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The additional public investment need required to meet the European Union's climate goals is between 0.5 percent and 1 percent of GDP annually during this decade. Increasing green public investment while consolidating deficits will be a major challenge. While our simulations show that budget consolidation can be done at a moderate pace in line with EU rules if those rules are interpreted flexibly, past consolidation episodes resulted in major public investment cuts. In this time, there is a need for a major increase in investment.

A **'green golden rule'** (excluding net green investment from the fiscal indicators used to measure fiscal rule compliance) is the most promising option to address this tension. Relaxing the strictness of the EU fiscal framework and reduce public costs. These ingredients should be combined.

Darvas, Z. and G. Wolff (2021) 'A green fiscal pact: climate investment in times of budget consolidation', *Policy Comment*, 18/2021, Bruegel

1

The European Union economy is gradually exiting its biggest recession since the Second World War. After a drop in GDP of 6 percent in 2020, the growth rate is forecast to be 4.8 percent in 2021 and another 4.5 percent in 2022¹. These estimates continue to be fraught with considerable uncertainty. One important factor of uncertainty will be the further development of the pandemic, for example the emergence and impact of new coronavirus variants. Further uncertainty arises from global supply chain disruption.

Substantial fiscal resources were rightly used to buffer the impact on the economy of the pandemic and public health measures, and debt level (with me) 1.1 (as) 3 (ur) 15 (15) 7 (ubs) 2 (,he) TJ-1.44ur15

As the economy recovers, the fiscal exit strategy from this substantial support will be of paramount importance. In a previous note to the informal ECOFIN, we warned against a premature fiscal exit (Claeys, 2021). We have also discussed the importance of a gradual shift from firm-specific fiscal support towards broader demand support in order to facilitate the adjustment of economic structures towards a new steady state after the acute phase of the pandemic. The design and the speed of the fiscal consolidation will have major ramifications for the recovery.

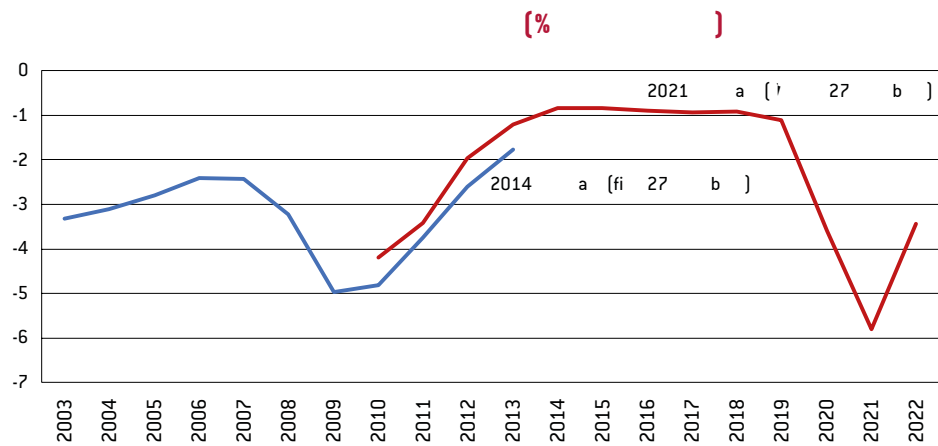
The fiscal exit strategy needs to be put in place when the EU is pursuing the major and justified goal of cutting its greenhouse gas emissions. Achieving the targets of the European Green Deal and the 'Fit for 55' package will require substantial additional investment and major regulatory and tax measures. And while the EU's share of global emissions is modest, EU investment also advances climate mitigation technology, which contributes to global reductions². These investments will have to be funded and we discuss how this will complicate fiscal policy trade-offs in this decade.

The EU's fiscal rules are under discussion, but this article is not intended to discuss them in detail.

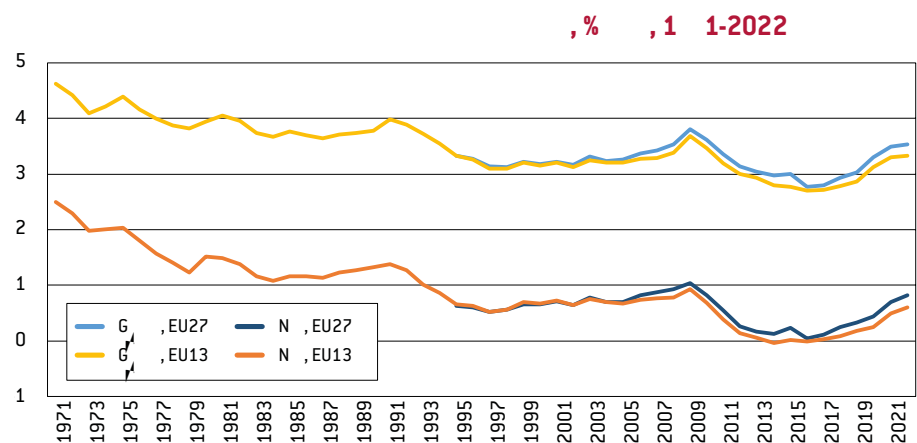
under the existing fiscal rules. We summarise estimates of public investment needs in green infrastructure. The overall message is that there are substantial investment needs that will be very difficult to achieve in the current fiscal setting. We highlight major political trade-offs and conclude with recommendations.

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In the midst of the escalating euro crisis of the early 2010s, fiscal consolidation in the EU was rather fast. In the current 27 EU members, the structural budget balance as a share of GDP increased by 0.8 percentage points in 2011, 1.5 percentage points in 2012 and 0.8 percentage points in 2013. This rapid fiscal consolidation was a major driver of the recession of 2012 (Figure 3).



Source: Bruegel based on the May 2014 and the May 2021 AMECO datasets. Note: the latest May 2021 AMECO includes estimates and forecasts for 2010-2022, so we include the May 2014 AMECO which also includes earlier estimates.



Source: Bruegel based on the May 2021 AMECO dataset. Note: EU13 is the aggregate of the first 15 members of the EU except the United Kingdom and Luxembourg. The forecasts for 2021-2022 include the impact of NGEU.

While the magnitude of fiscal consolidation in EU countries differed depending on



EU¹⁰. If one assumes that the new additional investments as reported by the Commission were in line with these self-reported estimates of the public share of funding, an annual additional public investment of €100 billion (at 2015 prices), or 0.8 percent of 2019 EU GDP, would result. IRENA's (2021) 1.5°C scenario estimated a somewhat lower public share at the global level. Public funding accounted for 22 percent of the relevant investments in 2019. This share would decline to 17 percent beyond 2030, while in absolute terms, public investment would more than double because of the large growth of overall green investment needs. The EIB (2021) report emphasised the importance of public funding to mobilise and facilitate private financing. Similarly, numbers presented by the World Economic Forum (2013) confirmed that public-private leverage ratios of 1:4 to 1:5 are possible if public funds are used efficiently¹¹.

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Source: Bruegel based on European Commission (2020). Note: 'Baseline' is a scenario in which current policies and targets for 2030 continue to apply (-40% GHG emissions). 'Mixed 55%' is a scenario (MIX) that features a combination of expanded carbon pricing and moderately increased ambitions in energy regulations to achieve 55% emission cut by 2030. Beyond that, the estimates for 2031-2050 do not assume any particular policy change to reach net zero in 2050.

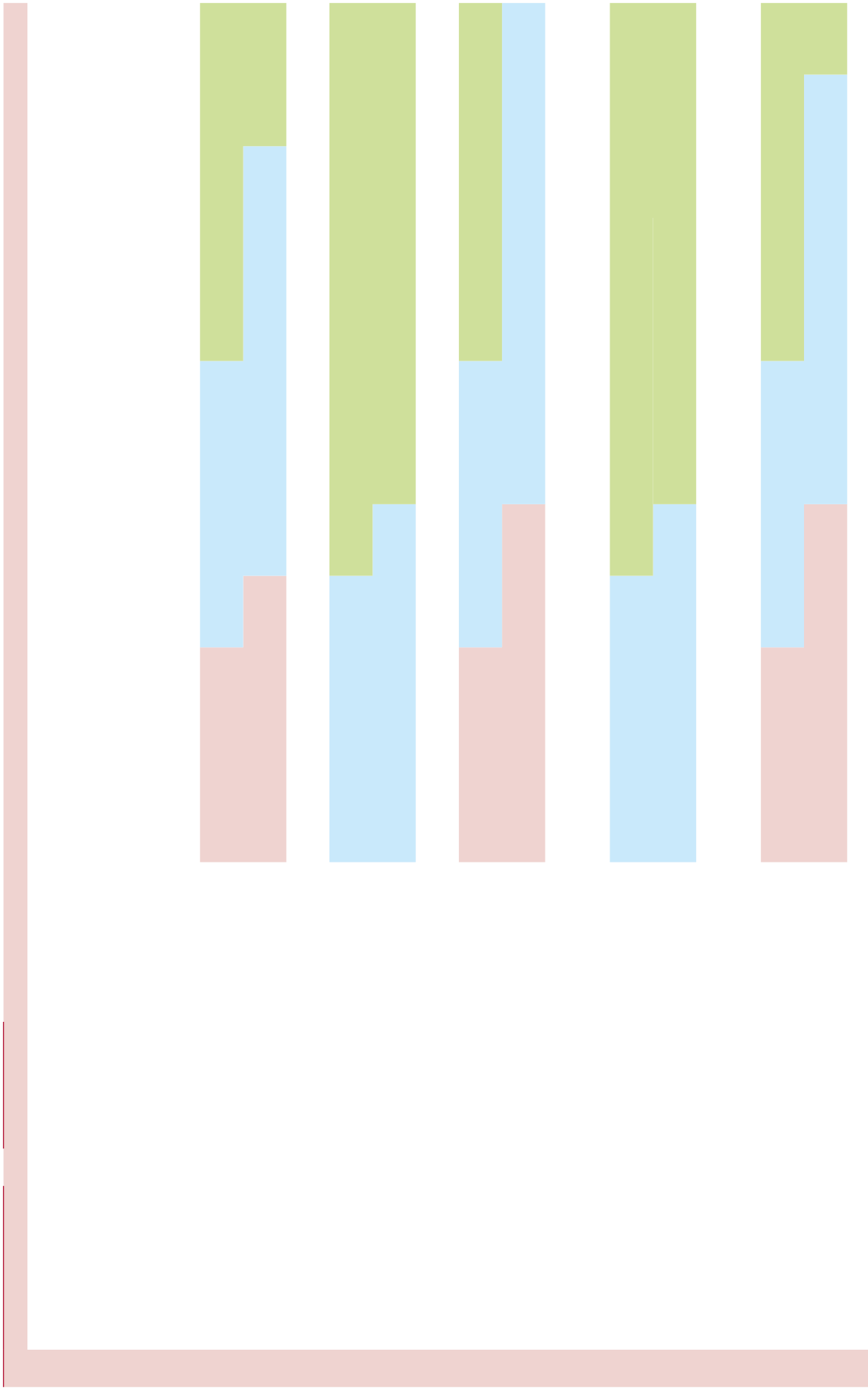
However, the share of public funding can be reduced by appropriate policy to reduce the costs to the public purse. Appropriate government regulation, taxation policy and, in particular, a higher carbon price should make green investments more profitable for the private sector. The percentage of public funding therefore depends on the willingness of the public sector to tax emissions. Nevertheless, some public spending cannot be done by the private

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Source: Bruegel based on Eurostat's 'Gas prices for non-household consumers [nrg_pc_203]', 'Electricity prices for non-household consumers [nrg_pc_205]', 'Gas prices for household consumers [nrg_pc_202]' and 'Electricity prices for household consumers [nrg_pc_204]' datasets.

Overall, in the course of this decade, to achieve EU climate goals, total green investment in the EU must be increased by about 2 percentage points of GDP annually, of which public investment will have to amount to between 0.5 percent and 1 percent of GDP. EU countries should tax emissions more so that investment in climate infrastructure becomes more profitable for the private sector, relieving the public purse. However, given the public-goods nature of some of the necessary investments and existing political choices, our best estimate is that public spending will still need to increase by some €100 billion per year. This is a major effort that will need to be financed.





percent debt benchmark of the EU treaties at the required pace. Thirteen countries would violate the 1/20t rule in at least one year under our flexible scenario. For countries with debt ratios over 100 percent of GDP, inconceivably large fiscal adjustments would be needed to meet this rule, with adverse impacts on output. We ignore the 1/20t rule because violations of this rule in the past decade did not lead to excessive deficit procedures as relevant factors were taken into account, such as the implementation of structural reforms.

- Sixth, Next Generation EU funds can substantially change the fiscal adjustment dynamics in some countries, depending on their precise treatment in the fiscal rules.
- Finally, we take the Commission's GDP and output gap estimates up to 2025 as given (and assume the 2025 growth rate for subsequent years), but obviously different fiscal adjustment paths have different impacts on GDP that we do not analyse. If the Commission's GDP scenario is consistent with our historical fiscal adjustment scenario, then our flexible scenario could result in (temporarily) faster growth. A key issue is if fiscal consolidation reduces the level of potential output or not¹³. We call for a growth-friendly consolidation strategy, and in particular, for increasing public investment, in which case fiscal consolidation might not have an adverse impact on potential output, implying that possible transitory GDP impacts would not undermine the interpretation of our scenarios.

Table 1 shows alternative scenarios for fiscal adjustment for the EU as a whole and the five most populous EU countries (results for the other EU countries, as well as the main assumptions for the simulations, are available in the Annex).

The expected significant reduction in the structural deficit from 2021 to 2022 mainly results from unwinding of pandemic-support measures. The European Commission expects the EU structural deficit to reduce from 5.8 percent of potential output in 2021 to 3.4 percent in 2022 (Table 1). This fiscal tightening is expected to result from the partial unwinding of the 2020-2021 discretionary expenditure measures (Figure A1 in the Annex)¹⁴.

Table 1 shows that substantial flexibility in the fiscal consolidation would be possible with the EU fiscal rules reinstated from 2023 and with NGEU further easing adjustment paths initially. In the EU as a whole, our flexible scenario implies 0.3 percent fiscal consolidation in 2023, 0.4 percent in 2024 and 0.5 percent in 2025. There are some differences between countries, but they do not change the overall picture. For example, in our flexible scenario, the fiscal consolidation effort that France would have to undertake from 2022 to 2023 would amount to 0.5 percent of GDP, reduced by 0.2 percent of GDP because of the increase in the transfer from NGEU from 2022 to 2023. In Italy, the increase in NGEU grants would even completely offset the fiscal consolidation need in 2023. If Germany and Poland invoke the structural balance clause already in 2023, as we assume in our flexible scenario, then practically no fiscal consolidation will be needed in 2023. Only Spain will face a sizeable fiscal consolidation in 2023 in our flexible scenario, because of the 0.5 percent adjustment required by the EDP, which would be reinforced by a 0.4 percent decline in NGEU grants. Yet we note that the timetable of NGEU payments planned by the Spanish government (which we use in our simulations) is heavily frontloaded and might be difficult to implement. Slower implementation in line with the Commission's 2020 assumptions (that we use for Italy and Poland, for example) would result in an increase in NGEU funding from 2022 to 2023, thereby reducing the impact

13 Fatás (2019) argued that a negative loop might have been at work after the global financial crisis in Europe: low GDP growth was seen as structural so potential output estimates were revised downwards, and this pushed policymakers to believe that further fiscal policy adjustments were needed. The successive rounds of fiscal contractions might then have caused further reductions in potential output, via hysteresis effects, that validated the initial pessimistic estimates.

14 Yet some of the COVID-19-induced discretionary expenditure measures and most of the discretionary revenue measures are expected to remain in place in 2022. This is calculated as $(\text{discretionary expenditure} - \text{discretionary revenue}) / \text{GDP}$ for 2020, 2021, and 2022, assuming that the 2020-2021 measures are not fully implemented in 2022.

of the EDP-induced fiscal consolidation need in 2023. In summary, under a flexible interpretation of the existing fiscal rules, fiscal consolidation needs in 2023 would be rather small.

For most countries, a small increase in NGEU grants is also expected for 2024 (thereby partially compensating for the consolidation requirement under fiscal rules), but NGEU grant payments are expected to decline in 2025-2026, aggravating the impact of fiscal consolidation¹⁵.

Overall, fiscal deficits will have to be reduced gradually as the EU exits the 2020 recession, but substantial flexibility exists. Our simulations suggest that with a flexible interpretation of current rules, the fiscal consolidation requirement will be relatively small in 2023 in many EU countries, and further eased by grants from NGEU. Hereafter, fiscal adjustment will have to resume at or somewhat above 0.5 percent of GDP in countries that have not yet reached their MTOs.

The central policy challenge for finance ministries in the coming years will be to consolidate deficits while increasing green investment. Evidence suggests that in the current fiscal framework, this will not be achieved because of political economy constraints. There are important reasons why politicians prefer cutting investment over current spending. First, in aging societies, the interests of future generations have less electoral support. Vote-maximising politicians are then likely to decide against the future, as seen in previous fiscal consolidation episodes. Second, fiscal rules disadvantage investments by treating them fully as current expenses, even though the benefits of investments accrue over long periods¹⁶. This biases the political economy further against investment. Basic accounting logic would allow net investments to be funded by deficits as they increase the stock of assets¹⁷.

We discuss three options for dealing with the trade-off between fiscal consolidation and increased green public investment:

- A general relaxation of EU fiscal rules;
- The introduction of a green golden rule;
- Centralised EU capacity to fund green investment, possibly via EU borrowing.

A general relaxation of the stringency of fiscal rules would not provide direct incentives to increase green public investment and would create risks of excessive deficits in good times. Our simulations suggest that a flexible interpretation of the existing fiscal rules would allow for a correction of deficits over several years. Combined with NGEU, the fiscal adjustment required during 2023 and 2024 would actually be small compared to previous consolidation episodes¹⁸. Less-stringent fiscal rules on deficit reduction do not, however, provide incentives to increase public investment. Additional fiscal resources could well be used for recurrent consumptive spending given the political economy reality. Going beyond existing flexibility in the fiscal rules would thus not necessarily increase green investment.

15 We discuss this further in Darvas and Wol (2021).

16 Note that corporate accounting rules treat current spending and investment spending differently: the cost of an investment is not charged to a single year when the investment is implemented, but distributed over the service life of the capital good.

17 This evident point was already made by Blanchard and Giavazzi (2004).

18 One can, of course, debate whether slower or faster fiscal adjustment is advisable, given the state of the EU's economies. This is outside the scope of our note. For slower adjustment, a general revision of the fiscal rules would be necessary. Under the basic agreements of the EU's monetary union, however, fiscal consolidations are unavoidable.

Allowing green investment to be funded by deficits that would not count in the fiscal rules would provide a positive incentive to maintain and increase green investment during the consolidation phase, because such investment would be excluded from the consolidation requirements.

Exempting investment spending from deficits as considered in the fiscal rules has been rejected in the past. The main reasons include the difficulty of defining what exactly constitutes 'investment' with positive future returns. It might create distortions, with favoured investments preferred over other forms of capital or current spending that might also be beneficial over the long run. There would be significant incentives to record current expenditure as capital spending. While we believe that these worries can be satisfactorily addressed with political will, the need to increase climate-related public investments should revive the discussion of at least a limited golden rule focusing on green investment. Of course, also in the case of green investment, there are problems defining exactly their scope but arguably less so thanks to the narrower goal of carbon emission reductions.

Good reasons justify deficit funding of green investment. The green infrastructure that

Important policy trade-offs emerge in the case of a green golden rule, i.e. a rule that would exclude green public investment from the computation of the deficit and debt relevant for the fiscal rules. For reasons of economic logic and political economy, public green investment should be funded from government deficits. However, given the uncertain growth effects of green public investment, the debt sustainability question cannot be ignored. Investment in climate adaptation after the fires in parts of southern Europe is necessary, but will weigh on debt sustainability if funded via deficits.

One bold and certainly controversial policy option would be to centrally fund all EU climate expenditure, for example via a permanent dedicated NGEU-type borrowing mechanism. An advantage of such a fund would be the approval of national green investment plans by the Commission and the Council, thereby ensuring consistency with EU goals. However, such a fund would need to amount on average to 1 percent of GDP over the next decade(s) and would thus be much larger than NGEU. An important question would be whether or not such a fund would involve redistribution, similarly to the EU budget and NGEU. Since the EU budget and NGEU in particular are highly redistributive towards poorer countries, such an approach would provide financial support to countries with greater budgetary constraints. But



economy constraints. Allowing deficit funding of net green public investments would – delay the budgetary consolidation in the coming years. This should support the macroeconomic recovery and contribute to the medium-term attainment of the European Central Bank’s inflation goal. However, given the uncertain growth effects of green investment, We do think, however, that existing flexibility should be used to the full. On the whole, some form of a green golden rule would usefully complement the existing fiscal framework. This would provide clear incentives for green public investment without opening the Pandora’s Box of increasing deficit funding in general²³.

For countries with greater debt-sustainability concerns, difficult policy trade-offs continue to exist and the application of a green golden rule needs to be handled more carefully. We do not assess here the actual fiscal sustainability concerns but would like to point out that Ultimately, it is a political choice how to resolve this tension between green investment needs and budget constraints. NGEU goes some way in the direction of reducing the trade-off by directing European money at climate investments in fiscally less-strong countries. Only after NGEU expires, does the question of a green golden rule become relevant for these countries.

Finally, we would like to emphasise the need to ensure that private investment be incentivised through appropriate taxation and regulation, to reduce the bill to the public sector. Political instinct may be to avoid unpopular taxes on emissions while preferring to subsidise expensive investments. But this strategy would mean that decarbonisation will become more expensive and the negative growth effects might be larger because of the less-efficient approach chosen. And the fiscal costs would be higher and budgetary trade-offs more difficult.

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Source: Bruegel based on May 2021 AMECO dataset. Note: data refer to the current 27 EU countries.

Assumptions for our fiscal scenarios presented in Table 1 and Table A2

- We use the GDP and output gap forecasts and projections of the European Commission up to 2025, which assume a zero output gap for all countries from 2025 onwards, though a close-to-zero gap is forecast already for 2022 for some countries²⁴. We assume the 2025 growth rate for subsequent years (see our discussion on the interaction of fiscal consolidation and GDP growth in the main text).
- We assume no one-off fiscal measures from 2023.
- Historical scenario for excessive deficits: in the past decade, for several countries, the time allowed to correct an excessive deficit was three years and the required structural adjustment would have reduced the structural deficit to 2.5 percent of GDP.
- Flexible scenario for excessive deficits: the Treaty and the Stability and Growth Pact (SGP) legislation does not define an upper time limit for adjusting excessive deficits, while the SGP sets half a percent of GDP as the minimum adjustment. Thus, this scenario requires half a percent adjustment in the structural balance per year until the headline deficit falls below 3 percent.
- Historical scenario for the preventive arm: a country not yet at its MTO should reach it by implementing fiscal consolidation, depending on the economic situation and the level of public debt, according to a matrix endorsed by the February 2016 ECOFIN Council. For many instances in the past decade, the MTO had to be reached in four years. Given that the output gap is projected to be in the range of $\pm 1.5\%$ in 2023 in almost all EU countries, the matrix implies a 0.5 percent annual adjustment for countries with public debt below

tance of the structural balance from the MTO is 1.5 percent of GDP, in order to ensure that in the benchmark case of an annual adjustment of 0.5 percent of GDP, the MTO can be achieved within the four-year horizon of the Stability or Convergence Programme. Thus, if this condition is not expected to be met in 2023, then for initial few years after 2023, we consider the speed as required by the matrix mentioned above. We assume the application of the structural balance clause in the first year when the gap to the MTO would be reduced to 1.5 percent or below, and thereafter assume 0.5 percent annual adjustment²⁶.

- For the three countries that are expected to exceed their MTOs in 2022 (Denmark, Luxembourg and Sweden) we assume that the 2022 structural balance remains unchanged in later years.
- The 2020 MTOs remain unchanged; thus, when a country reaches its 2020 MTO, no further fiscal consolidation is done.

Whenever the output gap is zero and there are no one-offs, the structural balance is the same as the headline balance. Thus, the change in the headline balance is driven by two main factors: the cyclical recovery (the change in the output gap multiplied with a country-specific elasticity) and the fiscal effort (the change in the structural balance). We assume that countries in which the headline budget deficit would exceed 3 percent in 2023 in the absence of fiscal effort are placed in an excessive deficit procedure (EDP). We simulate the development of the structural and headline balances under our scenarios and assume that an EDP ends when the headline balance falls below 3 percent. From that year, we continue our simulation by assuming our scenarios for the preventive arm, until the MTO is reached.

²⁶ An example for our application of the structural reform clause: Austria's MTO is 0.5 percent deficit, so the clause could be applied when the structural deficit falls to 2.0 percent or below. According to our historical scenario, the Austrian structural deficit would evolve as: 2023: 2.3 percent, 2024: 1.7 percent, 2025: 1.1 percent, 2026: 0.5 percent. Consequently, Austria could apply the clause in 2024 with a 0.5 percent deviation, so in our flexible scenario, the structural deficit is assumed to be 2.2 percent instead of 1.7 percent in 2024. Thereafter, we assume the structural deficit is reduced by 0.5 percent in 2025, 2026 and 2027, while the remaining 0.2 percent gap to MTO would be eliminated in 2028.

