulus package worth EUR 2.018 trillion in current prices (EUR 1.8 trillion in 2018 prices). It consists of the EU's long-term budget for 2021 to 2027 of EUR 1.211 trillion (EUR 1.074 trillion in 2018 prices), topped up by EUR 806.9 billion (EUR 750 billion in 2018 prices) through NextGenerationEU. This initiation represents a temporary instrument to power the recovery of EU countries. The funds are being used to address the most important challenges facing Europe and support those in need. In the aftermath of Russia's aggression on Ukraine, the EU budget was mobilised to provide emergency assistance and support, in Ukraine and in the EU countries, and to alleviate the humanitarian consequences of the war. The allocation of the grants was based on criteria set by the European Commission. It has been divided on a seven to three basis for the period 2021 to 2022 and for 2023. In this context, the aim of our work is to present the current status of the Recovery Plan for Europe with regard to the Recovery and Resilience Facility and to analytically assess, using OLS regression analysis, the criteria adopted for the distribution of the funds of this Facility. We investigate whether other criteria related to the economic situation may be related to the amount of grants received by EU countries. The results of the work show that more funds were allocated to countries with higher population, higher unemployment rates and higher loss in real GDP.

**Keywords:** recovery plan, recovery and resilience facility, pandemic, NextGenerationEU, public finances, Covid – 19

## **Introduction**

The extraordinary economic crisis caused by the Covid-19 pandemic required an immediate response from individual EU countries. The reactions of national policies in the initial stages of the Covid - 19 pandemic led to a significant increase in the deficit of public finances. Fiscal policy efforts were reinforced by extraordinary monetary measures. The aim of these measures was to prevent higher interest rates and ensure the sustainability of the public debt. After the great recession in 2009, four EU countries (Greece, Ireland, Portugal and Cyprus) showed how the Eurozone could be dramatically affected by sovereign debt crises. In 2020, the increase in the state public debts in the Eurozone countries in relation to GDP and also in its absolute values was higher than in the Great Recession of 2009. The fact that a state debt crisis did not occur was mainly due to the timely and correct decisions of the European Central Bank, in particular the emergency pandemic asset purchase program, whose task is to stabilize public debt at least until the end of 2024. The new stance of the Union's representatives has been reinforced by fiscal policy measures, especially through the NextGenerationEU plan, which aims to support growth in all EU member states.

The most important component of NextGenerationEU is the Recovery and Resilience Facility (RRF). It represents an instrument for providing grants and loans to support reforms and investments in the EU Member States at a total value of €723.8 billion. It helps to repair the immediate economic and social damage brought by the coronavirus pandemic and to cover costs caused by the needs of the refugees arriving in EU counties following Russia's aggression on Ukraine. Post-COVID-19 Europe will be greener, more digital, more resilient and better prepared for current and forthcoming challenges. Based on this initiative member states have addressed the economic and social consequences of the COVID-19 pandemic, while ensuring that their economies undergo an ecological and digital transformation, making them more

sustainable and resilient. Funds from the mechanism are distributed among the member states in accordance with the socio-economic criteria of the European Commission, on condition that they prepare a national recovery and resilience plan, in which they outline their reforms and investment programs until 2026.

The primary objective of this study is to evaluate whether the European Union allocated Recovery and Resilience Facility (RRF) funds Member States in accordance with the socio-economic criteria officially adopted by the European Commission. The analysis also explores whether additional economic variables—such as fiscal balance or public debt—played a role in determining the final allocation of funds. Accordingly, the study seeks to answer three main research questions:

1. Were the officially declared socio-economic criteria (population, GDP per capita, unemployment rate, GDP loss) statistically significant in explaining the distribution of RRF grants?
2. Do fiscal indicators, such as public deficit or debt levels, influence the allocation beyond the official framework?
3. To what extent does the actual allocation reflect the EU's declared principles of solidarity and convergence?

These questions guide both the structure and interpretation of the empirical analysis presented in the following sections.

## **Literature Review**

There are different opinions and theories about the sustainability of the national debt and its monetization. The reduction of the debt-to-GDP ratio depends largely on the growth of nominal

GDP. Therefore, the situation in recent years, when inflation was at a low level, made such a procedure difficult. Inflation increased in 2021 and 2022, which significantly changed the situation. The inflation rate plays a key role in stabilizing the ratio of public debt to GDP. In conditions of zero primary surplus, when GDP growth is higher than the average interest rate, it is a necessary condition to reduce the ratio of public debt to GDP, which is often used as an indicator of debt sustainability (Bohn, 2008; Collignon, 2012; Della Posta, 2018).

On the other hand, debt sustainability is determined by the ability to meet these conditions (Blanchard, 2019; Della Posta, 2018; Della Posta, 2020; Tamborini, 2015). In the situation that this is not the case, a positive primary surplus is needed to prevent the debt-to-GDP ratio from rising. As Tamborini (2015) argues, the larger the primary surplus required for debt stabilization, the more market participants share the belief that the surplus is approaching the maximum level that the country can socially tolerate. Such a belief then reduces the heterogeneity of the market and at the same time increases the interest rate of the public debt or its risk premium.

After the Great Global Crisis and the Greek crisis in 2009, the strategy proposed so-called austerity measures that would preserve and restore the sustainability of the public debt. From the Keynesian point of view, the reduction of public spending and especially investments, together with the possible increase of the tax burden, worsened the recession and stimulated the creation of a new recession, as in the case of Italy and the entire Eurozone, or weakened the already weak GDP growth (Blyth, 2015; Collignon et al., 2012; De Lemos Peixoto, 2022; Holland, 2016).

The aforementioned economic policy was supported by incorrectly used values of fiscal multipliers. Saccone et al. (2022) confirmed that the values of public investment multipliers were higher than one. Auerbach and Gorodnichenko (2013) as well as Gáli (2020) examined

and confirmed that, in fact, the real consequences of the aforementioned policies are even more significant if several countries consolidate at the same time.

According to several authors, including Krugman (Boyer, 2012; Konzelmann, 2014; Krugman, 2010, 2020), the crisis on the old continent was handled in the wrong way, especially in the Eurozone. Austerity measures had a negative impact on public accounts and public debt sustainability. An inappropriate solution to the crisis situation may cause a sudden outflow of capital from the country, which will result in an increase in imbalances in the payment system in the eurozone (Acocella, 2016; Beker, 2016; Blanchard, 2020).

Europe applied the experience and knowledge from previous crises in the recovery plan for Europe. It introduced a flexible emergency pandemic asset purchase program (PEPP), which is a non-standard monetary policy measure.

In connection with the monetization of the debt, economists of several theoretical directions unanimously proposed - albeit in different forms - a significant monetization of the new public debt caused by the epidemic (Pisani-Ferry & Blanchard, 2020; Tabellini & Giavazzi, 2020; Galí, 2020). According to the findings, this monetization reduces the need to run large primary surpluses while reducing negative effects on the interest rate, thereby creating an important channel that stabilizes public debt and reduces the size of the public debt-to-GDP ratio (Della Posta, Marelli, Signorelli, 2022).

Several studies are devoted to the new generation EU recovery plan. Castellarin et al. (2020) examine how the EU institutions are contributing financially to the response to the COVID-19 crisis, which includes the next-generation EU recovery plan. Similarly, Watt (2020) and Horwarth (2021) evaluate the economic policy measures that have been implemented or are being considered at the EU level in response to the COVID-19 epidemic. Bedrunka et al. (2021) and Callaghan et al. (2022) report on the supply of funds for COVID-19 in different EU

Member States under the ongoing operational programs of the EU Financial Perspective 2014-2020. Watzka and Watt (2020) examine the macroeconomic implications of the European Union's Recovery and Resilience Instrument. Furthermore, Arbolino and Di Caro (2021) and Watkins (2021) examine the consequences of the COVID-19 crisis on regional employment in Italy and also how the deployment of EU funds could extend the resilience of regional labor markets by reducing job losses during the COVID-19 period. Guillamón, Ríos and Benito (2021) carried out empirical research that inspired us, examining, according to older data, the criteria established for the allocation of RRF payments for 2020 and 2021.

Recent research from Central and Eastern Europe has also enriched the discussion on fiscal sustainability and economic recovery within the European Union. Zamfir, Balaban and Marinescu (2022) analyse the resilience of Central and Eastern European (CEE) economies and highlight structural asymmetries that influence their ability to recover from crises such as COVID-19. Butkus et al. (2021) explore the heterogeneous relationship between public debt and economic growth, emphasizing that highly indebted CEE countries—such as Hungary or Croatia—required more targeted fiscal interventions to maintain stability. Picek (2020) and Goniewicz, K. et al. (2020) investigate the spillover effects of the NextGenerationEU initiative on smaller Central European economies, noting the potential for cross-country transmission of fiscal stimuli. In addition, Gryelak and Kujaczynska (2013) and Jones (2020, 2021) examine the real convergence of EU member states and point to persistent structural constraints that limit equal participation of CEE countries in Union-wide recovery mechanisms. These regional perspectives contribute to a more comprehensive understanding of the Recovery and Resilience Facility by demonstrating that the specific fiscal capacities and structural vulnerabilities of Central European economies play a decisive role in shaping both the allocation and the efficiency of EU recovery funds.

In addition to earlier studies, several recent analyses published in 2023–2024 further contribute to the understanding of the Recovery and Resilience Facility (RRF) and its broader fiscal implications. The European Commission (2024) in its Annual Report on the Implementation of the RRF emphasizes the continued relevance of socio-economic factors—particularly population size, unemployment, and GDP loss—in determining the allocation of funds, while highlighting an increasing focus on green and digital transitions. The Bruegel (2024) review of the Recovery and Resilience Scoreboard similarly notes that Central and Eastern European countries have benefited significantly from the RRF yet face persistent administrative and structural challenges in fund absorption. Furthermore, the ECB (2024) in its analysis of Fiscal Policy and Resilience in the Euro Area underscores the stabilizing role of coordinated fiscal responses and their contribution to strengthening EU-level economic governance. These most recent studies confirm and extend earlier findings by showing that the RRF not only mitigated short-term economic shocks but also fostered deeper fiscal integration within the European Union.

### **Methodology and data**

As mentioned in the Literature review section, our work is based on available literature, studies, scientific articles, professional publications of national and international institutions and other materials. The professional articles by the authors Della Posta, Marelli, Signrelli, 2022. and by Guillamón, Ríos, Benito, 2021 were especially important for our work. We decided to use similar methods to these works and expand them with current and other knowledge.

The methodological approach of this paper is based on a comparative assessment of the official criteria adopted by the European Commission for the allocation of RRF funds and other potential economic determinants that may have influenced the final distribution. The analysis

aims to verify whether the Commission's allocation followed the declared rules or whether additional economic or fiscal factors were implicitly reflected in the outcomes. Testing this relationship is significant, as any deviation from the official criteria could reveal underlying structural, political, or pragmatic considerations in EU policy implementation. Therefore, the study is designed not only to replicate the official allocation framework but also to assess its internal consistency and explanatory power through an econometric comparison of declared and alternative variables. In order to fulfil the goal of the work, we used regression analysis. We investigated the direction of causality, which connects socio-economic indicators with financial resources allocated to individual states. Given the small size of our sample (27 states), we used OLS estimation with robust standard errors, which improves the properties of small sample estimates. For the criteria mentioned above, we worked with data in various databases. As for the socio-economic indicators for the distribution of funds that were set by the EU, we drew them from the database of the European Commission (2020a) and Eurostat. To clarify how organizations reduce environmental interdependence and uncertainty, we used Resource Dependence Theory (RDT), which focuses on:

- resources, the flow or exchange of resources between organizations;
- dependencies and power differences resulting from unequal exchange of resources;
- limiting effects that such dependence has on the organization's operations;
- efforts of organizational leaders to manage addiction (Johnson, 1995).

One of the main and most important methods of our work is OLS estimation with robust standard errors, which we developed using general statistical software Stata. The OLS estimate was aimed at evaluating the criteria used in the redistribution of funds to EU countries from the RRF. We then compared the achieved results with the results of works by other researchers.

Despite the robustness of the applied methodology, several limitations of this study should be acknowledged. First, the analysis is based on a relatively small sample of 27 EU

Member States, which restricts the statistical power of the results and limits the scope for generalization beyond the European Union context. Second, the study relies exclusively on OLS regression with robust standard errors, which, while suitable for cross-country comparison, does not capture potential dynamic or non-linear effects that could arise in multi-year panel analyses. Future research could therefore extend the approach by employing panel or fixed-effects models, or by incorporating additional variables reflecting institutional quality, absorption capacity, and structural reforms. Recognizing these constraints, the current analysis nonetheless provides a coherent and transparent framework for understanding the socio-economic determinants and fiscal indicators of RRF fund allocation.

### **Results and Discussion**

In order to find out the most relevant criteria adopted for the RRF we will examine the redistribution of the recovery plan funds among EU countries. The large sums expected in the coming years, together with the EU's new generation temporary recovery tool, represent the largest stimulus package ever supported by the EU budget. On December 17, 2020, the last phase leading to the approval of the future multi-annual EU budget was completed.

**Table 1. Total allocated funds by sections from the multiannual financial framework for the years 2021 - 2027 and NextGenerationEU**

AREA	euro	NextGenerationEU
Single market, innovation and digital	149,5	11,5
Cohesion, resilience and values	426,7	776,5
Natural resources and environment	401	18,9
Migration and border management	25,7	-
Security and defence	14,9	-
Neighbourhood and the world	110,6	-
European Public Administration	82,5	-
In Total	1 210,90	806,9

All amounts in billion €, in current prices. Source: European Commission

**Table 2. The overview of NextGenerationEU (in billion euro)**

Recovery and Resilience Facility (RRF)	723,8
• of which, loans	385,8
• of which, grants	338
ReactEU	50,6
Horizon Europe	5,4
InvestEU	6,1
European Agricultural Fund for Rural	8,1
Just Transition Fund	10,9
RescEU	2
In Total	806,9

All amounts in billion €, in current prices. Source: European Commission

**Table 3: Recovery and Resilience Facility – Maximum grant allocations**

	For 70 % of the amount		For 30 % of the amount	
	available 2021	2022		
	%	Euro	%	Euro
Austria	0,94 %	2,20	1,16 %	1,20
Belgium	1,54 %	3,60	2,23 %	2,30
Bulgaria	1,96 %	4,60	1,55 %	1,60
Croatia	1,96 %	4,60	1,65 %	1,70
Cyprus	0,34 %	0,80	0,19 %	0,20
Czechia	1,49 %	3,50	3,39 %	3,50
Denmark	0,56 %	1,30	0,19 %	0,20
Estonia	0,34 %	0,80	0,19 %	0,20
Finland	0,73 %	1,70	0,39 %	0,40
France	10,38 %	24,30	14,53 %	15,00
Germany	6,96 %	16,30	9,01 %	9,30
Greece	5,76 %	13,50	4,17 %	4,30
Hungary	1,96 %	4,60	2,42 %	2,50
Ireland	0,38 %	0,90	0,10 %	0,10
Italy	20,45 %	47,90	20,35 %	21,00
Latvia	0,90 %	2,10	0,10 %	0,10
Lithuania	0,68 %	1,60	0,29 %	0,30
Luxembourg	0,04 %	0,10	0,00 %	0,00
Malta	0,09 %	0,20	0,10 %	0,10
Netherlands	1,67 %	3,90	1,94 %	2,00

Poland	8,67 %	20,30	3,49 %	3,60
Portugal	4,18 %	9,80	3,97 %	4,10
Romania	4,36 %	10,20	3,88 %	4,00
Slovakia	1,96 %	4,60	1,65 %	1,70
Slovenia	0,56 %	1,30	0,48 %	0,50
Spain	19,90 %	46,60	22,19 %	22,90
Sweden	1,24 %	2,90	0,39 %	0,40
EU27	100 %	234,20	100 %	103,20

All amounts in billion €, in current prices. Source: European Commission, 2020

In order to fulfil the goal of the work, we used regression analysis. We investigated the direction of causality, which connects the socio-economic indicators with financial resources allocated to individual states. Given the small size of our sample (27 states), we used OLS estimation with robust standard errors, which improves the properties of small sample estimates. For the criteria mentioned above, we worked with data in various databases. As for the socio-economic indicators for the distribution of funds that were set by the EU, we drew them from the database of the European Commission (2020a) and Eurostat.

The Council of the European Union (2020) published a methodology for calculating the maximum financial contribution (i.e. non-refundable financial support) available to all member states for the period 2021 - 2022.

The method takes into account:

- the population;
- the inverse value of GDP per capita;
- the average unemployment rate for the last 5 years (2015 - 2019) compared to the EU average.

For the year 2023, the criteria were modified in order to better match the intention (European Commission, 2021). They belong here:

- the population;
- the inverse value of GDP per capita;
- the loss of real GDP in 2020
- cumulative loss of real GDP for 2020-2021

Tables 4 and 5 show a brief description of the variables we used in the analysis.

**Table 4. Characteristics of variables**

Variables	Description	Source
RRF Total	Recovery and resilience support tool - total	European Commission
RRF_21_22	Instrument to support recovery and resilience - grants per country for the years 2021 - 2022 (in	European Commission (2020)
RRF_23	Tool to support recovery and resilience - grants	European Commission
Population_1	Population of the country in 2019 (in millions)	Eurostat database
Population_2	Population of the country in 2020 (in millions)	Eurostat database
GDP_pc_19	Annual gross domestic product per capita in	Eurostat database
GDP_pc_20	Annual gross domestic product per capita in	Eurostat database
Unemploye	The average unemployment rate for the last 5	Eurostat database
Real_GDP_2	Loss of real GDP - growth rate for 2020 (%)	Eurostat database
Real_GDP_2	Cumulative real GDP loss for 2020 and 2021	Eurostat database
VF_19	Average general government deficit/surplus	Eurostat database
VF_20	Average general government deficit/surplus	Eurostat database

Debt_19	Gross consolidated public administration debt	Eurostat database
Debt_20	Gross consolidated general government debt	Eurostat database

Source: Based on Eurostat database

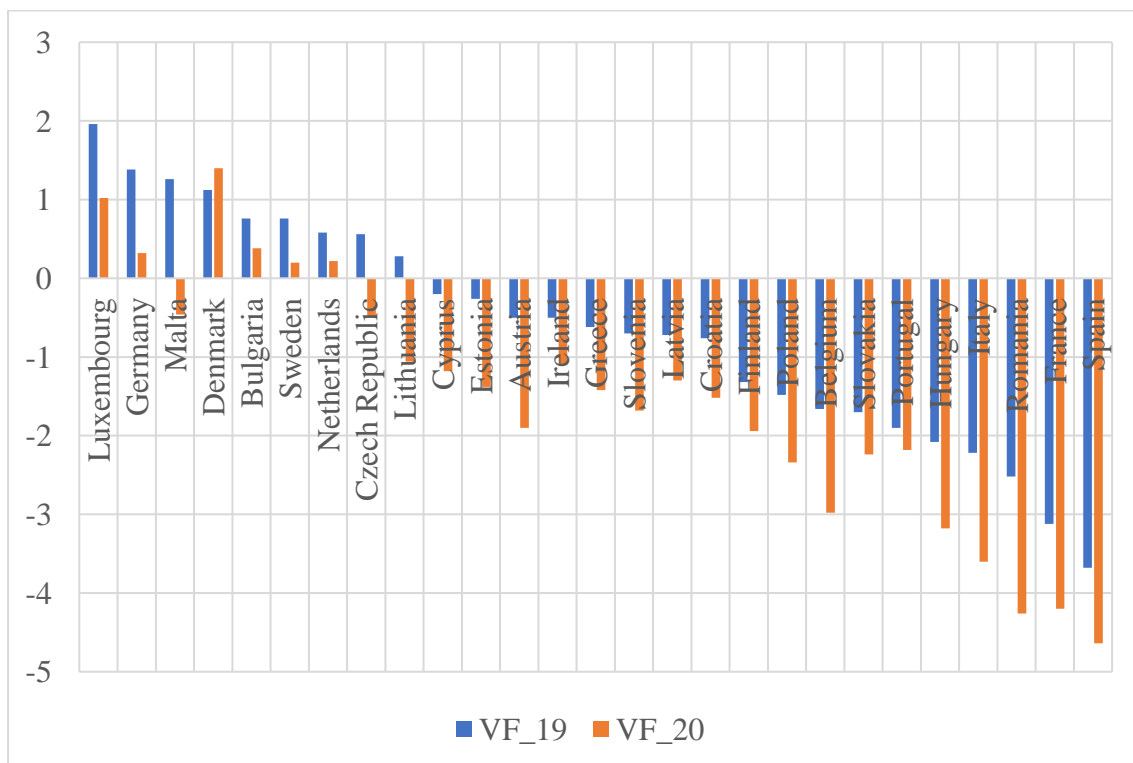
**Table 5. Descriptive statistics of variables**

Variables	Average	Standard deviation	Min.	Max.
RRF_Total	12,52	18,78	0,10	69,50
RRF_21_22	8,67	12,77	0,10	47,90
RRF_23	3,82	6,16	0	22,90
Population_19	16,54	22,25	0,49	83,02
Population_20	16,57	22,28	0,51	83,17
GDP_pc_19	31 660,37	20 581,18	8 820	100 360
GDP_pc_20	30 921,85	21 198,89	8 890	102 650
Unemployment_19	1	0,50	0,41	2,72
Real_GDP_20	4,60	3,11	0	11,30
Real_GDP_20_21	-11,42	5,24	-24,96	-5,37
VF_19	-0,64	1,44	-3,68	1,96
VF_20	-1,54	1,60	-4,64	1,40
Debt_19	63,26	38,71	8,50	180,60
Debt_20	75,30	44,06	18,50	206,30

Source: Based on Eurostat database

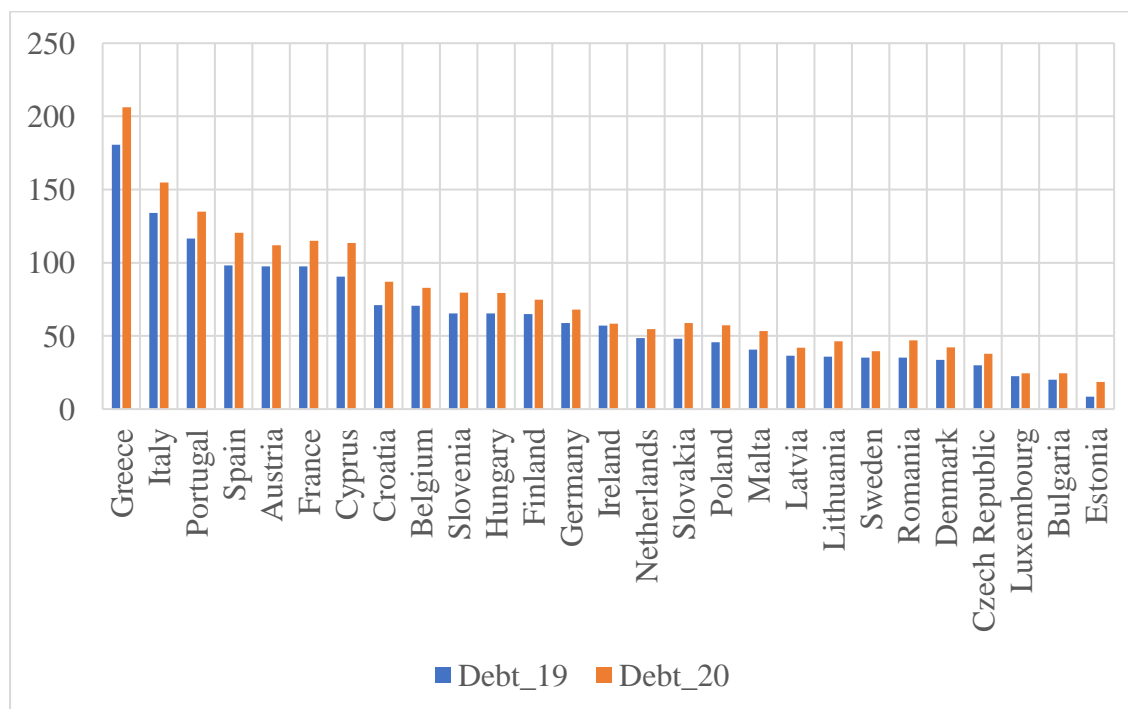
In our regression analysis, we have gradually added factors chosen by us, such as the average deficit/surplus of public administration between the years 2015-2019, which is designated as FY\_19 and 2016-2020, which is designated as FY\_20. Further it will be a gross consolidated public administration debt for 2019 and 2020. Charts 1 and 2 focus on these factors and their distribution among the member states of the European Union.

Chart 1. Average general government deficit/surplus for 2019 and 2020 as a % of GDP



Source: Eurostat

**Chart 2. Gross consolidated public administration debt for 2019 and 2020 as a % of GDP**



Source: Eurostat

Table 6 shows the relationship between several criteria of the European Commission for the allocation of subsidies for the period 2021 - 2022 and the amount of money (subsidies) that the member states have received in these years. This estimation was performed using OLS with robust standard errors. In addition, we verified that there were no multicollinearity problems (max. VIF 1.05). This model is significant (see F test) and explanatory (see R-squared). Seventy-eight percent of the variability of RRF\_21\_22 is explained by a linear model with the given explanatory variables.

Socio-economic criteria are important in explaining the amount of grants for member states in the period 2021-2022. However, GDP per capita is insignificant. The most important parameter is the population. Our findings are consistent with the EU's intention, as countries with larger populations; lower GDP per capita and higher unemployment rates received

(compared to the EU average) more RRF grants. Looking at the magnitude of the coefficients, it appears that the unemployment rate dominated the distribution of finance. If unemployment increases by one unit, in our case by one percentage point, the amount of grants for the given country will increase by 10.1 billion euro.

The GDP per capita variable is, as we said, the least significant in the regression, while unemployment is more significant with a much higher coefficient that could have absorbed the impact of the GDP variable on the dependent variable. In fact, if we do a bivariate correlation between RRF\_21\_22 and GDP, the coefficient is negative (-0.01) and not significant. Furthermore, if we gradually include the independent socio-economic factors in the regression model, the variable GDP\_pc\_2019 appears with a negative sign and is not significant, just like when the other variables are added.

Guillamón, Ríos and Benito (2021) tackled the same analysis of grants for the period 2021 to 2022 and reached similar results, with slightly different input data. Even in our regression, population was the most significant, factor GDP was the least significant, and unemployment had the largest coefficient. The explanatory power of the model was at the level of 77% by the aforementioned authors.

**Table 6. Relationship between the socio-economic criteria for the distribution of grants established by the European Commission (2021-2022) and the amount of grants**

RRF_21_22	
Population_19	0,422** (3,72)
GDP_pc_19	-0,0000439 (-1,37)
Unemployment_19	10,10* (2,30)
_cons	-7,003 (-1,72)
N	27
F(3;23)	9,70***
R-squared	0,78
max. VIF	1,05

T statistic in parentheses, \* $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ . Estimation using method of the OLS estimation with robust standard errors

In addition, in order to examine the relationship between the socio-economic criteria set by the European Commission for the distribution of grants in the years 2021 to 2023, we would like to verify whether other economic factors directly related to the crisis, such as debt and public finances, are related to the amount of grants that member states expect in this period. We decided on these parameters because the recovery plan is supposed to address the consequences of the crisis, which have a negative impact on, among other things, public accounts, stability and debt sustainability.

In table 7 we extend the previous regression analysis by these two economic indicators. We performed regressions separately for each indicator and then a regression including both variables. We performed calculations using OLS with flexible standard errors and tested for multicollinearity (max. VIF 1.61; 2.62; and 2.71). These models are also statistically significant (see F test) and explanatory (see R-squared).

Table 7 shows that the grants that were allocated to the countries were not significantly/significantly influenced by economic criteria (deficit/surplus, debt). According to

the p-value, the level of significance was at the 10 percent level (0.09, 0.08) in both regressions for the VF<sub>19</sub> parameter. The Debt<sub>19</sub> parameter was completely insignificant (0.78; 0.51). We can claim that the EU did not consider these criteria to a large extent when distributing grants. Nevertheless, it follows from the regression that countries with an increase in the surplus of public finances or the deficit will decrease, they will receive less in grants, which, in our opinion, is appropriate given the reasons for creating the RRF funds. (Note: surplus countries received fewer grants than deficit countries, while deficit countries did not differ significantly from surplus countries).

**Table 7. The relationship between socio-economic criteria and economic criteria and the amount of grants (2021-2022)**

	RRF_21_22	RRF_21_22	RRF_21_22
Population <sub>19</sub>	0,381*** (3,91)	0,429** (3,70)	0,395*** (4,18)
GDP_pc <sub>19</sub>	0,0000054 (0,11)	-0,0000432 (-1,38)	0,0000102 (0,21)
Unemployment <sub>19</sub>	8,055* (2,61)	11,08 (2,02)	9,997* (2,62)
VF <sub>19</sub>	-2,123 (-1,80)		-2,266 (-1,87)
Debt <sub>19</sub>		-0,0176 (-0,29)	-0,0373 (-0,67)
_cons	-7,214 (-2,02)	-7,017 (-1,74)	-7,258* (-2,18)
N	27	27	27
F(4;22)/(5;21)	8,05***	7,91***	7,90***
R-squared	0,81	0,78	0,82
max. VIF	1,61	2,62	2,71

T statistic in parentheses, \*p<0.05; \*\* p<0.01; \*\*\* p<0.001. Estimation using method of the OLS estimation with robust standard errors

For the year 2023, the European Commission slightly modified the socio-economic criteria for the allocation of grants. The unemployment rate was replaced by the real GDP loss of 2020 and the cumulative real GDP loss of 2020 and 2021. For the year 2023, an OLS estimate

was again made with robust standard errors (see Table 8). In addition, we verified that there were no problems with multicollinearity (max. VIF 2.02). This model is significant (see F test) and explanatory (see R-squared). 87% of the variability of RRF\_23 is explained by a linear model with the given explanatory variables.

The most significant criterion for redistributing grants in 2023 was again population, followed by real GDP loss in 2020. Our findings are in line with the EU's intention, as countries with larger populations, higher real GDP loss and cumulative loss received (compared to the EU average) more RRF grants (note: GDP per capita came out again with a positive coefficient). When we look at the size of the coefficients, it seems that the loss of real GDP 2020 prevailed in the allocation of funds. If the loss increases by one percentage point, the amount of grants for the given country will increase by 1.16 billion euro. According to this regression, the GDP per capita variable is the least taken into account when redistributing funds from the RRF for 2023.

The results presented in Table 6 confirm that the official socio-economic criteria established by the European Commission played a statistically significant role in determining RRF allocations during 2021–2022. Among these, population size and unemployment rate were the most influential, whereas GDP per capita showed only a limited effect. This outcome suggests that the EU followed its declared principles, prioritizing support for larger and more economically vulnerable Member States. However, when additional fiscal variables were introduced (Table 7), their explanatory power proved weak, indicating that the EU did not systematically consider national debt or deficit levels when allocating grants. This finding supports the interpretation that solidarity and crisis mitigation objectives prevailed over fiscal performance criteria.

**Table 8. The relationship between the socio-economic criteria for the distribution of grants established by the European Commission (2023) and the amount of grants**

	RRF_23
Population_20	0,173** (3,64)
GDP_pc_20	0.0000069 (0,35)
Real_GDP_20	1,164* (2,25)
Real_GDP_20_21	0,231 (1,14)
_cons	-1,974 (-1,33)
N	27
F(3;23)	16,70***
R-squared	0,87
max. VIF	2,02

T statistic in parentheses, \* $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ . Estimation using method of the OLS estimation with robust standard errors

In table 9, we performed a regression analysis with the addition of variables chosen by us. Again, we performed regressions separately for each indicator and then a regression including both variables. We performed calculations using OLS with elastic standard errors and tested for multicollinearity. These models are also statistically significant (see F test) and explanatory (see R-squared).

The most decisive criterion for 2023 is still the loss of real GDP. It follows from the models that the variable VF\_20 significantly influenced the amount of allocated grants and the variable Debt\_20 did not. It follows from the analysis that the countries whose public finance surplus will increase or the deficit will decrease by one percentage point; they will receive 0.99 billion less in grants euros or 1.05 billion euros according to the third model in Table 9. It is

important to note that the first and third models had the same R-squared; the second model had a lower one.

**Table 9. Relationship between socio-economic criteria and economic criteria and the amount of grants (2023)**

	RRF_23	RRF_23	RRF_23
Population_20 0,158***	0,158*** (4,32)	0,173** (3,55)	4,20
GDP_pc_20	0,0000321 (1,31)	0,0000069 (0,33)	0,0000344 (1,37)
Real_GDP_20	0,931* (2,25)	1,168 (1,76)	1,068 (2,04)
Real_GDP_20_21	0,170 (1,01)	0,232 (1,05)	0,190 (1,05)
VF_20	-0,992* (-2,21)		-1,053* (-2,16)
Debt_20		-0,000323 (-0,02)	-0,0111 (-0,64)
_cons	-3,667* (-2,14)	-1,962 (-1,25)	-3,380 (-1,95)
N	27	27	27
F(5;21) / (6;22) 22,03***	19,33***	14,98***	
R-squared	0,89	0,87	0,89
max. VIF	2,02	3,27	3,29

T statistic in parentheses, \*p<0.05; \*\* p<0.01; \*\*\* p<0.001. Estimation using method of the OLS estimation with robust standard errors

Loans provided from the Recovery and Resilience Support Mechanism are provided at the request of the Member State by the Commission until 31 December 2023. The loan is intended for the implementation of the recovery plan and is disbursed in partial payments conditional on the fulfilment of milestones and targets (EU Regulation, 2021). Its interest rate

is almost zero. As mentioned, the maximum loan volume should not exceed 6.8% of the gross national income of the given state. Based on our findings, we can state that countries that were granted loans had the same value of the GNI criterion on average as countries that did not even apply for a loan, and these countries did not statistically significantly differ from each other. In total, only seven countries applied for credit and thus disbursed the amounts shown in Table 10. The amounts requested and disbursed are almost identical with small variations, but this may be a discrepancy caused by the fact that we drew from different sources. The data in the table was last updated on April 28, 2023.

**Table 10: Allocated loans from RRF**

EU	Allocated loans	%
Portugal	2,699	0,25 %
Poland	11,507	1,08 %
Greek	12,728	1,19 %
Romania	14,942	1,40 %
Italy	122,602	11,46 %
Cyprus	200	18,70 %
Slovenia	705	65,92 %
Total	1069,478	100 %

Source: European Commission, 2023

The empirical results presented in this study also carry broader policy implications concerning the future of EU fiscal solidarity and governance reform. The allocation patterns of RRF — predominantly determined by population size, unemployment, and GDP loss — illustrate the European Union’s increasing commitment to shared fiscal responsibility. The RRF has demonstrated that collective, centrally coordinated fiscal responses can mitigate asymmetric shocks more effectively than national policies alone. This approach represents a significant step toward a more integrated fiscal framework, anticipating the principles embedded in the 2024 reform of the Stability and Growth Pact, which promotes flexible, country-specific adjustment paths while maintaining debt sustainability. Consequently, the

RRF can be viewed not only as a temporary recovery instrument but also as a prototype for a permanent EU fiscal capacity designed to strengthen economic convergence and resilience across Member States.

## **Conclusion**

First, we briefly described the current position of the recovery plan for Europe with regard to the Recovery and Resilience Mechanism and we analytically evaluated the criteria adopted for the distribution of funds of this mechanism. In order to determine the impact of the officially determined criteria and also the criteria we set, we used OLS estimation with robust standard errors. Thanks to the quick reaction of the European Central Bank, it was possible to reverse the worst fears associated with the pandemic. The European Commission came up with an extremely proactive program for the renewal of Europe with a broad scope. The study identifies the functioning as well as concerns related to the recovery plan. We consider the main benefits of the plan to be activities related to economic, ecological and digital transformation, which will make countries' economies more resilient and sustainable.

By means of the regression analysis carried out by us, we managed to evaluate the impact of socio-economic criteria on the number of financial resources flowing from the Mechanism for the support of recovery and resilience. The main findings include that in 2021 and 2022, more grants were allocated to countries with higher populations, higher GDP per capita and higher unemployment rates, which is in line with the EU's intention. The redistribution of funds was most influenced by the unemployment rate and the size of the population. In 2023, population and loss of real GDP were the most prominent criteria. Moreover, higher grants were received by countries with a higher number of inhabitants, a higher loss of real GDP and a cumulative loss of real GDP. Debt as a criterion was not included

at all in the grant redistribution methodology; on the contrary, the deficit was a factor in this redistribution in 2023. This means that the countries most affected by the public finance deficit received higher subsidies. In this way, the funds from the RRF would be more directed towards easing the economic situation.

Building on these insights, the findings of this study suggest that the RRF has not only served as a short-term stabilization instrument but also as a catalyst for rethinking the Union's fiscal architecture. The evidence confirms that shared fiscal tools can enhance macroeconomic stability and strengthen the cohesion of the Economic and Monetary Union. As the EU advances with the implementation of the reformed Stability and Growth Pact (2024), the experience of the RRF highlights the potential benefits of maintaining a permanent fiscal capacity at the European level. Such a mechanism could help address future asymmetric shocks, reduce divergences in public debt sustainability, and promote a more balanced and resilient recovery across Member States.

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