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Krzysztof Bańkowski, Othman Bouabdallah, João Domingues Semeano, Ettore Dorrucci, Maximilian Freier, Pascal Jacquinot, Wolfgang Modery, Marta Rodríguez-Vives, Vilém Valenta, Nico Zorell

The economic impact of Next Generation EU: a euro area perspective

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Abstract

This paper assesses the potential economic impact of Next Generation EU (NGEU), focusing on the euro area. Its findings suggest that the envisaged national investment and reform plans present a coherent package to support both recovery from the pandemic-induced crisis and longer-term modernisation of the euro area economy through their digital and green transitions. NGEU, however, can only unfold its full potential if all plans are implemented in a timely and effective way. We estimate the impact of the national plans on output, inflation and public debt using ECB staff economic models under the assumption of successful implementation. Specifically, NGEU is expected to take effect through three channels: structural reform, fiscal stimulus and risk premium. Overall, NGEU may increase gross domestic product (GDP) in the euro area by up to 1.5% by 2026, with the impact expected to be significantly larger in the main beneficiary countries. In Italy and Spain, two of the main beneficiaries, the public debt-to-GDP ratio may be more than 10 percentage points lower by 2031. At the same time, all euro area countries are expected to benefit from NGEU through positive spillovers, greater economic resilience and convergence across countries. Finally, the effect of NGEU on euro area inflation over the medium term is deemed to be contained to the extent that the inflationary effect of additional public expenditure is offset, at least to some degree, by the disinflationary effect of greater productive capacity resulting from the planned structural reform and investment measures.

JEL Codes: C54, E02, E22, E62, F45, H87, O52

Keywords: Next Generation EU (NGEU); Recovery and Resilience Facility (RRF); public investment; structural reform

Non-technical summary

Next Generation EU (NGEU) is not just an immediate response to the COVID-19 pandemic shock, it also consists of tangible initiatives for the EU to emerge stronger from the crisis. Since late 2021, NGEU and its core instrument, the Recovery and Resilience Facility (RRF), have moved from the preparatory to the implementation phase. This marks a natural moment to take stock of the national Recovery and Resilience Plans (RRPs) and present an assessment of their possible economic effects. The paper focuses on the euro area by discussing, first, the economic contents of the national plans of euro area countries, and second, the potential macroeconomic impact of NGEU.[1]

While still subject to some uncertainty, the adoption of the RRPs allows for a first quantitative assessment of the envisaged fiscal measures. Out of an RRF envelope of €723.8 billion (i.e. around 7% of 2020 euro area GDP), euro area countries had requested around half of the total, i.e. €401 billion or 3.5% of 2020 euro area GDP, by end-February 2022, when this paper was finalised.[2] More than 80% of RRF-financed expenditure in the euro area is expected to be allocated to relatively growth-friendly investment, particularly in the most vulnerable economies. More than 1,000 investment projects in the euro area will focus mostly on the green and digital transitions, but also on enhancing economic and social resilience. These are expected to add 2.5 percentage points to public investment in the euro area during the period 2021-26, which would drive it to levels last seen before the global financial crisis.

More than 600 structural reforms complement the fiscal measures in the RRPs. The largest part of these reforms (85%) is geared towards the public sector, framework conditions for the green and digital transitions, and labour market policies. The planned reforms are well aligned with EU policy priorities and country-specific structural weaknesses. They are also broadly commensurate with the size of the individual RRF envelopes, which is conducive to economic convergence. In terms of sequencing, the reforms are frontloaded relative to the RRP investments. Overall, the design of the RRP reforms exploits synergies with the RRF-funded public investments. Adequate and timely implementation of the reform plans could thus increase NGEU's effectiveness in modernising euro area economies. In particular, the envisaged reforms could facilitate a swift and effective roll-out of RRP investments by removing administrative and regulatory bottlenecks. At the same time, it should be noted that "classical" structural reforms of labour and product market institutions and the broader business environment do not feature prominently in most RRPs.

1 Other important aspects fall outside the scope of this paper, including the broader implications of debt issuance at European level and the potential impact of NGEU on the EU's climate objectives The most recent issue of the possible implications of the war in Ukraine for NGEU is also not addressed in this paper.

2 The Netherlands had not submitted its RRP by the cut-off date of this paper (28 February 2022).

NGEU can only unfold its full potential if all national investment and reform plans are implemented in a timely and effective way. The RRF's performance-based design is overall conducive to such an outcome. However, there are risks to implementing the plans as suggested by the disappointing track record of structural reforms and past delays in absorbing EU funds. Some features of the agreed reform deliverables could hinder their effective implementation, for example where their content is not fully spelled out. The backloading of quantitative, impact-oriented targets could delay detection of implementation slippages. Moreover, administrative bottlenecks and supply-side disruptions caused by the pandemic are likely to be key challenges in the RRF execution phase.

If fully implemented, the planned investment and structural reform measures are expected to affect euro area countries via three main channels. These are, in decreasing order of long-term macroeconomic impact, a structural reform channel, a fiscal stimulus channel and a risk premium channel. The paper uses two ECB staff macroeconomic models and the public debt sustainability tool of the European System of Central Banks (ESCB) to estimate the macroeconomic impact of NGEU.

The paper finds, first, that NGEU has had positive announcement and confidence effects that already started materialising in 2020 (risk premium channel). Along with the ECB's monetary policy measures and the European instrument for temporary Support to mitigate Unemployment Risks in an Emergency (SURE), NGEU was the game changer in the pandemic-induced crisis that restored confidence in the most vulnerable euro area economies, partly due to the significant degree of solidarity reflected in its grant component. The downward impact on sovereign yields is difficult to quantify, but the available evidence suggests it has been significant. A reduction in sovereign risk premia leads to savings for sovereigns and stimulative effects for the whole economy. Through this channel alone, the level of euro area GDP may increase by around 0.2% by the end of the programme in 2026, with significantly more sizeable effects for countries such as Italy and Spain.

Second, the fact that most RRPs are already approved or have at least been submitted allows for the fiscal stimulus (fiscal stimulus channel) stemming from NGEU to be calibrated more closely to the actual policy plans than in previous studies (though some assumptions are required). Four features stand out: (i) while the available grants are intended to be used almost fully, the loans requested so far are significantly lower than in the original RRF envelope; (ii) the planned time profile of expenditures is ambitious, although subject to a significant risk of backloading in several countries; (iii) around three-quarters of RRF-funded measures are estimated to provide a genuine fiscal stimulus, while about one-quarter will fund pre-existing measures; and (iv) a large majority of, but not all, RRF-funded expenditure will be used to finance investment. Once such features are incorporated in the model assumptions, the boost to euro area GDP from the fiscal stimulus is estimated at around 0.5% as early as 2022-23, and to largely persist in the subsequent years of NGEU's life span. The output effects are significantly higher in countries that particularly benefit from the scheme, like Spain and Italy. Yet all euro area countries benefit from the programme in the medium run, due not only to the funds they receive but, importantly, also to significant trade spillover effects stemming from

stronger demand in the EU internal market. The models, in turn, suggest no significant impact on euro area inflation in the medium term. However, they do not account for shorter-term factors, such as supply bottlenecks stemming from the pandemic-induced crisis.

Third, the structural reforms envisaged by the RRPs are estimated to lift euro area potential output by between 1.0% and 1.4% over the long run, depending on the model used. NGEU's effects on potential output via the structural reform channel are found to build up more gradually than those via investments, while being more persistent. There could also be a visible long-run impact on the growth rate of potential output, mainly due to higher contributions from trend growth in total factor productivity (TFP) and, to a lesser extent, labour. Despite the frontloading of reforms, any adverse macroeconomic side effects in the short term are likely to be limited due to the nature of the reforms and, in any case, to be outweighed by the RRF's fiscal stimulus.

The models estimate that, combining the risk premium, fiscal stimulus and structural reform channels, the NGEU programme will increase euro area GDP by up to 1.5% by 2026, with contained inflationary pressures. The main reason, among several factors, is that the inflationary effect of additional public expenditure is expected to be offset over the medium term, at least to some degree, by the disinflationary effect of greater productive capacity resulting from the planned structural reform and investment measures. The estimated debt-reducing effect of NGEU is moderate for the euro area, but significantly higher for the main beneficiaries with high debt. The public debt-to-GDP ratio may be lower by more than 10 percentage points in Italy and Spain by 2031, thus suggesting some fiscal convergence.

Finally, some simple correlations suggest that NGEU may help reduce divergences and contribute to economic convergence in the euro area. The lower a euro area country's GDP per capita in 2019, the higher the estimated increase in GDP. NGEU also involves a major capital reallocation across EU Member States that favours countries with lower net capital stock per capita.

These effects, however, are surrounded by significant uncertainty. On the upside, public investment may crowd in private investment as the RRF funds will likely act as a catalyst for investment financing in capital markets. Positive implications may also stem from the significant increase in EU-wide supply of safe assets. On the downside, prominent risks to the estimates relate, most importantly, to a lower or slower absorption of NGEU funds than foreseen in the RRPs, coupled with insufficient implementation of structural reforms. There is also a risk that pandemic-related supply bottlenecks persist, particularly for investment goods. To avoid procyclical, inflationary effects from NGEU-funded fiscal expansion, it is important that supply-side measures – particularly the planned structural reforms – are implemented in a timely manner.

1 Introduction

Next Generation EU (NGEU) goes beyond an immediate response to the COVID-19 shock by promoting tangible initiatives to help the EU emerge stronger from the crisis. First, the programme supports the recovery from the pandemic via confidence effects and macroeconomic stabilisation, thus complementing monetary policy and national policy measures. Second, it enhances medium-term growth prospects by kickstarting a virtuous circle towards greater resilience of EU economies and social systems, including by supporting the green and digital transitions. And third, it contributes, through NGEU's allocation key, to economic convergence of those EU Member States with below-average GDP per capita and hit hardest by the pandemic, as well as fiscal convergence of vulnerable economies via improved debt sustainability. Box 1 provides an overview of the instrument's main features. From the ECB's perspective, NGEU is important as it has the potential to shape the economic environment in which monetary policy operates.

NGEU and its core instrument, the RRF, have by now moved from the preparatory phase to the implementation phase. By the cut-off date of this paper (end-February 2022), the RRPs of 22 EU Member States had been adopted with Council implementing decisions, out of 26 plans submitted by all Member States except the Netherlands. The European Commission had already borrowed €111.5 billion for NGEU financing, and prefinancing payments totalling €56.6 billion had been made to 21 countries. Moreover, payments of RRF instalments to Member States had started, conditional on the fulfilment of qualitative milestones and quantitative targets in the planned reforms and investment projects. The Commission has also launched the Recovery and Resilience Scoreboard, which will serve as the main tool for monitoring implementation of the RRPs.

The start of the implementation phase marks a proper moment to take stock of the RRPs and present an initial assessment of their possible effects. This paper focuses on the economic contents and potential macroeconomic impact of NGEU. In early 2022, the European Commission (2022) found that "a year after the establishment of the Facility, major advancements have been made and implementation is firmly on its way". Despite this, successful implementation will depend on several factors that are difficult to gauge at this early stage. Potential risks include, first and foremost, shortcomings in the capacity of national administrations to spend the available funds efficiently and effectively, but also delays in complying with the agreed milestones and targets, difficulties in attracting private investment, or persistent supply constraints in the aftermath of the COVID-19 pandemic. The paper discusses these risks, although without factoring them into the quantitative estimates. Other important aspects fall outside the scope of this paper, including the broader implications of debt issuance at European level and the potential impact of NGEU on the EU's climate objectives. The most recent issue of the possible implications of the war in Ukraine for NGEU is also not addressed in this

paper. Finally, NGEU governance issues are not discussed per se, but only mentioned whenever relevant for the economic transmission of the RRPs.

While NGEU is aimed at the European Union (EU) as a whole, this paper focuses on the 19 EU Member States whose currency is the euro, i.e. the euro area. In reviewing the national RRPs of euro area countries, the paper takes a cross-country perspective, thus complementing the country-by-country approach characterising existing RRP studies by economic analysts and the Commission (2021a).[3]

The paper finds, first, that the investment and reform plans are overall well designed to support the recovery and enhance potential output, resilience and convergence, but they face implementation challenges. Pointing to the disappointing track record of structural reforms and past delays in absorbing EU funds, the paper highlights that NGEU also faces significant implementation risks, while acknowledging the efforts being made to address such risks. Member States will need to specify planned structural reforms in greater detail and address administrative bottlenecks to ensure that the RRPs are implemented in a timely and effective way, and that the anticipated economic benefits materialise.

Second, the paper finds significant positive effects of NGEU on the economic outlook and public finances of all euro area countries, especially the most vulnerable. When estimating the expected economic impact of NGEU, the paper disentangles the three main economic channels through which NGEU is expected to affect the macroeconomy of the euro area: a risk premium channel, a fiscal stimulus channel and a structural reform channel. The mechanisms through which these channels operate are quite different. The risk premium channel has significantly contributed to restoring market confidence in vulnerable euro area countries that were hardest hit by the pandemic-induced crisis. The fiscal stimulus provided at European level supports growth over the short to medium term – both directly and via positive trade effects stemming from stronger demand in the EU internal market – and may allow for additional fiscal support at national level. At the same time, to the extent that funding is mostly used for productive expenditure, NGEU can act as a catalyst for private investment and the modernisation of EU economies, with positive effects on their resilience and convergence.[4] Finally, NGEU can significantly improve potential output over the longer term, given that funding is conditional on the implementation of structural reforms. Such reform-related effects come on top of those operating via the fiscal channel in the form of higher capital stocks. Overall, NGEU is expected to increase GDP in the euro area by up to 1.5% by 2026. Growth effects are expected to be significantly higher in the main beneficiary countries, but greater economic resilience and convergence across countries would benefit the euro area as a whole. Inflationary pressures from NGEU are expected to be contained. The government debt-to-GDP ratio could be more than 10 percentage points lower in Italy and Spain by 2031. These effects rest on the assumption of full

[3] Country analyses cover, for example, Austria (Reiter et al. (2021)), Belgium (Bisciari et al. (2021)) and Greece (Malliaropulos et al. (2021)). See Corti et al. (2021) for a comparative analysis of selected RRPs.

[4] For a discussion of the relationship between public and private investment in general and in the case of NGEU in particular, see De Santis et al. (forthcoming in 2022).

implementation of the reform and investment measures and are subject to significant uncertainty.

The analysis presented in this paper benefits from additional information that has become available with the finalisation of most RRPs since mid-2021. First, estimates are based on the expenditure and reform plans of governments *as presented in the national RRPs*. Previous studies typically assumed the full take-up of the NGEU envelope and were mostly based on top-down, stylised scenarios.[5] Second, the earlier studies on the economic impact of NGEU mainly focused on the short to medium-term fiscal stimulus and did not consider the aforementioned other channels (risk premium, structural reform) through which NGEU affects the European economy, which are taken into account in this paper.

The paper is organised as follows. Section 2 takes stock of the fiscal and structural policy measures in the RRPs of euro area countries, focusing on aspects that are relevant for their overall economic impact. Section 3 discusses the challenges in implementing the plans. Section 4 presents the models and assumptions used for the quantitative assessment of the expected macroeconomic impact of NGEU in the euro area. Section 5 reviews and then quantifies the main channels of economic transmission of NGEU, providing estimates of their impact on real GDP, inflation, potential output and public debt. Section 6 concludes.

Box 1
General information on NGEU

Main features

NGEU is a temporary policy instrument that applies to the period from mid-2021 to 2026. It can mobilise a funding volume of up to €807 billion at current prices – the equivalent of 6% of 2020 EU GDP. EU Member States had requested €581 billion by the time this paper was finalised. Of the seven NGEU programmes, the RRF is by far the largest, accounting for almost €724 billion or 90% of the total envelope.[6] This paper refers to either the RRF or the whole NGEU package, depending on the context. The RRF can provide funding to EU Member States in the form of grants of up to €338 billion (2.4% of 2020 EU GDP) and loans of up to nearly €386 billion (2.8% of 2020 EU GDP). The euro area, on which this paper focuses, is expected to absorb 81% of the requested RRF funds, compared with 19% by non-euro area countries. The latter group, however, will receive slightly more (1.4 percentage points) as a share of their combined GDP.

The RRF grants allocated in 2021-22 are based on an allocation key that takes account of population, inverse GDP per capita and the average unemployment rate in 2015-19. For the grants allocated in 2023 (around 30% of total), the average unemployment rate is replaced by the GDP losses in 2020 (15%) and over 2020-21 on a cumulative basis (15%), as projected by the

5 Previous work by ECB staff shows the expected macroeconomic impact of several stylised scenarios, including the use of NGEU loans and grants for (i) productive public investment, (ii) unproductive government spending, and (iii) replacing or repaying existing sovereign debt. See Bańkowski et al. (2021). See also Watzka and Watt (2020) and Pfeiffer et al. (2021).

6 The remaining funds are allocated, in the form of grants, to the following programmes: ReactEU (€51 billion), Just Transition Fund (€11 billion), Rural Development (€8 billion), InvestEU (€6 billion), Horizon Europe (€5 billion) and RescEU (€2 billion). It should be noted that the relative share of the RRF and these programmes differs across the individual countries.

Commission.[7] Overall, these allocation keys imply that more funding is made available to countries that display relatively lower GDP per capita and have been hit hardest by the pandemic-induced crisis. By designing NGEU with these features, Member States have demonstrated strong solidarity with each other.

Turning to the RRF loan component, funds can be requested by Member States up to a ceiling of 6.8% of their gross national income (GNI). The option to request NGEU loans expires in August 2023. To date, seven EU countries have requested loans: three of them (Italy, Greece and Romania) have requested the full amount they were eligible for, while four countries have applied for a lower share (Portugal, Cyprus, Slovenia and Poland).

The funds are paid to Member States via a dedicated account opened at the ECB to disburse NGEU funds. Moreover, the European Commission has opened another account at the ECB to hold prudential cash to meet the upcoming scheduled payments. The Commission has a contract for fiscal agency services with the ECB that allows the coverage of the related costs.[8] This liquidity risk management approach is expected to contribute to the smooth implementation of NGEU.

In terms of accounting, all NGEU funding, be it in the form of grants or loans, adds to the liabilities of the EU (see Eurostat, 2021). The debt issued by the Commission under the grant component is matched by assets in the form of future streams of new own resources for the EU budget and, if needed, larger contributions from Member States. Unlike the financial assistance provided during the euro area sovereign debt crisis, the grants are direct, non-repayable transfers that alleviate the fiscal situation of the beneficiary Member States. This pooling element is recorded on the aggregated EU debt and in the future budget balance of all Member States (via their net contributions to the EU budget). The EU liabilities in the form of NGEU loans are instead matched one-to-one to corresponding assets in the form of loans to the requesting countries. Such loans, therefore, directly increase the national debt of the relevant Member States.

The RRF establishes a governance framework with several innovative elements that are not reviewed in this paper, except for those more directly affecting the economic transmission of the RRPs (see Section 3 and Box 4). The core novelty is that disbursements to Member States are conditional on the approval and satisfactory implementation of the national RRPs, which set out a package of national reforms and investment plans, including milestones and targets for their implementation.

Borrowing strategy and disbursement

NGEU allows the EU to issue a significant volume of debt at the European level. The issuance of new NGEU debt takes place between mid-2021 and 2026 in the form of bonds of up to €150 billion

7 The final distribution of the grants per Member State is to be adjusted by 30 June 2022 based on Eurostat statistics on real GDP that become available at the beginning of June 2022. As a result, the RRF allocations are likely to be adjusted somewhat, reflecting such new figures.

8 The funds, up to a limit of €20 billion, are remunerated at 0% or the deposit facility rate, whichever is higher (i.e. exempted from the application of negative interest rates). Amounts exceeding €20 billion are remunerated at the deposit facility rate. However, the remuneration policy changed after the adoption of Decision ECB/2022/5 (Decision (EU) 2022/310 of the European Central Bank of 17 February 2022 amending Decision (EU) 2019/1743 of the European Central Bank on the remuneration of holdings of excess reserves and of certain deposits), effective from 4 April 2022, as follows: up to a limit of €20 billion, the funds are remunerated at 0% or the euro short-term rate, whichever is higher. Amounts exceeding €20 billion are remunerated at the lower of the deposit facility rate, the euro short-term rate or 0%.

per year to finance the non-repayable grants and the RRF loans.[9] After 2026, any NGEU issuance will consist solely of refinancing maturing debt to smoothen the budgetary absorption of liabilities over time, and will be limited in scale. This activity reinforces the Commission's role in the capital markets as a major provider of safe (AAA-rated) assets denominated in euro.[10] Another novelty is that the RRF will issue 30% of the NGEU funding (€250 billion) in green bonds to be used exclusively for green and sustainable investments across the EU. By doing so, the EU is expecting to manage the largest green bond scheme in the world and act as a catalyst in the green transition.

NGEU provides new impetus for the EU to reform its system of own resources and introduce new resources, inter alia to repay the NGEU grants.[11] The repayment schedule has been stipulated in the Own Resources Decision[12], with liabilities amortised on a linear path over 2027-58, with the possibility of early reimbursement. All NGEU borrowing will be fully repaid by 2058 at the latest. The RRF grants will be repaid by the EU budget via new own resources and, if applicable, future GNI compensation by all Member States. The RRF loans will in turn be repaid by the borrowing Member States with a grace period of ten years from the disbursement date and annual repayments of 5% of the amounts received; they are scheduled to be fully repaid 30 years after disbursement, i.e. between 2051 and 2056.

The Commission seeks a transparent schedule to raise the necessary funds to foster predictability for market participants and a diversified funding strategy to promote cost-effective financing. Based on annual borrowing decisions, the Commission publishes the targeted amounts to be financed, the auction dates and the indications of the expected number and aggregate volumes of syndicated operations. To date, all issuances of EU bonds and bills have been oversubscribed. The investor base is balanced, mainly coming from European countries (with the United Kingdom being the largest investor so far) and buy-and-hold buyers. Fund managers, central banks and other official institutions account for around 60% of total holdings to date.

The financial support is to be disbursed as follows, according to the EU guidelines:

1. *One-off prefinancing payments of up to 13% of the requested grants and loans.* These funds are payable to Member States once the submitted national RRPs have been approved by the Council.

2. *Regular requests for payments by Member States, up to twice a year, based on the disbursement schedules stipulated in the RRPs.* Disbursements are conditional on the Member State fulfilling the milestones and targets set out in its RRP. Payment requests must be accompanied by documentation evidencing satisfactory implementation of the relevant milestones and targets under the RRP, for the Commission's assessment. Taking into account the opinion of the Council's Economic and Financial Committee, the Commission will decide whether to approve disbursement of the relevant portion of grants and loans to the Member State concerned.

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9 The European Commission became a novel actor in the bond markets during 2020 by raising €100 billion to finance the SURE programme. After approval of the Own Resources Decision, which establishes how the EU budget is financed, the Commission started NGEU borrowing in June 2021.

10 ECB (2021a).

11 European Council Conclusions of 17 to 21 July 2020.

12 Council Decision (EU, Euratom) 2020/2053 of 14 December 2020 on the system of own resources of the European Union and repealing Decision 2014/335/EU, Euratom (OJ L 424, 15.12.2020, p. 1).

2 Taking stock of the national RRPs

Member States were asked to present a coherent package of fiscal measures and structural reforms. First, EU countries were required to include detailed information on the use of the RRF for public investment and other expenditure in their RRPs (Section 2.1). The purpose of RRF funding is not only to improve the short-term macroeconomic outlook by providing additional fiscal stimulus, but also to address investment gaps and the common challenges of the green and digital transitions. Second, the RRF rules also require Member States to commit to concrete reforms that address country-specific structural weaknesses (Section 2.2). If designed well and implemented adequately, these reforms can transform economic structures and institutions, with a positive and lasting impact on potential output, resilience and convergence over the medium term.[13]

Fiscal and structural policy measures in the RRPs can complement and mutually reinforce each other. Well-targeted reforms enhance the effectiveness (i.e. the fiscal multiplier) of NGEU-financed spending, for instance by removing administrative and regulatory bottlenecks. At the same time, NGEU's fiscal stimulus can help to preserve the economy's supply-side capacity in the aftermath of the COVID-19 shock, facilitate the adaptation of the economy to post-pandemic environment and mitigate possible transition costs of reforms.

2.1 Fiscal plans

While still subject to some uncertainty, the adoption of the RRPs allows for a more accurate quantitative assessment of the related fiscal measures being taken in the euro area. Bearing in mind that not all RRPs specify each individual fiscal measure, its timing or statistical classification, the analysis in this paper draws on a confidential database developed by the ESCB's Working Group on Public Finance (WGPF). The database records NGEU-financed expenditures and tax measures with a measure-by-measure, bottom-up approach. Where information in this database is not available or cannot be published for reasons of confidentiality, this paper uses public information in the RRPs or from other sources, as well as ECB staff assumptions. This quantitative evidence allows for the more up-to-date calibration of the fiscal stimulus stemming from NGEU that is discussed in Section 5.2, whereas the present section provides an overview of the main features of the fiscal plans.

The plans on use of RRF funding reflect both the guidelines of the RRF Regulation and country-specific circumstances and policy priorities. [14] The 11 criteria that the Commission used to assess the RRPs include addressing the country-specific recommendations, the effects on growth and resilience, the social

13 See Consolo et al. (2018), in 't Veld et al. (2018), Roeger et al. (2008) and Sondermann (2018).

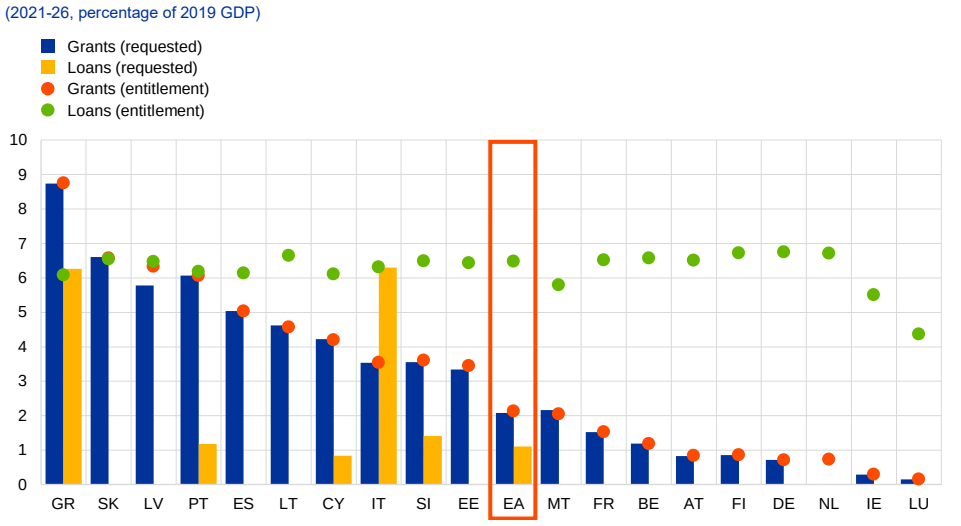
14 Regulation (EU) 2021/241 of the European Parliament and of the Council of 12 February 2021 establishing the Recovery and Resilience Facility (OJ L 57, 18.2.2021, p. 17).

impact, as well as the contribution to the green and digital transitions.[15] Despite these common guidelines, the RRPs of euro area countries differ significantly in terms of size, time profile and allocation.

Of a total EU entitlement of €723.8 billion at current prices, euro area countries have so far requested NGEU funds of €401 billion (3.5% of 2020 euro area GDP), with national plans differing significantly in size. While fiscal plans exceed 15% and 10% of GDP in Greece and Italy respectively, they are below 1% of GDP in six other euro area countries (**Chart 1**). This relates not only to that fact that RRF funds are mainly targeted at vulnerable euro area countries (see **Box 1** and Section 5.1), but also to the fact that only a few Member States will make use of their RRF loans, whereas all countries have requested their whole RRF grant entitlement. Although RRF loans are available at below-market rates in a number of euro area countries[16], only Greece and Italy (in full) and Cyprus, Portugal and Slovenia (in part) have applied for loans to date.[17]

Chart 1

RRF entitlements and funding requests in euro area countries



Sources: European Commission and ECB calculations.
Notes: Grant entitlements for countries are shown according to European Commission data. A country's loan entitlement is calculated as 6.8% of its 2019 GNI. Slovakia's RRP refers to a grant entitlement of €6.575 billion, which the European Commission calculates as €6.3 billion. No information on RRF grants and loans is available for the Netherlands as its RRP had not been submitted to the European Commission by the time this paper was finalised. EA stands for euro area.

RRPs also differ in terms of the announced timing of fiscal measures, which may in turn differ from the timing of actual implementation. As shown in **Chart 2**, the RRPs of some euro area countries (Germany, Spain, France and Luxembourg) intend to frontload the use of funds to 2021-22. Other countries aim instead to spread the use of funds relatively evenly over the 2021-26 RRF

15 See Afman et al. (2021).

16 While there are other EA countries for which RRF loans may be available at better-than-market rates, these have opted not to use them for the time being.

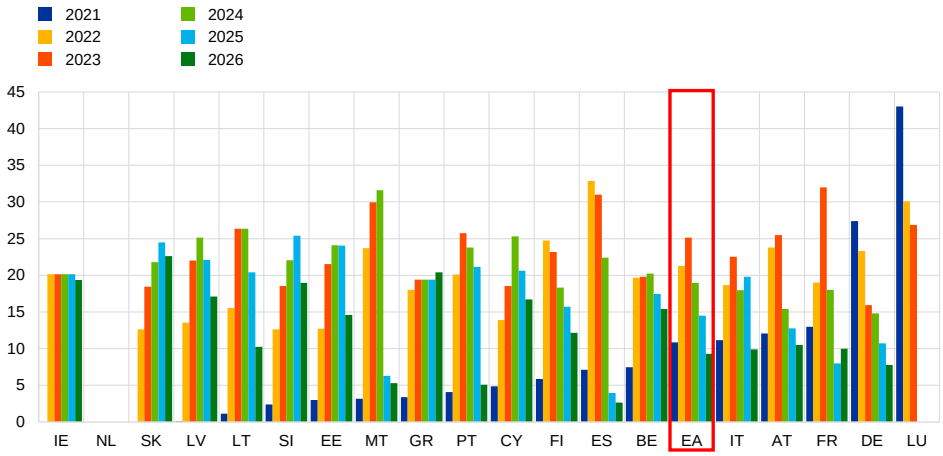
17 The grants for EA countries total €262.1 billion. RRF loans have been requested up to the ceiling of 6.8% of GNI by only Greece and Italy. To date, Cyprus, Portugal and Slovenia have made more limited use of the loan funding available to them, bringing the overall amount of loans requested by EA countries to €138.9 billion.

programme period, often with a profile rising until 2023-24 and subsequently declining. This is the case, for instance, with Italy. Finally, just a few countries intend from the very beginning to backload expenditure, such as Slovakia. As discussed in Section 3, however, for several countries the degree of backloading may turn out to be higher ex post, owing to delays in RRP implementation.

Chart 2

Announced time distribution of RRP measures financed with RRF grants and loans in the euro area

(2021-26, as percentage of total funds allocated to each euro area country)



Sources: For Spain, Independent Authority for Spanish Fiscal Responsibility (AIReF) and ECB staff assumptions for 2025-26. For France, planned RRF funding disbursements according to Cœuré (2021). For Germany, government Recovery and Resilience Plan of 27 April 2021. For Italy, "Update of the Economic and Finance Document 2021" (Nadef) of 29 September 2021 for 2021-24, ECB staff assumption of 2/3 use of remaining funds in 2025 and 1/3 use of remaining funds in 2026. For the other euro area countries, Eurosystem and ECB assumptions and calculations.
Notes: The chart includes both additive and substitutive expenditure and revenues. The chart refers to the time of the planned use of RRF funds, not the time of actual disbursement (except for France). This explains the relatively high shares recorded in 2021 for some countries. The information for the Netherlands is not included since its RRP had not been submitted to the European Commission by the time this report was finalised. EA stands for euro area.

Around four-fifths of RRF-financed expenditure in the euro area is due to be allocated to more than 1,000 investment projects. Such investment is indicated by the green bars in **Chart 3**. Direct government investment (dark green bars) explains nearly 50% of RRF expenditure. This includes most investment projects in, for example, public transport, roads, public health systems, schools and education, digital connections, public administration and the judiciary. Indirect public investment (light green bars) accounts for about 30% of total RRF expenditure; this includes public support to private investment via capital transfers, in the form of grants to the private sector, for instance, public-private partnerships or, as in the case of Greece, direct payments to the private sector. Examples include most investments in energy efficiency in buildings and other incentives for clean power, decarbonisation of the industrial sector, promotion of transition to renewable energy and hydrogen, financial support for electric vehicles and private charging stations, digitalisation of SMEs and incentives for artificial intelligence. Capital transfers may also relate to transfers from central to regional or local administrations. For example, capital transfers are relatively large for Spain, where funding is transferred to the regions, which implement most public investment projects.

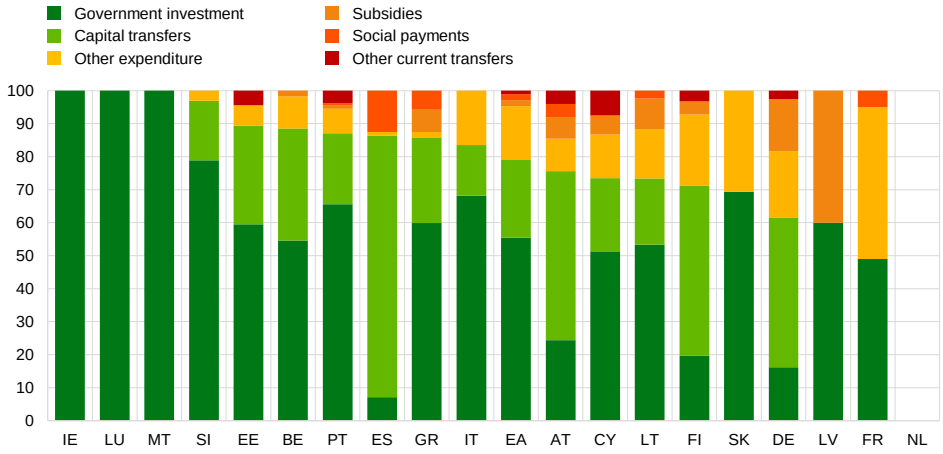
Interestingly, there is significant heterogeneity across Member States on whether to rely mostly on government investment or capital transfers. Spain and Germany attach more weight to public support for private investment. For Spain, this includes financial support for renewable energy and labour market measures (e.g. modernisation of active labour market policies, vocational training and programmes targeting young jobseekers), and for Germany support for buying electric cars and improving energy efficiency in residential housing. Italy and France attach more weight to direct government investment, with these countries planning to invest more in sustainable public mobility and public buildings.

The remaining fiscal measures mainly relate to crisis and welfare expenditure, such as subsidies, social payments and other current transfers to be implemented, especially in the initial years of the plans. In many countries, the measures target training and labour market inclusion. In Italy, 22% of total RRF funds are estimated to be allocated to expenditure on welfare as part of RRP measures on training, inclusion, cohesion and health.[18]

Chart 3

RRF-financed expenditure by statistical category

(2021-26; percentage of total requested)



Sources: For Spain, government Recovery and Resilience Plan. For France, government Recovery and Resilience Plan of 2021. For Germany, government Recovery and Resilience Plan of 27 April 2021. For Italy, "Update of the Economic and Finance Document 2021" (Nadef) of 29 September 2021 for 2021-24, ECB staff assumption for 2025-26.
Notes: The information for the Netherlands is not included since its RRP had not been submitted to the European Commission by the time this report was finalised. In the case of Greece, capital transfers include direct payments to the private sector to carry out new investment projects, which are statistically recorded as deficit-debt adjustment (DDA). Italy's data are based on government plans (2021-24) and ECB assessment (2025-26). EA stands for euro area.

Because the RRPs are oriented towards growth-friendly investments, with a focus on green and digital transition, the overall assessment of the national fiscal plans is positive.[19] It is estimated that use of the RRF will add 2.5 percentage points to public investment in the euro area during the period 2021-26. Assuming average 2010-20 levels of public investment going forward, RRF funding could bring public investment back to levels seen before the global financial crisis (**Chart 5**). As discussed in Section 5.2, the growth-friendly composition of RRF expenditure is expected to make a significant positive contribution to recovery in the euro area, as

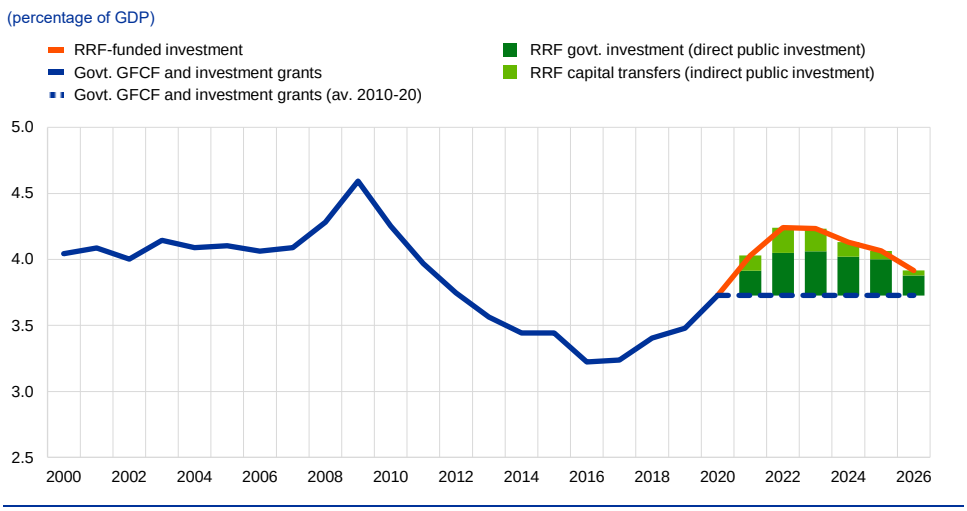
18 See Think Tank "Welfare, Italia" (2021).

19 See Freier et al. (2022).

well as increasing capital stock. This will enhance TFP and create employment, thus increasing potential output. At the same time, RRF funding is targeted to make a significant contribution to the green and digital transitions of EU economies and promote economic and social resilience, as briefly discussed in Box 2.

Chart 4

RRF contribution to public investment in the euro area



Sources: Eurosystem and ECB calculations.
Notes: "RRF-funded investment" includes both government investment (direct public investment, dark green bars) and capital transfers (indirect public investment, light green bars). GFCF stands for gross fixed capital formation in national accounts, i.e. investment. The public investment-to-GDP ratio (blue lines) includes government GFCF and investment grants.

Box 2

Support of fiscal plans for the green and digital transition and economic and social resilience

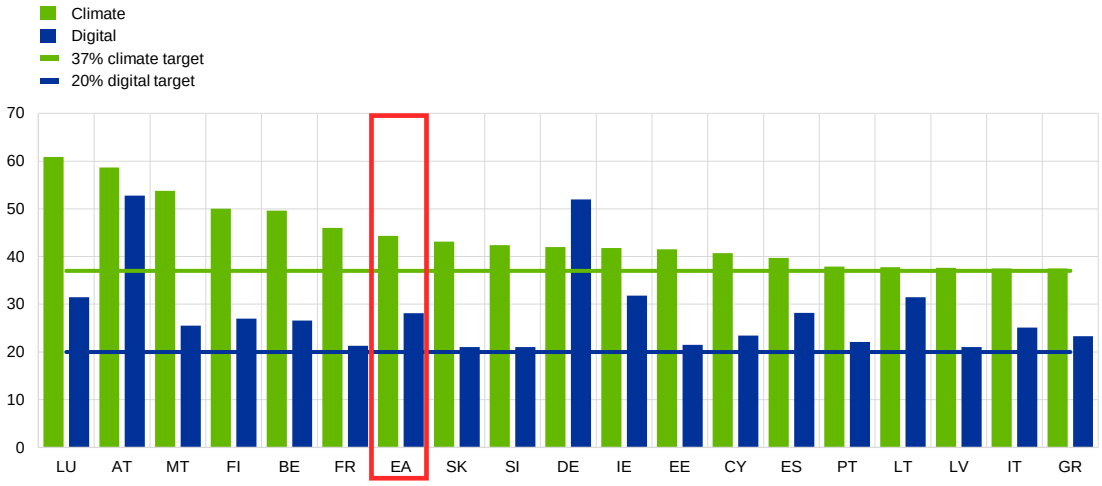
The RRF-funded expenditure allocated to the climate and digital transitions fulfils the requirements of the RRF Regulation (37% and 20% of total allocation respectively) in all euro area countries, although its relative importance differs significantly across countries. Bearing in mind that an investment may simultaneously contribute to the green *and* digital goals – which implies that the evidence presented in Chart A may partly overlap – green investment accounts for more than half of total RRF expenditure in Luxembourg, Austria, Malta and Finland, whereas digital investment exceeds 50% in only Austria and Germany (Chart A, panel a). The bulk of green expenditure has been allocated to sustainable mobility, energy efficiency and clean energy and networks (Chart A, panel b), while the largest share of digital expenditure will be used to digitalise public services and the corporate sector and invest in digital skills and connectivity (Chart A, panel c).

Chart A

RRF-financed expenditure profile by statistical category

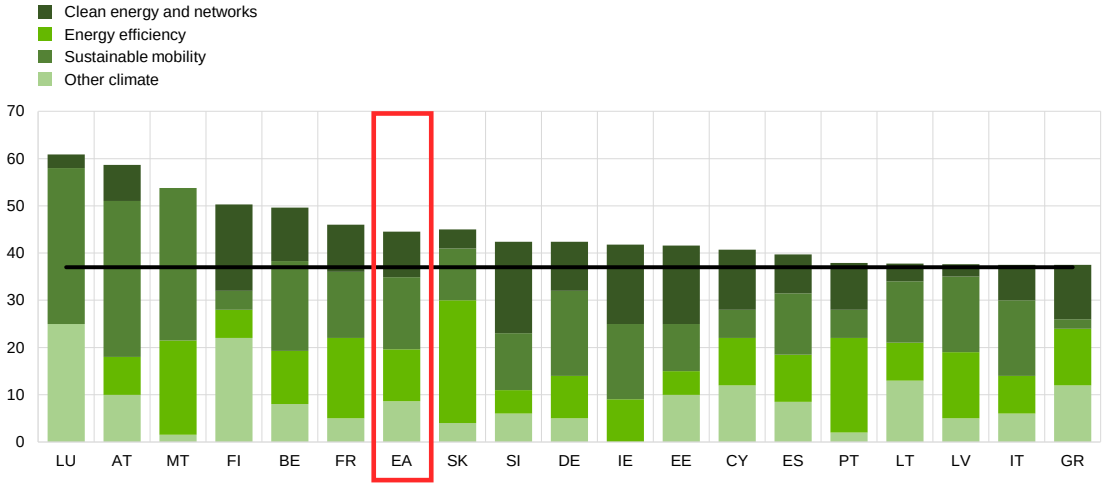
a) Climate and digital expenditure in the RRPs

(percentage of total allocation)



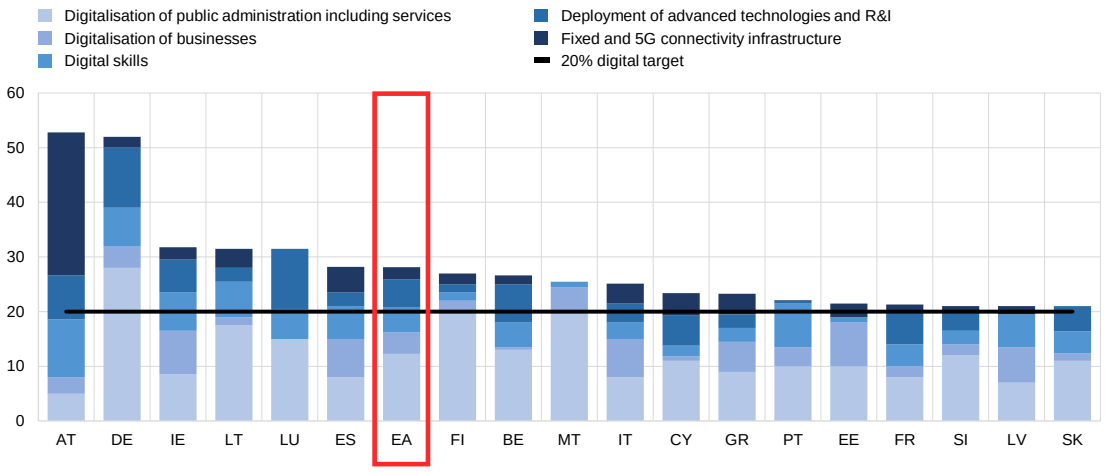
b) Allocation of climate expenditure in the RRPs across different objectives

(percentage of total allocation)



c) Allocation of digital expenditure in the RRPs across different objectives

(percentage of total allocation)



Sources: European Commission and ECB calculations.
Notes: The information for the Netherlands is not included since it has not yet submitted its RRP to the European Commission. EA stands for euro area.

While the green and digital transitions are the centrepiece of RRF-funded investment strategies in several countries, others have also invested significantly in projects aimed at enhancing economic and social resilience. Two groups of euro area countries can be identified in this regard: (i) those which have invested significantly more in green and/or digital transition than the combined minimum threshold of 57% of total funds stipulated by the RRF Regulation (more than 70% by Belgium, Germany, Ireland, Luxembourg, Malta, Austria and Finland); and (ii) those which have allocated a relatively high share of their funds to projects in the sphere of socio-economic resilience (Estonia, Greece, Italy, Cyprus, Latvia, Portugal, Slovenia and Slovakia).

2.2 Structural reform plans

The RRPs of euro area countries envisage more than 600 structural reforms overall. The planned reforms are described over thousands of pages in the RRPs and the corresponding legal documents. A key challenge for any cross-country analysis is to aggregate this qualitative information in a meaningful way. This challenge is simplified by the fact that the RRPs were all subject to the same EU rules, operational guidance by the Commission and peer review in the EU fora. The remarkable degree of formal consistency in the RRPs justifies a comparison based on quantitative indicators. Even so, the subsequent analysis considers robustness checks whenever differences in reporting standards could be an issue. The analysis focuses on features of the reforms that are critical for NGEU's macroeconomic impact, including the reform mix, sequencing and alignment with policy priorities.

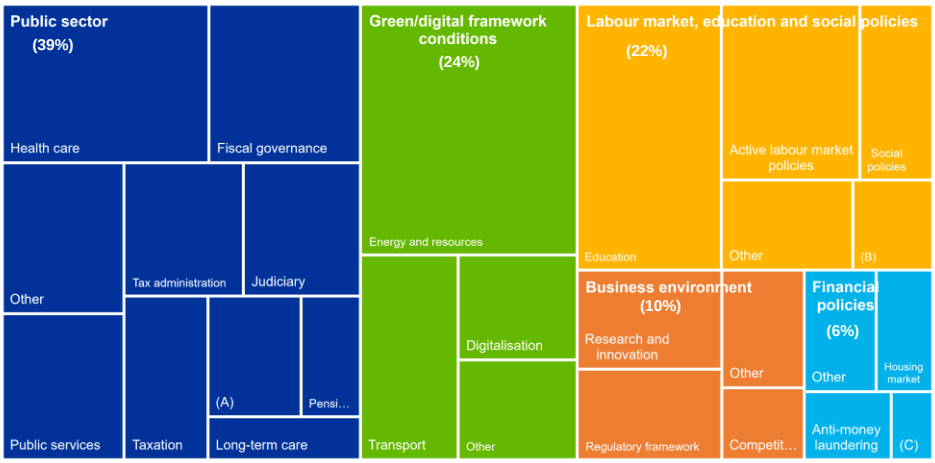
The reform plans of euro area countries are strongly geared towards the public sector, framework conditions for the green and digital transitions, and "soft" labour market policies. 39% of the reforms envisaged by the RRPs of euro area countries relate to the public sector (**Chart 5**). This category includes, for instance, reforms of the judiciary, tax administration and health care. Notably, reform progress in many of these areas was particularly slow over recent years.[20] The category "green/digital framework conditions" accounts for 24% of RRP reforms. This category includes revisions of building codes to accelerate the reduction of greenhouse gas emissions and the removal of legal hurdles to data storage in IT clouds. 22% of all reforms relate to labour market, education and social policies. Within this category, measures related to digital skills and active labour market policies are particularly frequent. Reforms addressing red tape in employment protection feature less prominently, although they could enhance labour market flexibility. Measures addressing financial policies and the business environment, including those enhancing competition in product markets, account for only 10% and 6% of all reforms respectively. Nevertheless, some RRPs envisage important reforms in this policy area, notably to insolvency frameworks (see **Box 3**) and anti-money laundering. It should also be noted that the various reform areas complement each

[20] See Efstathiou and Wolff (2019).

other. Most notably, a significant share of the public sector and labour market reforms in the RRPs consists of measures to support the green and digital transitions. For instance, e-government in the public sector and digital up-skilling through labour market policies go hand in hand.

Chart 5

Breakdown of RRP reforms by policy area: euro area aggregate

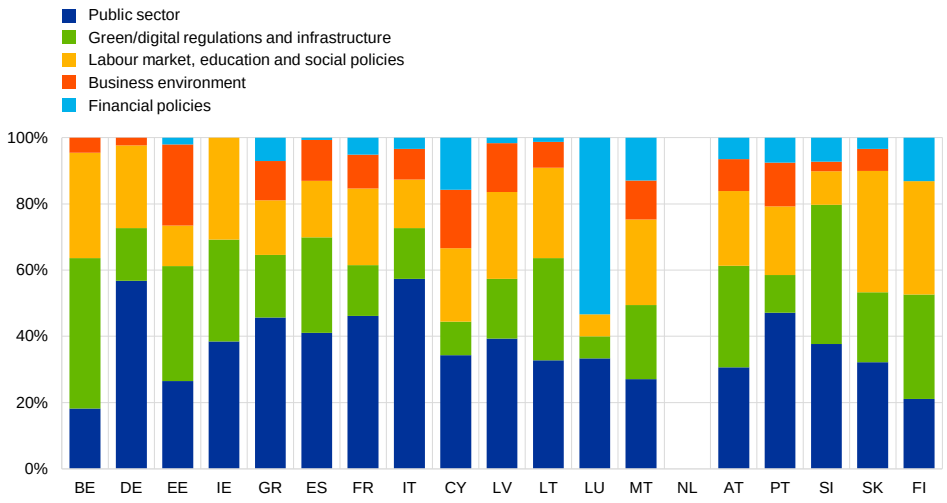


Source: ECB staff calculations based on European Commission data.
Notes: The size of a given box indicates the share of the corresponding category in the reforms envisaged by the RRPs. The classification is based on an ECB staff assessment. It has been applied at the level of individual milestones and targets. (A) Public procurement; (B) Employment protection legislation, framework for labour contracts; (C) Insolvency frameworks.

The main policy areas identified at euro area level play a dominant role in virtually all individual RRPs, despite some cross-country variation. The combined share of the public sector, the labour market and framework conditions for the green and digital transitions in the total number of reform-related milestones and targets ranges between 67% and 100% across euro area countries (**Chart 6**). Only Luxembourg stands out in this respect with its focus on financial sector reforms. The relative importance of the individual reform categories varies across countries, partly reflecting differences in reform needs. As a specific example of structural reforms envisaged by the RRPs, Box 3 looks at the policy measures related to national insolvency frameworks. As argued in the box, such measures have the potential to significantly enhance the efficiency of national insolvency frameworks in line with international best practice.

Chart 6

Breakdown of RRP reforms by policy area: country level



Source: ECB staff calculations based on European Commission data.
Note: The size of a given box indicates the share of the corresponding category in the reforms envisaged by the RRPs. The classification is based on an ECB staff assessment. It has been applied at the level of individual milestones and targets. EA stands for euro area.

Box 3

Reforms of national insolvency frameworks in the RRPs

Formal insolvency proceedings typically account for only a relatively small share of firm exits. Even so, countries with well-functioning insolvency frameworks typically see faster private sector deleveraging and reductions in non-performing loans in the aftermath of adverse shocks, with positive implications for macro-financial stability.[21] Such countries also tend to benefit from more efficient allocation of resources, less bank lending to zombie firms and higher medium-term productivity growth.[22] The pandemic-induced crisis and the ongoing structural shifts in the economy related to the green and digital transitions have increased the need for sound insolvency frameworks.[23]

The efficiency of current insolvency frameworks varies markedly across euro area countries. For instance, the average length of the recovery period for insolvency proceedings of small and medium-sized enterprises (SMEs) ranges from less than two years in Finland to more than six years in Italy, according to data from the European Banking Authority (EBA).[24] Average recovery rates for SME insolvencies, i.e. the recovery amount divided by the notional amount outstanding at time of default, vary from less than 10% in Greece to almost 80% in Luxembourg. Other indicators and other data sources provide an equally heterogeneous cross-country picture.

Seven euro area countries have included insolvency reforms in their RRPs, with a focus on efficiency-enhancing digitalisation efforts, out-of-court arrangements and preventive tools. All these plans aim to advance at least the partial digitalisation of insolvency proceedings or related

21 See Consolo et al. (2018), Jordà et al. (2020).
22 See Bricongne et al. (2016), Becker and Ivashina (2021).
23 See Laeven et al. (2020).
24 EBA (2020).

procedures (Table A). Several plans also include new preventive measures and pre-insolvency instruments. For instance, Spain plans to establish a more efficient "second chance" procedure for natural persons, allowing for debt relief without prior liquidation of the insolvent party's assets, and a new pre-insolvency instrument with a leaner, fully digital procedure tailored to micro firms. Some plans also aim to strengthen the role of out-of-court arrangements, which would help to avoid court congestion. To this end, Italy will create an online platform for out-of-court dispute resolution. Some RRPs envisage efficiency-enhancing organisational changes in the administration or the judiciary. Italy, Portugal and Slovakia plan to strengthen the specialisation of courts, while Cyprus will review the functioning of the Department of Insolvency. Other elements of the RRPs are more country-specific. For instance, Italy will allow secured creditors to be paid before tax and employee claims, establish a collateral registry and enable businesses to grant a non-possessory security right. Portugal aims to strengthen the role of insolvency practitioners, enhance the rights of creditors and introduce compulsory partial apportionment in specific cases. Cyprus will review specific insolvency procedures for companies and, importantly, the national insolvency framework for credit institutions.

Table A

Insolvency reforms envisaged by RRPs of euro area countries

Country	Digitalisation of insolvency proceedings or related processes	Enhancement of court-led insolvency proceedings and administrative capacity	Stronger role for preventive measures, early warning tools and out-of-court settlements
CY	x	x	
ES	x		x
GR	x		x
IT	x	x	x
LT	x		x
PT	x	x	
SK	x	x	x

Source: ECB staff.
Notes: The table only covers those euro area countries whose RRPs envisage adjustments to the national insolvency framework. Individual measures are only included if their impact is macroeconomically relevant and sufficiently specified. Some of the reform elements that are more country-specific are mentioned in the main text.

The policy measures described in the RRPs have the potential to significantly enhance the efficiency of national insolvency frameworks. The overall thrust of the plans appears to be consistent with international best practice. Most notably, several RRPs aim to facilitate out-of-court arrangements and restructuring, and Italy's RRP also reduces the privileges of specific creditors (most notably the sovereign). These two features tend to reduce the length and cost of insolvency proceedings, according to recent analysis by the EBA.[25] The literature also suggests that early warning tools and preventive mechanisms, as envisaged by several RRPs, can be effective in encouraging an early resolution of debt distress.[26] Moreover, the broad-based digitalisation efforts should help to speed up insolvencies and restructurings. Despite the well-targeted policy measures in the RRPs, there remains scope for future insolvency reforms and further harmonisation of insolvency frameworks across euro area countries.

The reform commitments in the RRPs are overall well aligned with EU policy priorities and commensurate with the size of the individual RRF envelopes.

25 EBA (2020).

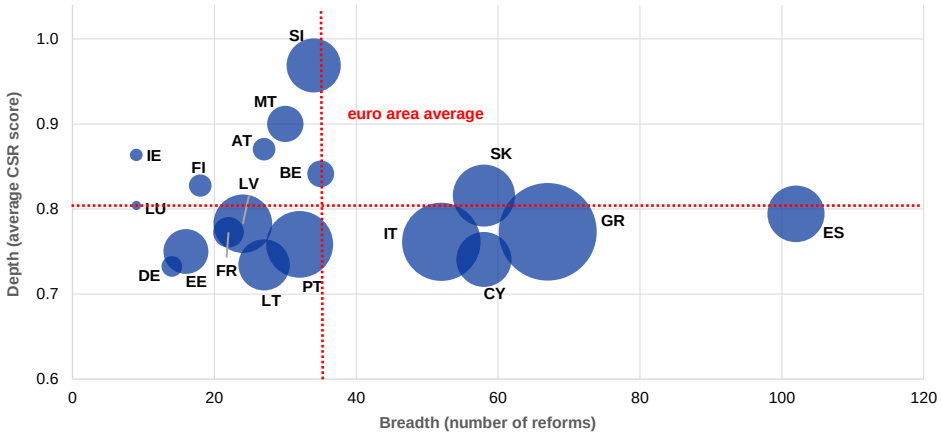
26 See Bricogne et al. (2016).

First, reform ambition as proxied by the number of RRP reforms is greater overall for countries that receive particularly large RRF funds relative to GDP (see **Chart 7**, x-axis). This cross-country finding is robust to the use of alternative indicators of reform ambition, such as the number of reform-related milestones and targets. Even so, the relative position of individual countries may change depending on the metric used.[27] Therefore, such indicators, taken in isolation, should not be used to rank individual countries. Second, the RRPs are generally well aligned with the country-specific recommendations (CSRs) issued in the context of the European Semester (the EU's annual policy coordination cycle), according to the Commission, and in line with the requirements laid down in the RRF Regulation (Chart 7, y-axis). In the Commission's assessment, each of the RRPs effectively addresses at least a significant subset of the CSRs. Taken together, these stylised facts on the breadth and depth of reforms suggest that the plans of the main RRF-recipient countries are ambitious. This cross-country distribution of reforms is conducive to economic convergence, since the main recipients tend to underperform their peers on institutional quality and income per capita.

Chart 7

Depth and breadth of the RRPs

(x-axis: number of reforms; y-axis: score, 0=worst, 1=best; bubble size: RRF grants and loans, percentage of 2019 GDP)



Source: ECB staff calculations based on European Commission data.
Note: The x-axis ("breadth") shows the number of reforms per RRP, while the y-axis ("depth") reports the extent to which each RRP addresses the CSRs according to the European Commission's assessment. The latter indicator is calculated as an unweighted average score across individual CSR elements.

The reforms envisaged in the RRPs are more frontloaded than the investments, which could enhance the efficiency of RRF spending. Averaging across euro area countries, around 70% of all milestones and targets related to reforms will need to be fulfilled by the second quarter of 2024, i.e. the middle of the RRF's envisaged lifespan (**Chart 8**).[28] For investments, the corresponding figure is around 50%. Reforms are frontloaded relative to investments in the RRPs of all euro

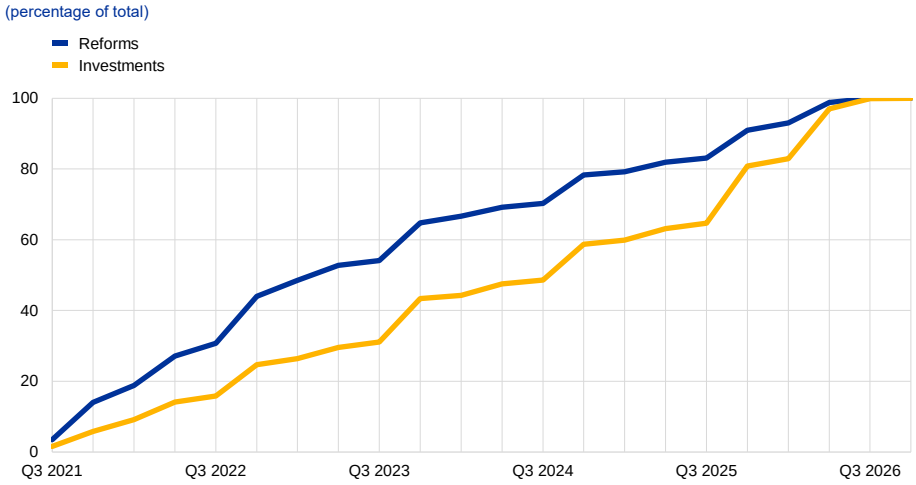
27 For instance, Spain's relative position deteriorates when the number of headline reforms is replaced with the number of reform-related milestones and targets. While there is a fairly strong positive correlation (0.7) between the two indicators, Spain is a notable outlier in this regard with a higher number of headline reforms than milestones and targets.

28 The profile looks similar if the milestones and targets for individual countries are normalised before cross-country aggregation, which provides a control for differences in the total number of milestones and targets across member countries.

area countries, although to different degrees. This sequencing of reforms and investments could help to enhance NGEU's effectiveness to the extent that frontloaded reforms reduce administrative and regulatory bottlenecks for public investments and complementary private investments. Notably, some reforms included in the RRPs were already implemented before the plans were adopted. These cases illustrate that not all reforms in the RRPs can be considered additive compared with a hypothetical scenario without NGEU. At the same time, the frontloading of reforms relative to investments underscores the conditional nature of RRF funding. Specifically, frontloading helps to ensure the time consistency of the plans, since member countries might in theory prefer to renege on their initial reform commitments ex post, i.e. after disbursement of RRF funds.

Chart 8

Cumulative path of RRP milestones and targets



Sources: European Commission and ECB staff calculations.
Note: The chart covers euro area countries only.

Overall, the design of the RRP reforms exploits synergies with RRF-funded public investments and could thus increase NGEU's effectiveness in modernising euro area economies. The reform mix is overall well suited to facilitating a swift and effective roll-out of RRP projects, particularly investments, by removing administrative and regulatory bottlenecks.[29] This is particularly important in view of the relatively weak track record of some euro area countries in implementing reforms and absorbing EU structural funds effectively.[30] The reform plans also have the potential to reduce public sector inefficiencies on a broader basis and improve the framework conditions for private investments in green and digital projects, with positive effects on potential output over the medium term.[31] The envisaged activation

29 For the interplay between RRF reforms and investments, see also Albrizio and Geli (2021).

30 See, for instance, Darvas (2020).

31 Inefficiencies in the public sector, including the judiciary, currently act as a structural brake on potential output in some EA countries. For instance, resolving litigious civil and commercial cases at first instance takes 600 days, on average, in the worst-performing countries, compared to fewer than 100 days in the best-performing countries. See European Commission (2021b).

policies and skill-related initiatives could, in turn, facilitate post-pandemic labour market adjustments while job retention schemes are gradually phased out.[32]

A stronger focus in the RRPs on labour and product market institutions and the business environment could have magnified NGEU's impact on potential output and resilience. Apart from a few exceptions, "classical" reforms aimed at deregulating labour and product markets or the broader business environment, beyond the green and digital dimension, feature less prominently in most RRPs. This is an important blind spot, since institutional quality varies markedly across euro area countries. Sound structural policies in this field are widely considered to foster allocative efficiency, potential output and economic resilience. From a euro area perspective, sound economic structures and institutions can also help to mitigate the impact of asymmetric shocks and support the effectiveness of the ECB's monetary policy, thereby contributing to the smooth functioning of the Economic and Monetary Union.[33] Corresponding reform efforts would therefore need to take place outside the RRPs, most notably in the context of the European Semester.

[32] Forty two percent of European citizens lack basic digital skills, according to the Commission's Digital Economy and Society Index (DESI). See also ECB (2021c) and ECB (2021d).

[33] See Masuch et al. (2018) and Sondermann (2018).

3 From plans to implementation

NGEU can only unfold its full potential if the national investment and reform plans are implemented in a timely and effective way. Any shortcomings in this respect would diminish NGEU's effectiveness in supporting the recovery and modernising the euro area economy as it emerges from the pandemic-induced crisis. Implementation slippages could also impair public trust in the novel governance features of NGEU, with implications for the future architecture of the Economic and Monetary Union. In the words of the Governing Council of the ECB, "*if effectively implemented, NGEU (…) will demonstrate the potential of EU-wide action*".[34]

The RRF's performance-based design – see Box 4 for details – looks conducive overall to timely and effective implementation of the national plans. According to the RRF Regulation, Member States only receive payments if they implement the agreed investments and reforms satisfactorily. The frontloading in the RRPs of reforms relative to investments further underscores the conditional nature of RRF funding. In addition, Member States need to have internal control systems in place to protect the EU's financial interests against fraud, corruption and conflicts of interest. Corresponding commitments were a precondition to approval of the RRPs. In some Member States, policy action related to RRP governance is also an integral part of their milestones and targets. Moreover, the Commission has invested considerable effort in formulating realistic and precise deliverables and will maintain close dialogue with Member States throughout the implementation phase.

Nonetheless, past performance in absorbing EU funds also shows that the completion of milestones and targets is likely to be challenging, especially at local level. Despite the European Regional Development Fund (ERDF), the Cohesion Fund (CF) and the European Social Fund (ESF) representing a significantly smaller percentage of GDP, their absorption has commonly fallen behind schedule in most countries, thus also affecting their economic impact (see Canova and Pappa, 2021). This is shown in **Chart 9**, which compares the actual, ex post absorption rate of such funds with the planned, ex ante absorption rate of the RRF in Germany, Spain, France and Italy.

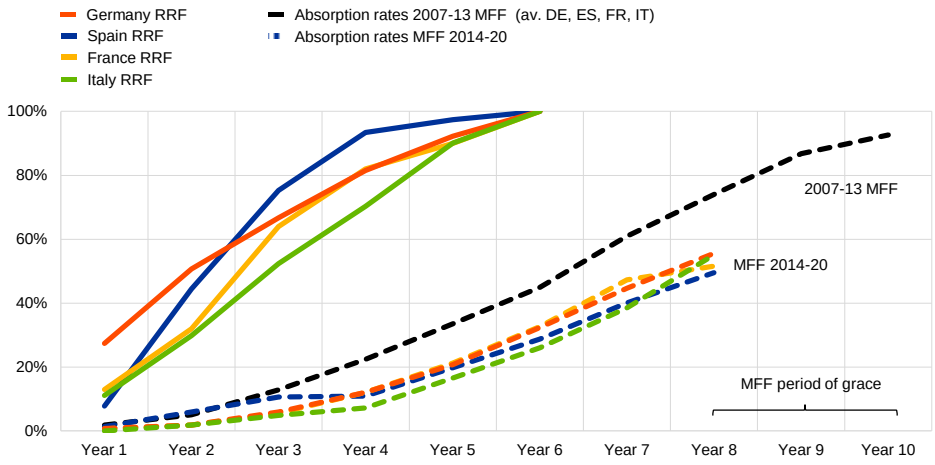
This raises the legitimate question of why things would be different this time round. Note, in this regard, that in contrast to previous EU programmes, national governments and the Commission have devoted a lot of time and effort to establishing the proper governance structure in each country to absorb RRF funds. Further, the RRF has received more attention and scrutiny than previous EU programmes, both from the public and the Council. At the same time, compared with previous plans, there will be a shorter time span and no grace period for absorption, so the time profile of RRF-financed expenditure may turn out to be more backloaded than currently planned. The timing of fiscal measures as outlined in the RRPs (**Chart 9**) may, therefore, be on the optimistic side.

[34] See ECB (2021b).

Chart 9

Assumed payout rates for RRF versus previous EU funds

(payout rates in Germany, Spain, , France and Italy (x-axis: percentage of 2019 GDP; y-axis: net percentages))



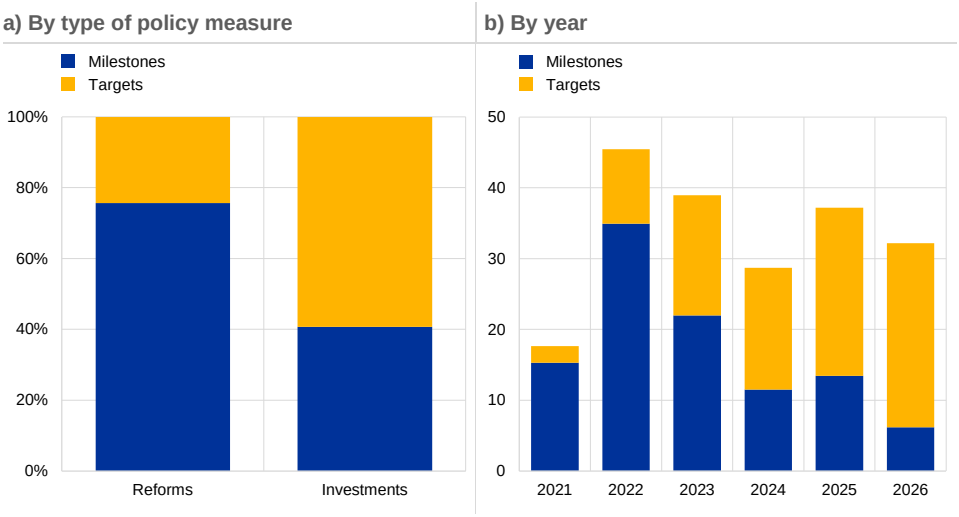
Sources: See Chart 2 and European Commission.
Notes: The payout rate (or absorption rate) is the percentage paid to each Member State compared with the total available EU budget for each country. Year 1 is the first year of the respective programme, i.e. 2007 for the 2007-13 MFF, 2014 for the 2014-20 MFF and 2021 for the RRF. The 2007-13 MFF includes the ERDF, the CF and the ESF, while the 2014-20 MFF includes only the ERDF and the CF. Provisional data for 2014-20 MFF for the year 2021 (year 8 in the chart). MFF stands for Multiannual Financial Framework.

Further, some features of the agreed reform deliverables could complicate their effective implementation. The content of some RRP reforms is not fully spelled out, for instance because they are still subject to consultations with social partners. This may create ambiguities as to what is expected from Member States. In addition, the monitoring of reform implementation will largely rely on qualitative milestones rather than quantitative, impact-oriented targets (**Chart 10**, panel a). For instance, the success of a reform aimed at faster court rulings will typically be assessed against the underlying legislation (i.e. a milestone) rather than its measurable impact (i.e. a target), such as the change in the average length of court proceedings. This is different from the investment leg, which relies more on targets than on milestones. There is a risk that the implementation of some RRP measures will formally fulfil the agreed milestones without achieving the intended economic impact; this risk of ineffective implementation is systematically greater for reforms than for investments.

Chart 10

Distribution of RRP milestones and targets

(panel a): percentages; panel b): average number per country for investments and reforms)



Sources: European Commission and ECB staff calculations.
Notes: A target is a quantitative result for an agreed indicator, while a milestone is a qualitative achievement, such as the adoption of legislation. The chart covers euro area countries only.

The backloading of quantitative, impact-oriented targets could delay detection of implementation slippages. Quantitative targets, for both reforms and investments, will mainly be assessed towards the outer years of the RRF horizon (**Chart 10b**). This is partly because some milestones refer to legislation that will be enacted early on and is subsequently expected to yield results that can be measured in quantitative terms. However, the backloading of targets relative to milestones implies a risk that ineffective (although formally compliant) RRP implementation will only be detected at a relatively late stage. In other words, a reliable picture of NGEU'S effectiveness might only become available towards the end of its envisaged lifespan. The aforementioned risk is more likely to materialise if RRP monitoring at national and EU level is conducted in a formalistic way ("box-ticking exercise") rather than as a genuine review of the extent to which agreed policy objectives have been achieved.

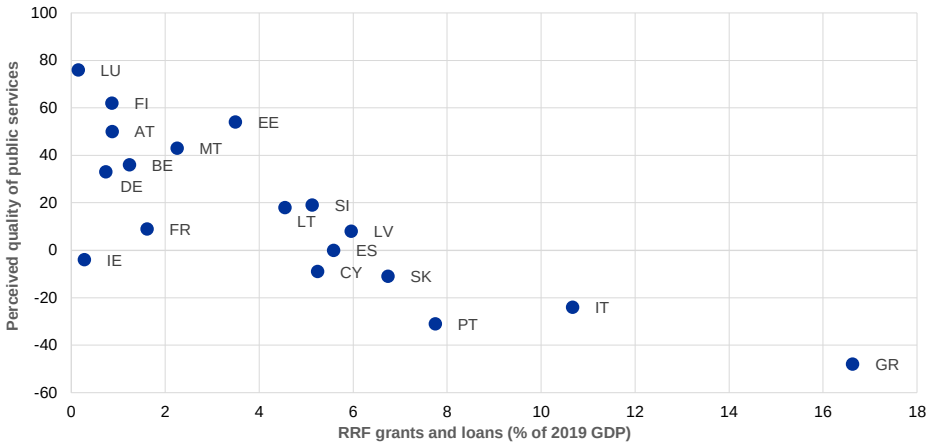
Administrative bottlenecks and supply-side disruptions caused by the pandemic are likely to be key challenges in the RRF implementation phase. For some Member States, the expected annual RRF payments are very sizeable. Member States will need to channel them into productive spending under considerable time pressure and, in parallel, implement the agreed reforms. The RRF will thus test the capacity of public administrations, particularly in the main recipient countries. For instance, administrative bottlenecks may stem from complex internal procedures, the involvement of too many actors in the governance of national RRPs, or competence conflicts between state and regions. This risks resulting in insufficient traction from the central administration over the relevant ministries, territorial entities and/or private sector actors. In some cases, limitations in the technical expertise of human resources in public administration may also play a role, as there may not be enough staff capable not only of designing public investment projects, but also of

assessing the quality of projects submitted by the private firms tasked with preparing investment. Notably, the euro area countries with the largest RRF envelopes tend to underperform their peers on standard governance indicators, including those seeking to capture the quality of public administration (**Chart 11**).[35] However, bottlenecks could also emerge in the private sector amid resurgent aggregate demand and persistent supply-side disruptions caused by the COVID-19 pandemic. For instance, it might be difficult to find suitable contractors for some public construction projects. Similarly, investment projects with a high-technology component and heavy reliance on specific capital goods could also be negatively affected by supply shortages.

Chart 11

RRF grants and loans set against perceived quality of public services

(x-axis: percentage of 2019 GDP; y-axis: net percentages)



Source: Eurobarometer (September 2021).
Note: The y-axis shows the percentage of Eurobarometer respondents rating the provision of public services in their country as "very good" or "rather good" minus the percentage of those providing a "rather bad" or "very bad" rating.

Box 4

How the RRF's design is expected to contribute to effective economic transmission of the planned measures

The RRF, as the main pillar of NGEU, is a performance-based policy instrument. Except for prefinancing payments, all RRF funds are disbursed sequentially, conditional on satisfactory fulfilment of the agreed milestones and targets. Disbursements can be suspended if milestones and targets have not been satisfactorily met, payments can be clawed back in the event of ex post backtracking and, in extreme cases, the agreements can even be terminated. Moreover, the policy measures envisaged by the RRPs need to be aligned with EU policy recommendations, as captured by the European Semester's CSRs. Hence, the EU for the first time offers positive financial incentives for implementing coordinated fiscal and structural policies. By contrast, the pre-existing EU governance framework mainly relied, at least in theory, on negative incentives, including financial sanctions, to encourage compliance. These negative incentives have, however, never been used in practice, which has raised questions about their effectiveness and credibility.

[35] This correlation indirectly reflects the RRF allocation key. Member States with relatively low income per capita and a high pre-crisis unemployment rate can request more RRF grants. These countries also tend to underperform their peers in terms of standard institutional and governance indictors.

The implementation of NGEU will be a litmus test for the effectiveness of its novel governance approach in incentivising structural reforms and economic policy coordination in Europe.[36] First and foremost, it is up to Member States to implement the agreed policy measures effectively. Broad-based public acceptance of the planned measures will be helpful here. At the same time, the Commission can support implementation of the policy measures via its RRF dialogues with Member States and the EU's Technical Support Instrument.[37] Moreover, the Commission has been tasked with monitoring implementation of the RRPs and suspending RRF payments in the case of non-compliance. Thorough and diligent monitoring, including by means of the recently approved scoreboard, will be important to preserving the credibility of the new governance approach pioneered by NGEU.

While the RRF has the potential to revive reform momentum, it is not a substitute for the European Semester. First, the RRF is not calibrated to the severity of macroeconomic imbalances. In the 2021 cycle of the EU's Macroeconomic Imbalance Procedure (MIP), Cyprus, Greece and Italy were found to have "excessive macroeconomic imbalances". The RRPs of these three countries average around 60 reforms, more than in most peer countries (Chart A). However, the typical number of reforms among countries with "imbalances" is similar to that for countries with "no imbalances". Overall, these findings suggest that a country's RRF envelope is better than its MIP status for predicting the number of reforms in the RRP. Hence, the RRF should not be seen as a country surveillance tool whose stringency is primarily aligned with the severity of macroeconomic imbalances of individual countries. Second, given their one-off nature, the RRPs are not intended to be adapted to imbalances or vulnerabilities emerging in the future (with some possible exceptions). Such developments would need to be addressed by the European Semester, which therefore remains an essential element of the EU's current governance framework.

Chart A

Number of RRP reforms and status under the MIP

(number of reforms)

Source: ECB staff.
Note: The x-axis refers to the outcome of the MIP in 2021.

[36] See also Aphecetche et al. (2022).

[37] The TSI allows EU Member States to request technical support for building administrative capacity. It is underpinned by a budget of €864 million over a seven-year period (2021-27).

4 Modelling approach and main assumptions

In the remainder, this paper moves from a description of NGEU to quantitative estimates of its potential economic impact. This section focuses on the modelling approach and the main assumptions; the next section on the findings for each of NGEU's transmission channels.

To assess the economic impact of NGEU and make results more robust, two macroeconomic models and the ESCB's public debt sustainability tool are employed. The two macroeconomic models are (i) a large-scale dynamic stochastic general equilibrium (DSGE) model (Euro Area and Global Economy model, EAGLE), and (ii) a semi-structural model (ECB Multi-Country model, ECB-MC). Box 5 presents the models' specifications, including fiscal multipliers. They show that both EAGLE and ECB-MC are well equipped with fiscal policy instruments and shocks. They are, therefore, suitable for analysing the effects of implementing NGEU on variables such as real GDP and inflation.

The effects on public debt are in turn assessed via debt sustainability analysis (DSA), using the results from ECB staff macroeconomic models as input.[38] The impact of NGEU on public debt is estimated by using the ESCB's debt sustainability framework. The macroeconomic and financial assumptions for the public debt simulations are taken from the model simulations. This approach allows the granularity of the ESCB's public debt sustainability tool in terms of fiscal assumptions, debt composition and interest rate structure (Bouabdallah et al., 2017) to be combined with the general equilibrium analysis using the EAGLE and ECB-MC models.

Box 5
Models and fiscal multipliers

Given the high uncertainty surrounding the effects of NGEU, the distinctive properties of EAGLE and ECB-MC enable results to be cross-checked. The EAGLE model (Gomes et al., 2012) embeds detailed trade links, thereby emphasising spillover effects stemming from the stronger demand in the European internal market generated by the NGEU stimulus.[39] The model also accounts for the positive impact of public investment on TFP. Moreover, its forward-looking nature allows for

[38] The ESCB's DSA tool aims to provide plausible, internally consistent and rule-based debt scenarios. It assumes that governments broadly (not fully) comply with the minimum requirements under the Stability and Growth Pact to avoid potential financial sanctions. Interest rate assumptions are derived from market expectations, extrapolated over the medium term. Real GDP growth assumptions ensure convergence while reflecting the assumed fiscal stance to potential growth estimates. On the nominal side, inflation rates based on the GDP deflator are assumed to converge to a rate consistent with the ECB's objective of price stability. In this paper, the endogenous reaction of GDP and inflation in alternative scenarios is switched off and the assumptions obtained from the macroeconomic models are used. For more details, see Bouabdallah et al. (2017).

[39] A limitation is that, by focusing on the EA, estimates do not account for the positive trade spillovers stemming from the rest of the EU. For a more comprehensive analysis of trade spillovers, see Pfeiffer et al. (2021).

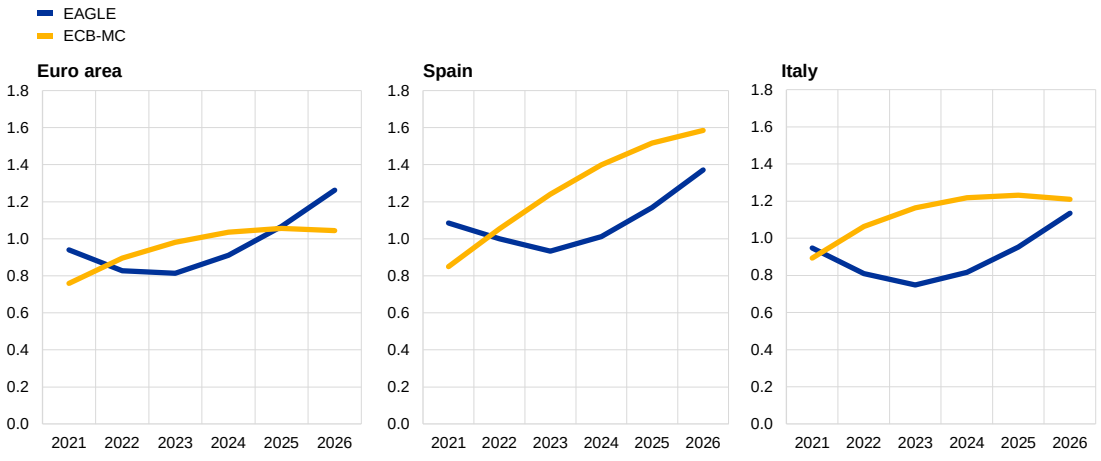
deflationary pressures reflecting the future supply effects of NGEU investment. By contrast, the ECB-MC model (Angelini et al., 2019) features backward-looking expectations where economic agents do not commensurately internalise future outcomes of the programme. The strength of this model comes from its semi-structural nature and close links to the data.

Notwithstanding differences, the fiscal multipliers for government investment associated with the two models emphasise the potency of this fiscal instrument. Chart A shows the fiscal multipliers in the two models for the period 2021-26, i.e. how a 1%-of-GDP government investment shock in all euro area countries affects output. The chart focuses on euro area aggregates as well as the two main beneficiaries of NGEU in absolute terms, Spain and Italy. Despite differences across models, one main conclusion comes out. Notably, the multipliers oscillate around the unity and are thus consistent with the relevant literature, which emphasises the relatively high effectiveness of public investment[40] [41].

Chart A

Effects on output of a 1%-of-GDP government investment shock in all countries that comprise the euro area (2021-26)[42]

(percentage deviation from baseline values)



Source: ECB staff calculations.
Notes: Estimates based on two ECB staff macroeconomic models: a large-scale DSGE model (EAGLE – blue line) and a semi-structural model (ECB-MC – yellow line). Given that the ECB-MC model is still under development, the euro area results of the model are based on a simple aggregation of the five largest countries in the euro area (Germany, Spain, France, Italy and the Netherlands).

Turning to the models' assumptions, the paper makes assumptions for each of the three channels of transmission of NGEU referred to in this paper: risk premium, fiscal stimulus and structural reforms. These assumptions are briefly

40 For a review of typical values of fiscal multipliers, including those associated with government investment, see Coenen et al. (2012), which is based on structural models operated by different policy institutions; and Gechert and Rannenberg (2018), which is based on various studies including both structural and reduced-form models.

41 The EAGLE (undiscounted) long-run government investment multiplier lies between 2.5 and 5 depending on the productivity of public capital (low or high, respectively). For technical details, see Clancy, Jacquinot and Lozej (2016).

42 Six-year shock with immediate implementation, reverting after the sixth year (following an autoregressive process set to 0.9). In the case of EAGLE, monetary policy is restrained by an effective lower bound for three years while public debt is financed by issuing bonds. Public capital productivity is set to 0.05. In the case of ECB-MC, monetary policy remains inactive during the entire simulation period.

summarised here, and then discussed more thoroughly in Sections 5.1, 5.2 and 5.3 respectively.

First, a simple approach is followed for the risk premium channel. As explained in Section 5.1, it is assumed that the impact of NGEU on sovereign risk premia is captured by the initial decline in sovereign bond spreads that was recorded within three weeks of the announcement, made on 18 May 2020, of the initial Franco-German proposal for a recovery fund.

Second, the assumptions for the fiscal stimulus channel closely reflect the contents of the RRPs submitted by all euro area countries except the Netherlands during 2021. Notably, the assumed fiscal stimulus reflects four fundamental features of the RRPs: (i) the funds actually requested; (ii) the planned time profile of their use (though, as discussed in Section 3, the envisaged degree of frontloading may turn out to be on the optimistic side); (iii) the estimate that only about three-quarters of grants and loans will finance additional expenditure in the euro area, rather than already budgeted expenditure; and (iv) the estimate that around four-fifths of such additional expenditure will fund new investment in the form of either government investment or capital transfers, both assumed to have the same multiplier. These assumptions are closer to actual policy plans than those made in previous studies, which were mostly based on stylised scenarios.

An additional assumption is that all existing plans and the reforms outlined in the RRPs will be implemented in full. In the light of the implementation risks identified in Section 3, this assumption is probably too optimistic. This is an important caveat to be borne in mind and calls for estimates to be updated based on the actual execution of the RRPs over time.

Third, estimates for the structural reform channel are particularly difficult, not least because of the challenge of mapping the reform measures to model parameters. In the EAGLE model, which is used to assess the impact of structural reforms, three parameters are predominantly affected by structural reforms: (i) the mark-ups on labour, (ii) the mark-up on goods markets, and (iii) the mark-up on services markets. These parameters are calibrated to be 1.40 for services, 1.20 for goods and 1.30 for labour across euro area countries.[43] This constrains the assessment, since it is not possible to associate both reforms and model parameters with some observed indicators – such as the employment protection legislation indicator of the Organisation for Economic Co-operation and Development (OECD) – and consider how much the gap to the best performer would be closed as a result of the reforms. In order to map the reforms to parameter changes, a mechanical study of the reforms in the RRPs was conducted. This expert-based assessment suggests that Italy's reforms are the most ambitious of the four largest euro area countries (German, France, Italy and Spain) in most markets.[44] At the other end of the

[43] See Gomes et al. (2011). Our values are in line with other existing similar studies, such as Faruqee et al. (2007), Everaert and Schule (2008). Many, if not all, of these studies refer to Jean and Nicoletti (2002), Oliveira Martins et al. (1996) and Oliveira Martins and Scarpetta (1999) for estimates of mark-ups on the basis of OECD data.

[44] As shown in Chart 13 in Section 5.1, Spain has committed to the highest number of RRP reforms. At the same time, the number of milestones and targets per headline reform is relatively low, suggesting that the number of headline reforms may overstate the plan's ambition.

spectrum, Germany's planned measures are assessed as being substitutive rather than additive. France and Spain's are seen as somewhere in-between. It is, therefore, assumed that Italy's labour and services mark-ups will decline by 0.05 percentage points (i.e. from 1.30 to 1.25 and from 1.4 to 1.35 respectively) and its goods market mark-ups by 0.02 percentage points. No mark-up changes are assumed for Germany. Mark-up changes assumed for France and Spain are between 0 and 0.05 percentage points, depending on the ambitions of reforms. Mark-ups in the rest of the euro area are assumed to decline by 0.02 percentage points in each market.

The model mechanisms behind structural reforms have been identified as follows. EAGLE features monopolistic competition in product and labour markets. The degree of competition in the two markets is captured by a mark-up between marginal costs and final prices, and between the marginal rate of consumption/leisure substitution and wages. These mark-ups are inversely related to the degree of substitutability between varieties of goods or labour. By permanently modifying these elasticity parameters, it is possible to simulate the impact of structural reforms that modify the degree of competition in the considered market. In particular, the greater the elasticity of substitution between varieties, the lower the mark-up and the closer the market is to perfect competition. Against this background, a decrease in mark-ups lowers costs for firms that increase their demand for labour and capital. As a result, hours worked and real wages increase, as well as private investment. Higher real wages and cheaper prices, in turn, increase consumption.[45] At the same time, structural reforms support an increase in the production of goods and services that is absorbed through the depreciation of the real exchange rate, Consequently, exports increase, supported by the aforementioned depreciation, while imports also increase, driven by stronger demand.

[45] The effects of labour and product reforms tend to be additive. Notably, real wages increase, given that the increase in labour demand more than counterbalances the increase in labour supply. The former is associated with reforms in the product sector, the latter with reforms in the labour market.

5 Estimated impact of NGEU on output, inflation and public debt

NGEU affects the economy of the euro area and its member countries via the three main channels described and quantified in this section: (i) a risk premium channel, (ii) a fiscal stimulus channel, and (iii) a structural reform channel. First, simply announcing NGEU and its solidarity-based mechanism helped to improve sentiment in sovereign debt markets, reducing risk premia, especially in high-debt countries. This also created fiscal space at national level that helped to achieve a broadly symmetric fiscal policy response across euro area countries. Second, NGEU represents a sizeable debt-financed fiscal stimulus in the euro area. The related multipliers can be expected to be relatively high given both the large share of investment and the EU-wide nature of the stimulus, which promises significant positive trade spillover effects[46]. And third, the structural reforms outlined in the RRPs are expected to increase potential output if successfully implemented. In the next sections, the contribution from the risk premium channel is calculated using the ECB-MC model, the contribution from the fiscal stimulus channel is obtained as an average effect using the ECB-MC and EAGLE models, while the contribution from the structural reform channel is gauged via the EAGLE model.

5.1 Risk premium channel

Even before the RRPs were finalised and the RRF implementation phase had started in 2021, positive confidence effects of NGEU had started materialising in 2020. Together with the Pandemic Emergency Purchase Programme (PEPP) and the other measures taken by the ECB[47] alongside the national fiscal policy responses adopted at that time, NGEU was the game changer that restored confidence in the most vulnerable euro area economies after the sizeable net portfolio outflows and widening spreads they had recorded in March 2020, in the wake of the pandemic shock. As shown in **Chart 12**, while the PEPP played a crucial role in stabilising financial markets after its launch on 18 March 2020, the Franco-German initiative of 18 May 2020, which is the forerunner of NGEU, helped produce a clear downward impact on sovereign yields of vulnerable economies in the euro area.

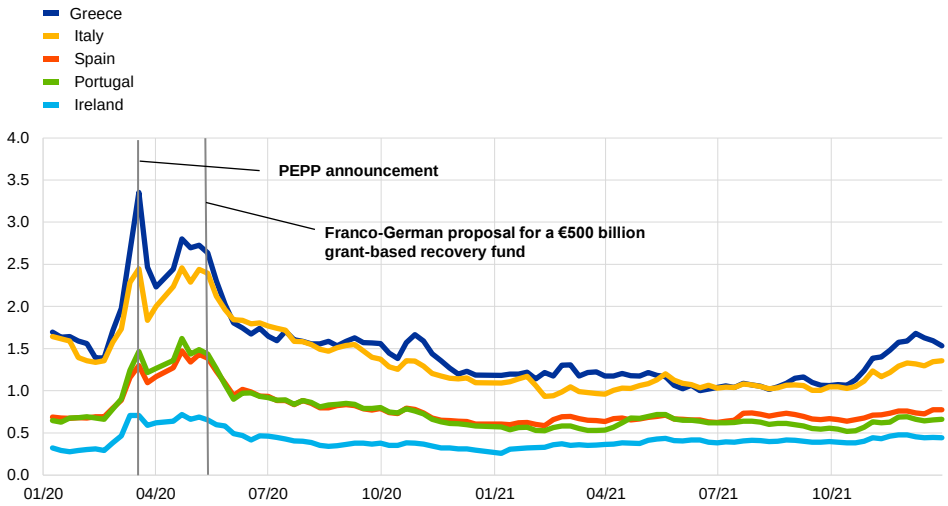
[46] Such spillovers across countries are likely to be amplified under accommodative monetary policy conditions; see, for example, Arce et al. (2016).

[47] Such additional measures included the funding of credit expansion at very favourable terms through a new series of targeted longer-term refinancing operations (TLTROs), as well as several measures in the sphere of banking supervision.

The Franco-German initiative[48] advocated an ambitious €500 billion reconstruction fund that would have provided the worst-hit sectors and countries with EU budget funds to be exclusively used via grants. The European Commission would have raised this sum on the capital market and channelled it to crisis-affected Member States as aid within the EU's multiannual financial framework. As stated in the joint press release, "*the aim is to ensure that Europe emerges from this crisis stronger, united and in a spirit of solidarity (…). Since the impacts of the coronavirus vary from state to state within Europe, cohesion within the Union is in jeopardy. This is why the fund must help all states in Europe to respond appropriately. (…) This will call for an exceptional one-off effort*".[49]

Chart 12

Ten-year sovereign bond yield spreads



Source: Refinitiv.

The NGEU package contains a grant component, implying a significant degree of solidarity.[50] NGEU presents some differences from the initial Franco-German proposal. As described in **Box 1**, it is even larger (more than €800 billion at current prices), although the grant component is smaller (€338 billion). Yet NGEU still involves a significant element of solidarity, which has helped further compress spreads in vulnerable economies (**Chart 12**). Looking at the actual requests for RRF grants and loans in 2021, i.e. before the Netherlands' requests, the lion's share of the euro area's RRF funds (65%) will be absorbed by Spain and Italy[51], as illustrated in **Chart 13**. Germany and France, taken together, will receive 16% of the RRF

48 The initiative came after the finalisation of a first assistance package totalling €540 billion, which was launched in April 2020 and consisted of the three safety nets of the European Stability Mechanism, the European Investment Bank and the European Commission. Only the latter, however, was fully used by Member States (via SURE, amounting to €100 billion).

49 https://www.bundesregierung.de/breg-en/news/dt-franz-initiative-1753890

50 Cimadomo et al. (forthcoming in 2022) show that NGEU results in an improvement in cross-country risk-sharing in the EA.

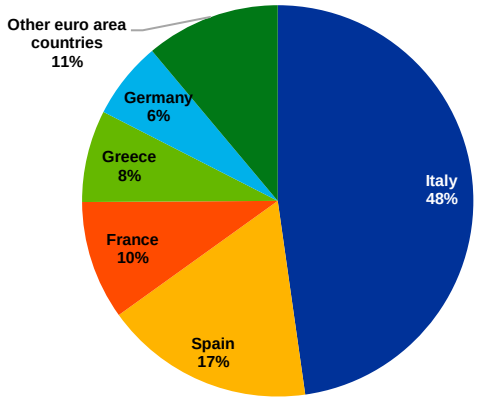
51 Specifically, almost half of RRF funds (48%) are currently estimated to be absorbed by Italy. This amounts to €191.5 billion in grants and loans, or 11.6% of Italy's 2020 GDP. Spain has only requested grants (€69.5 billion), which account for 17% of the requested RRF funding and 6.2% of its 2020 GDP (Chart 13).

funding. Of the remaining 19% for the smaller euro area economies, half will be absorbed by Greece in the form of grants and loans.

Chart 13

Allocation of RRF funds in the euro area based on actual country requests for grants and loans in 2021

(2021-26, percentage share of total take-up of grants and loans)



Sources: European Commission and ECB calculations.
Note: No information is available for the Netherlands as its RRP had still to be submitted by the time this paper was finalised.

The downward impact of EU debt plans (NGEU and SURE) on sovereign yields is difficult to quantify, but available evidence suggests that it has been sizeable. It is particularly difficult to reliably separate the effect of NGEU from other factors such as the monetary policy response to the crisis or the national fiscal policy response, or from factors unrelated to the pandemic that had already led to a decline in the equilibrium interest rate before the crisis. Real-time estimates of the effect of NGEU and SURE on ten-year euro area sovereign bond yields indicate a downward impact in the order of 10-25 basis points in Italy, Spain and Portugal by the end of 2020, as the outcome of revisions in national debt-to-GDP projections and changes in risk sentiment (blue bars in **Chart 14**).[52] The ex post estimates from December 2021 show an even stronger impact of more than 30 basis points.

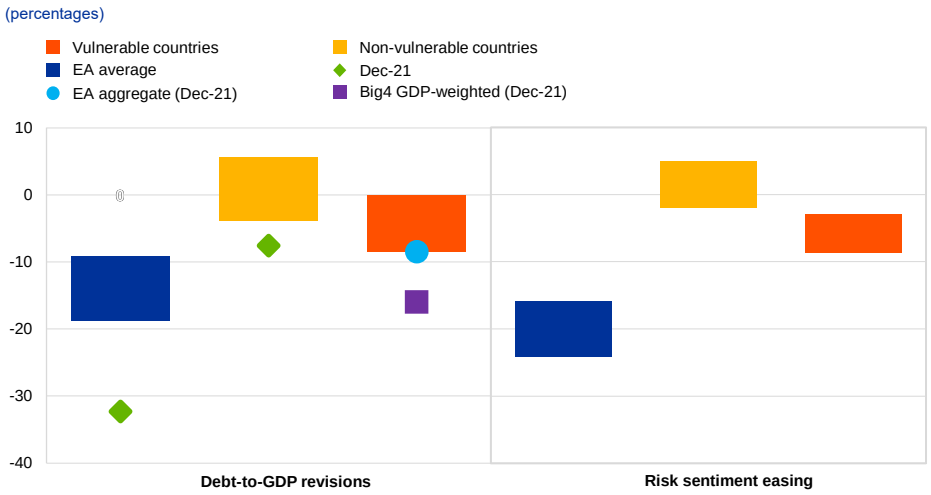
Taking into account the uncertainty surrounding the estimates, in the subsequent analysis the paper approximates the impact of NGEU on the sovereign risk premium as the initial decline in sovereign bond spreads within three weeks of the announcement of the Franco-German recovery fund proposal. This assumption is, of course, debatable. On the one hand, it may be argued that the true contribution from NGEU is lower, given the parallel effect of the

52 Chart 14 is based on ECB staff calculations. The impacts of NGEU and SURE on ten-year EA sovereign bond yields are estimated via two channels: (i) revisions in national debt-to-GDP projections (left panel); and (ii) changes in risk sentiment over the three trading days leading up to specific announcements related to the EU debt plans (right panel). In the left panel, the impacts of revisions in national debt-to-GDP projections are obtained from debt-yield elasticities based on three models: a regression approach of Laubach (2009); a vector autoregression; and a term-structure model building on Dewachter et al. (2015). The ranges result from different assumptions about whether EU loans effectively lower national debt (like grants) or not. In the right panel, the range of impacts of changes in risk sentiment over the three trading days leading up to specific announcements related to the EU debt plans are based on elasticities from two models: (a) a panel model of the eight largest EA economies with the EURO STOXX 50 Volatility Index (VSTOXX) as a proxy for risk sentiment; and (b) a vector autoregression using the Composite Indicator of Sovereign Stress (SovCISS) dataset.

PEPP and the national fiscal policy responses. On the other hand, there is no guarantee that in spring 2020 spreads would not have continued increasing without the EU policy responses, suggesting that the impact of NGEU might have been even stronger. In any case, the limits of this assumption should be borne in mind when interpreting the results.

Chart 14

Impact of joint EU issuance on ten-year sovereign bond yields in the euro area and selected groups of euro area countries



Source: ECB staff calculations.
Notes: "EA average" refers to the GDP-weighted average of "vulnerable countries" (Spain, Italy, Portugal) and "non-vulnerable countries" (Austria, Belgium, Germany, France, the Netherlands). For the methodologies used, see footnote 52. The bars show real-time range estimates from 2020. The ranges illustrate initial uncertainty related to additionality of NGEU spending and statistical treatment of joint EU debt issuance in national statistics. The diamonds show ex post estimates from December 2021.The "Big4 GDP-weighted (Dec-21)" impact is based on the debt-to-GDP revisions in the four largest euro area economies. The "EA aggregate (Dec-21)" impact takes into account the GNI-based euro area share of joint EU debt and is therefore based on a smaller debt-reducing impact.

A reduction in the country risk premium leads to savings for the sovereign and stimulative effects for the whole economy that can be best estimated by the ECB-MC model. A fall in the risk premium improves financing conditions for the government, households and non-financial corporations, alleviating debt sustainability concerns. The paper attempts to evaluate the macroeconomic implications of the sustained compression in sovereign spreads induced by the NGEU announcement through the lenses of the ECB-MC model.[53]

According to the model simulations, a sustained reduction in the risk premia, as quantified above, has non-negligible macroeconomic effects. The improved financing conditions gradually propagate to the real economy and lift euro area GDP by 0.2% within the simulation horizon (**Chart 15**). Unsurprisingly, the effect is significantly more sizeable for Spain and Italy (up to 0.5%), where the largest compression of sovereign spreads took place. Since the risk premium is measured as the spread on low-risk sovereign bonds, proxied by German Bunds, this channel

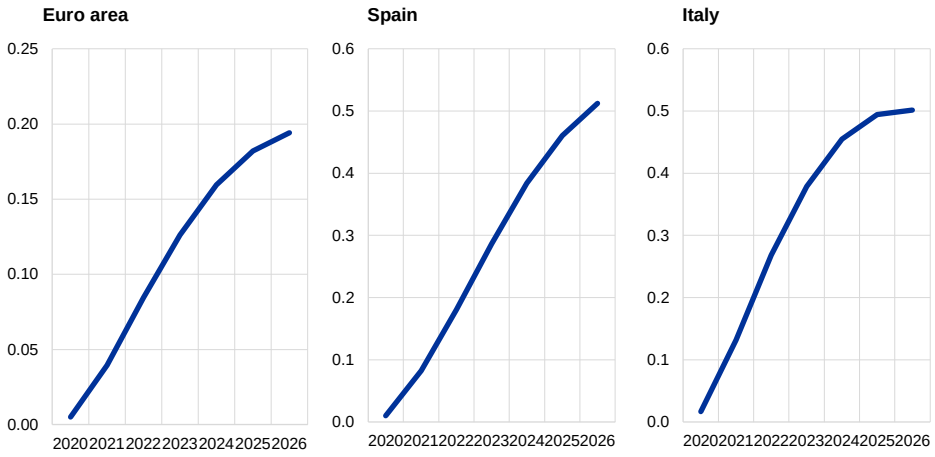
53 As outlined in Angelini et al. (2019), one of the major contributions of the new semi-structural model of the ECB (ECB-MC) is allowing for an explicit role of the financial sector. This feature primarily provides for a realistic monetary policy transmission mechanism. Also, it makes the model suitable for specific questions linked to the financial sector, such as the effects of country risk premia, analysed in this paper.

has by design little effect on low-yield countries and no effect on Germany. This tends to underestimate the impact of this channel on the aggregate euro area level.

Chart 15

Effect of the NGEU-induced reduction in credit risk premia on GDP (2021-26)

(percentage deviation from baseline values)



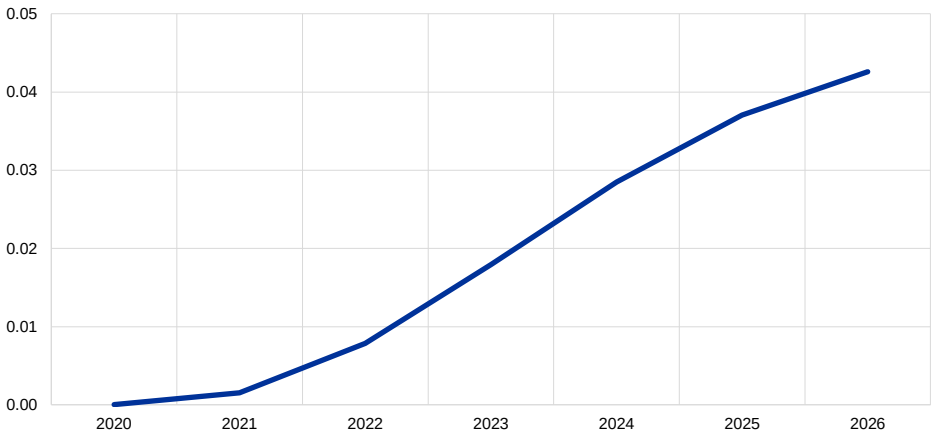
Source: ECB staff calculations.
Note: Given that the ECB-MC model is still under development, the euro area results of the model are based on a simple aggregation of the five largest countries in the euro area (Germany, Spain, France, Italy and the Netherlands).

Given the limited boost to euro area output, no material effects on euro area inflation are to be expected from this channel. As the risk premium does not affect prices directly, the effects on the nominal side materialise through overall economic activity, which with time slightly benefits from the spread compression. The model simulation suggests that the rise in euro area inflation within this channel is very limited, not exceeding 0.1 percentage points over the simulation horizon (**Chart 16**). The inflationary effects are more noticeable, albeit still limited, in Spain and Italy.

Chart 16

Effect of the NGEU-induced reduction in credit risk premia on HICP inflation in the euro area (2021-26)

(percentage point deviation from baseline values)



Source: ECB staff calculations.
Notes: Given that the ECB-MC model is still under development, the euro area results of the model are based on a simple aggregation of the five largest countries in the euro area (Germany, Spain, France, Italy and the Netherlands). HICP stands for Harmonised Index of Consumer Prices.

5.2 Fiscal stimulus channel

Compared to earlier studies, the quantitative evidence available since most RRPs were approved allows for a more up-to-date calibration of the fiscal stimulus stemming from NGEU.[54] Three quantitative elements have emerged from the national RRPs that enable a more accurate – though still preliminary – analysis of the potential macroeconomic impact of NGEU when compared with a hypothetical scenario where the whole RRF envelope is spent and its uses consist exclusively of new productive investment that had not been budgeted before.

First, Member States have requested almost all allocated grants, but significantly fewer loans than were made available by the EU through the RRF. The economic impact of NGEU will be limited by the fact that only 69% of the total RRF funds available have been requested by EU Member States. Out of a total entitlement at EU level amounting to €723.8 billion at current prices, €401 billion has been requested in the euro area (3.5% of 2020 euro area GDP) and €498 billion in the EU as a whole.[55]

Second, around three-quarters of RRF-funded measures will provide a genuine fiscal stimulus. Initial, still preliminary, estimates are available on whether RRF funds will provide a genuine fiscal stimulus or just be used to fund measures that had

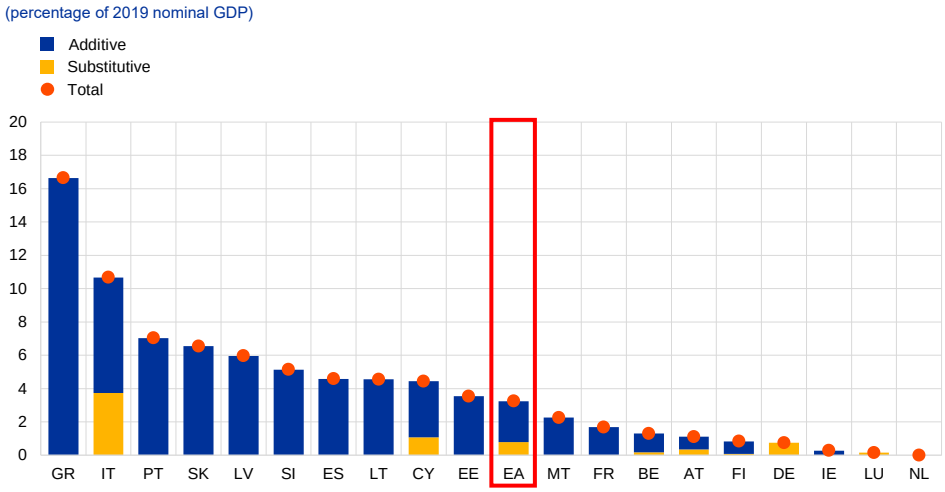
54 By the time this paper was finalised, the RRPs of all EA countries except the Netherlands had been approved. All evidence and findings presented in this sub-section therefore refer to the EA except the Netherlands.

55 Considering also the other NGEU instruments, while NGEU has a total envelope amounting to about €807 billion or 6% of 2020 EU GDP, only a bit more than €580 billion or 4.4% of EU GDP had been requested in the Union by the time this paper was finalised.

already been budgeted. As the blue bars in **Chart 17** show, in the euro area about 77% of RRF grants and loans are estimated to finance new fiscal measures and are, therefore, additive, i.e. provide a genuine fiscal stimulus. The remaining 23%, as indicated in the yellow bars, are estimated to be used to fund pre-existing measures and are, therefore, substitutive.

Chart 17

Additive and substitutive measures funded with the RRF in the euro area



Sources: For Spain and Italy, government Recovery and Resilience Plan. For the other euro area countries, Eurosystem and ECB assumptions and calculations.
Notes: Preliminary estimates provided by the national central banks (NCBs) in the WGPF. "Additive" (blue bars in the histograms): RRF grants and loans used to finance new fiscal measures (estimated at about 77% of total in the euro area, though subject to revisions). "Substitutive" (yellow bars in the histograms): RRF grants and loans used to fund pre-existing measures in a few countries (Germany, Luxembourg, and to a lesser extent Austria, Cyprus and Italy). The information for the Netherlands is not included since its RRP had not been submitted to the European Commission by the time this report was finalised.

Third and finally, a large majority, but not all, RRF-funded expenditure will be used to finance productive investment. As described in Section 2.1, more than 80% of euro area expenditure financed with the RRF is expected to be allocated to public investment and capital transfers with relatively higher fiscal multipliers (see **Box 5**). At the same time, about a -fifth of RRF-funded expenditure will not be used to finance productive investment and, therefore, can be assumed to have somewhat lower multipliers.

Reflecting this calibration, the boost to euro area GDP provided by the NGEU fiscal stimulus is estimated to be around 0.5% as early as 2022-23, and to largely persist in the subsequent years of the NGEU programme. As shown in **Chart 18**, the output effects are significantly higher in countries that particularly benefit from the scheme, like Spain and Italy.[56]

Looking beyond 2026, it can be reasonably assumed that the positive effect on real GDP will persist. While standard fiscal stimuli are usually expected to have a limited long-term impact, the very large investment component of the NGEU promises to have a lasting positive impact on output via capital accumulation. This

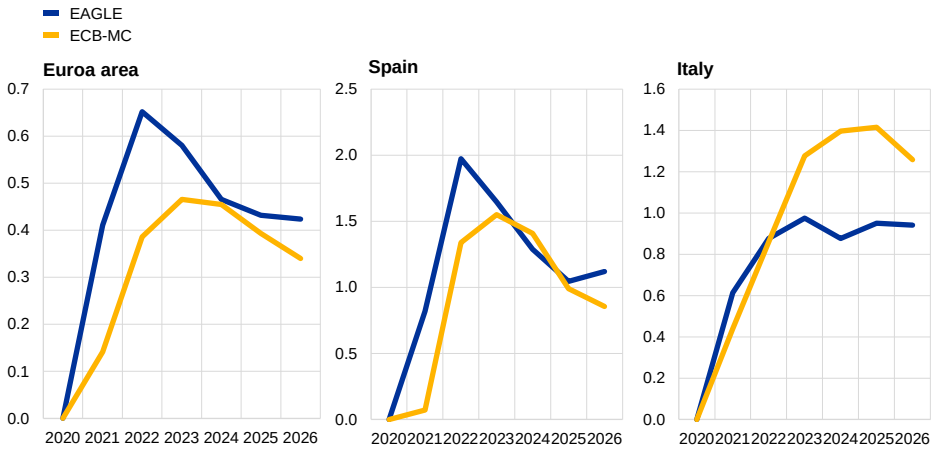
[56] Spain's programme, being more frontloaded, is expected to raise real GDP by up to 2% as early as 2022 and 1-1.5% thereafter. In Italy, the effects on GDP gain strength more gradually, amounting to around 1-1.5% between 2023 and 2026.

impact from fiscal expenditure on the level of output is estimated to be 0.4% in the medium term. Persistent but not permanent, it could gradually vanish after 2026.

Chart 18

Effect of NGEU on GDP via the fiscal channel (2021-26)

(percentage deviation from the baseline values)



Source: ECB staff calculations.
Notes: Estimates based on two ECB staff macroeconomic models: a large-scale DSGE model (EAGLE – blue line) and a semi-structural model (ECB-MC – yellow line). Given that the ECB-MC model is still under development, the euro area results of the model are based on a simple aggregation of the five largest countries in the euro area (Germany, Spain, France, Italy and the Netherlands).

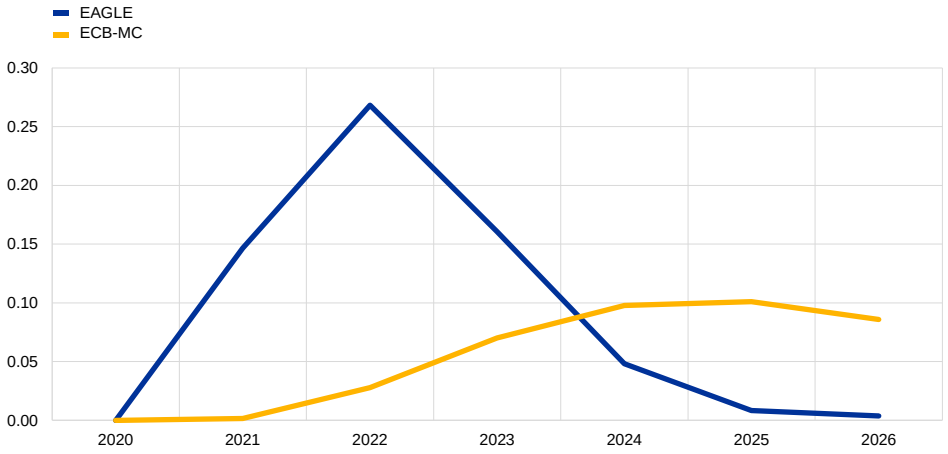
While the effects of NGEU are more pronounced for the main RRF beneficiaries, it should be emphasised that they are estimated to be positive in all euro area countries. The net contributors to the RRF are also expected to benefit from it in the medium run, and not only because of the structural reforms in in their RRPs, but also thanks to trade spillovers stemming from stronger demand in the EU internal market. Pfeiffer et al. (2021) estimate the trade spillover effects to account for around a -third of the total NGEU effect on EU output.

Turning to inflation, models suggest no significant effects for the euro area. This is shown in **Chart 19**. While there may be more material inflation effects in individual euro area countries, especially the main beneficiaries, these effects look very much dependent on the model used. Forward-looking models with fully rational agents – like EAGLE – tend to emphasise that rapid, demand-driven inflation is quickly offset by disinflationary pressures due to expected increases in productive capacity in the future. This is the narrative implicit in the blue line in **Chart 19**. At the same time, models with backward-looking expectations – like ECB-MC – tend to mostly reflect past and contemporaneous additional demand, which gradually pushes up prices. This narrative is reflected in the yellow line of the chart. The exact outturn will depend on which forces eventually prevail; hence, the jury is still out. It may, however, be inferred that the longer pandemic-related supply bottlenecks persist, the more the second kind of models will tend to prove right, at least in the initial years.

Chart 19

Effect of NGEU on HICP inflation in the euro area (2021-26)

(percentage point deviation from the baseline values)



Source: ECB staff calculations.
Notes: Estimates based on two ECB staff macroeconomic models: a large-scale DSGE model (EAGLE – blue line) and a semi-structural model (ECB-MC – yellow line). Given that the ECB-MC model is still under development, the euro area results of the model are based on a simple aggregation of the five largest countries in the euro area (Germany, Spain, France, Italy and the Netherlands). HICP stands for Harmonised Index of Consumer Prices.

5.3 Structural reform channel

Structural reforms are a key component of the RRPs, the macroeconomic impact of which remains unassessed. Investment and other fiscal measures play an important role in supporting recovery and medium-term growth prospects. The impact of structural reforms is, however, commonly considered to be even more important for potential output. While the macroeconomic impact of additional fiscal stimulus has been subject to some studies, the impact of the structural reforms in the RRPs has not been studied. Estimating the impact of structural reforms is very difficult – as explained in Section 4 – and subject to huge uncertainty; in the following, a preliminary exercise is attempted.

Adverse macroeconomic side effects in the short term are likely to be relatively small in comparison to the RRF's fiscal stimulus. Certain reforms can have adverse short-term effects on economic activity before their beneficial impact materialises over time.[57] However, based on the currently available information on the RRPs, it is difficult to find clear examples of reforms planned in the short term that could risk stifling recovery. Most notably, only a few of the planned labour market reforms are related to changes in employment protection legislation, for which some studies have found significant short-term transition costs. The dynamic effects of the reforms related to the public sector and the digital and green transitions are more difficult to assess, given limited overlaps with the literature. Even so, it seems plausible that households and firms would immediately benefit from policy

[57] See International Monetary Fund (2016).

actions that speed up administrative processes, reduce court congestion, ensure swifter payments in public procurement and enhance digital training.

The impact of structural reforms on long-run GDP depends on the level of reform ambition in the RRPs but is expected to be significant for the euro area aggregate. The effect of structural reforms on GDP is calculated using ECB's EAGLE model, as described in Section 4. Among the four largest euro area economies, the impact is estimated to be largest in Italy, where GDP may turn out to be 3.1% higher than under a counterfactual without the full implementation of the RRP[58], as the outcome of ambitious reforms if properly implemented[59]. The impact is expected to be smallest in Germany, with an increase of only 0.1%, despite positive spillovers from other countries (**Chart 20**). On aggregate, the structural reforms envisaged by the RRPs are estimated to result in a 1.0% increase in euro area GDP. The estimates should be interpreted as long-run effects, as it typically takes time for reforms to show their full impact (in some cases several years).[60]

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58 This result is consistent with previous findings in Banca d'Italia (2021).

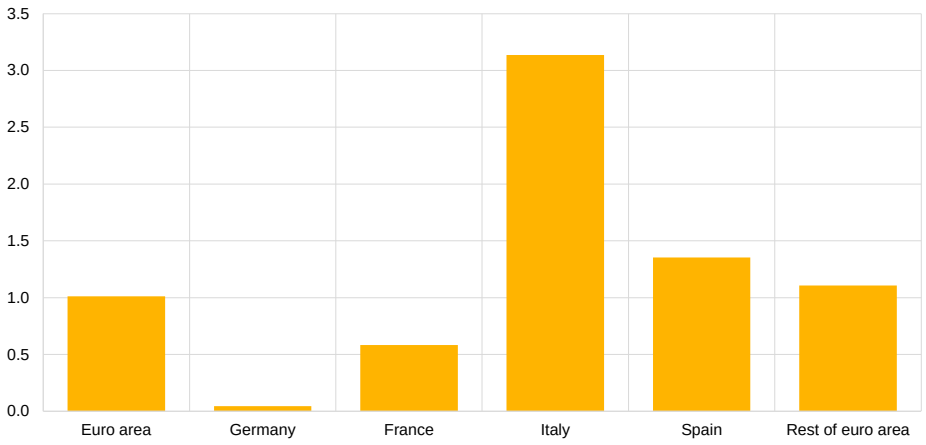
59 The most important structural reforms in Italy's RRP are:
- Reforms of the justice sector and public administration. This includes (i) in the judiciary, measures such as simplified procedures, promoting dispute resolutions, introducing targets to reduce the length of judicial proceedings (90% of civil cases to be cleared before the end of the plan), temporary hirings to reduce court backlogs, further digitalisation of the judiciary; and (ii) in public administration, reform of public employment (aimed at hiring more capable and specialised managerial staff, as well as re-training and skill upgrading for existing staff), reducing red tape and strengthening administrative capacity.
- Reform of public procurement, by (i) introducing urgent measures to simplify and digitalise public procurement procedures in view of the realisation of RRP projects; (ii) establishing a single body for public procurement; (iii) reforming the Public Procurement Code, with actions aimed at reducing fragmentation of contracting authorities, requiring establishment of an e-platform, and defining interoperability and interconnectivity requirements; and (iv) substantially reducing late payments by public administrations and health authorities over time.
- Fiscal reforms aimed at (i) tackling tax evasion, including via electronic payments and transactions, subject to fines if not used; (ii) strengthening the framework for spending reviews with clear milestones and targets; and (iii) completing the 2009 reform of fiscal relations across levels of government (fiscal federalism).
- Competition reforms, through (i) annual competition laws to be adopted each year (2021-24) to reduce barriers to competition in various sectors; (ii) measures aimed at increasing competition in utilities (electricity, gas, water), waste management and transport (ports, rail and highways); (iii) regarding local public services, prioritising competitive procedures to award contracts, revising the rules on aggregation in view of economies of scale, and applying the general principle of proportionality in length and proper compensation; and (iv) consolidating, digitalising and professionalising market surveillance.
- A number of other reforms, including in (i) the labour market (e.g. active labour market policies, stronger incentives to work legally, enhanced opportunities for women, young and disabled people, new childcare facilities); (ii) the business environment (e.g. incentivising private investment via the Transition 4.0 and Superbonus programmes, supporting investment in strategic value chains, reducing late payments by the public administration, improving sectoral regulations, promoting female entrepreneurship); (iii) the education system (e.g. reorganising the school system to match demographic trends); (iv) promoting regional and social cohesion; and (v) the health sector (e.g. strengthening local healthcare and enhancing telemedicine, implementing a technological and digital update of the health system).

60 For instance, Bordon et al. (2016) find that the positive impact of a typical labour market reform on output becomes statistically and economically significant after around two to three years. The effect of product market reforms comes through faster. The impacts are found to be state-dependent.

Chart 20

Effect of NGEU on GDP in the long run: structural reforms

(percentage deviation from the counterfactual)



Source: ECB staff calculations.

Alternative estimates by an ESCB expert team suggest that NGEU could raise euro area potential output by 1.4% over the long run. Seven NCBs from euro area countries, covering more than three-quarters of nominal euro area GDP, sent experts to the team. The methodology and results are described in **Box 6**.

Box 6

Preliminary estimates of how NGEU may affect euro area potential output[61]

The ESCB team employed their regular tools to estimate the potential output effects of NGEU. They built a counterfactual scenario without NGEU, and then different scenarios with NGEU that differed in the degree of implementation of fiscal expenditure and reforms. While the participating NCBs used different methods, in this exercise they all relied on the same two databases, one on NGEU-related fiscal expenditure and another on the structural reforms in the national RRPs.[62]

Based on aggregated estimates of the expert team, the fiscal expenditure and structural reforms of NGEU could boost potential output in the euro area by 1.4% by 2030. There is also a visible impact on the growth rate, reaching almost 0.2 percentage points in 2030. The impact on the growth rate first comes from fiscal expenditure via capital contributions and later, as the impact of structural reforms kicks in, via the increasing contribution of trend growth in TFP and to a lesser extent via the labour contribution (Chart A). This result, albeit not directly comparable, is close to the long-run impact of structural reforms estimated with the ECB's EAGLE model (**Chart 20**).

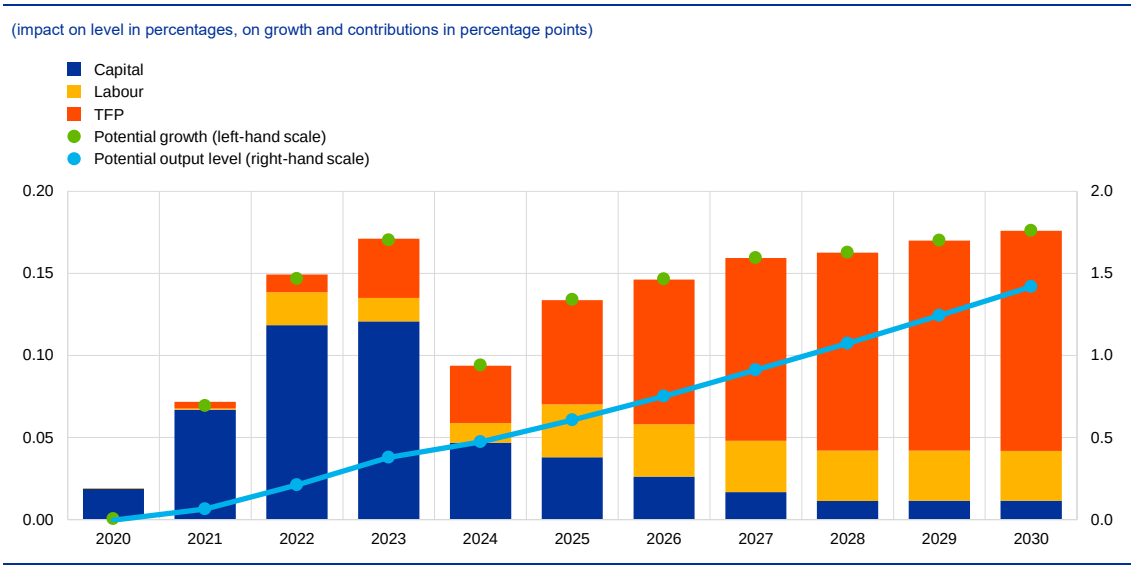
61 This box was prepared by Bela Szörfi (ECB), based on estimates of a dedicated ESCB expert team: Jan Kuckuck, Florian Kajuth and Marcus Jüppner (Deutsche Bundesbank), Riccardo Zago and Antoine Sigwalt (Banque de France), Monica Correa and Javier Quintana Gonzalez (Banco de España), Maria Lisa Rodano (Banca d'Italia), Cláudia Duarte, Paulo Júlio and José Maria (Banco de Portugal), Marianthi Anastasatou (Bank of Greece), Jude Darmanin (Central Bank of Malta) and Julien Le Roux, Katalin Bodnár and Pascal Jacquinot (ECB).

62 In some cases the results obtained with other models were also reported. In particular, alternative results for the Portuguese case based on the structural model PESSOA were obtained by reducing wage and price mark-ups and the degree of inefficiency in the intermediation of financial funds. For more details, see Júlio, P. and Maria, J. (2017).

The results of the expert team assume the full, successful implementation of both fiscal expenditure and structural reforms. On the one hand, this scenario might be regarded as optimistic, since less successful implementation could, of course, result in lower impact from NGEU. On the other hand, not all reforms are quantifiable at this stage, so the impact of some reforms may not be included in the estimations. Moreover, this exercise does not account for spillover effects.

Chart A

Impact of NGEU on the potential output of seven euro area countries



Source: ESCB expert team calculations.
Notes: The seven countries aggregated are Germany, Spain, France, Greece, Italy, Malta and Portugal. Their historical aggregated potential growth is very close to the potential growth of the euro area as a whole.

Estimates of the long-run impact of NGEU through the structural reform channel are subject to high uncertainty. To put the model-based estimates into context, a previous study based on the Commission's QUEST model found that euro area GDP could be around 6% higher after ten years if individual countries were to halve the gap to the best-performing Member States in terms of economic structures and institutional quality.[63] This result, while not fully comparable, appears to be one order of magnitude larger than the estimated impact of NGEU. Taken at face value, this discrepancy would imply that the RRP reforms are overall not sufficient to halve the gap to the best-performing Member States in terms of economic structures and institutional quality in all countries. However, an important caveat is that only a relatively small part of the RRP reforms are "classical" and thus capable of being captured by standard institutional indicators or macroeconomic models. Thus, the estimated long-run impact on potential output of 1% might not fully capture the transformative impact of NGEU.

63 See in 't Veld et al. (2018).

5.4 Expected overall impact

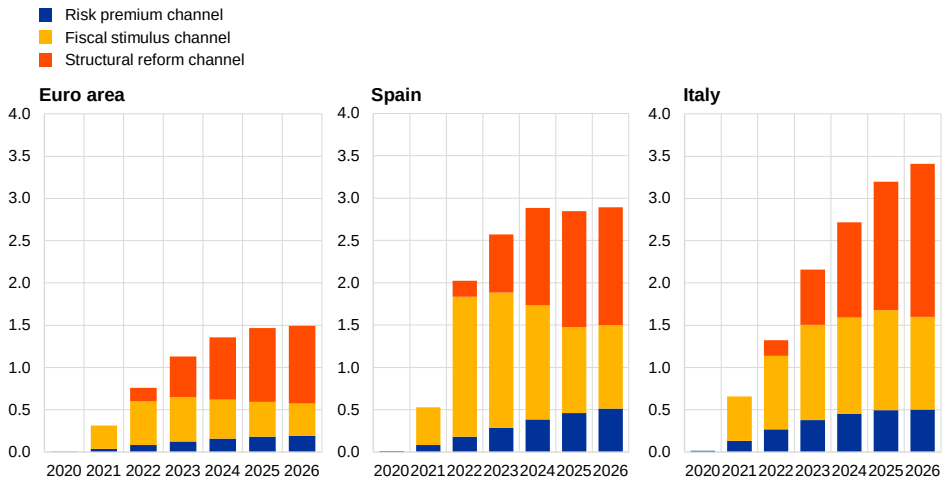
Output and inflation

The model simulations suggest that NGEU will have a significant positive effect on output overall. Taking all three main channels together, NGEU may increase euro area GDP by around 1.5% by 2026 (**Chart 21**). The effect is estimated to be significantly stronger for the main NGEU beneficiaries – just below 3% for Spain, and 3.5% for Italy. As regards the contributions of individual channels, the risk premium channel is stronger for Spain and Italy than for the euro area as a whole, given the stronger downward impact of NGEU on sovereign yields in these countries. The fiscal stimulus channel initially brings the strongest contribution and partly unwinds in later years. It is expected to have a lasting positive impact on output, mainly thanks to the large share of investment resulting in an increase in capital stock. Finally, the structural reform channel is expected to contribute with a delay, but become prominent in the medium run, assuming successful implementation of the reforms in the RRPs.

Chart 21

Overall effect of NGEU on GDP (2020-26)

(percentage deviation from baseline values)

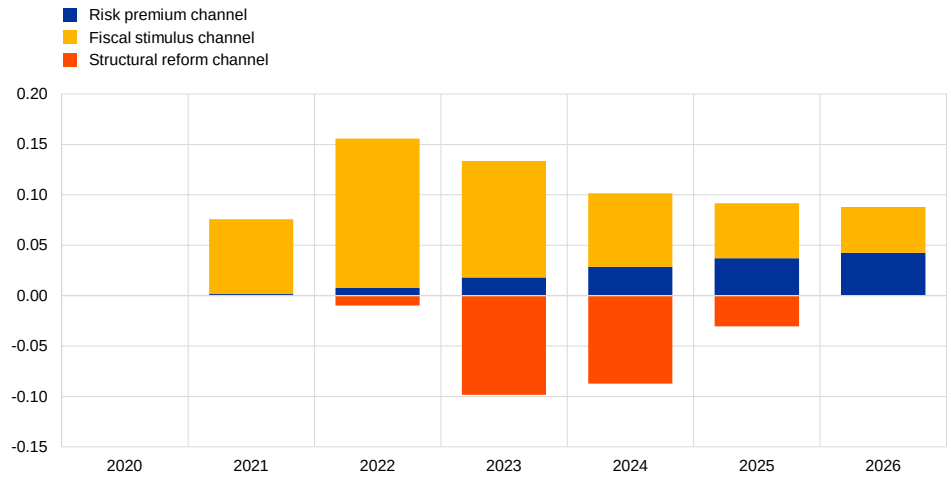


Source: ECB staff calculations.
Notes: The contribution from the risk premium channel is calculated using the ECB-MC model, the contribution from the fiscal stimulus channel is an average effect as calculated using the ECB-MC and EAGLE models, and the contribution from the structural reform channel is calculated using the EAGLE model. The overall effect is calculated as a sum of the effects from individual channels. Possible interactions between the channels are not considered because they are relatively minor in the models used for the simulations.

The overall effects on inflation in the euro area over the medium term will likely be limited, subject to the assumption of temporary implications of supply bottlenecks. The fiscal stimulus can be expected to contribute up to 0.2 percentage points to euro area HICP inflation following the initial fiscal stimulus provided by the NGEU funds (**Chart 22**). The implementation of structural reforms can be expected to have disinflationary effects, largely offsetting the stimulus effect.

Chart 22

Overall effect of NGEU on HICP inflation in the euro area (2020-26)



Source: ECB staff calculations.
Notes: The contribution from the risk premium channel is calculated using the ECB-MC model, the contribution from the fiscal stimulus channel as an average effect is calculated using the ECB-MC and EAGLE models, and the contribution from the structural reform channel is calculated using the EAGLE model.

It should be stressed that the overall effects on output and inflation are subject to great uncertainty and should be interpreted with caution. In addition to standard model uncertainty, the effect from the fiscal stimulus and structural reform channels critically hinges on the absorption of the NGEU funds and their effective use, as well as implementation of the reforms. The quantification of the risk premium channel suffers from uncertainty related to the genuine impact of NGEU on sovereign risk premia and its propagation to the private sector.

Moreover, several additional factors not captured by the models may affect the estimates in either direction. On the upside, the most important factor is that public investment may, on the whole, crowd in private investment, since RRF funding will likely act as a catalyst for investment funding in capital markets. This is a crucial aspect that will require more analysis in the future. Moreover, additional trade spillovers not captured by the analysis will originate from non-euro area EU Member States. On the downside, it may be argued that some badly targeted public investment projects could crowd out private investment, although this effect will probably be less relevant than the overall crowding-in effect. More importantly, the persistence of COVID-19-related supply bottlenecks and the possibility of lower absorption of NGEU funds than currently foreseen seem to be the two most prominent downside risks to the estimates.

Public debt

NGEU may also lead to some improvement in the debt outlook, mainly in high-debt countries. The public debt outlook can be expected to benefit from positive macroeconomic effects via all three channels reviewed in previous sections, as well as interest rate savings, mainly from the risk premium channel. NGEU also has

implications for the fiscal assumptions underlying the debt projection. It brings budgetary savings to the extent to which the grants received are used to finance expenditure that would be effected even without NGEU (substitutive grants). Conversely, NGEU increases national public debt to the extent to which loans are used to finance new expenditure (additional loans). The impact from the NGEU funding beyond the NGEU horizon depends on how the related spending is withdrawn. In principle, NGEU funds should not finance recurrent spending and, as such, should be withdrawn when the NGEU funding ends, implying a relatively strong fiscal adjustment. As a default, the ESCB's DSA tool assumes broad compliance with the Stability and Growth Pact (SGP), which implies a gradual adjustment in the structural budget balance. As a result, expenditure financed through NGEU grants is expected to be withdrawn because, if maintained, it would lead to an increase in the fiscal deficit and thus to non-compliance with the SGP. However, only a gradual adjustment of the expenditure financed through loans would not violate SGP requirements. It would, however, imply a higher deficit than a non-NGEU scenario, leading to extra debt accumulating during the period of convergence towards countries' medium-term budgetary objectives.[64]

To assess the overall effect of NGEU on public debt, a counterfactual scenario in which no NGEU would exist is estimated. The paper uses the public debt outlook based on the Eurosystem staff macroeconomic projection of December 2021 as a starting point and assumes that it includes, to the extent possible, all currently expected impacts of NGEU. It then subtracts all debt-reducing and debt-increasing effects identified in the previous sections, broken down into four components:

- The risk premium channel includes all confidence and solidarity effects on GDP and inflation identified in Section 5.1, and interest rate savings in countries where NGEU reduces market expectations of future sovereign borrowing costs.
- The macroeconomic impact of the fiscal stimulus channel includes effects on GDP and inflation, as estimated in Section 5.2.
- The fiscal impact of the fiscal stimulus channel includes, for individual countries, the debt-reducing effects from substitutive NGEU grants and the debt-increasing effects from additive NGEU loans. For the euro area, which is approximated by the aggregate of its four largest economies, the fiscal impact corresponds to the share of these countries in the EU debt issuance corresponding to NGEU's grant component (loans are already included in government debt of individual countries).
- The structural reform channel includes the impact on potential output and inflation, as estimated in Section 5.3.

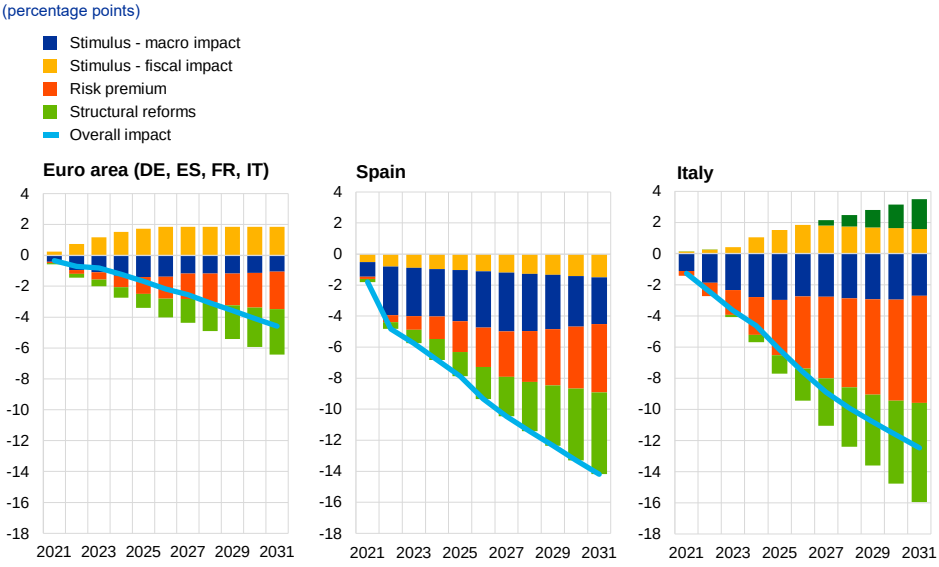
The overall estimated debt-reducing effect of NGEU is moderate for the euro area, but significantly larger for high-debt countries. Chart 23 shows the

[64] The fiscal policy assumptions considered in this analysis are still based on the current version of the SGP and do not consider any possible adjustment that may be introduced in the context of the ongoing EU fiscal governance review. The situation may be different in countries that channel borrowed NGEU funds to the private sector. The analysis does not consider any potential budgetary implications of recalculating the forward-looking allocation criteria determining allocations of 30% of funds in 2023.

findings obtained using the ESCB's DSA tool, as introduced in Section 4. These results confirm that the estimated debt-reducing effect of NGEU is significantly larger for high-debt countries than for the euro area aggregate, which in **Chart 23** is approximated by its four largest economies. NGEU's relatively small impact on the euro area's debt of about 4 percentage points not only reflects NGEU's limited impact on Germany but also the euro area's very likely lion's share of joint EU debt issuance.[65]

Chart 23

Estimated impact of NGEU on government debt-to-GDP ratio over a ten-year horizon



Source: ECB staff calculations using the ESCB's DSA tool.
Notes: The impact of NGEU on the debt-to-GDP ratio stems from four effects: (i) stimulus effect produced by NGEU on output and inflation (blue bars); (ii) budgetary effect of the stimulus (yellow bars) through additive loans (-) for Italy (yellow bars indicate the debt-increasing impact of loans, the dark green green bars the possible debt-increasing impact if related spending is withdrawn only gradually as only the overall structural balance is assumed to be broadly compliant with SGP requirements and the adjustment is expected to be no stronger than required), through substitutive grants (+) for Spain and through GNI-based share of the four largest euro area countries in the EU debt issuance for the big-4 aggregate (grant component only, as loans are already included in countries' debt); (iii) risk premium – interest savings from lower interest rates and the associated positive macroeconomic effect (red bars); and (iv) impact of NGEU on potential output through structural reforms (EAGLE estimates) (light green bars).

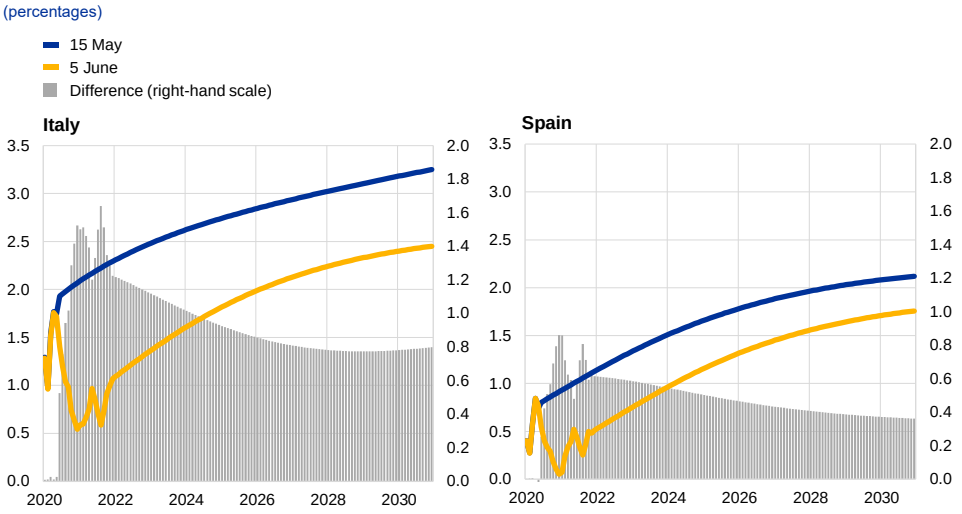
NGEU has the potential to reduce the government debt-to-GDP ratio by up to 14 percentage points in Spain and 12 percentage points in Italy by 2031. First, the favourable risk premium effect is estimated to reduce the Italian government debt-to-GDP ratio by almost 7 percentage points by 2031 (**Chart 23**). This effect is estimated to be only 4 percentage points for Spain, as the estimated impact of NGEU on government bond spreads in Spain was somewhat smaller than in Italy. As shown in **Chart 24**, market expectations for the two-year Italian yield shifted more substantially down after the Franco-German announcement. Second, the positive impact of stimulus on output and inflation is similar for the two countries and estimated to reduce the government debt-to-GDP ratio by around 3 percentage

65 The paper approximates the EA by aggregating its four largest economies – Germany, Spain, France and Italy. The aggregate is the sum of government debt of these four countries plus the GNI-based share of these four countries in the part of the EU issuance corresponding to NGEU's grant component. This is to reflect that the EU debt is no longer just the sum of debt in individual countries but should also include debt issued at EU level. The loan component is already part of government debt of the individual countries. It should be noted that according to current plans, official statistics will only include EU debt in the EU debt aggregate and not in the EA debt aggregate.

points. This impact in Italy will be largely offset by the debt-increasing effect of the extra loans that Italy is expected to draw. As Spain is not planning to use EU loans, the fiscal effect is positive, since it is assumed that part of the grants will finance existing expenditure and thus be effectively used to reduce debt. Third, the estimated positive effect on potential growth from implementing structural reforms may imply a reduction in the debt-to-GDP ratio of up to 6 additional percentage points. This effect is somewhat delayed because it takes time for the structural reforms to take effect and because of the initial disinflationary effect of the reforms. Again, the estimate should be considered an upper bound, since the potential output effect crucially depends on the assumption that structural reforms will be implemented in a full and timely way and yield the desired results.

Chart 24

Market expectations of two-year government bond yields



Source: ECB staff calculations.
Note: Market expectations are calculated as the par forward rates for two-year maturities derived from the Nelson-Swanson parameters estimated at 15 May 2020 (last trading date before the Franco-German announcement) and 5 June 2020 (three weeks later).

Box 7

The RRF and economic convergence: some stylised facts

If properly implemented, the RRPs may help to reduce the cross-country divergences that existed in the euro area before the pandemic-induced crisis, but which the latter has further exacerbated.[66] Over the medium run, NGEU funding may help to reduce some of the divergences caused by the crisis.[67] Chart A, panel a – which is based on Pfeiffer et al. (2021) – shows that the higher the estimated RRF grant allocation, the lower GDP per capita of euro area countries in 2019. In this way, NGEU funding helps forestall a potentially strong fiscal contraction, such as the one observed in some economies in the years following the global financial crisis.

66 For a longer-term analysis of real convergence in the EA, see Diaz del Hoyo et al. (2017).

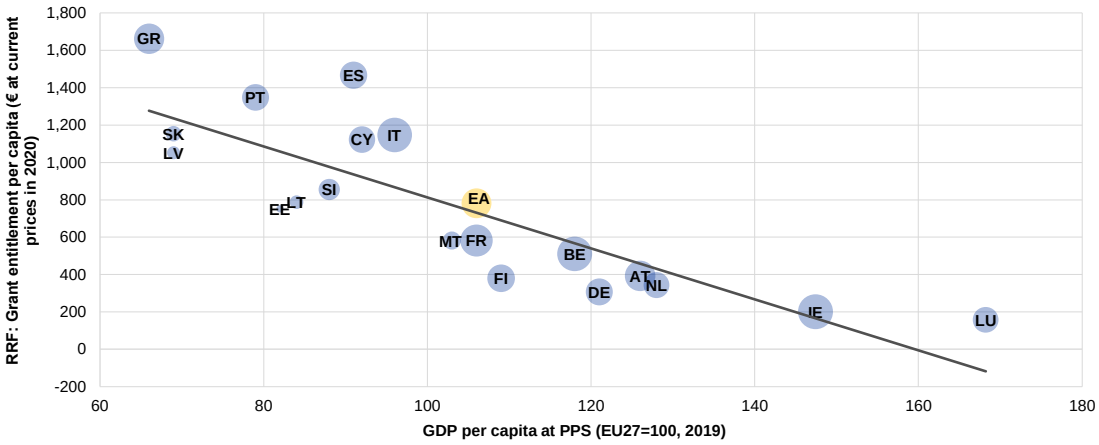
67 For a discussion of the impact of net fiscal transfers and EU structural and investment funds on real and business cycle convergence in the EA, cf. Capella-Ramos et al. (2020).

Over the longer run, NGEU may also mitigate some of the most entrenched structural divergences in EU as a whole. For example, RRF funding may trigger a catch-up process for investment and, therefore, involve a capital reallocation across EU Member States. As shown in Chart A, panel b, the lower the net capital stock per capita in 2019 (x-axis), the higher the government investment and capital transfers funded with the RRF (y-axis).

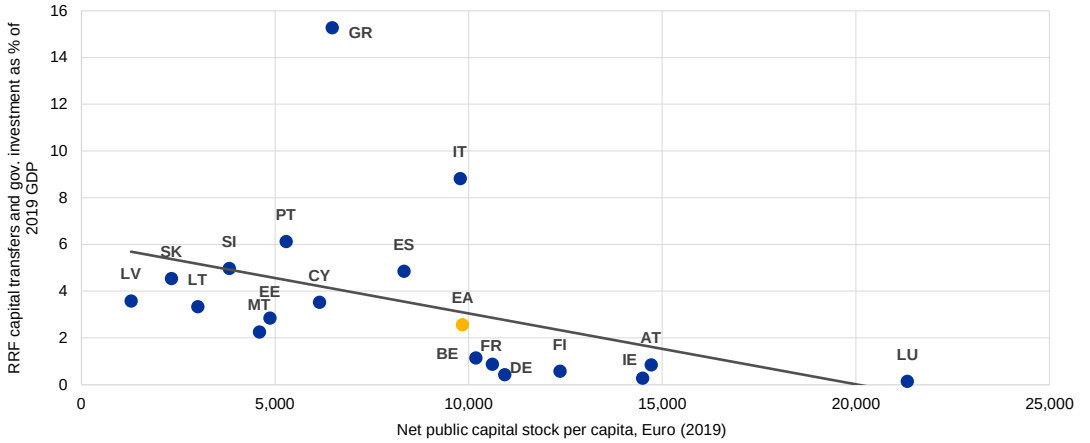
Chart A

NGEU's contribution to mitigating economic divergence

a) RRF grant entitlement per capita (2021-26) and 2019 GDP per capita (bubble size: general government debt per capita in 2019)



b) Total RRF-funded public expenditures and per capita public capital stock



Sources: European Commission and ECB staff calculations.
Notes: The y-axis in panels a) and b) reflect the initial (2020) calculation of the amount of RRF grants. Panel a): y-axis: information based on population from 2020; x-axis: for Ireland and Luxembourg, the GNI per capita in purchasing power standards has been used. Panel b): the information on government investment and capital transfers is not available for the Netherlands. In the case of Greece, capital transfers include direct payments to the private sector, statistically recorded as DDA. For Italy, this chart is based on assumptions about the RRF composition by European System of Accounts categories.

6 Conclusions

This paper has provided, first, an analysis and assessment of the national RRPs. This analysis comes to an overall positive assessment on account of the RRF's focus on the most vulnerable euro area countries, growth-friendly investments and reforms, and the green and digital transitions. The frontloaded structural reform plans exploit synergies with the investment projects and are, therefore, expected to enhance their effectiveness. The reforms are also broadly aligned with reform needs and EU policy recommendations, although measures aimed at deregulation and improvements in the broader business environment might have deserved greater prominence. Overall, the national plans have the potential to act as a catalyst for the modernisation and economic convergence of euro area economies. Despite its temporary nature, NGEU's legacy may be lasting.

Second, the paper has highlighted important implementation challenges. NGEU can only unfold its full potential if all national investment and reform plans are completed in a timely and effective way. Over time, this will require an increasingly granular inspection of the implementation of the RRPs. For instance, problems might arise in certain euro area countries from possible administrative bottlenecks. Finally, any persistence of the supply constraints that emerged during the pandemic-induced crisis may be an additional, and in this case external, factor impairing execution of the plans. Implementation risks need, therefore, to be addressed proactively to ensure that NGEU delivers on its promises. In this regard, the Recovery and Resilience Scoreboard developed by the European Commission will provide an early warning tool to monitor the fulfilment of milestones and targets to which RRF disbursements are subject, and to track expenditure per policy area under the facility, including by collecting qualitative information through thematic analyses of the implementation of the plans in specific spheres.

Finally, the paper has shown that NGEU has the potential to significantly improve the economic outlook for the euro area. Based on ECB models, it estimates the effects of NGEU on the euro area economy via a risk premium channel, a fiscal stimulus channel and a structural reform channel. Taking all three channels into account and assuming the national plans are implemented effectively, the paper finds an overall positive and significant impact on GDP growth, potential output and debt sustainability, particularly for the vulnerable euro area economies. The NGEU programme is expected to increase GDP in the euro area by up to 1.5% by 2026, with inflationary pressures over the medium term contained to the extent that the inflationary effect of additional public expenditure is offset, at least to some degree, by the disinflationary effect of greater productive capacity resulting from the planned structural reform and investment measures.

The ex ante estimates of NGEU's macroeconomic impact that have been presented here rest on the assumption of effective implementation of the RRPs. While the planned investment and reform measures of most RRPs were known at the time this paper was published, Member States are only just beginning

their execution. Future, ex post studies will determine whether NGEU fulfils its promises.

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Krzysztof Bańkowski
European Central Bank, Frankfurt am Main, Germany; email: Krzysztof.Bankowski@ecb.europa.eu

Othman Bouabdallah
European Central Bank, Frankfurt am Main, Germany; email: Othman.Bouabdallah@ecb.europa.eu

João Domingues Semeano
Formerly European Central Bank, email: jsemeano@gmail.com

Ettore Dorrucci
European Central Bank, Frankfurt am Main, Germany; email: Ettore.Dorrucci@ecb.europa.eu

Maximilian Freier
European Central Bank, Frankfurt am Main, Germany; email: Maximilian.Freier@ecb.europa.eu

Pascal Jacquinot
European Central Bank, Frankfurt am Main, Germany; email: Pascal.Jacquinot@ecb.europa.eu

Wolfgang Modery
European Central Bank, Frankfurt am Main, Germany; email: Wolfgang.Modery@ecb.europa.eu

Marta Rodríguez-Vives
European Central Bank, Frankfurt am Main, Germany; email: Marta.Rodriguez@ecb.europa.eu

Vilém Valenta
European Central Bank, Frankfurt am Main, Germany; email: Vilem.Valenta@ecb.europa.eu

Nico Zorell
European Central Bank, Frankfurt am Main, Germany; email: Nico.Zorell@ecb.europa.eu

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Postal address 60640 Frankfurt am Main, Germany
Telephone +49 69 1344 0
Website www.ecb.europa.eu

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