

# A targeted golden rule for public investments?

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A comparative analysis of possible accounting methods in the context of the review of the Stability and Growth Pact



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*Supporting EU economic governance scrutiny*





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A comparative analysis of possible accounting methods in the context of the review of the Stability and Growth Pact

## **Abstract**

The necessary green transition in the EU requires substantial additional green public investment (GPI) by Member States throughout this decade and beyond. This briefing paper discusses four approaches for a reform of EU fiscal rules to better accommodate higher (debt-financed) GPI: (1) an exemption clause for GPI; (2) the implementation of a green golden rule; (3) a country-specific benchmark share of government expenditures dedicated to GPI recommended by the European Commission; and (4) an EU Climate Fund. We also discuss these options in relation to the recent Commission proposal from November 2022.

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## LIST OF ABBREVIATIONS

<b>CF</b>	Climate Fund
<b>CSR</b>	Country Specific Recommendations
<b>EFSI</b>	European Fund for Strategic Investments
<b>EGD</b>	European Green Deal
<b>EMU</b>	European Monetary Union
<b>GFC</b>	Global Financial Crisis
<b>GDP</b>	Gross Domestic Product
<b>GPI</b>	Green public investment
<b>IFI</b>	Independent Financial Institution
<b>IPCEI</b>	Important Project of Common European Interest
<b>MIP</b>	Macroeconomic Imbalance Procedure
<b>MS</b>	Member States
<b>MTO</b>	Medium Term Objective
<b>NRRP</b>	National Recovery and Resilience Plan
<b>ORD</b>	Own Resources Decision
<b>RRF</b>	Recovery and Resilience Facility
<b>R&amp;D</b>	Research & Development
<b>SF</b>	Sovereignty Fund
<b>SGP</b>	Stability and Growth Pact

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## EXECUTIVE SUMMARY

### KEY RECOMMENDATIONS

1. Additional green public investment at the Member State level, at least partially debt-financed, will be needed to address the climate emergency as a central priority for the current EU political cycle. The fiscal framework will need to be reformed to better accommodate green public investment to achieve this goal.
2. Four different approaches to amend the current fiscal framework to better address climate challenges and ensure the necessary green public investment offer themselves:
  - (1) expansion of the investment clause in the Stability and Growth Pact to include green public investment
  - (2) introduction of a “green golden investment rule”
  - (3) a benchmark for green public investment amounting to a pre-determined share of government expenditures
  - (4) an EU Climate Fund
3. The Commission’s recent proposal from November 2022 regarding orientations for a reform of the EU governance framework widens the leeway for debt-financed public investment. However, existing green public investment needs are not considered sufficiently. Therefore, option (2), (3), or (4) should be followed through to enable the flexibility of national budgets to ensure a level of green public investment which – together with private resources – is sufficient to close the existing green investment gaps.
4. The basis for such a coordinated approach should be the EU Taxonomy for sustainable activities specifying areas and projects for green public investment.

## Background

In light of the substantial resources required to finance the necessary green transition, additional public investments by Member States (MS) will need to be mobilised throughout the next decade. The current fiscal framework of the EU does not provide enough flexibility for MS to react adequately to these challenges by increasing debt-financed green public investment (GPI). Thus, amendments within the fiscal framework are required.

## Aim

The Commission proposal from November 2022 adds a substantial element of country-specific flexibility and reinforces the long-term orientation of the EU fiscal framework, while at the same time reducing its complexity. However, GPI is not accounted for separately, and the time frame before having to return to decreasing debt ratios may be too limited in face of the substantial long-term green public investment needs.

Against this background, we discuss four approaches for a reform of the fiscal rules better accommodating for the existing GPI requirements.

- A GPI exemption clause complementing the current SGP flexibility clauses would be relatively easy to implement and not require Treaty changes. It would, however, complicate an already complex set of fiscal rules further and would not ensure that MS indeed invest the necessary amount towards greening their economies. Compared to the Commission's proposal, a GPI exemption clause based on the current design of exemption clauses would be significantly more restrictive.
- With a golden rule for GPI the respective deficit accrued would not be counted towards deficit and debt statistics relevant for EU fiscal rules. While this would also complicate the fiscal framework further, a green golden rule would incentivise governments to transform as much as possible from their spending towards GPI. Compared to the Commission's proposal, a green golden rule would on the one hand have a narrower scope. On the other hand, it would create larger leeway for GPI, as its impact on deficit and debt ratios would be disregarded. Moreover, the green golden rule would be a permanent provision, thus better accommodating for the existing long-term GPI. In principle, it could be integrated in the reform of the fiscal framework as proposed by the Commission.
- A third approach would be for the European Commission to estimate and the Council to recommend country-specific benchmark shares of government expenditures in each country to be dedicated to GPI. The problem with this approach is that the similar approach regarding debt rules has proven to be complex, while not ensuring that countries comply with the given recommendations. A GPI benchmark share could rather easily be integrated in the Commission proposal of a net expenditure path.
- An EU Climate Fund (CF) financed by common EU debt could offer MS loans to MS at favourable interest rates to finance GPI. The CF would not constitute a reform of the existing fiscal rules framework. Depending on its scope and volume, it could either complement or substitute a reform of fiscal rules aiming to further GPI based on one of the three reform options sketched above.

## 1. INTRODUCTION AND BACKGROUND<sup>1</sup>

The European Green Deal (EGD), the EU's "new growth strategy" adopted in 2019 aiming at making the EU climate neutral by 2050, requires massive investment in the decarbonisation of European economies and societies. The recent geopolitical developments with the Russian invasion in Ukraine driving up energy costs in Europe imply the need to speed up the replacement of fossil fuels through renewables to thus accelerate the clean energy transition and energy independence in Europe. Accordingly, the REPowerEU plan foresees to increase the EU's 2030 target for renewables from 40%, as envisaged under Fit for 55<sup>2</sup>, to 45%, and to raise the energy efficiency target from 9% under Fit for 55 to 13%.

National budgetary decisions in the EU Member States (MS) are managed under a common European fiscal framework known as the Stability and Growth Pact (SGP), and a coordination mechanism known as the European Semester. The SGP has been revised multiple times since its establishment in 1997<sup>3</sup> to address some of its previous shortcomings. The rules have often been criticised as being too procyclical, i.e., not restricting debt enough in bad times, and not providing enough fiscal space in good times (see, e.g., Bénassy-Quéré et al., 2018, or Ubide, 2019). The various amendments introduced over time have made the European fiscal framework better suited to steering macroeconomic policy. At the same time, they have resulted in fiscal rules becoming overly complex and non-transparent, which has led to a discussion on how to simplify and improve them (Friis et al., 2022).

The Fit for 55 Package launched by the European Commission in mid-2021 aims at realising the ramped-up ambition in the EU's climate targets. This package does not contain, however, any initiatives to make the EU fiscal framework more compatible with sustainable growth and development, particularly with the massive green investment needs. Such a reform has become still more urgent with the outbreak of the multiple crises since the adoption of the EGD. At the same time, as the COVID-19 as well as the current energy crisis have been increasing debt levels considerably in most MS, fiscal consolidation episodes can be expected all over the EU after the re-installment of the fiscal rules (which has been suspended after the outbreak of the COVID-19 crisis in 2020) after 2023.

This briefing paper briefly reviews the case for (deficit-financed) green public investment (GPI) necessary to achieve the EU climate goals, and the limitations of the current EU fiscal framework to accommodate these investment needs (section 2). Section 3 starts with a brief presentation of the Commission's "Communication on Orientations for a Reform of the EU Economic Governance Framework" from November 2022 (European Commission, 2022a). We then discuss four options to complement the EGD and the Fit for 55 Package through reforms in the European fiscal framework ensuring the budgetary space required to undertake the level of GPI which, besides the measures proposed in the European Commission's Fit for 55 Package, is necessary to achieve the envisaged green transition in the EU (section 3). Section 4 concludes.

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<sup>1</sup> This briefing paper is a shortened and updated version of Pekanov and Schratzenstaller (2020).

<sup>2</sup> See Tagliapietra (2021) for a brief overview of the measures included in the Fit for 55 Package.

<sup>3</sup> See Pekanov and Schratzenstaller (2020) for an overview of major changes to the EU fiscal framework.

## 2. (GREEN) PUBLIC INVESTMENT IN THE CURRENT EU FISCAL FRAMEWORK

### 2.1. The case for (debt-financed) green public investment

Public investment encompasses investment in projects that are often associated with long-term positive externalities so that the long-term social rate of return of such investment exceeds the private rate of return. In the case of GPI, these positive externalities inter alia result from the reduction or avoidance of environmental damage and of energy dependence and benefit society as a whole. As these positive external effects are characterised by non-exclusion of beneficiaries, the respective investment will not or only to an insufficient extent be supplied by private investors, as potential users will not be willing to pay an adequate price for the use of these investments. Furthermore, certain investment projects display specific characteristics which may make it unattractive for private investors to undertake them. Particularly infrastructure networks, which represent a considerable share of green investment (among them infrastructure networks supporting the green transition, as rail infrastructure), have various properties deterring private investors. These range from indivisibilities over long life spans and high fixed and sunk costs to asset specifics, implying high risks and thus impairing the ability and/or willingness of private investors to undertake them. Natural monopoly situations, which are relevant for many infrastructural networks, may also require public involvement. Specifically related to the issue at hand is that the green transition requires the development and implementation of innovative, often risky and untested, green technologies. As private finance is fundamentally risk averse (Mazzucato, 2011), there may be a justification for the state to step in to invest in the development and diffusion of innovative green technologies (Owen et al., 2018). In addition, in face of rising interest rates, which decrease the profitability of such investments through increasing the cost of financing them, private investors will be increasingly reluctant to undertake such investments, also considering the substantial uncertainty surrounding the current economic and political developments (Bertram et al., 2022). Overall, therefore, the state has an important role to play in the green transition: through co-financing, private-public partnerships, and state guarantees, but also through public investment (European Investment Bank, 2021; Delgado-Téllez et al., 2022).

Although the private-public investment ratio can be influenced by policies to incentivise private green investment (particularly through carbon pricing, but also the repeal of fossil fuel subsidies, which renders private green investment more profitable), a certain share of the necessary green investment for the reasons mentioned above will need to be undertaken directly out of Member States' budgets to complement private investment.

Analogously to public investment in general, an argument can be made for at least partially financing GPI, which creates long-term benefits also for future generations, by public debt, instead of solely relying on tax increases or shifts within the expenditure structure away from other expenditure to GPI. These long-term benefits in the case of green investment include the positive environmental externalities mentioned above but may also consist of long-term productivity-enhancing effects and thus positive effects on long-term growth, which can generally be found for certain public investment (Fournier, 2016; European Fiscal Board, 2019). Based on expert assessments, Hepburn et al. (2020), with regard to stimulus measures to counter the economic recession resulting from the COVID-19

pandemic, find that investment in clean physical infrastructure, building efficiency retrofits, and clean R&D are among the policies combining high climate impact and high longer-term multiplier effects.<sup>4</sup>

According to the “pay as you use” principle (Musgrave, 1939), debt service for debt financed public investment with long-term benefits accruing to the next generation(s) can be seen as an option to make them contribute adequately to the provision of such public investment. From this perspective, debt financing of public investment provides for a fair intergenerational distribution (Yakita, 1994; Balassone and Franco, 2000), reducing incentives for de- or under-investment today which would harm future generations (Bertram et al., 2022). Moreover, as far as such public investment creates public wealth corresponding to the additional public debt required to finance it, it can be expected to endanger debt sustainability less than debt-financed public consumption. Green investment – like investment in general – adds to the stock of assets, warranting deficit financing (Corti et al., 2022). GPI will be self-financing to a certain degree, to the extent that it (as does public investment in general) generates positive growth effects, because the additional growth resulting from public investment will yield additional tax revenues helping to repay the debt incurred to finance it.

In an empirical analysis for a sample of 17 advanced economies, Abiad et al. (2015) find that debt-financed additional public investment has larger positive short- and medium-term output effects than budget-neutral additional public investment. The authors also show that debt-financed public investment has not led to a subsequent deterioration of funding costs in terms of sovereign real interest rates in the countries considered. In a recent study, Batini et al. (2021) are the first to estimate output multipliers for expenditures for clean energy and biodiversity conservation compared to non-ecofriendly spending in a cross-country setting. The estimation covers China, Japan, Korea, Canada, the US, Brazil, Indonesia, Mexico, Russia, Australia, New Zealand, France, Germany and Italy and the time period 2003 to 2019. Their findings show that investment in renewable energy has considerably higher multipliers than fossil fuel energy investment both in the short and in the longer run. Moreover, while the green investment multiplier decreases only slightly over time, the non-ecofriendly energy investments multiplier falls to a larger extent between the first and the fifth year. For the US, Hasna (2021) finds that green energy spending multipliers are larger compared to public infrastructure multipliers in general and non-green investment spending, which can be explained by a higher marginal productivity of green public investment as green public capital is further away from the steady state.

The case for debt financed (green) public investment is strengthened further in a low interest rate environment. During recent decades, long-term real interest rates across advanced economies have been undergoing a steady decline. Figure 1 (Annex) shows the considerable decrease of 10-year government bond yields in selected Euro area countries in past decades. In situations of lower interest rates, states should undertake higher deficit-financed public investment than in a situation of a higher interest rate. Even though since the second half of 2022 there has been a rapid increase in interest rates of major central banks, the decline in long-term real interest rates has been a process ongoing in recent decades and may not reverse easily.

Finally, green (public) investment can have a significantly positive role in ameliorating climate related and other environmental risks. Climate change is a significant structural factor and risk for many economies in the coming decades and overcoming the (budgetary) risks of inaction will be related to

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<sup>4</sup> A more sceptical view is offered by Pisani-Ferry (2021) who points out potential negative growth effects resulting from higher costs for green compared to brown investment as well as from sunk costs incurred through the replacement of brown through green infrastructure. Victor (2022) points out that not all green investment is productive in the sense of increasing an economy's production potential and underlines the necessity to distinguish between additional green investment and non-additional investment displacing other investment.

significant benefits. Despite of the uncertainties associated with their estimation, the costs of climate inaction can be assumed to be substantial (European Environmental Agency, 2017); green (public) investment should be able to make an important contribution to avoid or at least decrease them. Zenios (2022) demonstrates that acute climate-related events, e.g., extreme weather phenomena, as well as long-term transition risks could have a substantial effect on the long-term stability of public finances. Thus, considering the budgetary cost and risks of climate inaction corroborates the rationale for debt-financed GPI.

## 2.2. Projections of the green investment gap in the EU

Projections of the “green investment gap”, i.e., the additional spending that needs to be undertaken to meet the 2030 climate targets compared to a business-as-usual-scenario, have had to be adapted several times during the last few years due to rising climate ambitions. In 2018, the European Commission (2018) identified an annual EU-wide green investment gap of at least EUR 180 billion. In 2019, prior to the increase of the 2030 emission reduction target from 40% to 55% compared to 1990 levels through the EGD, the European Commission (2019) estimated the green investment gap at EUR 260 billion per year. To achieve the EGD objectives, the European Commission (2021) doubled its estimate for the green investment gap and indicates additional necessary investments for the current decade of EUR 520 billion per year (3.7% of 2019 GDP) compared to the previous decade. Hereby, an annual amount of EUR 390 billion is required to decarbonise the economy and particularly the energy sector (including energy-related investment in the building and transport sectors), and another EUR 130 billion per year need to be invested to achieve other environmental objectives of the green transition.

These estimates most likely underestimate the actual investment requirements in face of recent geopolitical developments and due to the neglect of adaptation investment (Delgado-Téllez et al., 2022). Moreover, also in the decades after 2030 green investment needs can be expected to remain substantial, requiring an adequate policy framework (European Commission, 2022b). The sheer size of this green investment gap implies that a significant part of the funding for the increased investment will have to come from the national rather than the EU level and from private investors (Claeys and Tagliapietra, 2020; European Commission, 2022b).

The Commission’s estimates of the green investment gap do not differentiate between private and public investment. Furthermore, they are not broken down to individual Member States, so that country-specific investment gaps are not available. Estimates from the European Investment Bank (2021) suggest large country-specific differences regarding the overall green investment gap, its sectoral composition, as well as the necessary share of GPI. Synthesising existing estimates, Darvas and Wolff (2021) arrive at a public-private ratio of 1:4 to 1:5 and estimate an annual (pre-energy crisis) GPI level of 0.8% of EU GDP on average for the EU for the current decade. Delgado-Téllez et al. (2022) estimate that on average, GPI between 1% and 1.8% of EU GDP is required annually during the current decade in the EU.

## 2.3. (Green) public investment in the current EU fiscal framework (SGP) and limitations

### 2.3.1. Recent reforms in the SGP

In the immediate aftermath of the Global Financial Crisis (GFC), there was a widely shared view that the SGP has been unable to limit pro-cyclical policy and has failed to incentivise governments to build the necessary fiscal buffers in good economic times to withstand an economic crisis. To address these

shortcomings of the SGP, the Six-pack reform and the Two-pack reform were implemented in 2011 and 2013, respectively- in an attempt to ensure that MS would not fail to build fiscal buffers in good economic times and thus endanger the long-term fiscal sustainability of their public finances.

The SGP has, however, also been criticised for its lack of flexibility to enable higher government expenditure and public investments via higher deficits when they were most needed from a macroeconomic standpoint. This lack of flexibility in a situation when the economy is perceived to be in a situation known as “liquidity trap”<sup>5</sup> has been criticised as an important limitation of the SGP which hinders countries to implement proper countercyclical macroeconomic policy during economic downturns.<sup>6</sup> As a reaction, in 2015 a Communication by the European Commission (2015) on the use of flexibility clauses and their interpretation has been published, focusing on a more flexible application of the SGP rules by taking into account exceptional circumstances, structural reforms and other relevant factors, as well as investments.

These flexibility clauses<sup>7</sup> seek to provide the necessary leeway for MS to exempt part of their government spending from deficit statistics under specific conditions. The clauses define such conditions and therefore should enhance the necessary flexibility to allow countries not to cut spending sharply in recessions. Most importantly for the goals of this briefing paper, the investment clause in the SGP is a way to enable more investment, especially in times of economic downturns. The Communication enabled a reinterpretation of the existing fiscal rules, without the need to explicitly change them or take legislative action.

In the current version, for the investment clause to be invoked, the following conditions are to be met: (i) GDP growth in the MS in question is projected to be below its potential level (with a negative output gap larger than 1.5% of GDP); (ii) the MS is not under the corrective arm and has a certain safety margin in terms of the maximum deficit of 3% of GDP; (iii) the projects for which the government spending will be used are projects that have already obtained EU funds, e.g., funds from the European Fund for Strategic Investments (EFSI); (iv) the deviation is capped at 0.5% of GDP for the investment clause deviation of the MTO; if there is a deviation along the structural reform clause, the combined deviation cannot be more than 0.75% of GDP; (v) the exemption clause is activated only once along the adjustment path to achieving the MTO, and the MTO should be fulfilled in the four years of the relevant Stability Programme of the MS.

Although the investment exemption clause has been assessed as a positive change to the SGP, the strict conditions have made it very difficult to be invoked. So far, only two countries (Italy and Finland) have made use of it, pointing towards the fact that binding it to such strong conditions makes it less effective in providing the flexibility the clause is aiming for.

### 2.3.2. Cyclicity of public investment

Even though interest rates have been following a prolonged downward trend for the last three decades, recent years have not seen an increase of public investment in the EU. In many Member States, public investment has suffered in the aftermath of the GFC due to its pro-cyclicity (European

<sup>5</sup> A liquidity trap is a situation in which it is assumed that the central bank main economic policy tool – a decrease in the interest rate – is not efficient anymore to stimulate the economy.

<sup>6</sup> Pekanov (2019) gives a detailed overview about the recent discussions regarding reforming the EMU architecture, the importance of a fiscal stabilisation instrument, and numerous reform proposals to improve existing imbalances.

<sup>7</sup> Introduced by a European Commission Communication “Making the best use of the flexibility within the existing rules of the SGP” in January 2015 (European Commission, 2015). The Communication clarifies how the Commission would implement the flexibility clauses when assessing the compliance of Member States with the Pact. This reinterpretation did not require legislative change. The European Council endorsed this new approach in February 2016, which led to an update of the Code of Conduct of the SGP (“Specifications for the implementation of the Stability and Growth Pact”).

Commission, 2020). After the GFC, public investment has markedly declined in EU MS as a share of current primary expenditures – especially in more indebted MS (Figure 2 and Figure 3 in the Annex). The period of fiscal consolidation has contributed further to this general weakness of public investment (Storm and Naastepad, 2016; Darvas and Wolff, 2021). Public investment has a cyclical character and often experiences considerable reductions during economic downturns, as it is easier to reduce without significant political costs in comparison to current expenditures, government transfers, or other programs. Particularly in aging societies, public support for preserving current expenditures may be higher than for future-oriented investment (Darvas and Wolff, 2021).

Productive public investment in 2020 was at the same or at lower levels in many advanced European countries both as a share of GDP and as a share of total government expenditure compared to 2007 (Figure 4 and Figure 5<sup>8</sup> in the Annex). The simulations undertaken by Darvas and Wolff (2021) suggest that under the current fiscal framework, the existing long term GPI needs will be very difficult to fulfil.

At the same time, during an economic downturn, government spending is normally more beneficiary for the economy. While in good economic times it is often assumed that government spending might just substitute private investment (“crowding-out”), in times when the economy is producing under its potential output (i.e., when there is a negative output gap), government spending can be a substitute of private spending and induce “crowding-in” – i.e., it can stimulate further private spending. This crowding-in effect is the central argument for higher public investment during recessions in modern macroeconomic theory. A large branch of the recent literature deals with fiscal multipliers during recessions and finds that government spending increases have a much higher positive effect on the economy in bad economic times (Farhi and Werning, 2017; Nakamura and Steinsson, 2014; Chodorow-Reich, 2019). Private investment becomes even more challenging to ensure in its required amount in times of high inflation and increasing interest rates, as these times normally require or lead to some form of fiscal consolidation and it is normally public investment which gets reduced in times of consolidation. While the main argument for this roots in pure political economy reasons, the increasing interest rates also make the public investment less beneficial from an accounting perspective. This might result in levels of public investments, also in the form of GPI, which are well below their optimal level in terms of positive long-term effects. This requires further interventions or amendments, as discussed below.

Any future amendments to the fiscal framework to better enable GPI could also be made conditional on cyclical factors in the economy so that GPI could also act as automatic stabiliser. MS could pre-prepare projects to be used during recessions<sup>9</sup>, when the benefits of such public investments are higher because of crowding-in effects. Although this could be beneficial from a macroeconomic point of view, it is however questionable how realistic it can be that projects that are economically rational can be halted until times of recession, when they will be most cost effective to implement. Moreover, public investment projects will often have an implementation lag, limiting their effectiveness as fiscal stimulus measure.

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<sup>8</sup> Analysed in the European Fiscal Board (2019) review on fiscal rules, Chapter 5.

<sup>9</sup> Furman (2016) discusses the importance of having a portfolio of “shovel ready” projects for public investments during recessions.

### 3. OPTIONS TO SUPPORT GPI IN THE EU FISCAL FRAMEWORK

As discussed above, closing the green investment gap in EU MS will require additional, at least partially debt-financed, additional government expenditures at MS level. To allow for such additional debt-financed GPI, the current EU fiscal framework would need to be revised. On November 9, 2022, the Commission (2022a) issued a “Communication on orientations for a reform of the EU economic governance framework”.

In what follows we briefly present and assess this Commission proposal in light of the existing GPI requirements. We also discuss different options and recommendations how to improve the EU fiscal framework to facilitate GPI, including their compatibility with the Commission proposal and their necessity should the Commission proposal be implemented, respectively. We also address potential challenges and risks.

#### 3.1. The Commission proposal from November 2022

At the heart of the Commission’s communication from November 2022 there are three main pillars (Becker et al., 2023). First, the Commission suggests an expenditure rule: net primary expenditures (i.e., total expenditures excluding interest and unemployment payments as well as additional expenditure covered by tax increases) shall serve as the only indicator to gauge compliance with the debt and deficit criteria. The expenditure path shall be determined by the Commission based on a debt sustainability analysis. The second element are national medium-term fiscal-structural plans to be submitted by Member States, detailing the measures to comply with the expenditure path. Third, while the 60% of GDP debt criterion shall remain, however without concrete time frames when to reach it and as an indicative objective, the 3% of GDP deficit criterion shall be monitored and sanctioned stricter in the future.

Altogether, the proposal adds a substantial element of country-specific flexibility and reinforces the long-term orientation of the EU fiscal framework, while at the same time reducing its complexity. The Commission’s communication proposes differentiated adjustment speeds for different MS, according to their debt levels, to give more credibility to the imposition of medium-term targets, which might otherwise seem unrealistic to fulfil for MS. Moreover, debt-financed public investment can be considered explicitly, albeit not in the form of a golden rule which would exempt public investment permanently from deficit and debt statistics: rather, the time period allowed to return to a path of decreasing debt ratios can be prolonged from four to seven years if MS submit national medium-term fiscal-structural plans including public investment endorsed by the Commission and adopted by the Council. Furthermore, MS would not be allowed to exceed the 3% deficit limit. While the Commission communication explicitly mentions that national medium-term fiscal structural plans (which can include investment proposals) should in particular “address common EU priorities, including the National Energy and Climate Plans (aligned with the targets of the EU Climate Law...”, GPI is not accounted for separately in the Commission’s proposal, and the time frame of up to seven years may be too limited in face of the substantial long-term GPI needs. More generally, the evaluation of national medium-term fiscal-structural plans can be subjective or can lead to political negotiations, thus politicising the process and making it more complicated for the Commission to reach an agreement with individual MS; thus potentially slowing down the implementation of necessary GPI.

#### 3.2. Options to support GPI in EU MS

We discuss four different options to amend or complement the current fiscal framework to better address climate challenges and ensure the necessary GPI, also taking into account the recent Commission proposal:

- expansion of the investment clause in the SGP to include GPI
- introduction of a “green golden investment rule”
- a benchmark GPI amounting to a pre-determined share of government expenditures
- an EU Climate Fund

### 3.2.1. GPI exemption clause in the SGP

The most straightforward approach would be to add a GPI definition to the existing investment exemption clause of the SGP (discussed in Section 2.3.1) and thus enable short run deviations from deficit targets and MTO, similar to the deviation allowed through the investment flexibility clause or the structural reforms clause. It would help frontload GPI, especially if the temporary exemption was extended over a longer time period. The clause can be applied to MS that can present verifiable and detailed plans for GPI reforms under consideration, with sufficient proof of their long-term benefits in terms of environmental sustainability, as well as their contribution towards economic growth, productivity, and potential output. This would need to be accompanied by a set of specific deadlines, short-run and medium-run goals, and ways to control their implementation. The plans would require clear evidence that the investment in question will help the economy improve its environmental sustainability. This evidence could rest on the EU taxonomy for sustainable activities and would at least partly need to stem from independent, third-party institutions or experts, similar to independent fiscal institutions (IFIs) that oversee budget proposals for MS. The exemption could be granted after a thorough process of proving that the investments in question indeed would contribute to climate neutrality and/or further environmental goals, in a way similar to proving that investments will have a “positive, direct and verifiable long-term effect on growth and on the sustainability of public finance” in the existing investment clause. A GPI exemption could be granted ex-ante, after approval that the criteria and conditions are fulfilled. The legal implementation would include changing or using a new Communication and then embedding the changes in the Code of Conduct of the SGP. While this is possible, the changes should still not breach the secondary and primary legislation (the SGP itself), e.g., should not lead to an increase above the 60% debt-to-GDP ratio or should not hinder the decrease of the debt ratio towards this limit, respectively, and the 3% deficit rule in the medium term. This would make the clarification of specific projects and funds and providing exemptions only on a case-by-case basis a more workable solution.

Pros:

- The GPI exemption clause would be easy to implement even in the current EU fiscal framework under the condition that there is a clear definition of which public investment is to be counted as green. It will help frontload GPI, especially if the temporary exemption can be extended over a longer period of time.
- It would not require a legal change, but only an amendment within the flexibility clause of the SGP to include also GPI as a separately defined term and the conditions for activating and proving it.
- The process, conditions, recommendations, and the coordination can be embedded easily into the European Semester.

Cons/potential problems:

- If the envisaged GPI is only eligible after a thorough review of the project in question, this might imply that most investment is realised slowly, and projects would be implemented with a

significant time lag due to the required evaluation and assessment process for each project or investment amount.

- The GPI exemption clause would not necessarily incentivise national governments to undertake the investment necessary to close their green investment gaps but would only enable it.
- It would add further to the complexity of the fiscal rules. The three existing escape clauses of the SGP have introduced opacity and have led to uncertainty regarding how binding fiscal rules are in reality.
- Exemption clauses are short-term in nature, applying under exceptional circumstances and for selected projects; they therefore are of limited use considering the longer-term substantial GPI needs of most MS, which will be the normal state in the foreseeable future instead of exceptional short-term instances (Bénassy-Quéré, 2022).
- A GPI exemption clause oriented at the design of existing exemption clauses would be insufficient to enable the substantial GPI needs in most MS, as it allows only a maximum deviation of 0.5% of GDP initially which is to be corrected in the following four years.

Compared to the Commission's proposal, a GPI exemption clause based on the current design of exemption clauses would cover a shorter timeframe (four instead of seven years), would be applicable under exceptional circumstances and allow a limited deviation of 0.5% of GDP only.

### 3.2.2. Introduction of a "green golden investment rule"

A second option would be to embed a green investment golden rule in the current fiscal framework. A golden rule for investment has been discussed and proposed as a way to improve the European fiscal rules framework for a long time.<sup>10</sup> A classical golden investment rule is based on a classification of government spending into two types – current expenditure versus capital expenditure (i.e., public investment). The golden investment rule would allow deficit-financed public investment which will not be counted for deficit and debt statistics, while current expenditures need to be balanced or fulfil some maximum deficit target (e.g., the existing one of 3%).

A more targeted golden rule could focus on GPI only. Such a green golden rule would be even more effective in mobilising resources for the green transition by having a strong incentivising effect for governments to transform as much of their public investment as possible into GPI. A green golden rule would also allow MS to not count their additional co-financing on EU projects (above their national commitment) to their deficit statistics, thus incentivising them to undertake additional investment in such EU projects – in that case especially in "green projects".

Pros:

- A green golden rule would incentivise Member States to transform large parts of their expenditures towards GPI, and it would therefore be efficient in terms of achieving the goal of mobilising significant resources towards a green transition.
- A green golden rule is a permanent provision enabling the implementation of longer-term GPI strategies most MS will need in the current decade and beyond.

<sup>10</sup> For suggestions on a general golden rule for investment see Poterba (1995) and Blanchard and Giavazzi (2004), for more recent discussions see Ubide (2019) and Darvas and Wolff (2021).

- It will also protect GPI during cyclical downturns when public investments are easier to reduce or postpone to a later period. This should ensure that long-term investments to fight climate change will not suffer from fiscal tightening.

Cons/potential problems:

- A green golden rule may require changes towards the Fiscal Compact and the expenditure benchmark, which is part of the Six-pack reform.
- It would increase the complexity and administrative burden both from an evaluation and monitoring standpoint.
- It could create inefficient shifts away from green expenditure which has an investment character but is not counted as green investment (e.g., green qualifications) towards GPI which is eligible but possibly less efficient (Bénassy-Quéré, 2022).

Compared to the Commission's proposal, a green golden rule would specifically focus on GPI and not on public investment in general, so that its scope would on the one hand be narrower. On the other hand, a green golden rule would create larger leeway for GPI, as the 3% of GDP deficit limit would be disregarded, as well as the impact of GPI on the debt ratio. Moreover, while the national medium-term fiscal structural plans enable additional public investment for a limited period of time only, the green golden rule is a permanent provision, thus better accommodating for the existing long-term GPI needs. In principle, it could be integrated in the reform of the fiscal framework as proposed by the Commission.

### 3.2.3. A benchmark for GPI as a share of government expenditures

The third approach would be for the European Commission to recommend a benchmark for each MS as a share of government expenditures that should be committed towards GPI (e.g., a certain percentage of overall government public investment/expenditure). This benchmark share would be based on an estimated country-specific green investment gap and also consider the country-specific general public investment gap. The share would therefore not have to be uniform across MS: Some MS perform better in terms of environmental sustainability already; furthermore, the green (public) investment gap differs between MS, as well as the adequate public-private-mix of green investment (Delgado-Télez et al., 2022). By being calculated in relation to government expenditures, which vary considerably between MS in terms of GDP, such an approach would not constitute an excessive breach in MS' fiscal policy sovereignty, as it would not prescribe the size of government spending, but rather only direct a part of its composition. MS could also be given the option to undertake GPI within a certain range around the target share, to allow some degree of discretion at MS level. Given this target share of GPI, MS could qualify relevant expenditures for being exempted from the deficit rules. The difference to the previous two options is that the European Commission would pro-actively recommend to MS in a top-down approach that a certain share of their expenditures should be in the form of GPI.

The progress of MS could then be operationalised following the precedent of the Six-pack reform, by introducing a definition of a necessary speed at which MS should close their GPI gaps. The Commission would evaluate whether this happens at a "satisfactory pace".

The problem with this approach, however, is that a similar approach regarding debt rules has proven to be very complex, while not ensuring that MS comply with the rules and recommendations. Furthermore, an overreliance on quantitative numbers in terms of GPI might lead to a neglect of the quality of investment, thereby worsening the overall efficiency in terms of greening the economy.

The efficiency of such pro-active guidance by the European Commission on how much MS should spend on greening their economy will depend on the implementation process. However, the history of fiscal rules and monitoring of recommended reforms in the EU brings a mixed picture of how effective the compliance by Member States can be. Although sanctions can be applied by the Council if there are breaches to the SGP and the MIP, they were never applied in practice and the existing enforcement regime has been weak.

Pros:

- Legally a benchmark share for GPI would be easy to introduce within the European Semester, by enriching it with GPI goals and adequate indicators.<sup>11</sup>

Cons/potential problems:

- Achieving the goal of mobilising significant GPI in MS will be very much dependent on the implementation of the GPI benchmark share. If it is implemented as a soft law with the European Commission only issuing recommendations to MS about the share of GPI they should invest in, it runs the risk of being ineffective, similar to the Country Specific Recommendations (CSR). On the other hand, an enforcement based on sanctions appears politically unrealistic.

A GPI benchmark share could rather easily be integrated in the Commission proposal of a net expenditure path, by excluding GPI spending from net expenditures. Alternatively, the medium-term fiscal-structural plans submitted by MS could foresee a pre-determined share of GPI in their public investment – similar to the mechanism behind the implementation of the national Recovery and Resilience Plans (NRRP) requiring a minimum share of green spending financed through the Recovery and Resilience Facility (RRF) of 37%. In contrast to the RRF approach, the GPI share could vary across MS, depending on the country-specific size of the GPI gap.

### 3.2.4. An EU Climate Fund

In her State of the Union address in September 2022, Commission President Ursula von der Leyen proposed an EU Sovereignty Fund (SF). One option for the financing of such an EU SF – following the example of the EU Recovery and Resilience Fund (RRF) – would be to take up debt on capital markets, making use of the EU's excellent credit rating which grants relatively low interest rates for common EU debt. MS could then apply for loans at these favourable interest rates to finance GPI. Particularly those MS facing relatively high interest rates for public debt would be given the opportunity to debt finance strategically important green infrastructure projects at favourable interest rates. An option with a more limited scope focusing on GPI would be to establish an EU Climate Fund (CF).<sup>12</sup> Such an EU CF would have the advantage vis-à-vis an EU SF to provide incentives for MS to direct their investment activities toward GPI.

The granting of EU CF loans could be based on a combined bottom-up / top-down approach. MS could either apply for loans based on national strategic GPI plans. Alternatively, the Commission could identify strategic green infrastructure projects, and actively approach the affected MS with strategic GPI proposals, including also a funding proposal. The Commission proposals could focus on cross-border GPI projects which would be neglected in a bottom-up approach, as experiences with the RRF show. The handling of CF loans, including the drafting of proposals, their assessment, approval, and

<sup>11</sup> Similarly, the EU Greening Initiative has made first attempts to reaching such goals without the need to change other EU law, including the SGP. See: [https://ec.europa.eu/environment/integration/green\\_semester/about\\_en.htm](https://ec.europa.eu/environment/integration/green_semester/about_en.htm).

<sup>12</sup> The cornerstones of an EU CF sketched in the following are inspired by the proposal by Garicano (2022) who suggests introducing a European Climate Investment Facility. See also the recent proposal launched by the IMF (Arnold et al., 2022) for a debt-financed EU Climate Investment Fund which, however, should grant transfers to MS to fund GPI.

monitoring, could build upon RRF experiences and the institutional and procedural provisions established to implement national recovery and resilience plans. Similar to the RRF, the assessment of MS GPI plans could be based on the EU Taxonomy; in addition, they could be screened by an independent European Fiscal Agency which issues a recommendation to the Commission and Council whether to approve a MS' GPI plans (Garicano, 2022). CF loans could also top up specific industrial projects in the area of green investment supported through Important Projects of Common European Interest (IPCEI) funding, as proposed by Commissioner Thierry Breton in the context of an EU SF (European Commission, 2022c).

Of course, CF and RRF investment plans should be coordinated. An EU CF could then act as a permanent successor institution of the temporary RRF, which will phase out in 2026. The CF would not constitute a reform of the existing fiscal rules framework. Depending on its scope and volume, it could either complement or substitute a reform of fiscal rules aiming to further GPI based on one of the three reform options sketched above. Should the focus be on cross-border GPI projects, it would be complementary to a GPI-oriented reform of fiscal rules. Similar to national recovery and resilience plans, reporting and monitoring of national CF plans could be integrated in the European Semester.

Pros:

- An EU CF would alleviate the burden of interest payments associated with additional public debt to finance GPI particularly for those MS facing relatively high interest rates.
- It could be used to finance strategically important cross-border GPI projects, particularly in the areas of railway and energy supply infrastructure, which are underfunded based on purely national decision-making and budgets. By collectivising GPI accordingly, the CF would strengthen the EU Single Market (European Commission, 2022c).
- It would incentivise debt financed GPI particularly in those MS confronted with relatively high interest rates.
- It could make use of already existing EU and national RRF implementation structures.
- It would avoid making EU fiscal rules even more complex (Bénassy-Quéré, 2022).
- An EU CF could help to mitigate a subsidy race within the EU by coordinating MS GPI policies to some extent.

Cons:

- An EU CF would be rather unattractive for those MS enjoying favourable interest rates for their national debt. To avoid dealing with administratively burdensome application, implementation, and monitoring procedures accompanied by the Commission and the Council, they may prefer to directly incur debt on capital markets for their GPI projects.

Although the recent Commission proposal explicitly aims at increasing the leeway for public investment, the CF could act as a complement to further widen the space for national GPI. It would thus account for the fact that the investment gap probably is biggest regarding green investment, which, however, is not explicitly acknowledged and considered in the Commission's proposal. In addition, it would support cross-border GPI, which is completely neglected in the Commission's proposal.

### 3.2.5. Summary of options to further GPI in the EU fiscal framework

Table 1 summarises the four options to further GPI in the EU fiscal framework and evaluates them based on several criteria and along several dimensions. Also their relation to the recent Commission proposal is briefly addressed.

The criterion “Ensures the necessary investment” refers to the fact that traditionally fiscal rules are focused on limiting government expenditures and are therefore asymmetric: in deep downturns they do not necessarily recommend a minimum level of government expenditures and therefore higher budget deficits. To realise the green transition, however, exactly the opposite problem needs to be addressed by policymakers – a lack of public investment. An efficient reform of the fiscal framework will therefore not only enable higher GPI but will actively incentivise and mobilise it. This is best accomplished via a golden rule for GPI, as it will incentivise countries to undertake as much of their expenditures in the form of GPI. This will be less the case for the introduction of a criterion for MS to have a share of their government expenditures in GPI with the share depending on their green investment gap, as its efficiency will depend on the exact implementation. Moreover, to meet this criterion, the reform option would have to enable longer-term and substantial deviations from the deficit targets. A GPI golden rule could create the space required for longer-term debt-financed GPI programmes. In contrast, a GPI exemption clause, if oriented at the current design of existing exemption clauses, would only be helpful in case of short-term debt-financed GPI of limited size. An EU Climate Fund institutionalised until 2050 would enable long-term planning and investment security and would help to secure particularly cross-border GPI projects.

The criterion “Complexity and administrative burden” focuses on the question whether the respective change will further complicate the EU fiscal framework, which was already recognised as a problem, and whether it will lead to additional administrative burden in evaluating and monitoring whether GPI comply with the given conditions and criteria. The application of a golden rule for GPI can be expected to add significantly to complexity and administrative burden associated with the fiscal framework. An exemption clause for GPI as well as a share in GPI in current expenditure should lead to a medium increase of complexity and administrative burden. An EU CF established outside the EU fiscal framework would avoid adding complexity to it (Bénassy-Quéré, 2022). Not least, the contribution of the selected option to complexity and administrative burden will depend on its coordination with existing provisions.

**Table 1:** Summary evaluation of options for amending the current fiscal framework to better accommodate for GPI

Proposal	Ensures the necessary investment	Complexity and administrative burden	Legal/institutional changes needed	Further comments
Options for a GPI-friendly fiscal rules framework				
Golden Rule for GPI	Incentivises MS to make the maximum amount of GPI possible  Allows longer-term and more substantial deviation from deficit targets	Significant increase in complexity and administrative burden	Changes to the Fiscal Compact/Six-pack Reform	Would create larger leeway for GPI than the Commission proposal  Could be integrated in the Commission proposal
Exemption Clause for GPI	Enables, but does not ensure Member States will make sufficient GPI  Allows only limited temporary deviation from deficit targets	Medium increase in complexity and administrative burden	New Communication on the flexibility clause and amendment to the Code of Conduct of the SGP	Would create considerably lower leeway for GPI than the Commission proposal
(Binding) share of GPI as a percentage of current expenditure	Incentivises GPI, but risks non-compliance	Medium increase in complexity and administrative burden	Changes to the European Semester	Low political feasibility (if binding) or low compliance (if only with a recommendatory character)  Could be easily integrated in the expenditure path proposed by the Commission to increase leeway for GPI: alternatively, binding GPI shares in public investment proposed in national fiscal-structural plans could be foreseen
EU Climate Fund	Incentivises particularly MS facing high interest rates to make debt financed GPI  Incentivises cross-border GPI	Neutral with regard to the EU fiscal framework	New legal proposal also based on amendment of ORD  New Communication on counting CF GPI towards fiscal rules  Changes to the European Semester	Incentives differ across MS depending on country-specific interest rates for public debt  Could act as a complement to the EU proposal to particularly support (cross-border) GPI

Source: own.

If, for example, the existing flexibility clauses, which have proven as rather ineffective anyway (see section 2.3.1), were streamlined along with and in exchange for the introduction of a new provision better accommodating for GPI, the overall complexity of the EU fiscal framework could even be reduced.

The criterion “Legal/institutional changes needed” points to whether and what type of EU law and/or institutional provisions would require changes for the individual reform options. A golden rule for GPI would require most extensive changes within the existing legal fiscal rules framework.<sup>13</sup> The establishment of an EU CF would require changes within the European Semester, but not within the legal fiscal rule framework. It would rather imply the creation of an additional institutional framework based on a new legal proposal similar to the one setting up the RRF, also based on an amendment of the Own Resources Decision (ORD). This can be seen as an advantage, as the complexity of the EU fiscal framework and its envisaged reform would not be increased. Rather, the implementation of an EU CF would offer an opportunity to deal with the pressing issue of GPI financing without having to consider all other dimensions of fiscal framework reform (Garicano, 2022).

A green golden rule could be integrated in a reform of fiscal rules as suggested recently by the Commission to increase the leeway for GPI. Also a GPI expenditure benchmark could be integrated in the expenditure path proposed by the Commission. An EU CF could act as a complement to the fiscal rules reform suggested by the Commission to particularly support GPI, specifically also cross-border GPI, which is neglected so far in the Commission proposal. A GPI exemption clause would be meaningless in the case of implementation of the Commission proposal, as the additional leeway provided by the opportunity to increase GPI via national medium-term fiscal-structural plans would be considerably larger.

### 3.3. Challenges and risks

Even though all four proposals for amending the fiscal rules sketched above have benefits in terms of enabling more GPI, they also are associated with various challenges and risks.

A first issue is the definition of GPI. A clear-cut definition of GPI is indispensable to avoid greenwashing, the misuse of additional fiscal space for non-green public expenditures which may endanger fiscal (as well as environmental) sustainability, and burdensome disputes between MS and the Commission or between MS. Generally, defining the scope of admissible GPI is more straight-forward and obvious compared to general public investment, given the narrower goals GPI aims to achieve (Darvas and Wolff, 2021). The EU Taxonomy for sustainable activities presents itself as a useful basis for such a definition (see Box 1 in the Annex); moreover, the RRF methodology for climate tracking and the experiences gathered with its application will – despite its limitations (see Levarlet et al., 2022) – be helpful. However, there is still some potential for conflict, as the current debate on the environmental sustainability of certain energy sources (e.g., nuclear energy or natural gas as transition technology) illustrates. Generally, there are open issues regarding the concrete types of GPI required to achieve EU and MS’ climate goals and whether they should be provided privately or publicly (Bertram et al., 2022).

A second challenge is to design the reform in a way that it minimises additional complexity and administrative burden, as the current design of the SGP with all its amendments has already been criticised for being too long, complex, and non-transparent.

Third, monitoring and reporting will therefore be a crucial part of an efficient implementation of any of the above approaches to facilitate GPI in EU MS. There would be a need for working mechanisms to

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<sup>13</sup> See Corti et al. (2022) for an in-depth discussion of the legal options for implementing a golden rule in the EU fiscal framework.

evaluate if MS are deviating from the pre-committed goals on GPI, both in terms of spending and in terms of types of projects enacted. Any reform that exempts some type of investments as GPI would require considerable safeguards against its misuse for current expenditures that do not have a sustainable, green character. If the investment projects are not approved on a case-by-case basis after a careful selection process based on a detailed taxonomy of GPI and involving an independent European Fiscal Agency, this will require ex-post monitoring following clear and transparent criteria. If the investment projects are approved ex-ante on a case-by-case basis, this would mean considerable slowdown in their realisation and might lead to a growing administrative burden to evaluate and decide on them.

A fourth, related challenge revolves around the measurement of the green (public) investment gap (Bertram et al., 2022), which is important to determine MS specific green (public) investment needs as well as to measure progress in the implementation of the respective investment plans and the related green provisions in the reformed EU fiscal framework. It will be difficult to assess such a gap in a robust way and to allocate it adequately to the public and the private sector. Quantitative targets would therefore need to be accompanied by qualitative targets, embedded into annual reports and evaluated by independent authorities. Moreover, additional qualitative criteria underlying the ex-ante approval and the ex-post assessment of GPI projects will be needed.

Fifth, it will be important to avoid short-sightedness, as GPI inevitably involves long-term planning and multiannual projects. Therefore, instead of setting up rules, targets, or exemptions on an annual basis, these should be guided through multiannual plans, similar to the MTO embedded in the SGP. The MTO set a guiding post and a goal for MS to be aiming at in the medium run and annually evaluates whether these goals are fulfilled at a sufficient pace. A similar approach could be useful regarding GPI, which can have an even longer-term character than conventional government investment.

Sixth, a certain risk is associated with the interest rate environment. Until recently, additional public deficits and debt were associated with low or no additional budgetary costs in terms of additional interest payments. However, depending on currently highly insecure future political and economic developments, debt-financed GPI may incur considerable future costs for public budgets and may thus be problematic from the perspective of fiscal sustainability, should the most recent trend of increasing long-term interest rates continue. This trend could be aggravated by a significant increase in green investment and by climate change itself, which may raise the real equilibrium interest rate (Darvas and Wolff, 2021).

## 4. CONCLUSIONS

To sum up, from the perspective of the ever-increasing urgency to advance the green transition, targeted reforms in the EU fiscal framework to increase the space for GPI very generally are preferable to a general relaxation of the stringency of EU fiscal rules, as the latter would not provide incentives to raise GPI (Darvas and Wolff, 2021). Such a targeted flexibilisation of the EU fiscal framework will be particularly important during the current decade: on the one hand, the stepped-up EU climate goals require massive GPI in all EU MS by 2030 and beyond. On the other hand, the deterioration of public budgets due to the ongoing multiple crises bear the danger that public investment in general and GPI in particular fall victim again to the fiscal consolidation efforts to be expected for the near future, aggravated by the recent increase in interest rates. At the same time, targeted approaches to further GPI appear less prone for loopholes compared to a general relaxation of EU fiscal rules. Moreover, considering the uncertain growth effects of GPI (Darvas and Wolff, 2021; Victor, 2022; Pisani-Ferry, 2021) and the possibly changing interest rate environment, targeted approaches appear more advisable from the perspective of debt sustainability.

Any reform of EU fiscal rules accommodating for GPI should be embedded in a broader mix of measures supporting the green transition in general and green private investment in particular. Hereby, carbon pricing and environmental taxation in general (including the repeal of the substantial fossil fuel subsidies, which would increase fiscal space for GPI in MS) as well regulations are of particular importance, as well as long-term policy commitments providing investment security (Lenaerts et al., 2022). In any case, the upcoming reform of the EU fiscal framework needs to account for the massive GPI needs confronting all EU MS, and it needs to be better coordinated with the current initiatives to realise the EGD. Not least, it should implement a monitoring of the fiscal impact of climate change, and country-specific debt sustainability analysis should take into account climate-related risks (Bertram et al., 2022).

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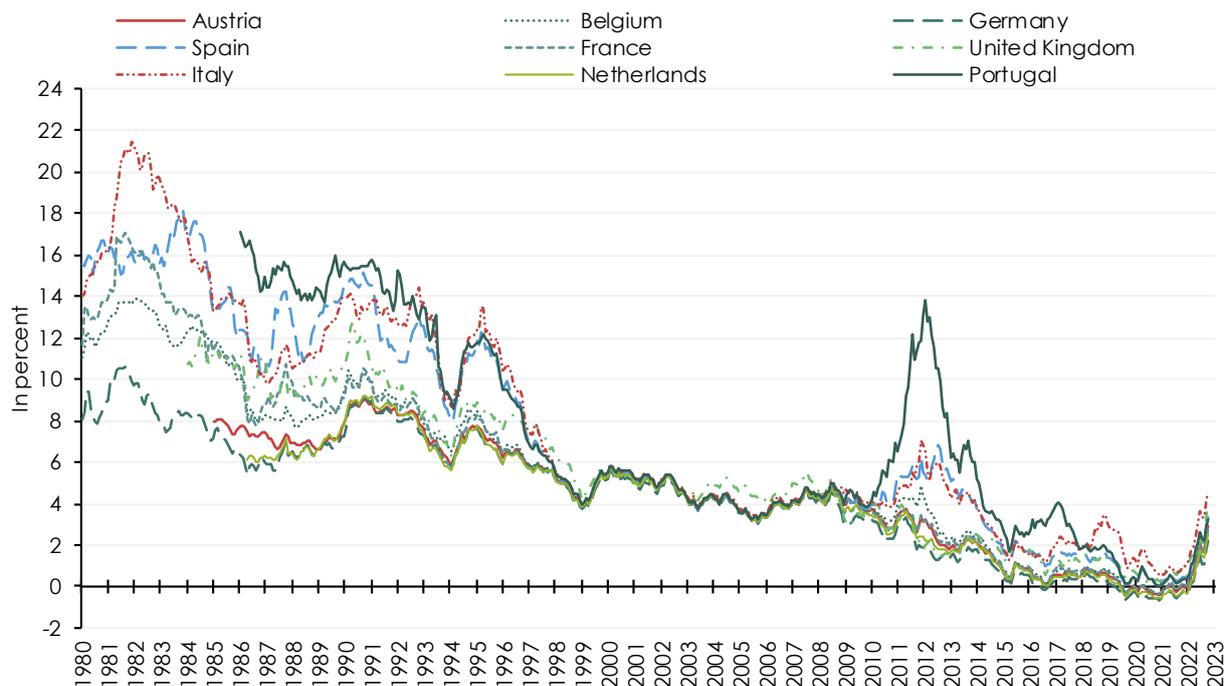
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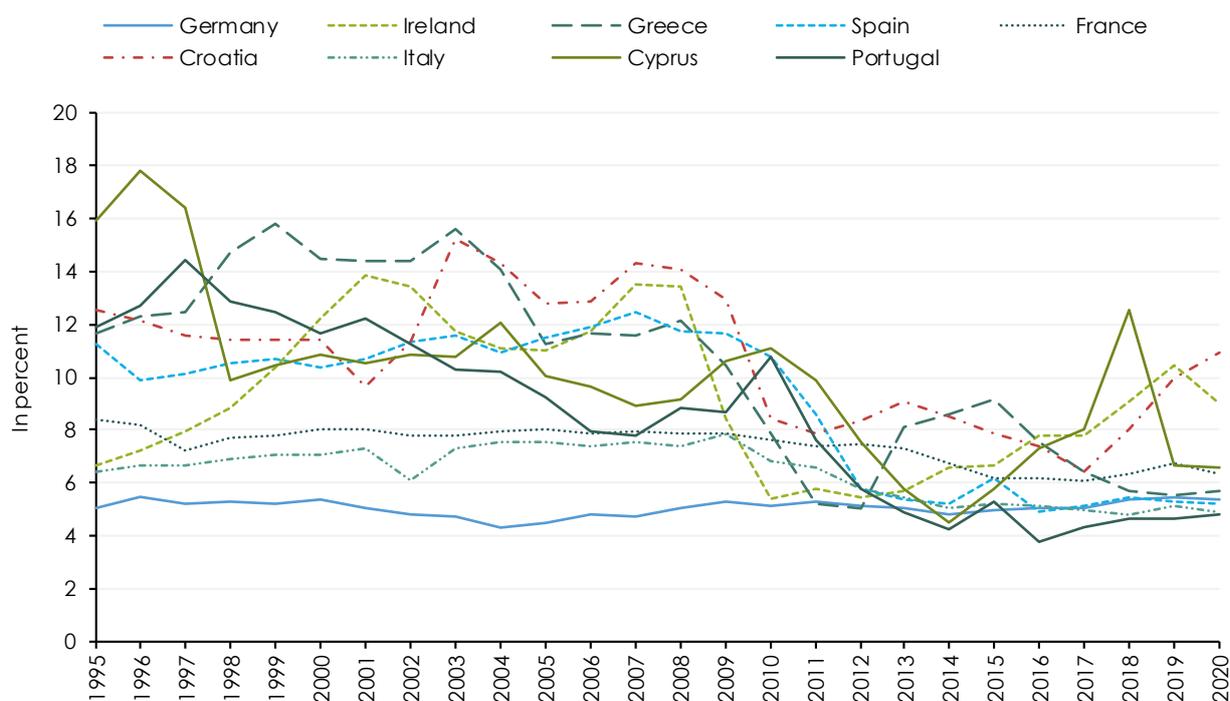
## ANNEX

**Figure 1:** Interest rate (10 years government bond yield) in selected Member States



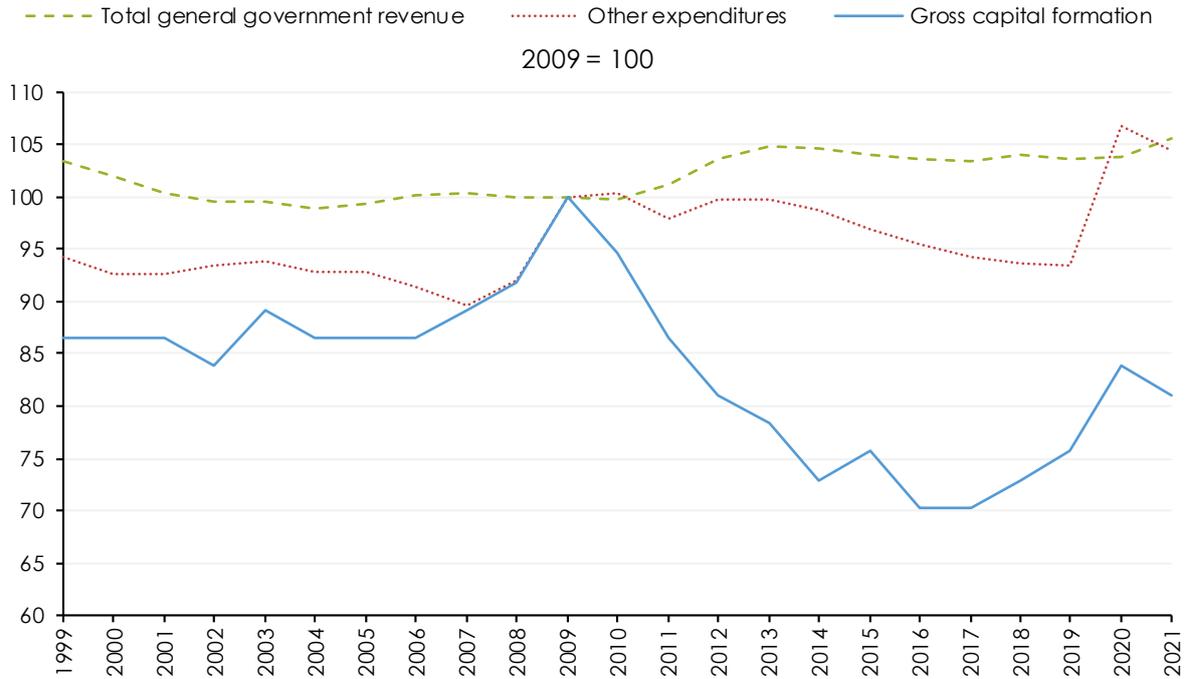
Source: Eurostat, Macrobond.

**Figure 2:** Gross fixed capital formation as a share of primary expenditure in selected Member States



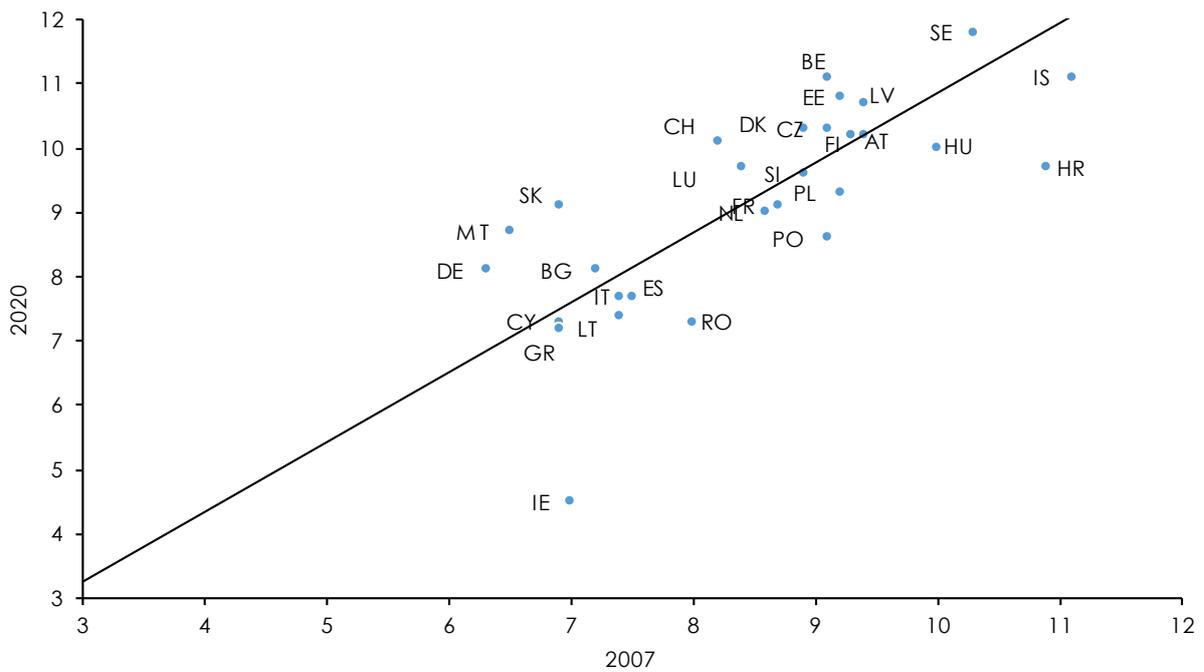
Source: Eurostat. – Primary expenditure = Total general government expenditures minus property income.

**Figure 3:** Euro area general government revenue, investment and other expenditures, in percent of GDP



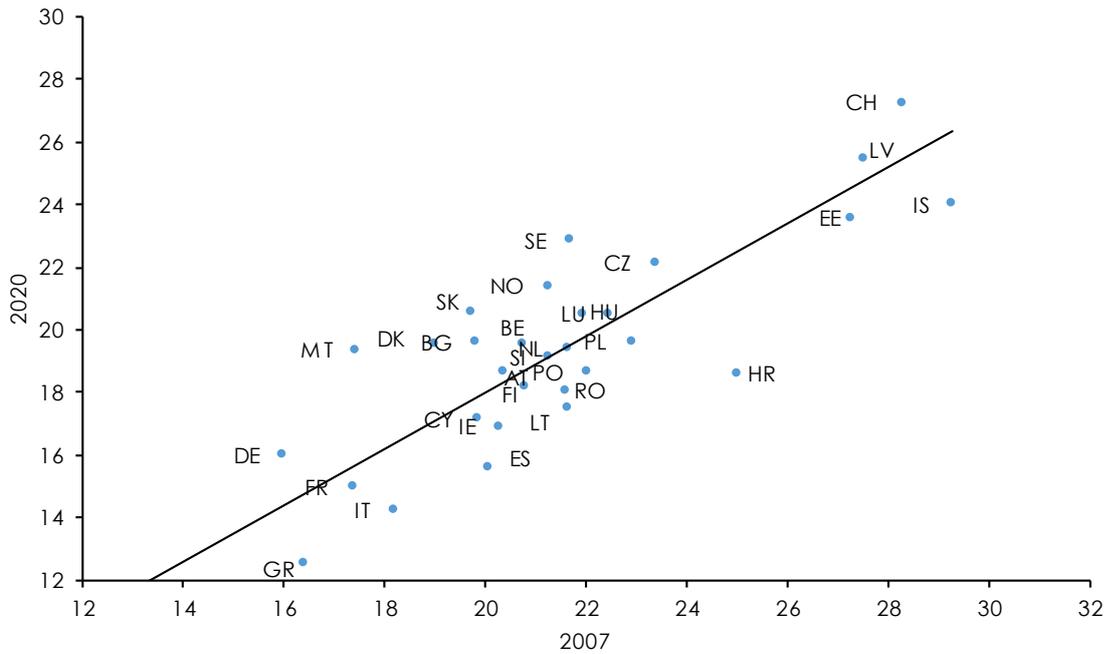
Source: Eurostat. – Other expenditures = Total general government expenditure minus gross capital formation.

**Figure 4:** Share of productive public expenditure in percent of GDP, 2007 and 2020



Source: Eurostat. – Productive public expenditures = Basic research + R&D General public services + R&D Defence + R&D Public order and safety + Transport + R&D Economic affairs + R&D Environmental protection + R&D Housing and community amenities + R&D Health + R&D Recreation, culture and religion + Education + R&D Social protection.

**Figure 5:** Share of productive public expenditure in total primary expenditure, 2007 and 2020



Source: Eurostat. – Total primary expenditure = Total general government expenditures minus property income. Productive public expenditures = Basic research + R&D General public services + R&D Defence + R&D Public order and safety + Transport + R&D Economic affairs + R&D Environmental protection + R&D Housing and community amenities + R&D Health + R&D Recreation, culture and religion + Education + R&D Social protection.

**Box 1:** Definition of green public investment (GPI)

There is no established common definition of GPI. The definitions of green investment provided in the relevant literature often refer to climate change, i.e., investment to reduce greenhouse gas emissions (mitigation) and investment to reduce the risks and impacts of climate change (adaptation) (World Economic Forum, 2013). While climate change undoubtedly is the most pressing global environmental problem, a definition of “greenness” focusing on greenhouse gas emissions and therefore equalling “green” with decarbonisation and carbon neutrality, respectively, neglects other important environmental problems, be they of a more local or a more global nature. Moreover, it neglects trade-offs between different environmental objectives, as, e.g., some low-emission energy sources may be associated with other environmental problems: e.g., the production of biofuels, which is resource intensive with regard to land and water use (see, e.g., Munoz Castillo et al., 2019, for the example of Brazil), or nuclear energy, with its potential environmental and health hazards (Ramana, 2009).

Green investment is explicitly or implicitly often associated with infrastructure investment. “Green infrastructure can be defined as infrastructure that enables economic growth and at the same time improves the environment (quality of air, health of citizens), helps conserve natural resources, reduces emissions, and enables adaptation to climate change. Green infrastructure could include renewable and low-carbon power plants, sustainable and low-carbon vehicles and transport, and energy efficient, climate-resilient buildings.” (World Economic Forum, 2013) Generally, infrastructure is the most important element of gross fixed capital formation by the state. Accordingly, the bulk of GPI will consist of green infrastructure (Mielke, 2019). It will be complemented by green non-infrastructure spending with an investment character, particularly in forestry and green research and development (R&D). For the goals of the issue at hand, GPI can be defined as public investment with a “greening” character.

In the EU, a framework for the classification of sustainable economic activities was established with the EU Taxonomy for Sustainable Activities. Sustainable activities are understood as “economic activities that can make a substantial contribution to climate change mitigation or adaptation, while avoiding significant harm to other European Union environmental objectives...” (Technical Expert Group on Sustainable Finance, 2020). According to the Taxonomy Regulation entering into force in July 2020, only economic activities that contribute to one of six major objectives are to be classified as green: climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, the transition to a circular economy, pollution prevention and control, and the protection and restoration of biodiversity and eco-systems (European Union, 2020). The Regulation contains 35 economic activities contributing to the six major objectives, e.g., investment in nature and biodiversity conservation or in energy efficiency. The EU Taxonomy lends itself as a suitable basis for the classification of green (public) investment. While actually referring to private activities, the taxonomy has the advantage of building on definitions and concepts already applied by the Commission (e.g., in the identification of measures contributing to the green transition in National Recovery and Resilience Plans to apply for funds from the EU Recovery and Resilience Facility) and could therefore serve as a basis for the elaboration of an operational definition of GPI in the context of the EGD in general as well as relevant reforms of the EU fiscal framework in particular.

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The necessary green transition in the EU requires substantial additional green public investment (GPI) by Member States throughout this decade and beyond. This briefing paper discusses four approaches for a reform of EU fiscal rules to better accommodate higher (debt-financed) GPI: (1) an exemption clause for GPI; (2) the implementation of a green golden rule; (3) a country-specific benchmark share of government expenditures dedicated to GPI recommended by the European Commission; and (4) an EU Climate Fund. We also discuss these options in relation to the recent Commission proposal from November 2022.

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