Occasional Papers No. 41

Cristina Anghelescu ▪ Daniel Dăianu ▪ Tudor Grosu ▪ David Orțan

European funds and public investment in Romania: implications of the wind-up of the National Recovery and Resilience Plan (NRRP) for economic growth

OCCASIONAL PAPERS

No. 41

February 2026

NOTES

The views expressed in this paper are those of the authors and do not necessarily reflect the views of the National Bank of Romania.

ISSN 1584-0867 (online)

European funds and public investment in Romania: implications of the wind-up of the National Recovery and Resilience Plan (NRRP) for economic growth

Cristina Anghelescu*

Daniel Dăianu**

Tudor Grosu*

David Orțan*

The authors would like to thank Mr Răzvan Stanca and colleagues from the Macroeconomic Modelling and Forecasting Department of the NBR for their comments and suggestions during the preparation of this paper. Any remaining errors are the sole responsibility of the authors.

The opinions expressed in this study belong to the authors and do not necessarily reflect the official position of the institutions to which they belong, including the National Bank of Romania.

* National Bank of Romania

** Romanian Fiscal Council

Contents

Abstract

Non-repayable European funds, particularly those associated with the European Union's *Cohesion Policy*, have played a key role in fostering the economic and social development of EU Member States over time. Furthermore, the *Next Generation EU* programme, built around the implementation *of National Recovery and Resilience Plans (NRRPs)*, has provided significant support to economic activity in the aftermath of the public health crisis and the subsequent adverse shocks. This study assesses the macroeconomic impact of European funds related to the EU *Cohesion Policy* using a panel data model that incorporates data for Romania and ten other Central and Eastern European (CEE) economies. Empirical evidence indicates a contemporaneous impact of around 0.5 percentage points on economic growth following a 1 percentage point increase in European funds as a share of GDP, with spillover effects accumulating over time. For Romania, the analysis is extended by quantifying the impact of the NRRP. Using the synthetic control method, we estimate a cumulative contribution exceeding 1 percentage point to GDP growth over the 2022–2024 period. The study also discusses implications of the wind-up of the NRRP as a potential investment shock, through the reduction of public investment, as well as the role of alternative compensatory investment programmes, such as the EU's Security Action for Europe (SAFE) programme. The main conclusion is that the impact of European funds depends critically on institutional quality and the pace of project implementation: timely absorption and a front-loaded execution maximize macroeconomic effects, whereas delays generate significant economic costs and constrain Romania's growth potential.

Keywords: structural and cohesion funds, MFF, NGEU, NRRP, SAFE, recovery and resilience, European Union, panel data, synthetic control, economic growth

JEL Classification: C21, C23, E61, H30

1. Introduction

The outbreak of the COVID-19 pandemic in 2020 was a profound shock to global economic activity. Considering the rapid spread of infections, administrative decisions entailed the introduction of lockdowns. These measures had significant adverse effects, including disruptions to global production and distribution chains and the postponement of investment plans, partly reflecting heightened uncertainty.

In response, the authorities adopted both domestic support measures and coordinated initiatives at the European Union (EU) level to alleviate these effects. The European Commission (EC) proposed the *Next Generation EU* (NGEU) programme, which aims to transform EU economies by making them more resilient to shocks, including those related to the transition to a green and digital economy. The centrepiece of the NGEU programme is *the Recovery and Resilience Facility* (RRF), a temporary performance-based instrument. In this context, access to funds depends on meeting targets and milestones agreed with the European Commission.

In addition, to facilitate economic recovery, a series of measures were introduced to make the absorption of European funds under the standard multiannual financial frameworks more flexible and to extend their implementation period. All of this has facilitated the acceleration of European funds absorption.

Despite these support measures, economic activity at EU level contracted sharply, with real GDP growth falling by 5.6 percent in 2020. There was considerable heterogeneity among EU Member States, with Spain (-10.9 percent), Greece (-9.2 percent) and Italy (-8.9 percent) among the hardest hit economies. In Romania's case, the contraction in GDP was moderate (-3.6 percent), below the EU average. Subsequently, EU countries, including Romania, recorded relatively robust economic growth, to which European support programmes made a significant contribution following the first payments under the RRF, starting only in the second half of 2021, despite significant adverse shocks at global level, such as those affecting international value chains or the war in Ukraine, which had a more pronounced impact on the economies in the region, including Romania.

The aim of this paper is to quantify the impact of European funds on economic activity in the post-pandemic period, a context marked by multiple global challenges. This topic is intensely debated in the literature, with a renewed prominence following the introduction of the NGEU programme. However, there is no consensus on the magnitude of the multiplier effect for projects financed via European funds. In these circumstances, the analysis begins with a brief overview of the various empirical evidence in the literature. *Sections 3* and *4* then contextualise the state of implementation of *the National Recovery and Resilience Plan* (NRRP) and the absorption of resources from standard multiannual financial exercises. In this regard, the absorption rate and any delays in accessing European funding by EU Member States are taken into account.

Romania has consistently been a net beneficiary of European funds, with with inflows substantially exceeding its contributions to the EU budget. Over time, these resources have made an important contribution to economic development. Thus, *Sections 5* and *6*

summarise the empirical evidence obtained by applying econometric methods. In a first stage, we estimate an annual panel data model incorporating country-specific information for Romania and ten other Central and Eastern European (CEE) countries. This first set of evidence addresses the issue of structural and cohesion funds, given the importance of the EU's *Cohesion Policy,* under which hundreds of investment projects have been financed across the Member States. Such funds are not exceptional in nature but can be accessed within multiannual financial exercises as part of the EU budget. The purpose of the analysis is to estimate the size of the multiplier effects generated by these funds on economic activity.

Furthermore, exceptional resources introduced in the context of the COVID-19 pandemic are also considered. To quantify the impact of the NRRP, a counterfactual scenario is built based on the synthetic control method. The analysis traces the counterfactual path of real GDP in the absence of NRRP funding in Romania. This makes it possible to estimate the impact of this programme for the period 2022-2024. Both econometric methods indicate positive effects of European funds on the economy, albeit in different ways – in the form of an average annual multiplier for the first method and a cumulative effect for the second.

After highlighting the impact of the NRRP, the question arises of economic developments after the wind-up of this programme. In this context, *Section 7* presents possible implications of the exhaustion of NRRP resources, drawing both on the experience of previous multiannual financial frameworks and on the (unlikely) scenario in which the remaining available funds are not fully absorbed. In addition, the possible effects of the implementation of the *Security Action for Europe* (SAFE) programme are investigated.

Section 8, which presents the conclusions of this study, outlines the main results obtained. Overall, the study aims to update some of the evidence in the literature with the latest information. The novelty lies in estimating the impact of European funds from the NRRP in case of Romania using the synthetic control method at both national and regional level, as existing work has tended to focus on more developed economies. This analysis focuses primarily on the relationship between the level of European funds, public investment, and economic growth dynamics, without extending the analytical framework to examine the *structure of* public investment financed by European funds.

The wind-up of the NRRP constitutes an investment shock. *Ceteris paribus*, it has implications for both economic growth and the balance of payments. On the other hand, the SAFE programme, the reallocation of funds from the NRRP to the 2021-2027 multiannual financial framework – which allows for more flexible use of these resources over time – as well as the possibility, strictly conditional on the achievement of targets and milestones, to continue some NRRP-funded expenditure after 2026, could contribute to a smoother profile of public investment over time.

2. Literature review

EU Member States, particularly the least developed ones, benefit from substantial allocations of non-repayable external funds. Against this background, the macroeconomic impact of European funds has attracted considerable attention in the literature. Although no consensus exists regarding the magnitude of the associated multipliers, most empirical evidence points to a positive impact on economic growth. Assessments by the International Monetary Fund (2017), based on *panel* data, identify a contemporaneous multiplier in the range of 0.5-0.66, alongside persistent effects reflecting the multiannual nature of European-funded investment projects. Comparable results are reported by the National Bank of Romania (2019), which estimates – using a similar methodology on a sample of CEE countries – that a 1 percentage point increase in structural and cohesion funds as a share of GDP raises annual real GDP growth by 0.4-0.7 percentage points, with cumulative effects approaching 3 percentage points over four years. Similarly, Durand and Espinoza (2021) identify, again in a *panel* of CEE countries, a contribution to economic growth between 1.2 and 1.8 percentage points over one year as a result of a 1 percentage point increase in the share of structural and investment funds in GDP.

However, the quantified favourable effects are expected to be unevenly distributed. In this regard, Alexopoulos *et al.* (2025), Crucitti *et al.* (2024), Fidrmuc *et al.* (2019) and Zacek *et al.* (2019) have shown that less developed regions experience stronger effects from European funds, a sign that cohesion policy is producing real convergence effects. In addition, the impact of this source is assessed to manifest over the medium-term, given that European funds have positive effects on total factor productivity (Aresu *et al.*, 2025) or projects are carried out over a long period of time (Abalașei *et al.*, 2022).

Recently, the analysis of the impact of the NGEU has gained increased importance. Since the beginning of the implementation of this programme, empirical evidence has indicated a high potential to stimulate economic growth in the EU, with preliminary assessments pointing to a possible cumulative impact of around 1.5 percentage points over the period 2021-2024 (Pfeiffer *et al.*, 2021), conditional, however, on a coordinated response at EU Member State level (Picek, 2020). Bankowski *et al.* (2021) highlighted a similar magnitude of the impact of NGEU funds in the euro area.

To enhance the effects of the NGEU on economic growth, both early implementation of the NGEU and grant financing of public investment rather than current transfers are necessary (Economic Bulletin of the Bank of Spain, 2020). In addition, according to Augusztin *et al.* (2025), only those economies with adequate institutional quality benefit significantly from European funds. Another factor that may limit the impact of the NGEU is the shortage of skilled labour (Fernandez-Cerezo *et al.*, 2023).

Conversely, as the NGEU programme matures and approaches completion in the near future (August 2026), the literature confirms the existence of positive and significant *spillover* effects. Given its high degree of integration in the production and distribution chains, Germany is likely to experience the most extensive spillover effects (Michels *et al.*, 2025). In addition, Barbero *et al.* (2024) highlight the persistent effects of European funds, mainly due to favourable supply shocks. This result is also confirmed

by Bankowski *et al.* (2024), given the increase in the productive capacity of EU economies due to government investment projects. This is also the main channel identified by Millard (2025), although the author mentions effects arising from the risk premium and structural reforms channels – in the latter case, the evidence in the literature is limited.

Most empirical evidence focuses on assessing the impact of the NGEU, particularly that of the NRRP, on the economy. However, new approaches focus on the regional economic impact (Aparicio-Perez *et al.*, 2025) or that on the main economic sectors (Michels *et al.*, 2025). For the Netherlands, Garcia *et al.* (2025) illustrate that the construction and manufacturing sectors could benefit most from the NRRP, including through significant spillover effects.

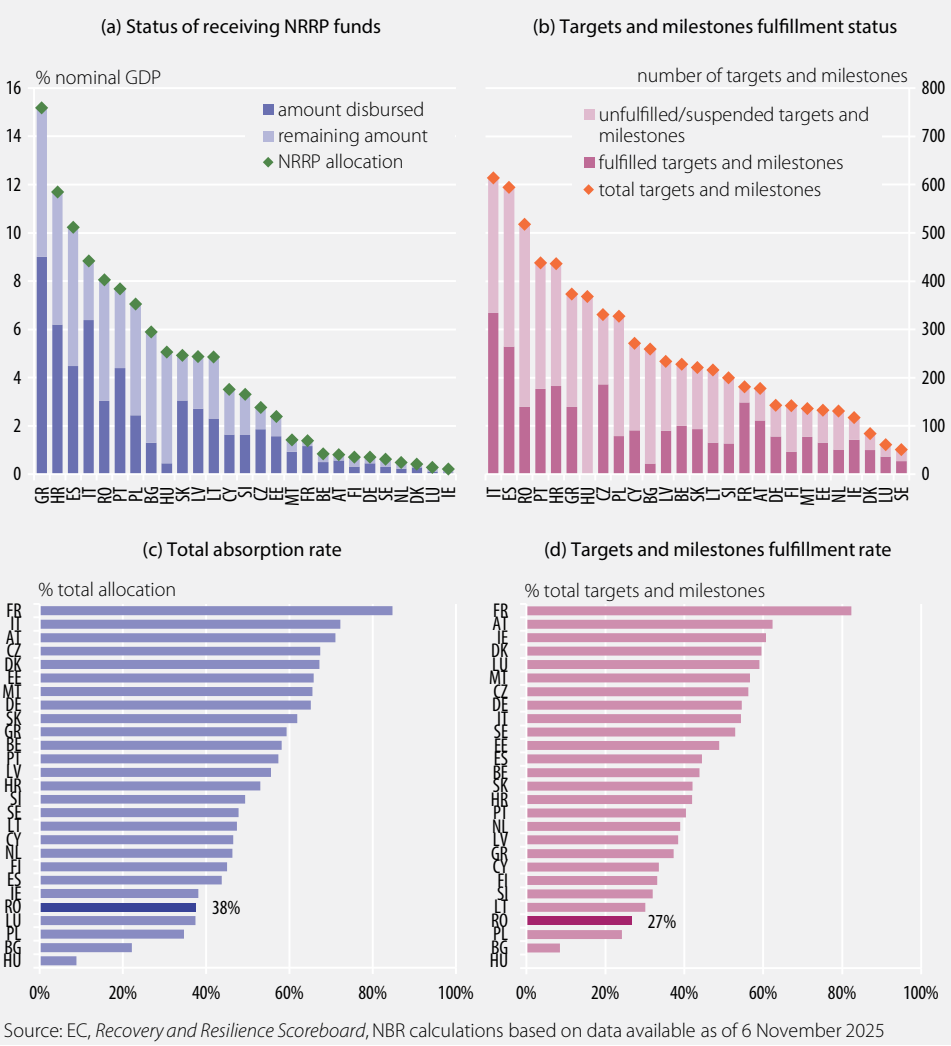
However, there is also evidence of a limited or even negative impact of projects financed from such resources. For example, Canova and Pappa (2021) highlight a short-lived positive impact for the regional development funds or even a negative one for the European Social Fund. In the absence of adequate institutional quality, Augusztin *et al.* (2025) also point to a potential adverse impact from European resources. Almazan-Gomez *et al.* (2025) consider that the NGEU has only a limited capacity to mitigate the negative effects of the pandemic in most European regions. Likewise, the authors point out that the effect of European funds on economic growth depends on the quality of institutions, being positive particularly in countries with low levels of corruption, a functioning rule of law, efficient governments and sound regulations; at the same time, the sectoral structure and regional contagion effects can influence the magnitude of this impact.

For Romania, empirical evidence is rather limited. The impact of the NGEU is addressed in a series of thematic boxes in the NBR's *Annual Reports*. A first set of assessments suggested the possibility of a cumulative impact of the NGEU on economic growth of over 4 percentage points in the period 2021-2026 (*NBR Annual Report*, 2021). According to the initial version of the NRRP (October 2021), if Romania were to access the entire envelope of grants and loans available, the cumulative impact on real GDP growth could reach around 5.4 percentage points. However, initial expectations proved to be overly optimistic, given the repeated delays in the implementation of this programme (*NBR Annual Report*, 2025). The delay in the NRRP is also expected to have an impact on the budget deficit, thus mitigating the positive effects documented in the *NBR Annual Report* published in 2022.

3. NRRP implementation – current status and outlook

The centrepiece of the NGEU programme is *the Recovery and Resilience Facility* (RRF), a grant- and loan-based instrument designed to support the green and digital transitions while addressing country-specific challenges identified at EU level. Access to RRF funds requires the submission of a *National Recovery and Resilience Plan* (NRRP), whose implementation is conditional on the achievement of a predefined set of targets and milestones. In addition, the implementation period is limited, with the formal deadline for completing the programme set for August 2026.

Figure 3.1. Status of NRRP fund absorption



Source: EC, *Recovery and Resilience Scoreboard*, NBR calculations based on data available as of 6 November 2025

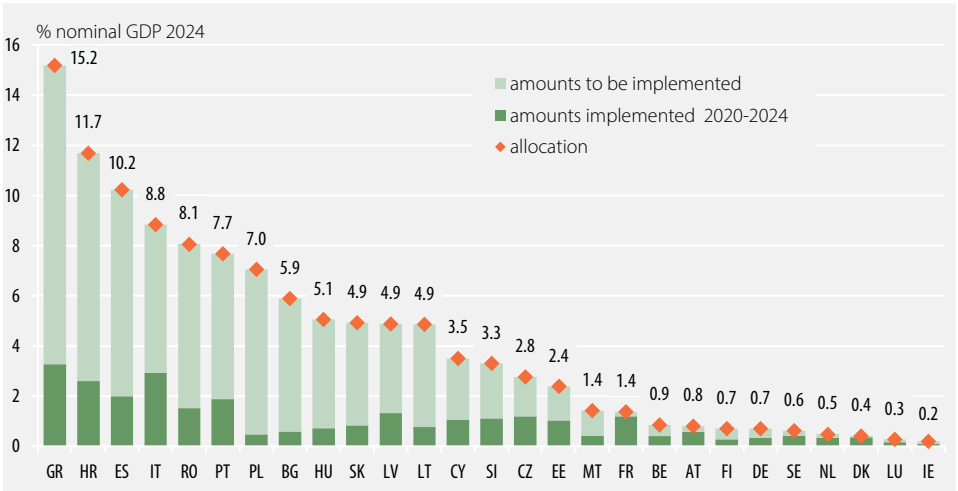
Romania is among the EU members with the highest allocations under the NRRP (Figure 3.1, panel a). At the same time, the number of targets and milestones associated with these allocations is commensurately high, exceeded only by Italy and Spain (Figure 3.1, panel b). However, EC data available as of November 2025 indicate a significant slowdown in the absorption of NRRP funds in Romania (Figure 3.1, panel c).

Less than 40 percent of the available funds had been disbursed, placing Romania among the Member States with the lowest absorption rate[1]. This outcome reflects a cumbersome implementation process, as only 27 percent of the initially agreed 518 targets and milestones had been fulfilled by early November 2025 (Figure 3.1, panel d). By contrast, several other Member States, including France, had reached a much more advanced stage of implementation, despite having smaller allocations.

At EU level, the average absorption rate of NRRP funds stood at 56.4 percent at the beginning of November 2025. Although the programme was initially met with considerable enthusiasm, implementation was hampered by limited administrative capacity, lengthy legislative procedures, and disruptions to global value chains.

In addition, in many European economies, including Romania, discrepancies were observed between the amounts received from the EC and those actually used. Based on available data, at the end of 2024, expenditure on investments financed through the NRRP reached a level equivalent to 57.3 percent of the total funds received. Seventeen other EU countries are in a similar situation, having spent only part of the funds available. In relation to the total allocation, Romania has spent less than 20 percent of the available NRRP envelope (Figure 3.2). As a share of GDP, the most substantial payments by the end of 2024 were made by Greece and Italy, which also benefit from significant allocations.

Figure 3.2. Status of NRRP project implementation



Source: EC, *Recovery and Resilience Scoreboard*, NBR calculations based on data available as of 6 November 2025

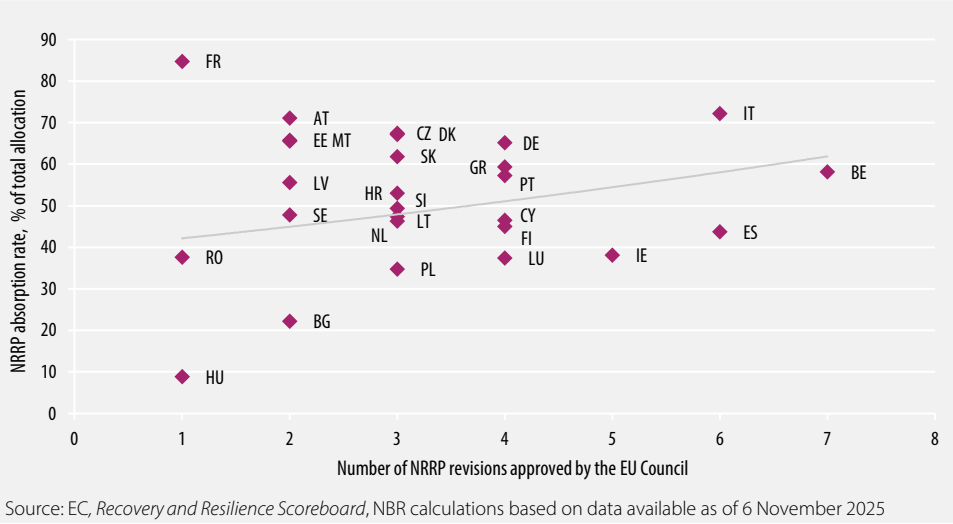
To mitigate the delays in the implementation of the NRRP, Member States have revised their National Plans. Romania revised its NRRP twice, in December 2023 and October 2025[2], leading to a reduction in the overall allocation from 8.1 percent

1 Most EU Member States submitted their NRRP proposals to the EC in spring 2021, with approval by the EU Council expected in July. In Romania's case, the NRRP was validated three months later, in October 2021. However, there are also cases where the NRRP was only approved during 2022: Bulgaria and Sweden (May), Poland (June), the Netherlands (October) and Hungary (December).

2 The second revision of the NRRP in Romania was endorsed by the EC in October 2025, and the EU Council approved it only on 13 November 2025. Under these circumstances, the data in the graphs on the implementation status refer to the unrevised NRRP allocation.

to 6.1 percent of GDP, entirely through a cut in the loan component. However, there are countries where the NRRP has been revised much more frequently – six times for Italy and Spain, and seven times for Belgium, by the beginning of November 2025. While early revisions may facilitate absorption, no clear relationship can be identified between the frequency of revisions and the absorption rate (Figure 3.3).

Figure 3.3. Absorption rate and frequency of NRRP revisions



Source: EC, *Recovery and Resilience Scoreboard*, NBR calculations based on data available as of 6 November 2025

4. Implementation of projects from other sources

4.1. STANDARD MULTIANNUAL FINANCIAL FRAMEWORKS

The NGEU programme complements non-repayable European funds provided under standard multiannual financial frameworks (MFFs). Irrespective of the pandemic, EU budget grants have been allocated with the objective of reducing regional disparities, with cohesion policy remaining the main investment instrument.

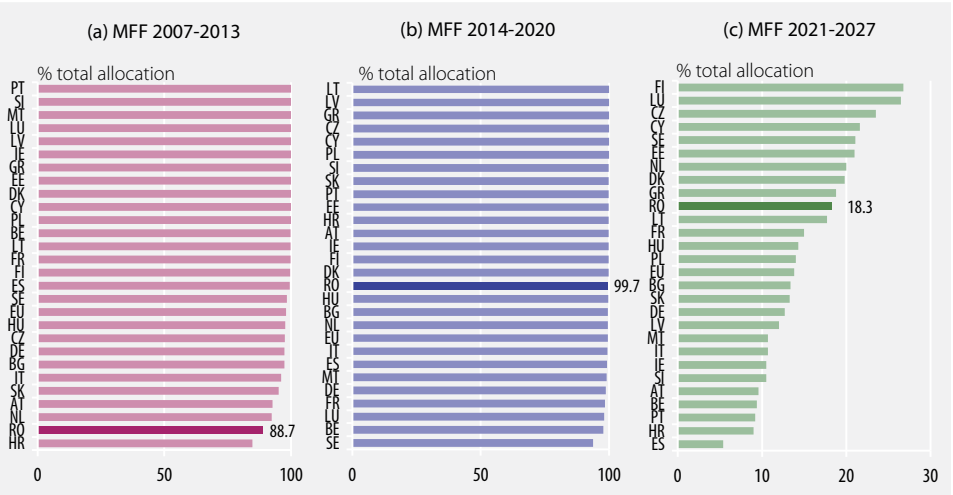
During the public health crisis, the European Commission introduced a series of measures aimed at accelerating absorption, including greater flexibility in reallocating resources across operational programmes and extended implementation deadlines. Romania benefited from these measures, particularly in financing support schemes for small and medium-sized enterprises and healthcare-related expenditure. In addition, some operational programmes have been modified so that they could be fully funded by EU grants.

Romania is a net beneficiary of non-repayable European funds. Between 2007 and September 2025, it received approximately EUR 100 billion in EU grants (excluding the NRRP), while contributing around EUR 35 billion to the EU budget, resulting in net inflows of roughly EUR 65 billion. These funds have played a significant role in economic development, particularly through investments in transport infrastructure, regional development and energy efficiency (climate neutrality). For example, funds from the 2014-2020 MFF financed the construction and rehabilitation of over 1,300 km of roads, of which 650 km is new infrastructure.

Regarding the absorption of *Cohesion Policy* funds, Romania recorded modest results in the 2007-2013 MFF, ranking among the countries with the lowest absorption rates (Figure 4.1, panel a). Subsequently, in the 2014-2020 MFF, almost all structural and cohesion funds were absorbed (Figure 4.1, panel b). It should be noted, however, that the timeframe for using the resources in this multiannual exercise was extended, thus facilitating better performance compared to the previous MFF. Under the 2021-2027 MFF, Romania's absorption rate exceeded both the EU average and that of most peer countries in the region (Figure 4.1, panel c).

At the same time, during 2025, the first discussions on the EU budget for the 2028-2034 programming period also began. The discussions are still at a preliminary stage, and no consensus has yet been reached on the new amounts. However, there are provisional allocations, with the EU budget being divided into three main areas: *(i)* a general allocation based on *cohesion policy*, *(ii)* funds for migration, security and home affairs and *(iii)* a social climate fund. According to the EC proposals of July 2025[3], Romania's budget could total over EUR 60 billion, or 17 percent of GDP. At EU level, as a share of GDP, it ranks in the top ten, with generous allocations associated with the social climate fund – over 1 percent of GDP.

Figure 4.1. Status of Cohesion Policy funding under multiannual financial frameworks



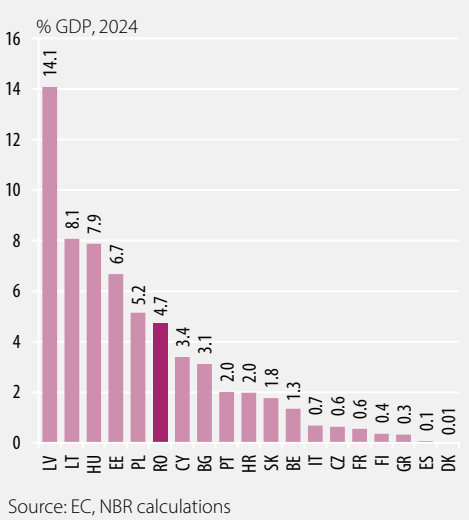
Source: EC, NBR calculations based on data available as of 10 November 2025

3 More details are available at https://commission.europa.eu/document/download/5868c188-933f-49dc-b7c3-d7fb3c82a064_en?filename=MFF_Member%20States%20allocation_17.07_22h35.pdf

4.2. OTHER PROGRAMMES AT EUROPEAN LEVEL

In a context of heightened geopolitical tensions, the need to strengthen EU security in the face of new challenges has become apparent. In March 2025, the EC introduced the *"ReArm Europe – Readiness 2030"* plan, a defence package that provides EU Member States with financial leverage to accelerate military investment. The core financial instrument of the programme is the *"Security Action for Europe"* (SAFE). Through this instrument, loans with long maturities can be accessed on favourable terms. Although SAFE is a different instrument, consisting exclusively of defence-related loans, it reflects a similar approach of large-scale EU financial support and shares certain features with cohesion funds, particularly in terms of financing targeted regional investment projects.

Figura 4.2. Tentative allocations under SAFE



Source: EC, NBR calculations

Under SAFE, Romania could access cumulative loans amounting to 4.7 percent of GDP (Figure 4.2). At regional level, Hungary and Poland receive the largest allocations as a share of GDP. The timetable for the implementation of this programme requires EU Member States to submit *National Defence Investment Plans* by the end of November 2025, followed by the negotiation of loans and the signing of the corresponding operational agreements in the first part of 2026.

The National Defence Strategy for 2025-2030 outlines the main directions envisaged by the Romanian authorities in the field of defence, public order and national security. According to this strategy, the coming years will focus on modernising the institutions relevant to national security, armament and procurement programmes for the Romanian Army, training military personnel and developing the national defence industry. Over the longer term, until 2035, a gradual increase in defence spending to 5 percent of GDP is envisaged, of which 3.5 percent of GDP represents core defence spending (e.g. military procurement) and 1.5 percent of GDP is related expenditure. In this regard, it is expected that SAFE could also finance infrastructure projects, such as – according to public sources – the construction of sections of the A7 and A8 highways.

However, it should be noted that SAFE loans have an impact on the budget deficit, while grants from multiannual financial frameworks lead to proportional increases in budget expenditure and revenue and are therefore characterised by a neutral budgetary impact.

In addition, the transition to a green economy is another issue that is expected to remain central. As already mentioned, one of the pillars of the next EU multiannual budget is the *European Social Climate Fund*. In this case, there are similarities with the way the

NRRP works, namely accessing funding based on the achievement of a set of targets and milestones characteristic of investment projects pre-established within a *National Social Climate Plan*. In Romania's case, a preliminary version of this Plan indicates measures in areas such as energy efficiency, public transport development and support for households affected by the implementation of the ETS2 (*Emissions Trading System*), which is the main instrument through which the European Union aims to reduce greenhouse gas emissions in the future.

5. Impact assessment of European funds using panel data

5.1. METHODOLOGY AND DATA

The impact of European structural and cohesion funds on economic growth is estimated using a dynamic panel data framework of the *Arellano-Bond generalised method of moments* type, designed to capture the persistent nature of GDP dynamics. This analysis is, in the first phase, an update of the estimates in *Box 1. Assessment of the impact of the EU structural and cohesion funds on economic growth*, included in the NBR *Annual Report* for 2018, based on the IMF methodology (2017).

The analysis uses annual panel data covering 11 Central and Eastern European (CEE) countries. The countries included are Bulgaria, Czechia, Croatia, Estonia, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia and Hungary, and the period covered is 2016-2024. In addition to economic growth and the dynamics of structural and cohesion funds[4] (SCF), the model also accounts for the impact of public and private investment, as SCF and other investments in the economy have similar effects on economic growth. It also accounts for the possibility that these variables may produce effects on economic growth with a certain delay. The estimated equation is as follows:

$$y_{i,t} = \alpha + \beta y_{i,t-1} + \sum_{j=0}^{2} \gamma_j SCF_{i,t-j} + \sum_{j=0}^{2} \delta_j z_{i,t-j} + \lambda_t + e_{i,t} \quad (1)$$

where i represents the country ($i = 1, \dots, 11$), *and* t represents the years included in the analysis, y represents the annual growth of real GDP, SCF represents the growth (Δ) of European structural and cohesion funds (flows) expressed as a share of nominal GDP, and z captures the control variables (including, depending on the specification, the dynamics of GFCF at the economy-wide level and, respectively, at the level of the private sector, expressed as a percentage of GDP)[5] .

[4] It incorporates funds such as those for regional development, cohesion, European social funds, and those for the transition to a green economy.

[5] Although the equation also includes country-specific fixed effects, these are eliminated once the variables are expressed as dynamics/differences (*first-differences*). In order to account for the specific characteristics of each year, time fixed effects (λ_t) were included.

Furthermore, a *conditional beta convergence* equation (based on Augusztin *et al.*, 2025) was estimated to illustrate the role of institutional quality in mediating the effect of European funds on economic growth.

The starting point for the analysis of *conditional beta convergence* is the theoretical framework of unconditional convergence stated by Barro and Sala-i-Martin (1992), according to which economies (countries or regions) with a lower initial level of GDP per capita tend to record higher growth rates, which allows them to catch up with economies with higher income levels.

In order to capture other determinants of economic growth, the specification is then extended according to Mankiw *et al.* (1992).

$$g_{i,t} = \alpha_i + \beta y_{i,t-1} + \alpha_1 SCF_{i,t} + \alpha_2 SCF_{i,t} * inst_{i,t} + X_{i,t} + \lambda_t + e_{i,t} \quad (2)$$

where $g_{i,t}$ represents the annual growth rate of real GDP *per capita* (PPS), $y_{i,t-1}$ is the level of real GDP *per capita* (PPS), *SCF* represents the growth rate of European structural and cohesion funds (flows) expressed as a share of nominal GDP, $X_{i,t}$ is a vector of control variables, which includes the share of GFCF in GDP at the economy-wide level, the dynamics of the employment rate and the proportion of people with tertiary education in the total population (aged 25-64), α_i are fixed country effects, and λ_t are time effects (year). The variable $inst_{i,t}$ represents an index of institutional quality, the dimension "control of corruption" (*Worldwide Governance Indicators*, WGI, World Bank, 2024), expressed in standard normal units, ranging from -2.5 (weak) to 2.5 (strong).

5.2. RESULTS

5.2.1. Contemporaneous and medium-term impact

Table 5.1 presents the results of the different specifications of the described equations. For equation (1), three specifications were considered, introducing alternatively, as explanatory variables, total or private investments. The estimates yielded coefficients that were generally statistically significant for SCF. SCF have both a positive contemporaneous impact on economic growth and, more notably, medium-term effects. The findings are in line with IMF's (2017) or NBR's (2019) empirical evidence, highlighting the multiannual nature of most investment projects.

However, contrary to expectations, the specifications for columns (1) and (2) indicate that the persistence of economic growth is slightly negative and/or statistically insignificant (in the first specification). This result can be attributed to the irregular nature of economic growth in CEE countries in the post-pandemic period, marked by a succession of shocks. Given this result, specification (3) was estimated, which differs from the first two in that it uses an extended time sample, namely the period 2008-2024 (compared to 2016-2024 in the first two specifications). Employing a larger sample allowed for the estimation of a relevant and positive coefficient attributed to

the GDP persistence term, but those corresponding to European funds lost their statistical significance, except for the one referring to an impact over a three-year horizon. This result could be explained by the significant difference between absorption in different multiannual financial frameworks, with the early ones characterized by relatively modest absorption rates, while absorption has improved significantly in recent years (more details in *Section 4*). In other words, the fact that the effects of attracting EU funds are significant in the post-2016 period suggests that the acceleration of absorption in recent years has increased the contribution of these funds to economic growth, while in previous periods the impact was more diluted. In this context, given the emphasis on the recent period, the following interpretations of the effects of the SCF on economic growth will focus on the first two of the three candidate specifications[6].

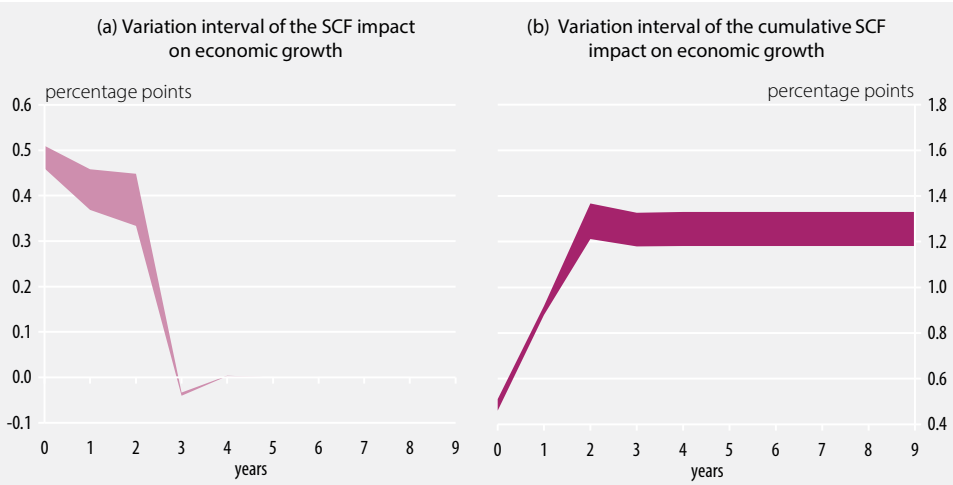
Table 5.1. Results of estimates of the impact of SCF on economic growth

Explanatory variables\ Dependent variable: Δ real GDP	(1)	(2)	(3)
Δ real GDP (t-1)	-0.09	-0.10*	0.19**
	[0.06]	[0.05]	[0.08]
Δ SCF	0.46**	0.51**	0.12
	[0.21]	[0.21]	[0.19]
Δ SCF (t-1)	0.50***	0.42***	0.09
	[0.18]	[0.13]	[0.22]
Δ SCF (t-2)	0.49**	0.37	0.34*
	[0.22]	[0.25]	[0.19]
Δ GFCF – total	0.16		0.37***
	[0.11]		[0.09]
Δ GFCF – total (t-1)	0.08		0.31***
	[0.19]		[0.09]
Δ GFCF – total (t-2)	-0.12		-0.09
	[0.07]		[0.09]
Δ GFCF – private sector		0.26**	
		[0.12]	
Δ GFCF – private sector (t-1)		0.11	
		[0.26]	
Δ GFCF – private sector (t-2)		-0.03	
		[0.08]	
Observations	99	99	165
Number of countries	11	11	11
Robust standard errors are shown in brackets.			
* p<0.10, ** p<0.05, *** p<0.01			
Source: NBR, Eurostat, NIS, NBR calculations and estimates			

6 The results obtained reflect an average effect estimated for the entire sample of 11 countries and cannot be interpreted as specific to the Romanian economy. In the absence of a model that allows for variation in coefficients across countries, the conclusions should be understood as indicating aggregate trends, without capturing the structural or institutional particularities of each individual economy. An analysis tailored to the specifics of the Romanian economy is presented in Section 6 of the paper.

Accordingly, a 1 percentage point increase in European structural and cohesion funds as a share of GDP is associated with a contemporaneous increase of approximately 0.5 percentage points in economic growth[7] . With respect to *spillover effects*, i.e. the impact of funds in periods after the shock, the first specification indicates a potential amplification of SCF effects, while the second specification reflects a gradual dissipation of their magnitude. Overall, *the estimated models show that the maximum cumulative impact is reached after three years*. This is estimated to range between 1.2 and 1.3 percentage points (Figure 5.1, panel a – annual impact and 5.1, panel b – cumulative impact).

Figure 5.1. Variation interval of the SCF impact on economic growth



Source: NBR, Eurostat, NIS, NBR calculations and estimates

One factor that may contribute to the interpretation of the results is the sectoral distribution of the European funds included in the analysis. Although this topic goes beyond the immediate scope of the study, the sectoral composition of investments may influence the size of the estimated multipliers. In Romania's case, both the structural funds for the 2014 -2020 period and the NRRP investments were mainly directed towards *transport infrastructure, energy, regional development and energy efficiency* – sectors characterised, in some cases, by high import volumes, administrative complexity and longer implementation times. These characteristics may lead to lower effective multipliers in the initial phases of projects, as a significant part of the additional demand may be directed towards imported goods and services or may be delayed until the advanced stages of implementation.

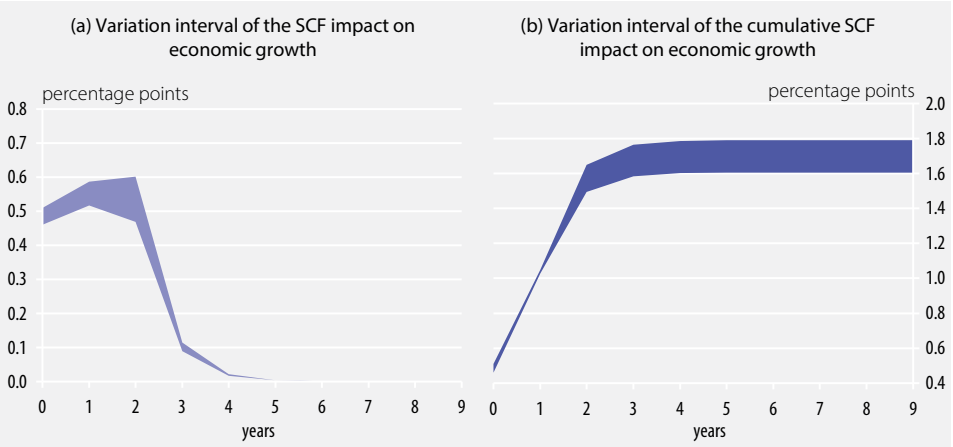
It is important to note that European funds do not act in the same way as traditional budgetary expenditure and the estimated multiplier reflects the combination of, on the one hand, the absence or low level of domestic fiscal burden (expenditure is offset

7 The average flow of European structural and cohesion funds (expressed as a percentage of GDP) for all countries included in the analysis for the period 2016-2024 is significantly higher than in previous periods, by about 0.7 percentage points. By comparison, in the period 2008-2015, the average share was around 0.2 percentage points. This development could be explained both by the overlap of several multiannual financial frameworks (MFF 2007-2013 with MFF 2014-2020 and MFF 2021-2027) given the n+2 implementation rule, and by the support measures granted during the pandemic, which aimed to make the procedure for attracting European funds more flexible.

by revenue and does not lead to additional debt except to the extent that there is a usually limited, co-financing component) and the predominantly investment-oriented nature of the projects – a characteristic of the SCF, as well as of the NRRP programme – and, on the other hand, the institutional constraints faced by the beneficiary states. As a result, the multiplier effect would be expected to be higher than that of domestic investments given the absence of *crowding-out* and the high probability of *crowding-in*. Possible disadvantages compared to domestically financed investments are related to implementation difficulties causing delays due to administrative conditionalities, which are common in emerging economies and explained in *Sections 3* and *4* of the paper.

Compared to the NBR (2019) assessments, updated empirical evidence suggests a more modest impact (by 0.2 percentage points for the contemporaneous impact and up to 1.7 percentage points for the cumulative medium-term impact). This reduction in the contemporaneous impact can be attributed to recent cyclical factors – for example, overlapping crises – which have mitigated both the direct effect of European fund spending and its multiplier effect in the economy. At the same time, the reduction in the medium-term impact reflects a significantly lower GDP persistence compared to previous estimates. An alternative exercise, using the GDP persistence associated with specification (3) (Table 5.1), highlights broader potential effects (Figures 5.2, panels a and b).

Figure 5.2. Adjusted* variation interval of the SCF impact on economic growth



*) the value corresponding to specification (3), Table 5.1, was taken for the real GDP persistence term

Source: NBR, Eurostat, NIS, NBR calculations and estimates

5.2.2. The role of institutional quality

Previous empirical evidence suggests the existence of possible mediating factors in the propagation of SCF effects on economic growth. In the literature, one of these factors refers to institutional quality. Table 5.2 contains the results of estimates based on the *conditional beta convergence* equation, which includes an interaction term between SCF dynamics and a relevant dimension of institutional quality specific to CEE economies (equation 2). In line with the results of Augusztin *et al.* (2025), the important role of institutional quality in the pass-through of effects of European funds into economic growth, expressed here in *per capita* terms, is confirmed. In the absence

of an adequate level of institutional quality, the impact of SCF could be statistically insignificant. In addition, the estimated effect is relatively small, with a contemporaneous impact of 0.11 percentage points on GDP *per capita* growth. In contrast, SCF funds conditional on a low level of corruption – an indicator of investment quality – are associated with a contemporaneous increase in GDP *per capita* growth of up to 0.64 percentage points, a statistically significant effect.

Table 5.2. Results of estimates of the impact of SCF conditioned on institutional quality (control of corruption)

Explanatory variables \ Dependent variable: *Δ GDP per capita*	(1)
Δ SCF	0.11
	[0.26]
Δ SCF conditional on institutional quality	0.64**
	[0.27]
Δ GFCF – total	0.06
	[0.14]
Δ employment rate	-0.21
	[0.13]
% people with tertiary education	-0.18
	[0.19]
Observations	99
Robust standard errors are shown in brackets.	
* p<0.10, ** p<0.05, *** p<0.01	
Source: NBR, Eurostat, NIS, NBR calculations and estimates	

6. Assessing the impact of European funds using the synthetic control method

6.1. METHODOLOGY AND DATA

The second approach aims to assess the impact of a hypothetical NRRP/NGEU shock on Romania and its geographical regions (NUTS 2) using the synthetic control method (SCM).

Essentially, SCM (Abadie, Diamond & Hainmueller, 2010) is based on the idea that a weighted combination of untreated units of analysis (where a certain measure/policy/intervention/shock is assumed *not to have occurred*) can constitute a valid control group when the number of treated units (those states/regions, etc. where a certain measure/policy/intervention *was introduced*) is limited. There are $J + 1$ units, where

$j = 1$ is the treated unit, and the units from $j = 2, \dots, J + 1$ represent the control group used to build the counterfactual corresponding to $j = 1$.

The effect we want to estimate, denoted by α, is the difference between the evolution of the variable of interest for the treated unit (Y_{1t}) and that of the control group $(Y_{jt}^N, j = 2, \dots, J + 1)$.

D_{jt} is a *dummy* (binary) variable that takes the value 1 if the unit is treated and if the recorded period is post-intervention.

$$Y_{jt} = Y_{jt}^N + \alpha_{jt} D_{jt} \tag{3}$$

$$\alpha_{it} = Y_{jt}^I - Y_{jt}^N \tag{4}$$

$$D_{jt} = \begin{cases} 1 \; if \; j = 1 \; and \; t > T_0 \\ 0, otherwise. \end{cases} \tag{5}$$

The counterfactual variable of interest is determined using a set of covariates (Z_j) in a factorial model, to which unobserved effects (u_j) and transitory shocks (ε_{it}) are added.

The variables in the equation of Y_{jt}^N are then weighted so that the difference between the pre-intervention evolution of the treated unit and that of the counterfactual is minimised (equation 14), where:

- X_0 is the matrix of pre-intervention characteristics of the donor group, and
- X_1 is the vector of pre-intervention characteristics of the treated unit.

The weights w_j must be positive and sum to 1.

$$\alpha_{1t} = Y_{1t}^I - Y_{1t}^N = Y_{1t} - Y_{1t}^N \tag{6}$$

$$Y_{1t}^N = \delta_t + \theta_t Z_j + \lambda_t u_j + \varepsilon_{jt} \tag{7}$$

$$W = (w_2 \dots w_{J+1}) \tag{8}$$

$$w_J \geq 0 \tag{9}$$

$$j = 2, \dots, J + 1 \tag{10}$$

$$w_2 + \cdots + w_{J+1} = 1 \tag{11}$$

For each synthetic control unit, the value of the variable of interest is:

$$\sum_{j=2}^{J+1} w_j Y_{jt} = \delta_t + \theta_t \sum_{j=2}^{J+1} w_j Z_j + \lambda_t \sum_{j=2}^{J+1} w_j \, u_j + \sum_{j=2}^{J+1} w_j \, \varepsilon_{jt} \tag{12}$$

$$\sum_{j=2}^{J+1} w_j Y_{j1} = Y_{11}, \sum_{j=2}^{J+1} w_j Y_{jT_0} = Y_{1T_0}, \sum_{j=2}^{J+1} w_j Z_j = Z_1 \tag{13}$$

$$\|X_1 - X_0 W\| \text{ is minimised with respect to } w_2 \geq 0 \ \ldots w_{J+1} \geq 0 \quad (14)$$

According to Abadie, Diamond and Hainmueller (2010), it can be shown that if the number of pre-intervention periods is large enough relative to the amplitude of transitory shocks, then:

$$Y_{1t}^N - \sum_{j=2}^{J+1} w_j Y_{jt} \cong 0 \quad (15)$$

Both the determinants Y_{1t}^N and the uniqueness of the event are important. Regarding the first component, it should be noted that not every combination of determinants will provide a good fit for the pre-intervention outcome variable. The second component, however, is more subjective and depends on the researcher's judgement.

Ideally, the event should be unique both in time and across the board – specifically, within a sufficiently long-time window, only the treated unit – in this case, Romania – and not the control units, should have been subjected to the same type of treatment/ intervention whose effect is to be identified. This implies that the estimates in *Section 6.2* may slightly underestimate the actual impact of the NRRP: if some of the countries in the donor group benefited, even marginally, from these funds, then the built counterfactual is higher than it would have been in the absence of any effect, leading to a conservative measurement of the impact. At the same time, however, there are factors that could distort the estimates in the direction of an overestimation. For example, the 2022-2024 period is marked by the energy crisis, which has had heterogeneous effects on EU countries, possibly higher for the control group. Furthermore, any potential discrepancies could be associated with the stance of the fiscal and income policies, but also with the absorption of European funds in the standard MFF.

The intuition behind the method is as follows: we construct the counterfactual evolution of Romania's GDP based on a weighted combination of predictors for other countries with low NRRP absorption, which act as donors. Typically, these predictors include values from previous periods of the variable of interest (in this case, GDP) and known determinants of the dependent variable.

Similar to Aparicio-Perez *et al.* (2025), these determinants are: gross fixed capital formation, which reflects investment in physical assets; the share of the population with tertiary education, which captures the impact of education on productivity and innovation, according to Barro (2001); population growth, which can either stimulate economic growth or put pressure on resources when the growth rate of population exceeds that of the economy; population density is also included, which controls for both the size of regions and some multiplier effects/economies of scale.

To construct the control group, the criterion considered was the amounts used from the NRRP. Thus, the candidate countries are those that spent less than 75 percent of the EU average, equal to 1.1 percent of GDP, between 2021 and 2024. At the same time, this threshold represents about half of the amounts implemented by Romania during the same period (criterion of 0.8 percent of GDP versus 1.6 percent of GDP). Given these conditions, the following countries qualified *a priori* for inclusion in the control group: Austria, Belgium, Bulgaria, Denmark, Finland, Germany, Lithuania,

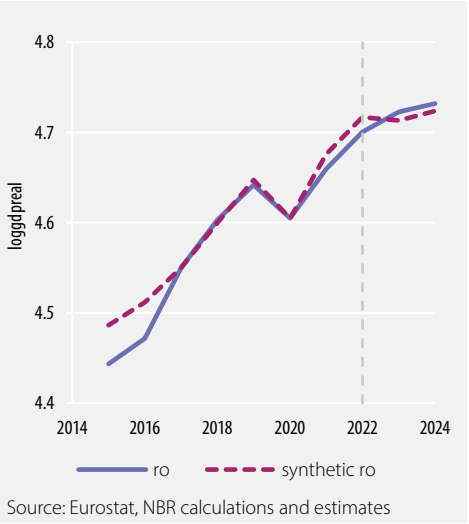
Luxembourg, Malta, Poland, Sweden, the Netherlands and Hungary[8]. The low absorption and, implicitly, the modest effective implementation were also caused by delays in the approval of the NRRP. For example, the EU Council approved the NRRP and the launch of the programme for Poland, Sweden and Hungary only in 2022, one year later than most EU economies. Furthermore, the data presented in *Section 3* highlighted delays in the implementation of the NRRP, with Hungary being the only EU country that had not met any targets or milestones by the beginning of November 2025. A low absorption rate is also evident in Bulgaria, whose Plan was also approved by European officials in 2022. From the group of candidate countries, the SCM model selected only those whose economic performance was closer to that of Romania in the period prior to the NRRP/NGEU shock. Thus, the counterfactual was constructed based on Hungary (82 percent), Bulgaria (16.4 percent), Poland (1.2 percent) and Malta (0.4 percent).

6.2. RESULTS

6.2.1. Impact at national level

Romania's NRRP was only approved by the EU Council in October 2021, and more substantial amounts implemented in investments and reforms were only recorded in the national accounts from 2022 onwards. Under these circumstances, the shock associated with the NRRP/NGEU is expected to manifest itself starting this year. Figure 6.1 shows Romania's real GDP trajectory (labelled *"ro"*) and the counterfactual trajectory constructed using the synthetic control method (labelled "*synthetic ro*").

Figure 6.1. Results of estimates of the impact of a NRRP shock on GDP at national level (logged)



Source: Eurostat, NBR calculations and estimates

In the pre-treatment period, i.e. 2014-2021, and especially since 2017, the evolution of the two series is well correlated, suggesting a good statistical fit. Afterwards, however, a divergence between the two trajectories can be observed. The difference between them is attributed to the implementation of the NRRP. Thus, the SCM method indicates a positive impact of the NRRP, supporting Romania's economic growth. *At the cumulative level, estimates indicate that, in the absence of these funds, real GDP growth is estimated to have been lower by up to 1.2 percentage points in the period 2022-2024*. This value should

8 Ireland was excluded a priori due to distortions in the National Accounts data caused by multinational corporations operating in the country.

be treated with caution, given Romania's fiscal policy during the period analysed[9], compared to the control group, including against the backdrop of the busy electoral calendar in 2024. Furthermore, the estimated effect could also accumulate the impact of European funds related to the standard multiannual financial frameworks, given Romania's higher absorption to date under the 2021-2027 MFF compared to some of the countries included in the control group, such as Bulgaria and Hungary, whose share in the construction of the counterfactual GDP trajectory is decisive (over 95 percent).

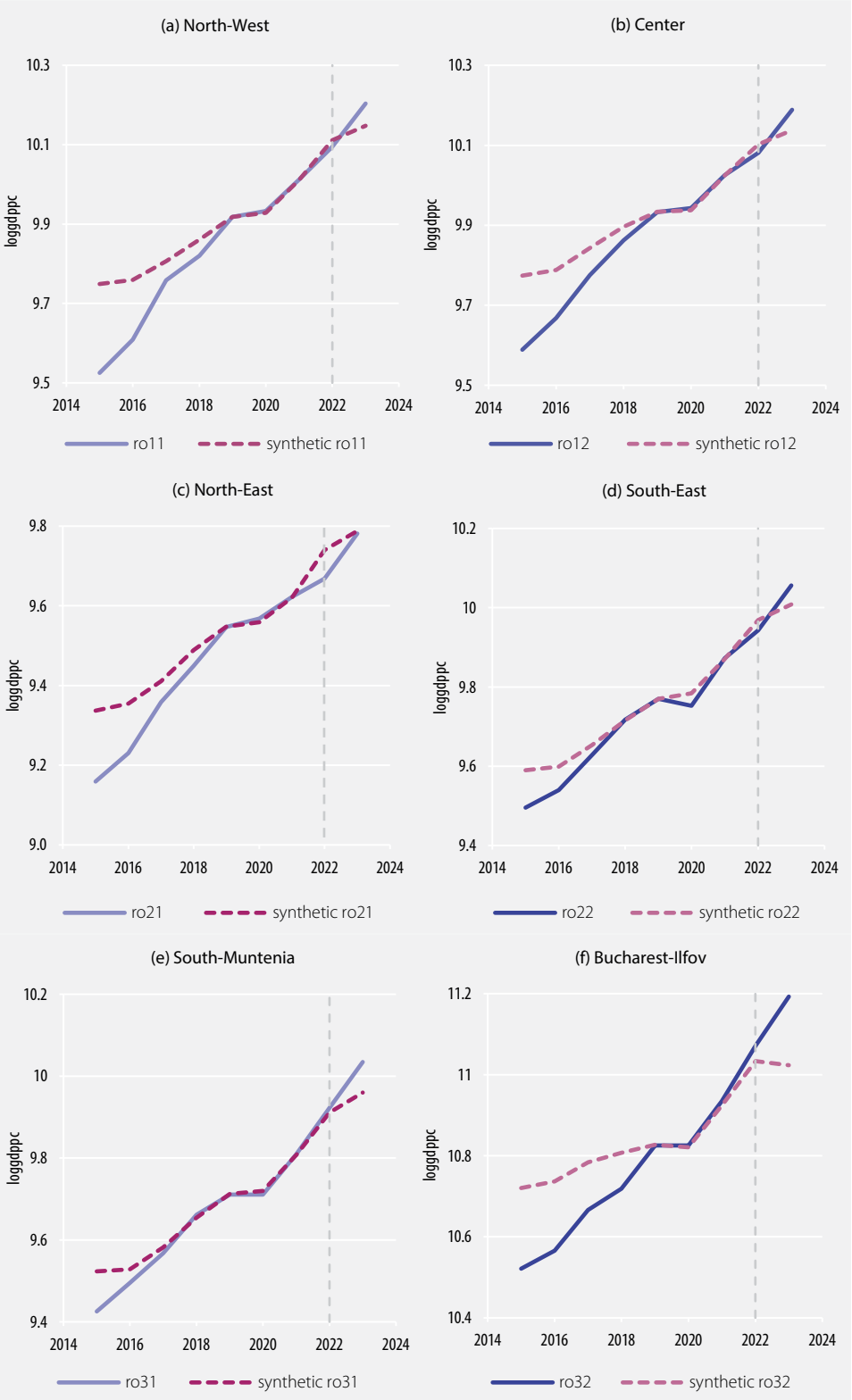
Robustness tests carried out with a slightly different control group (Hungary, with shares in the range of 65-70 percent, and Poland, with 30-35 percent), resulting from an alternative (*nested*) optimisation procedure or from the use of an alternative variable of interest (GDP, *chain-linked volumes*, euro, instead of the fixed-base index used in previous estimates), indicate similar results, with a cumulative impact on economic growth in the range of 1.4-1.5 percentage points.

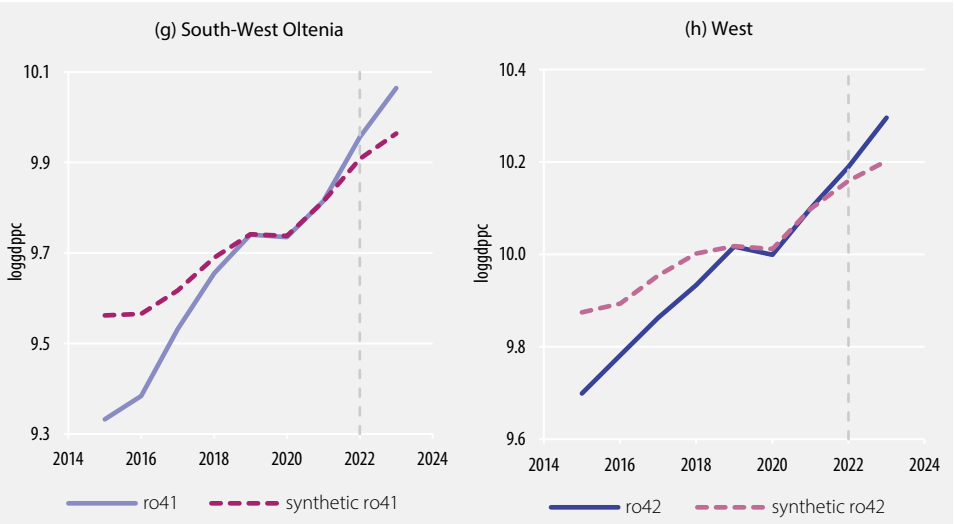
6.2.2. Regional impact

The empirical evidence was also extended to the regional level. This time, GDP per capita (PPS) was considered – regional-level data being available only up to 2023 – in line with other evidence in the literature (e.g. Aparicio-Perez et al, 2025). Similar to the previous exercise based on SCM, the control group was constructed based on regions from the same countries. In all NUTS 2 regions analysed, except for the Nord-Est, one of the poorest regions in the EU, the SCM model confirms a positive impact of a NRRP shock on GDP per capita (Figure 6.2). Except for the richest (*București-Ilfov* and *Vest*) and the poorest (*Nord-Est*) regions, where there are some problems in constructing the counterfactual based on the set of regions included in the control group (belonging to the same group of states with low NRRP absorption described above), the estimated impact highlights the fact that the NRRP seems to have had, to a certain extent, an effect in terms of supporting the process of real convergence. For example, stronger effects are estimated to have been felt in *Sud-Vest Oltenia* and *Sud-Muntenia*, which are less developed regions (Table 6.1). In contrast, more modest developments are expected in more developed regions, such as *Centru* or *Nord-Vest*. The results therefore confirm the preliminary evidence presented in the literature and highlight the need to continue efforts to absorb funds efficiently.

9 According to AMECO, the fiscal impulse, defined as the change in the primary structural deficit, cumulated over the period 2022-2024, indicates stimulative effects on aggregate demand in Romania estimated at 1.6 percent of potential GDP, exceeded in magnitude only by those prevailing in Poland (2.7 percent). In contrast, the rest of the economies in the control group witnessed a contractionary fiscal policy. For Hungary, an economy used in over 80 percent of the construction of the counterfactual GDP series, the cumulative fiscal impulse was strongly restrictive (-5.6 percent of potential GDP).

Figure 6.2. Results of estimates regarding the impact of a NRRP shock on GDP per capita at regional level (logged)





Note: The real GDP trajectory of a region is represented (code *"ro11" corresponding to the North-West region, "ro12" to the Center region, "ro21" to the North-East region, "ro22" to the South-East region, "ro31" for the South-Muntenia region, "ro32" for the Bucharest-Ilfov region, "ro41" for the South-West Oltenia region and "ro42" for the West region*) and the counterfactual trajectory, constructed using the synthetic control method (*"synthetic" followed by the region code*).

Source: Eurostat, NBR calculations and estimates

Table 6.1. SCM results for Romanian regions, GDP per capita

Region	GDP/capita 2021, PPS	GDP/capita 2023 treated, PPS	GDP/capita 2023 synthetic, PPS	Δ% GDP per capita 2023, treated vs. synthetic
Noth-East	15,100	17,700	17,816	-0.7
South-Muntenia	18,200	22,800	21,160	7.5
South-West Oltenia	18,300	23,500	21,253	10.1
South-East	19,400	23,300	22,211	4.8
North-West	22,300	27,000	25,530	5.6
Center	22,600	26,600	25,281	5.1
West	24,300	29,600	26,961	9.3
Bucharest-Ilfov	56,100	72,600	61,273	17.0

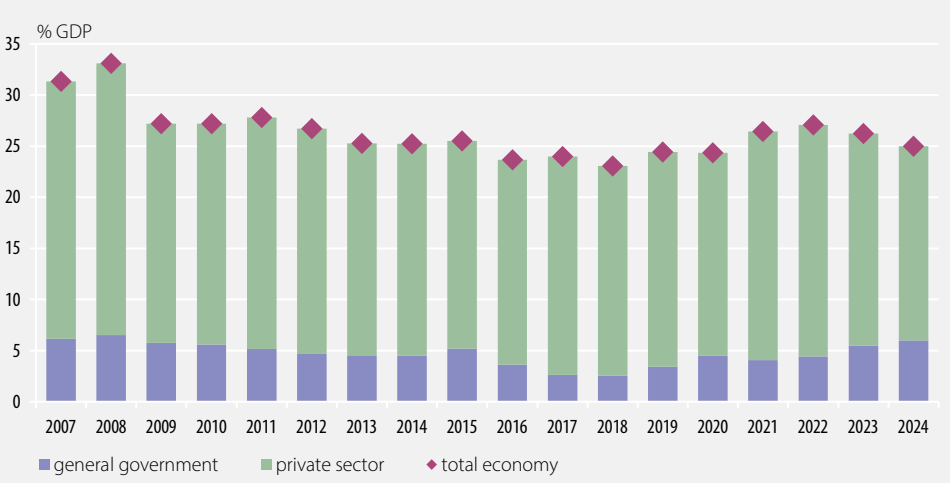
Source: Eurostat, NBR calculations and estimates

7. Prospects following the wind-up of the NRRP in Romania

7.1. WILL THE WIND-UP OF THE NRRP CAUSE A SHOCK AFTER 2026?

Like any multiannual financial exercise, the NRRP also has a fixed completion date, with targets and milestones to be met by end-August 2026. Romania has benefited from significant allocations under this programme in terms of both grants (EUR 13.6 billion) and loans (EUR 14.9 billion, later revised to EUR 7.8 billion), with the NRRP acting as a financing buffer and investment accelerator. The exhaustion of these funds may therefore generate a funding cliff, reflecting a discontinuity in a previously predictable and relatively 'cheap' source of financing[10]. Implicitly, certain adverse consequences for the macroeconomic framework are also anticipated.

Figure 7.1. Public vs. private investment



Source: NIS, NBR calculations

A relevant benchmark is the completion of the 2014-2020 MFF in 2023 and the developments observed in 2024, when typical end-of-cycle effects emerged[11]: a marked slowdown in GDP growth (from 2.3 percent in 2023 to 0.9 percent in 2024), despite the consistent fiscal policy stimulus related to the busy electoral calendar;

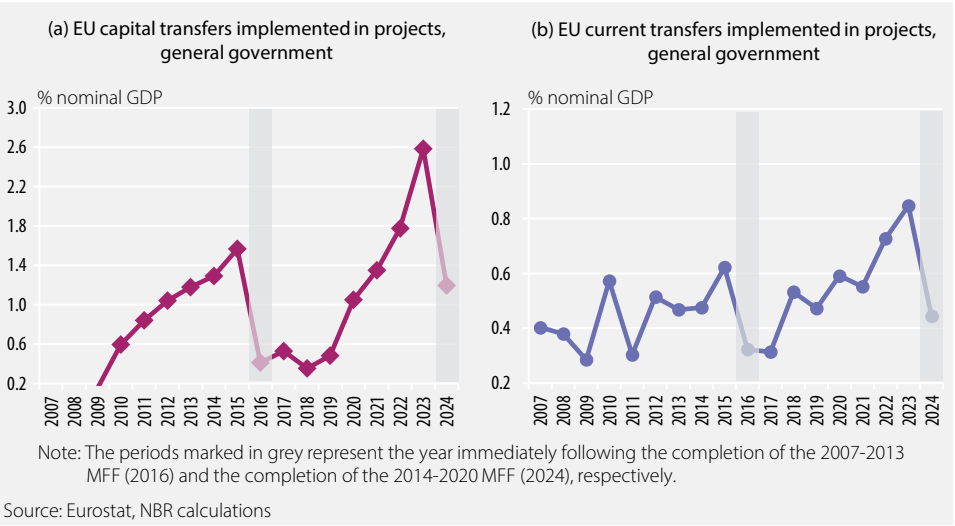
10 Although NRRP grants do not generate repayment obligations, interest payments or refinancing risk for the public budget, the existence of national co-financing requirements and related implementation costs means that even these resources cannot be considered completely free.

11 In formulating these conclusions, it should be borne in mind that, in 2024, the uptake of funds under the 2021-2027 Multiannual Financial Framework remained modest – a development characteristic of the early years of the programming period – and the funds attracted through the NRRP, although significant in value, did not change the trajectory of economic growth, which slowed down in 2024. In addition, although funds related to the 2014-2020 MFF continued to be attracted in 2024, their volume was relatively low, given that most of the allocations available for this programme had already been absorbed by the end of 2023.

a sharp decline in EU-funded public investment; and weak private investment amid elevated uncertainty (Figure 7.1). Thus, at the economy-wide level, *gross fixed capital formation* (investment) made a negative contribution to economic growth, mainly reflecting the reduction in investment flows financed from EU funds, amplified by internal cyclical factors and a modest compensatory reaction from private investment. A certain degree of caution is therefore required when attributing these developments exclusively to the dynamics of European funds.

The *cohesion policy* literature highlights that, in many Member States, EU funds account for a substantial share of public investment, making absorption discontinuities macroeconomically relevant. In Romania, public investment continued to grow in 2024, but this was particularly achieved through "budget substitution", with an increase in investment financed from domestic and borrowed resources, adding pressure to the budget deficit. In 2024, capital transfers from the EU interrupted the upward trajectory they had followed since 2019 (Figure 7.2.a). However, current transfers fluctuated (Figure 7.2.b).

Figure 7.2. EU transfers implemented in projects, public administration



Note: The periods marked in grey represent the year immediately following the completion of the 2007-2013 MFF (2016) and the completion of the 2014-2020 MFF (2024), respectively.

Source: Eurostat, NBR calculations

Consequently, the period following the wind-up of the NRRP could represent a potential *change in the investment regime*, determined by the end of an exceptional programme in terms of the resources involved, with potential simultaneous effects on several levels for the Romanian economy. The main effects are summarised below.

1. *Shock of "cheap" financing and resource composition (funding cliff)*. With the wind-up of the NRRP, not only does a volume of European funds disappear, but also a certain *mix* of financing. The *grant* component and, in general, EU transfers support both demand and investment (supply) without increasing external debt or exerting pressure on the public budget, in the sense of the need to resort to alternative financing through financial markets. Instead, in the absence of these transfers, the pressure shifts to: *(i)* internal/external debt financing, *(ii)* possible compression of investments, or *(iii)* budget reallocations, but under significantly higher opportunity costs.

2. *Shock to the financing of the current account deficit, i.e. the quality* of *financing*. Capital transfers and grants are, by definition, stable flows that do not generate external debt – they reduce dependence on loan financing, especially in an economy with a structural external deficit. Although Romania received funds from the 2014-2020 MFF throughout 2024, their amount was significantly lower than in previous years, a phenomenon likely to induce a temporary financing *gap* between the two successive financial frameworks. According to balance of payments data (*accrual* basis), capital transfers fell from EUR 8.8 billion in 2023 to EUR 4.8 billion in 2024[12]. Under these circumstances, the stability of external sources of deficit financing has become more fragile, and the economy's exposure to changes in the sovereign risk premium has increased.

3. During the period of abundant European funds, a significant portion of public investments benefit from such financing, with a relatively limited impact on the budget deficit, induced exclusively by the co-financing mechanism. However, with the completion of the programmes, pressure is mounting to maintain the level of public investment, with projects to be financed either from own sources or from loans. This dynamic becomes problematic in a context of fiscal consolidation, when the level of public investment may also be affected. In 2025 and 2026, the NRRP greatly mitigates the impact of fiscal consolidation on public investment. The period after 2026, from a macroeconomic perspective, marks an intensification of fiscal policy constraints, facing the authorities with a *trade-off*: either accepting a correction of public investment, with the risk of an "investment cliff" due to a possible *funding cliff*, and adverse effects on economic growth, or identifying alternative sources of financing to allow investments to be maintained, some of which may involve resorting to other adjustments in the structure of the public budget – by increasing budget revenues and/or compressing other categories of expenditure – while continuing the process of correcting the budget deficit. In this context, a substantial improvement in the efficiency of public investment and in the associated spillover effects on private investment can help mitigate the risk of an "investment cliff".

4. *Shock to productivity* (potential GDP dynamics). The "investment cliff" problem is not exclusively one of aggregate demand (investment volume), but tends, over time, to become one of aggregate supply. The existence of unfinished projects, the reduction of impact multipliers and, implicitly, the impact on productivity are mechanisms through which this phenomenon can have persistent consequences on the growth potential of the economy. *Ex-post* assessments of structural and cohesion funds – including for economies that have benefited substantially from these resources, such as Spain – generally indicate positive effects on economic growth and the convergence process, effects transmitted mainly through the investment channel, in particular that of infrastructure development. This is the context in which the *crowding-in* effect may arise, whereby public investment acts as a catalyst for private investment. These results suggest that a sudden reduction or slowdown in EU funds may create a gap that is difficult to fill exclusively through private sector investment.

[12] This development is attributed to the reduction in the amounts received under the 2014-2020 MFF, coupled with extremely modest inflows from the NRRP. Within the latter, during 2024, the only grants received from the EC are those corresponding to pre-financing for the RePowerEU component (approximately EUR 0.3 billion).

5. As the convergence process progresses and, at the same time, other economies join the European Union or increase their need for financial support, the architecture of European allocations will gradually change. In this context, Romania could, over time, undergo a transition from being a major net beneficiary to a net contributor, even if this scenario is not imminent, but rather reflects a long-term structural trend. The experience of other Member States, such as Spain, Ireland, Portugal and Greece, shows that the status of major net beneficiary is specific to certain stages of the convergence process and that it adjusts as the European average is approached or as the Union's budgetary rules change. The implication for Romania is that the economic growth model based on persistent flows of European funds must be understood, especially in the current context, as a transitional regime rather than a permanent state, which requires a gradual reconfiguration of the internal engines of growth and investment financing.

At the same time, it should be noted that a fundamental aspect that distinguishes the NRRP from standard MFF funds is the reform component, introduced as a distinct element in this programme. These reforms are intended to contribute to sustainable economic growth, mitigating the shock of the depletion of NRRP resources after 2026. In addition, the spillover effects associated with projects under this programme are expected to continue to have a positive impact on economic growth even after the formal end of the programme, an assessment supported by the architecture of the Recovery and Resilience Facility, which allows the use of funds already disbursed after 2026, obtained on the basis of milestones and targets achieved by 31 August 2026. Thus, the efficiency of the use of NRRP funds will depend both on the fulfilment of targets and milestones by August 2026 and on the subsequent capacity to complete investment projects.

At the same time, amid the NRRP renegotiation, certain projects have been eliminated, as it was considered that they could not be completed within the programme's deadline. An example of this is the modernisation of certain hospitals, with the prospect of their funding being moved to the 2021-2027 MFF. A similar treatment is also envisaged for delayed investments in the NRRP corresponding to major transport infrastructure (e.g. those related to the Ploiești-Buzău-Focșani motorway or those related to rail infrastructure), for which part of the funding has already been moved by the authorities from the NRRP to the "Transport 2021-2027" programme[13]. Even if this process does not involve an additional allocation within the standard multiannual financial framework, it could lead to faster absorption of these funds, as previous MFF experience indicates that project implementation only accelerates in the more advanced stages of the MFF. Under these circumstances, the transition to an economy without the NRRP could be smoother, partly offset by improved absorption of other financial resources, including through increased investment efficiency.

However, uncertainties persist regarding the absorption of the remaining funds from the NRRP. By early December 2025, Romania had attracted about half of the revised

[13] At the end of 2025, Romania had received around EUR 0.6 billion in funds from the 2021-2027 MFF for large infrastructure projects for which the expenditure had initially been made under the NRRP. This move reduces the absorption pressure on the NRRP and, at the same time, supports the continuity of public investment through other European budgetary instruments.

allocation. Although the risk of an incomplete absorption has diminished considerably once with the renegotiation of the NRRP and the retention of those projects with a higher probability of completion, further delays in their implementation cannot be ruled out. In the unlikely event that Romania no longer receives NRRP funds and does not replace this form of financing, economic growth in 2026 could be lower, given the sensitivities illustrated in this paper, by more than 1 percentage point. This adverse development would also have an impact on real GDP growth in the medium-term, as the knock-on effects that could have contributed, on average, to economic growth in 2027 by up to 0.8 percentage points, according to the multipliers estimated in this paper, would dissipate. In addition, although the latest revision of the NRRP indicates that projects with a high probability of completion by August 2026 will be maintained, thus leading to the full absorption of the remaining funds, the possibility of partial reimbursements by the EC of payment requests cannot be ruled out, reflecting the unsatisfactory fulfilment of the targets and milestones related to them[14]. In this case, the impact of the NRRP would diminish proportionally. At the same time, however, in the event of a delay in NRRP funds, investment projects are expected to continue from own funds as early as 2026.

7.2. THE SAFE PROGRAMME AS A (POTENTIAL) SUCCESSOR TO THE NRRP

As mentioned above, Romania could benefit from loans amounting to approximately EUR 16.7 billion (4.7 percent of GDP in 2024) under the SAFE programme, which will be operational until 31 December 2030 (Figure 4.2, tentative allocations). Access to these funds is conditional on EU Member States submitting *National Defence Investment Plans*, followed by the negotiation of loans and the signing of the corresponding operational agreements.

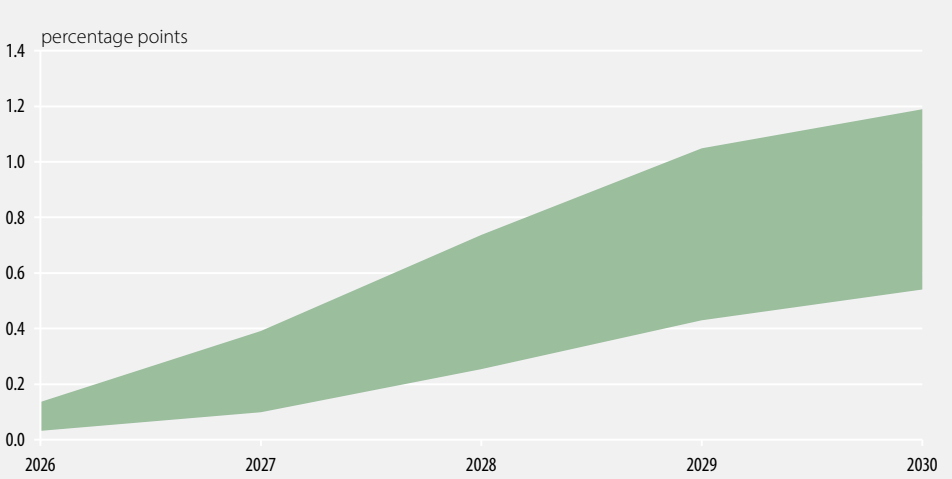
Compared to the MFF and NRRP, the SAFE mechanism provides Romania with access to EU funds, but with a distinct macroeconomic profile, as these funds are exclusively loans. Unlike the grants available through the MFF and NRRP, SAFE funds do not allow for autonomous financing of the current account deficit, instead they will generate external debt. Furthermore, given that Romania has not activated the national escape clause, the use of these funds will be fully reflected in the budget deficit, putting additional pressure on public finances. It is therefore essential to activate this clause. If the budgetary constraints imposed by the excessive deficit procedure are strict, SAFE-funded projects are expected to be predominantly substitutive in nature, namely they will finance investments that would have been made anyway – either by replacing less favourable sources of financing or by reallocating budgetary expenditure – rather than additive. Finally, although the information currently available suggests that SAFE is geared towards military procurement, expanding production capacities and, to a

[14] According to the revised version of the NRRP, Romania still has four payment requests to receive – three for grants, one of which has already been submitted to the EC, and one for loans. Added to these are the outstanding amounts from the third payment request (approximately EUR 0.9 billion). Their history shows delays in transmission within the deadlines agreed with the EC, as well as the suspension of a certain amount of funds due to only partial satisfactory fulfilment of targets and milestones.

certain extent, infrastructure projects, it cannot be ruled out that these funds may have a lower investment content than that of the NRRP – estimated at around 70 percent of total allocations – with proportionally diminished knock-on effects. Against this background, although SAFE is expected to support economic activity in the short and medium-term, its structural advantages are likely to be more limited than those of the MFF and the NRRP, respectively.

In order to assess the potential impact of SAFE on economic growth, a set of working assumptions was adopted: (*i*) the coefficients in Table 5.1 were used, resulting in a range of impact variation; (*ii*) similar to the NRRP, no extensions to the period for accessing funds were assumed, as is the practice with regular MFFs (*n+2* rule); (*iii*) the absorption of allocated funds is assumed to be full; (*iv*) SAFE funds (EUR 16.7 billion) were distributed, based on conservative values, as follows: EUR 1.1 billion in 2026[15], EUR 2.5 billion in 2027, EUR 3.5 billion in 2028 and EUR 4.8 billion in 2029 and 2030 respectively[16]; (*v*) unlike the traditional pattern of military spending, typically associated with a high import content, in this case an increase in domestic production capacities and a partial allocation of funds to hybrid civil-military investments, including dual-use infrastructure, are assumed, which leads to a mitigation of import substitution effects and to an expenditure structure and, consequently, multipliers closer to those of the MFF/NRRP programmes.

Figure 7.3. Range of variation of the annual impact on economic growth for SAFE



Source: NBR, Eurostat, NIS, NBR calculations and estimates

The resulting impact on annual economic growth (Figure 7.3) ranges from 0.03-0.1 percentage points in 2026, 0.1-0.4 percentage points in 2027 and up to 0.5-1.2 percentage points by 2030. Given the assumptions imposed, the cumulative impact of SAFE on economic growth ranges from 1.4 to 3.5 percentage points in the period 2026-2030. This is marked by numerous uncertainties, stemming from: (*i*) different allocation from the provisional one announced to date; (*ii*) incomplete

15 Amount equal to 50 percent of the possible pre-financing under the programme (15 percent of the total allocation).

16 Quasi-linear growth, except for the last year, based in part on absorption within the regular MFFs. The monetary values for each year were reported in relation to the nominal GDP in the *2025-2031 National Medium-Term Fiscal-Structural Plan*, using an exchange rate of 5.1 RON to 1 euro.

absorption of funds, determined in part by budgetary constraints (SAFE funds are classified as loans, with a direct impact on the budget deficit[17]) and administrative constraints (discussed in previous sections); (*iii*) a different effect of SAFE compared to SCF, whose multiplier was used to estimate the impact of SAFE, including from the perspective of spillover effects on civil infrastructure, assuming that SAFE funds are used predominantly for the purchase of military equipment and technology; (*iv*) possible new shocks that could mitigate the impact of SAFE. Therefore, similar to the NRRP, where initial assessments proved to be overly optimistic, the above estimates could be considered a rather favourable scenario.

8. Conclusions

The public health crisis amplified pre-existing economic vulnerabilities and underscored the need to strengthen resilience to future shocks. In this context, the European Commission launched the *Next Generation EU* programme, with the *Recovery and Resilience Facility* as its central pillar, based on which the National Recovery and Resilience Plans (NRRPs) were designed.

However, the implementation of the NRRP has been affected by delays, due to the overlap with major adverse shocks – including widespread price increases caused by disruptions in global supply chains and the war in Ukraine – as well as limitations in the administrative capacity to implement these programmes.

In Romania, these constraints translated into delays in investment, reform implementation, and payment requests, ultimately leading to the renegotiation of the NRRP. In addition, given the wind-up of this programme in August 2026, the revision also involved a reduction in the loan component by approximately 2 percent of GDP. However, in terms of funds actually used, Romania was slightly above the level of other economies in the region, such as Poland, Hungary and the Czech Republic, by the end of 2024.

European funds, both those related to the NRRP and those provided under standard multiannual financial frameworks (MFF), have played an important role in mitigating the adverse effects of the COVID-19 pandemic and supporting economic recovery. Empirical results show that a 1 percentage point increase in structural and cohesion funds (as a share in GDP) raises economic growth by around 0.5 percentage points contemporaneously, with additional medium-term spillover effects. The analysis highlights the critical role of institutional quality in mediating these effects. In economies characterised by weak institutional frameworks, the growth impact of European funds is more limited, whereas improvements in governance and administrative capacity significantly amplify their effectiveness, in line with the literature (e.g. Augusztin *et al.*, 2025).

[17] However, if the national escape clause is activated, the EC will allow the deficit target to be exceeded annually in the period 2025-2028 by up to 1.5 percent of GDP. According to data available at the end of 2025, 16 countries have activated this clause, and Romania is not among them. More details are available at: National escape clause for defence expenditure - Consilium.

Regarding the NRRP, by constructing a counterfactual series of GDP for Romania, it was found that in its absence – i.e. the 1.6 percent of GDP spent – economic growth in the period 2022-2024 would have been lower by up to 1.2 percentage points[18]. At regional level, the favourable effects on GDP per capita growth are more pronounced in less developed regions, confirming the importance of continuing efforts to absorb funds efficiently.

The paper also examines the macroeconomic outlook associated with the wind-up of the NRRP after 2026. On the one hand, in line with previous MFF experience, there is a risk of an adverse impact on economic growth through a compression of total investment, given that the private sector has relatively limited capacity to compensate and the public sector's fiscal space is also limited.

However, the shock of the NRRP's wind-up is expected to be partially mitigated by the overlap of several factors: *(i)* the persistence of the effects of projects already implemented, *(ii)* the impact of structural reforms included in the NRRP – aimed at increasing the resilience of the economy – to which is added *(iii)* the launch of alternative investment programmes, such as SAFE. In the latter case, the set of estimated multipliers and *a priori* assumptions – in particular full absorption – imply a possible cumulative impact on economic growth, including spillover effects, of 1.4-3.5 percentage points by 2030. Given uncertainties regarding allocations, conditionalities and implementation, SAFE should be viewed as a potential mitigating factor rather than a baseline assumption.

The analysis is subject to standard methodological limitations. When assessing the multiplier for structural and cohesion funds, the evidence is based on a panel data set consisting of 11 economies in Central and Eastern Europe, each with its own particularities. Within this framework, an average multiplier was derived, yet the potential existence of deviations from this value at the individual level cannot be ruled out. In addition, except for institutional quality, the study did not seek to investigate possible influencing factors that could lead to variability over time or asymmetries in the pass-through of the impact of European funds into economic growth.

As for the synthetic control method (SCM), estimates are influenced by the structure of the control group. This includes economies that have implemented projects financed by the NRRP – albeit to a relatively small extent – with no EU Member States having failed to benefit from NRRP funds at the time of the analysis. In addition, all economies included in the control group also benefit from allocations under the standard multiannual financial frameworks, whose macroeconomic impact is comparable to that of the funds implemented through the NRRP. However, the robustness tests carried out – using an alternative control group resulting from a different optimisation procedure or estimates based on another variable of interest for GDP – indicate similar results, namely a cumulative impact on economic growth during 2022-2024 in the range of 1.4-1.5 percentage points, compared to 1.2 percentage points in the baseline

[18] The results obtained using the SCM method indicate a marginally higher impact of the NRRP on economic growth compared to that which would have been obtained using the multiplier system calculated in *Section 5*. According to the multipliers corresponding to specifications 1 and 2 in Table 5.1, the impact of the NRRP in the period 2022-2024 is estimated at 1 percentage point of GDP, of which 0.8 percentage points are attributed to direct effects and 0.2 percentage points to indirect effects.

set of estimates. As for the assessment of the SAFE impact, the calculations were made by applying the multipliers specific to the structural and cohesion funds. However, given that SAFE is mainly geared towards defence investments and not towards the traditional areas of the *Cohesion Policy*, this approach may lead to an overestimation of the effects on economic growth.

Despite the methodological limitations mentioned above, the study contributes to strengthening the existing evidence in the literature. Furthermore, to our knowledge, this is the first analysis to use the SCM method to assess the impact of the NRRP in Romania, both at national and regional level. From the perspective of economic policy makers, the empirical results confirm and reinforce the importance of a firm and consistent implementation of projects financed by European funds, as these are likely to generate long-lasting effects, both through the modernisation of the economy's structure and through spillover effects on economic growth.

This analysis focused primarily on the relationship between the level of European funds, public investment, and economic growth dynamics. A relevant direction for future research is to extend the analytical framework to examine the structure of public investments financed by European funds, given the potentially significant differences in the macroeconomic impact and efficiency of different types of investments.

By end-November 2025, Romania has absorbed around half of the revised NRRP allocation (amounting to EUR 21.4 billion). Assuming full absorption by 2026 – i.e. remaining funds of 2.7 percent of GDP –, the estimated multipliers imply a potential growth impact in 2026 of over 1 percentage point, although this should be interpreted cautiously. Failure to absorb remaining NRRP funds would either delay investment projects or require domestic financing (e.g. standard MFF or SAFE), with adverse implications for the budget deficit.

After 2026, the foreseeable cessation of financial flows associated with the NRRP – whose formal deadline for completing milestones and targets is 31 August 2026 – implies a discontinuity in public investment, with a macroeconomic impact. However, this transition is likely to be cushioned through several channels, reducing the risk of an adverse "investment shock" at the end of the NRRP cycle.

Firstly, the comprehensive revision of the NRRP carried out by the authorities in 2025 allowed for *the reallocation of a significant portion of the projects and funds initially included in the NRRP to the 2021-2027 multiannual financial framework*, especially in the "Transport 2021-2027" programme. Secondly, an additional source of funding is *the SAFE programme*, which is designed to support strategic investments, particularly in areas relevant to security and critical infrastructure. Thirdly, it is important to note that *the NRRP does not end abruptly in 2026*, but allows, depending on the fulfilment of targets and milestones by 31 August 2026, for financial flows to continue thereafter, including in 2027. Thus, although new commitments are limited in time, payments associated with validated reforms and investments may continue, subject to strict performance conditions.

Overall, the transition from the NRRP to the 2021-2027 MFF, supplemented by additional instruments still in the process of being defined, outlines a *smoother adjustment profile for public investment* in the short and medium-term, with favourable implications for macroeconomic stability, but also with persistent risks related to administrative capacity, conditionalities and the predictability of European fund flows.

In the absence of additional resources, the wind-up of the NRRP should not be treated merely as a simple decrease in investments financed from European funds, but also as a *change in the investment regime*: from a period of relatively abundant and advantageous financing – grants, stable flows, spillover effects, reforms – to a period when financing becomes more expensive, more volatile and more dependent on financial markets. This transition has simultaneous implications for economic growth, public finances and current account deficit dynamics. Under these circumstances, avoiding a significant "investment cliff" depends on several factors: *(i)* accelerating the absorption of structural funds and other sources, *(ii)* improving the quality of institutions – combating corruption, streamlining administration – improvements that can enhance the effects on economic growth, *(iii)* policies that increase the economy's capacity to generate private investment and thus increase economic productivity, and *(iv)* the launch of the SAFE programme, which may partially compensate for the wind-up of the NRRP.

Bibliography

Abadie, A., Diamond, A., Hainmueller, J. — 2010, Synthetic control methods for comparative case studies: estimating the effect of California's tobacco control programme, *Journal of the American Statistical Association,* vol. 105, no. 490, pp. 493-505, https://doi.org/10.1198/jasa.2009.ap08746

Abalașei, D.E., Maha, L.G., Viorică, E.D — 2022, The impact of European funding on Romanian SMEs. Case study on the regional operational programme 2007-2013, *Eurint*, vol. 9, pp. 9-30

Alexopoulos, A., Kostarakos, I., Mylonakis, C., Varthalitis, P. — 2025, The heterogeneous causal effects of the EU's cohesion fund, *Working Paper no. 7,* Athens University of Economics and Business

Almazan-Gomez, M.A., Llano, C., Perez, J., Kallioras, D., Tsiapa, M. — 2025, Regional economic impact of the Next Generation European Union recovery plan, *Papers in Regional Science,* vol. 104(2025), https://doi.org/10.1016/j.pirs.2025.100105

Aparicio-Perez, D., Espinosa, P., Pavia, J., Tortosa-Ausia, E. — 2025, On the impact of next generation EU funds: A regional synthetic control method approach, *Papers in Regional Science*, vol. 104(2025), https://doi.org/10.1016/j.pirs.2025.100082

Aresu, F., Marrocu, E., Paci, R. — 2025, EU funds and TFP growth: how the impact changed over time and space, *The Annals of Regional Science*, vol. 75, no. 1, https://doi.org/10.1007/s00168-025-01424-z

Augusztin, A., Iker, A., Monisso, A., Szorfi, B. — 2025, The growth effect of EU funds – the role of institutional quality, *ECB Working Paper Series no. 3014*, European Central Bank

Bankowski, K. *et al.* — 2021, The macroeconomic impact of the Next Generation EU instrument on the euro area, *Working Paper Series no 255*, European Central Bank

Bankowski, K. *et al* — 2024, Four years into NextGenerationEU: what impact on the euro area economy?, *Working Paper Series no 362*, European Central Bank

Barbero, J. *et al.* — 2024, The impact of the recovery fund on EU regions: a spatial general equilibrium analysis, *Regional Studies,* vol. 58, no. 2, pp. 336-349, https://doi.org/10.1080/00343404.2022.2123467

Barro, R., Sala-i-Martin, X. — 1992, Convergence, *Journal of Political Economy*, vol. 100, no. 2, pp. 223-251, https://www.jstor.org/stable/2138606

Barro, R. — 2001, Human capital and growth, *American Economic Review*, vol. 91, no. 2, pp. 12-17, DOI: 10.1257/aer.91.2.12

Canova, F., Pappa, E. — 2021, What are the likely macroeconomic effects of the EU Recovery plan?, *Discussion Paper no. 16669*, Centre for Economic Policy Research

Crucitti, F., Lazarou, N.J., Monfort, P., Salotti, S.	2024, The impact of the 2014-2020 European Structural Funds on territorial cohesion, *Regional Studies*, vol. 58, no. 8, pp. 1568-1582, https://doi.org/10.1080/00343404.2023.2243989
Durand, L., Espinoza, R.	2021, *The Fiscal multiplier of European structural investment funds: aggregate and sectoral effects with an application to Slovenia*. International Monetary Fund, WP/21/118
Fernandez-Cerezo, A., Moral-Benito, E., Quintana, J.	2023, A production network model for the Spanish economy with an application to the impact of NGEU funds, *Working Papers no. 2305*, Banco de Espana, https://doi.org/10.53479/27333
Fidrmuc, J., Hulenyi, M., Zajkowska, O.	2019, The elusive quest for the holy grail of an impact of EU funds on regional growth, *Working Paper no 7989*, CESifo
Garcia, C.F. *et al.*	2025, Economic impact of the Recovery and Resilience Facility in the Netherlands, *Discussion Paper no. 232,* European Commission
Mankiw, G., Romer, D., Weil, D.	1992, A contribution to the empirics of economic growth, *The Quarterly Journal of Economics*, vol. 107(2), pp. 407-437, https://doi.org/10.2307/2118477
Michels, A. *et al.*	2025, Economic Impacts of the Recovery and Resilience Facility: new insights at sectoral level and the case of Germany, *Discussion Paper no. 221*, European Commission
Millard, S.	2025, A macroeconomic analysis of the impact of the EU Recovery and Resilience Facility, *Discussion Paper no. 564*, National Institute of Economic and Social Research
Pfeiffer, P., Varga, J., Veld J.	2021, Quantifying spillovers of Next Generation EU Investment, *Discussion Paper no 144*, European Commission
Picek, O.	2020, Spillover effects from Next Generation EU, *Intereconomics*, vol. 55, no. 5, pp. 325-331
Zacek, J., Hruza, F., Volcik, S.	2019, The impact of EU funds on regional economic growth of the Czech Republic, *Czech Journal of Economics and Finance*, vol. 69(1)
Presidential Administration of Romania	2025, *National Defence Strategy for the period 2025-2030*
Banco de Espana	2020, Box 9. The macroeconomic impact of the Next Generation EU programme under various alternative scenarios, *Quarterly Report on the Spanish Economy*, Economic Bulletin 3/2020
National Bank of Romania	2019, Box 1. Assessment of the impact of European structural and cohesion funds on economic growth, *Annual Report 2018*
National Bank of Romania	2021, Box 3. "Next Generation EU: prospects for a swift economic recovery", *Annual Report 2020*
National Bank of Romania	2022, Box 9. "Next Generation EU: engine of economic recovery and support in the context of fiscal consolidation", *Annual Report 2021*

National Bank of Romania	2025, Box 2. NRRP – possible adverse effects of delayed investments, *Annual Report 2024*
European Commission	2022-2025, *Annual reports on the implementation of recovery and resilience plans*
International Monetary Fund	2017, Central, Eastern and Southeastern Europe: A broadening recovery, *Regional Economic Issues*
Government of Romania	2024, *National Medium-Term Budgetary and Structural Plan 2025-2031*
Romanian Ministry of Investments and European Projects	2021, *National Recovery and Resilience Plan*
Romanian Ministry of Investments and European Projects	2025, *National Social Plan for Climate*, public consultation document