

INCORPORATING THE IMPACT OF SOCIAL INVESTMENTS AND REFORMS IN THE EU'S NEW FISCAL FRAMEWORK

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The European Union's new fiscal framework aims to incentivise public investment and reforms by offering the option to extend the four-year fiscal adjustment period to seven years, thereby lowering the average annual fiscal adjustment requirement. Investments and reforms proposed by EU countries in their national medium-term fiscal structural plans can be expected to also inform the fiscal adjustment proposed by member states. Yet, the EU lacks an agreed methodology for deciding on the potential quantitative impact of investment and reforms on the fiscal adjustment required under the new rules.

We first analyse the 'investment friendliness' of the new framework. Although the incentives offered for raising investment are powerful, the bar for extending the adjustment period mainly through higher investment is high, and the design of the new rules will make it hard to actually raise investment.

We next propose an approach for quantifying the impact of investment and reform on debt sustainability in the context of the new framework, taking into account uncertainty about their implementation and their economic effects. Such a methodology would also help the European Commission evaluate the impacts of recently adopted measures. Developing this methodology will require revisiting the current commonly agreed methodologies for medium- and long-term capital stock and total factor productivity projections.

We illustrate the potential impact of investment on debt sustainability analyses through calculations on three social investment measures, that is, combinations of reform and public spending that aim to increase human capital and labour force participation. While the impact of individual reforms on fiscal adjustment needs is generally modest, the combined impact of several measures could be notable.

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1 Introduction

The update to the European Union's fiscal rules agreed in February 2024 will change fundamentally the planning and surveillance of the fiscal policies of EU countries¹. Under the new framework, the European Commission will issue to EU countries four-to-seven year reference trajectories intended to show how they should bring their spending² under control – or in technical terms, ensuring their public debts are on a “*plausibly downward path*” (or remaining below 60 percent of GDP), as determined by a country-specific debt sustainability analysis (DSA) augmented by numerical ‘safeguards’³. EU countries will subsequently submit medium-term fiscal-structural plans (MTFSPs), which the Commission will evaluate. If these include reforms and public investment that meet certain criteria – such as being growth-enhancing and supportive of fiscal sustainability, and raising investment over the medium term – they would justify an extension of the adjustment period from four to seven years. To the extent that these plans are executed and influence productivity growth, the capital stock and labour supply, they would also impact the future debt path.

This paper proposes an approach for quantifying this impact and integrating it into the new framework, taking into account uncertainty about the implementation of reforms and their economic effects. A key component of this approach is the development of a quantitative methodology that quantifies the reform and investments impacts. Developing such a methodology is important for two reasons. First, countries that succeed in obtaining an extension of the adjustment period will likely argue that their proposed reforms and investments justify less-stringent adjustment than envisaged in the Commission's reference trajectory (which precedes the MTFSPs, and hence does not take into account new reforms). This raises the question of how the trade-off between promised reforms/investment and fiscal adjustment should be quantified. Second, while the reference trajectories do not take into account the impact of proposed reforms, they do try to take into account the impact of recent reforms. However, some of this impact may not yet be observable – because, for example, reforms have only just been adopted – raising much the same methodological problems as assessing the impact of promised reforms.

We pay particular attention to *social* investments, defined as reforms and increases in public spending that pursue social objectives⁴ and are also expected to raise economic growth. The growth-enhancing effect could materialise through the impact of social investments on human capital and productivity, including via stronger innovative capacity and absorption of new technologies, and/or labour supply. For example, investments in childcare can raise the labour supply; improvements in education and

¹ Agreement on the new rules is, at time of writing, still subject to ratification by the Council of the EU and the European Parliament; see Council of the EU press release of 10 February 2024 (updated 21 February), ‘Economic governance review: Council and Parliament strike deal on reform of fiscal rules’, <https://www.consilium.europa.eu/en/press/press-releases/2024/02/10/economic-governance-review-council-and-parliament-strike-deal-on-reform-of-fiscal-rules/>.

² Government expenditure net of interest spending, cyclical unemployment spending, discretion revenue measures, EU-funded national spending, co-financing of EU programmes and one-offs.

³ See Annex 1 for the four numerical safeguard requirements.

⁴ For example, increased labour-market participation, access to quality education and training, reduction and prevention of poverty risks.

training can boost productivity and growth; and reforms and investments in public employment services can improve job matching, thereby increasing output. However, not all increases in social or educational spending are good for growth. Although such increases might be valuable, we would not regard them as social investments.

In many cases, it is difficult to decide *ex ante* whether social spending should qualify as social investment. But for the purposes of reflecting the impact of social spending on the debt sustainability analyses, no *ex-ante* classification is necessary. Increases in social spending that are proposed as part of an investment or reform plan would be evaluated for their growth impacts, just like any other reform and investment proposal. The question of whether social spending qualifies as social investment can be answered *ex post*, based on this evaluation⁵.

Against this background, we focus on four issues. First, we summarise the incentives for reforms and investments in the new fiscal framework and evaluate their likely effectiveness. Second, we review the current practice of incorporating reform and investment impacts in the DSA. Third, we provide three quantitative examples of social investments and reforms and evaluate their impacts on fiscal adjustment needs by inserting their expected growth effects into the DSA; our examples are: (a) a childcare policy to boost labour supply, (b) a policy to increase the quality of education, and (c) a labour market policy aimed at increasing the share of high-skilled workers. Finally, we recommend a conservative approach to incorporating the impacts of planned reforms and investments into the growth trajectories underpinning DSAs within the new fiscal governance framework of the EU, and we discuss options for a governance structure.

2 Incentives for reforms and investments in the EU's new fiscal framework

Under the new fiscal framework centred on country-specific debt sustainability analysis (DSA), agreed in February 2024, every EU country will be required to submit a medium-term fiscal-structural plan (MTFSP) that ensures that its debt ratio declines or remains below 60 percent of GDP for at least 10 years following the end of a four-year or seven-year-long adjustment period, assuming unchanged fiscal policy except for changes to the fiscal balance that reflect changes in ageing-related fiscal costs. For countries with debt above 60 percent of GDP, the plausibility of the decline is established both using a stochastic DSA (requiring a decline with a probability of at least 70 percent) and a deterministic analysis (requiring a decline even in adverse interest rate, GDP and primary-balance scenarios).

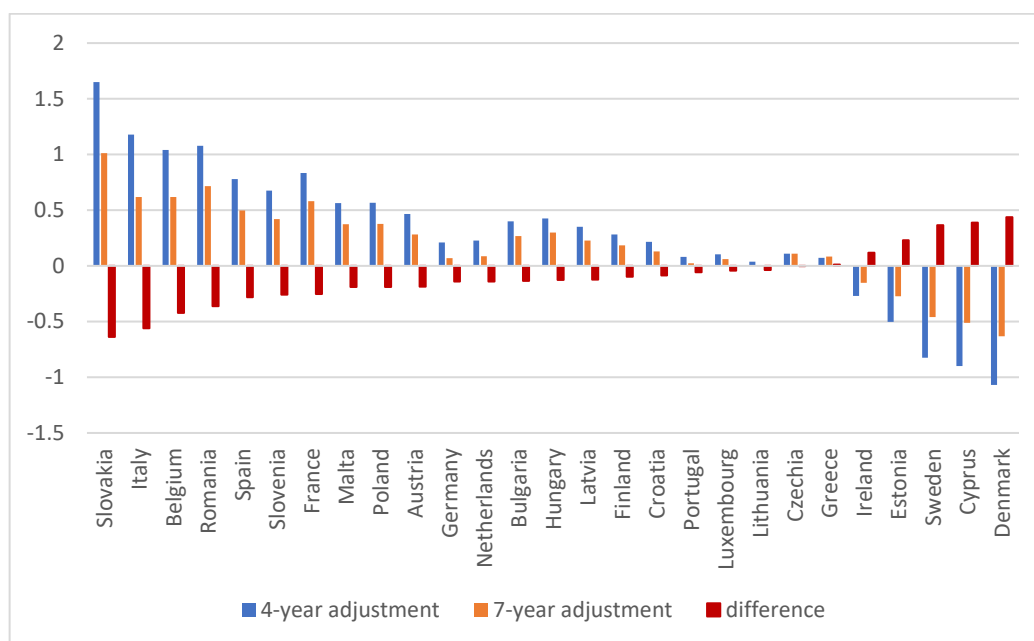
The main incentive for reforms and investments is the possibility to extend the four-year-long adjustment period to seven years, thereby lowering the average annual fiscal adjustment requirement⁶. This would ease potentially politically and economically costly annual fiscal

⁵ An *ex-ante* definition of social investment would be required, however, to compare social investments across countries and to undertake research on the impact of investments labelled as social.

⁶ The total adjustment requirement is broadly similar under the four-year and seven-year adjustment periods for most countries (with the seven-year total adjustment requirements being marginally higher for most countries), with the notable

adjustments. Figure 1 shows that for Slovakia, Italy, Belgium and Romania, the seven-year adjustment period would require an average annual adjustment of about 0.5 percent of GDP less than the four-year adjustment period. The extension would also substantially reduce the average annual adjustment needed for Spain, Slovenia and France⁷.

Figure 1: Annual average fiscal adjustment requirements under the new fiscal framework



Source: Bruegel based on November 2023 AMECO dataset for macro variables, January-February 2024 market expectations for interest rates and inflation rates. Note: Methodology based on European Commission (2023a) adjusted with the new requirements of the approved fiscal framework. See the Annex for the details of the calculations.

Article 13(1) of the EU law through which the fiscal reform would be implemented⁸ states that to obtain the extension, reforms and investments are required to be growth-enhancing, support fiscal sustainability, address common EU priorities, address relevant European Semester country-specific recommendations and result in an increase in nationally financed investments. These requirements would apply “as a general rule taken altogether”, implying that not every single reform or investment must satisfy all criteria.

exception of France. For France, the debt sustainability safeguard is not binding under a four-year adjustment because France would exit the excessive deficit (EDP) procedure in the last year of the adjustment period (and hence the requirement of a debt reduction from the year of exiting the EDP to the end of the adjustment period cannot be interpreted). In the seven-year case, however, France would exit the EDP one year before the end of the adjustment period and hence the debt sustainability safeguard applies for the last year of the adjustment period. See the Annex for further details.

⁷ The five countries on the right side of Figure 1 have either debt levels well below 60 percent of GDP (Ireland, Estonia, Sweden, and Denmark), and/or large budget surpluses (Cyprus and Denmark), implying that these countries could implement a fiscal expansion under the new fiscal framework.

⁸ See footnote 1. The text of the draft law is available at <https://www.consilium.europa.eu/media/70386/st06645-re01-en24.pdf>.

Article 38bis (Transitory Provisions) adds that for the first medium-term fiscal-structural plans, reform and investment promises already made by EU countries in their post-COVID-19 pandemic Recovery and Resilience Plans will not be sufficient to justify extensions, but shall be taken into account provided they have a significant impact on fiscal sustainability “*and the Member State concerned commits to continue the reform effort over the remainder of the national medium-term fiscal-structural plan, as well as to maintain the nationally financed investment levels realised on average over the period covered by the Recovery and Resilience Plan*”. The latter is understood to include investment spending financed by EU Recovery and Resilience Facility (RRF) loans or national co-financing, but excludes spending financed by RRF grants, which do not show up in national deficit and debt statistics⁹. For southern and eastern European countries that have obtained large amounts of RRF loans, this sets a high bar: such countries may find it difficult to maintain nationally financed investment at the average level realised during the lifetime of the RRF. It is unclear whether the possibility of extension will offer sufficient incentives to increase nationally funded public investment above this level.

An additional concern is that the new framework includes minimum annual adjustment requirements (0.5 percent under the excessive deficit procedure (EDP), 0.4 percent or 0.25 percent under the deficit resilience safeguard, and requirements under the no-backloading safeguard – see Annex 1) that may discourage increases in investment, because they would require this increase to be offset fully by higher revenues or spending cuts other areas. Suppose, for example, that Italy wished to increase public investment by 1 percent of GDP over a period of five years (say, in pursuit of its 2030 climate targets). For Italy, the no-backloading condition would require this increase to be fully offset by additional fiscal adjustment in order to ensure that its structural primary balance improves by 0.55 percent of GDP per year when the adjustment period lasts for seven years (Figure 1 and Table 4 in the Annex). This would require an additional 1 percent consolidation in the non-investment budget for the duration of the investment programme¹⁰. For political economy reasons, this is unlikely to happen¹¹.

The draft law also includes three additional provisions intended to make it investment friendly.

First, Article 2 (Definitions) states that: “(2) ‘net expenditure’ means government expenditure net of interest expenditure, discretionary revenue measures, expenditure on programmes of the Union fully

⁹ Spending financed by RRF grants does not show up in budget balances (neither in the headline balance nor in the structural balance) because “*the principle of the EU flows neutrality on the general government net lending/net borrowing*” applies, according to Eurostat’s decision. But spending financed by RRF loans shows up in deficit and public debt numbers.

¹⁰ The 0.55 percent annual adjustment requirement from the no-backloading condition will be the most binding constraint for Italy. In addition, Italy will be subject to two other safeguards, though these require less adjustment than the no-backloading safeguard: the deficit-based EDP will require a minimum 0.5 percent annual adjustment, and the deficit resilience safeguard will require a minimum 0.25 percent annual adjustment.

¹¹ A missed opportunity in the fiscal rules reform was not introducing a *fiscally responsible public investment rule*. By this, we mean an exemption for the extra investment from the safeguards, while the existing budget would remain subject to them, and the debt generated by the extra investment would matter for the debt sustainability analysis, the 3 percent deficit requirement and the longer-term 1.5 percent deficit resilience requirement. Our calculations show that such a rule would have allowed a meaningful public investment programme, while public debt dynamics would have remained broadly the same.

matched by Union funds revenue, national expenditure on co-financing of programmes funded by the Union, cyclical elements of unemployment benefit expenditure, and one-offs and other temporary measures.”

This provision has no impact on the *ex-ante* fiscal adjustment requirements under the new rules – in particular, it does not allow member states to increase deficit-financed public investment by increasing their co-financing of EU programmes. The reason is that the co-financing remains included in the definitions of deficits and debts, and hence subject to the DSA requirements, the requirement to reduce the budget deficit below 3 percent of GDP, and the four safeguards (see Annex 1).

The provision can make a difference *ex post*, however (during the implementation of the MTFSP). An increase in the deficit on account of higher-than-planned co-financing of EU programmes would not constitute a violation of the agreed net-expenditure ceilings, and hence would not trigger the debt-based excessive deficit procedure. Thus, an unexpected increase in co-financing is treated like a shock outside a country’s control, such as an interest rate shock, cyclical unemployment spending or a cyclical revenue shock.

Second, Article 11 (Content and requirements of the national medium-term fiscal-structural plan) requires members states to explain how their plan “*will ensure the delivery of investment and reforms responding to the main challenges identified within the European Semester, in particular in the country-specific recommendations, and explain how it will address the following common priorities of the Union: (i) a fair green and digital transition, including consistency with the European Climate Law; (ii) social and economic resilience, including the European Pillar of Social Rights; (iii) energy security; and (iv) where necessary, the build-up of defense capabilities*” (sic). This language expresses the wish in particular of the European Parliament that climate investment and other ‘good’ spending should be protected, or indeed expanded, while also undertaking the fiscal consolidation prescribed by the rules. But it does not offer EU countries any help in trying to reconcile these objectives (as it might have done, for example, by exempting EU-endorsed investment from the application of the numerical ‘safeguards’; see Darvas *et al*, 2023).

Third, Article 38bis(c) states that “*Projects related to Recovery and Resilience Facility loans as well as national co-financing of EU funds in 2025 and 2026 shall be taken into account whenever a Member State requests an exception to the no-backloading safeguard referred to in Article 6 point c, provided that this does not endanger fiscal sustainability in the medium term*”.

This provision does not imply an automatic exclusion of RRF loan-financed spending from the constraints imposed by the no-backloading safeguard, but makes this conditional on a country’s request (“*whenever a Member State requests an exception to the no-backloading safeguard*”). The incentive for a country to submit such a request depends on whether or not its RRF loan-financed spending is expected to increase from 2024 to 2025 and from 2025 to 2026.

For example, Italy's 2023 stability plan indicated that total RRF investments (financed by both grants and loans) would amount to 1.7 percent of GDP in 2024 and 2025 and 0.7 percent in 2026. Since Italy receives three times more RRF loans than RRF grants, the bulk of the decline from 2025 to 2026 is likely strongly influenced by RRF loans. Hence the decline in RRF investment from 2025 to 2026 implies a sizeable fiscal consolidation, ie an increase in the structural balance¹². Excluding this from the no-backloading safeguard would mean that Italy would have to undertake additional fiscal tightening to meet the no-backloading safeguard. Hence, we would expect Italy either to not request the exemption, or to delay RRF-loan financed spending so there is no decline in 2025 and 2026, but rather an increase.

When RRF-loan financed spending increases from 2024 to 2025 and/or from 2025 to 2026, implying a fiscal expansion, then excluding such spending from the no-backloading safeguard reduces the fiscal consolidation needs in other items of the budget and hence countries would likely take this opportunity.

National co-financing of EU funds in 2025 and 2026 is expected to increase marginally, so the exclusion of such spending from the no-backloading safeguard could marginally reduce fiscal consolidation needs in other budget items.

3 How reform and investments currently influence the Commission's DSA

At the core of any debt sustainability analysis (DSA) is a forward projection of the debt/GDP ratio. Denoting debt at the end of year t by D_t , GDP in year t as Y_t , primary (non-interest) public expenditure excluding ageing costs as E_t , ageing-related expenditure such as public pension expenditure, healthcare expenditure and long-term care expenditure as A_t , tax revenues as T_t , the primary balance without ageing costs P_t (which is equal to $T_t - E_t$), real interest rates as r_t , and the real growth rate as g_t , the evolution of the debt-to-GDP ratio can be written as:

$$\frac{D_{t+1}}{Y_{t+1}} = \frac{1 + r_t}{1 + g_t} * \frac{D_t}{Y_t} - \frac{T_t - E_t - A_t}{Y_t} = \frac{1 + r_t}{1 + g_t} * \frac{D_t}{Y_t} - \frac{P_t - A_t}{Y_t} \quad (1)$$

or equivalently, using lower-case letters d_t , a_t and p_t to denote debt, ageing costs and the non-ageing related primary balance as shares of GDP¹³:

$$d_{t+1} = \frac{1+r_t}{1+g_t} d_t - p_t + a_t \quad (2)$$

¹² The provisionally approved legislation does not define the indicator in which the no-backloading safeguard is measured. Article 6(c) says: "the fiscal adjustment effort over the period of the national medium-term fiscal-structural plan is linear as a rule and at least proportional to the total effort over the entire adjustment period". In the past, "the fiscal adjustment effort" was measured in terms of the change in the structural balance in EU fiscal surveillance. As noted earlier (see footnote 9), spending financed by RRF loans is included in national deficit and debt statistics, but spending financed by RRF grants is not.

¹³ The reason for separating ageing costs from other public expenditures is that ageing costs are treated differently in the Commission's DSA and there is a special process for forecasting them (see Section 3.2).

Reforms and public investments hence impact the key DSA input variables through the following channels:

- *Through their upfront and ongoing costs.* The upfront costs of investment and reforms increase public spending E_t and reduce the non-ageing primary balance P_t at the time they are paid for, increasing debt at that time. Certain new or expanded public services, such as childcare, have ongoing costs.
- *Through their impact on output,* by increasing future growth ($g_{t+n}, n > 0$), but also possibly current-year growth (g_t), which lowers the debt-to-GDP ratio both by increasing its denominator, Y_{t+n} , and through higher revenue T_{t+n} and hence a higher primary balance (P_{t+n}), which lowers D_{t+n} . The impact on output could occur through two channels: the short-term expansionary effect of higher public investment, but more importantly by increasing *potential* output, ie the production capacity of the economy. In the EU's commonly agreed methodology, the latter is determined by production factors: capital, labour and total factor productivity (TFP)¹⁴. Public investment and reforms could:
 - Boost TFP through either a level shift or a persistent increase in its growth rate (for example, better skills could raise the productivity of the workforce, and investments in artificial intelligence could boost the productivity of public services);
 - Increase the capital stock by (for example, through infrastructure investment);
 - Increase the labour force, by encouraging greater labour-force participation and reducing the equilibrium level of unemployment.
- *Through their impact on ageing costs.* Reforms and investments could impact various components of ageing costs (A_t). For example, increases in the retirement age could lower public pension expenditures, reforms could lower long-term care expenditures and changes to the tax or public pension systems could increase the incentives for older workers to remain in the labour force.
- *Through their impact on the interest rate.* Reforms and public investments could influence the interest rate (r_t) indirectly, for example, through their impacts on potential output (faster growing economies tend to have higher real interest rates) or by reducing the uncertainty premium in bond yields (by improving fiscal sustainability, a reform can reduce the uncertainty about whether future fiscal adjustment will be sufficient, which can reduce the interest rate now). This channel is uncertain and hard to assess; we ignore it in this paper.

3.1 Impacts on potential growth

The European Commission forecasts potential growth in the near term (from T to T+2, where T is the year in which the forecast is made) and the medium (T+3 to T+10) and long-term (T+11 to T+37). The near-term forecasts are based on expert knowledge and produced as part of a coordinated exercise, but are not based on any specific model or methodology. Medium- and long-term projections use methodologies agreed by two working groups of the Economic Policy Committee: the Output Gap

¹⁴ See Havik *et al* (2014) and Blondeau *et al* (2021).

Working Group (OGWG) and the Working Group on Ageing Populations and Sustainability (AWG). All Commission projections are based on a *no-policy change assumption*, that is, they only take into account policy measures and structural reforms which have been adopted into law or otherwise credibly announced in sufficient detail¹⁵ at the cut-off date for the finalisation of the forecasts¹⁶.

Annex 2 explains how the Commission, in conjunction with the OGWG and AWG, generates its forecasts over these horizons. The main insight is that in the current methodology, higher levels of investment or reform have impacts on potential output, TFP and the capital stock mainly to the extent that they are forecast to impact TFP and investment in the *short term*, ie from T to T+2. With respect to the medium and long term, the Commission makes assumptions and/or uses statistical methods that imply that the short-term impacts of reform gradually dissipate, with TFP growth assumed to revert to mean over the medium term and to eventually converge on a fixed long-term rate, 0.8 percent per annum in 2070, a relatively high long-run TFP growth rate (agreed with EU countries). The capital stock is assumed to converge to a long-term capital/labour ratio.

Adopted reforms can also have a long-term impact through their estimated impact on the non-accelerating wage rate of unemployment (NAWRU), which influences employment and thereby potential output. The impact of agreed pension reforms on labour-market participation rates is explicitly modelled and taken into account up to 2070, which also influences potential output projections.

From the perspective of forecasting output growth in the medium and long terms, these methods are broadly reasonable¹⁷. They are also reasonable if the objective is to evaluate the longer-term impact of reforms that operate mainly through their impacts on employment and labour-market participation. However, they are clearly not suitable for the purposes of evaluating the growth impact of recently legislated reforms that are expected to raise output and growth through their effects on the capital stock and TFP. Suppose, for example, that a member state puts into law a reform that is expected to have an impact after three years, or enacts an investment programme that goes beyond the T+2 short-term expert forecasting horizon. Under the current forecasting procedure, these actions have no impact on projected capital and TFP, even if large growth effects are expected in the medium and long terms (assuming no policy change).

A better approach would be to use either results from the literature on the impact of specific reforms, or macroeconomic models such as variants of the Commission's QUEST model to simulate the impact of reforms and policies¹⁸. When reforms have been only recently *adopted or approved*, the Commission

¹⁵ An example: a draft law has been prepared, and the government has a comfortable majority to finalise the legislative process.

¹⁶ This differs from the approach of the International Monetary Fund (in the context of surveillance reports) or of commercial forecasters, in which baseline projections are conditional on the most likely evolution of policies – including measures that may not have been adopted yet.

¹⁷ The main exception is the assumption of convergence of TFP growth with a constant rate that is identical for all countries regardless of history, economic structure and *per-capita* income level.

¹⁸ See <https://web.jrc.ec.europa.eu/policy-model-inventory/explore/models/model-quest/>.

could use models of this type to generate the medium- and longer-term growth forecasts underlying the reference path, sharing both the results and the underlying models (an application of this approach is shown in the next section). To the extent that EU countries wish to argue that *proposed* reforms or investments will lead to higher growth via their impacts on TFP, labour supply and/or the capital stock, they could use the same models to justify their arguments.

3.2 Impact on ageing-related costs

The Commission's current DSA methodology includes ageing-related cost projections from the AWG's Ageing Report, the eighth edition of which will be published in spring 2024. The report combines Eurostat population projections with the common methodology for output projections and country-specific calculations for pension, healthcare, long-term care and education spending in various scenarios. The DSA methodology relies on the baseline scenario, which assumes no policy change beyond those currently in place or agreed:

- *Population projections* assume shifts in fertility rates (rising from 1.5 live births per woman in 2022 to 1.6 by 2070), life expectancy (male life expectancy in the EU is projected to increase by 7.7 years, from 78.4 in 2022 to 86.1 in 2070, while female life expectancy is expected to rise by 6.4 years), and net migration (assumed to stabilise at 2022 levels).
- *Output projections* follow the production function approach of the commonly agreed methodology described in Annex 2. Labour input is projected using a cohort method, which captures the current situation in each country. It assumes no further policy changes beyond already legislated pension reforms, which impacts labour-market participation rates over the full projection horizon. Labour-market participation is projected to rise, driven by older workers and women joining the work force, although not sufficiently to compensate for the decline in the working-age population, making labour productivity growth the sole driver of GDP growth.
- *Healthcare spending projections* are based on a macro model that combines population demographics from Eurostat with age/gender-specific healthcare cost profiles provided by member states to calculate total projected healthcare expenditure.
- *Long-term care cost projections* are based on forecasts for the number of dependent elderly individuals based on population data and dependency rates. Projections take into account various types of care delivery (informal, home, institutional and cash benefits).
- *Education spending projections* combine student population forecasts, student enrolment data and cost-per-student figures to project total public education expenditure.
- *Pension projections* rely on country-specific models and are carried out by EU countries because of the complexity and diversity of pension systems across the EU, and are peer-reviewed by the AWG.

The resulting ageing costs are incorporated into the DSA in a conservative way. After the end of the fiscal adjustment period, the structural primary balance is assumed to remain unchanged except for changes in ageing costs over the ten-year-long post-adjustment period. Thus, for countries with rising

ageing costs, the structural primary balance by the end of the adjustment period should be high enough to ensure that even in the absence of related reforms in the subsequent ten years, the DSA requirements and the 3 percent deficit benchmark requirement of the EU Treaty will continue to be met during this ten-year-long period. Our simulations confirm that ageing cost changes have a significant impact on the structural primary balance to be achieved by the end of the adjustment period. Thus, if countries put in place reforms that reduce ageing costs in the ten-year post-adjustment period, the fiscal adjustment requirement during the adjustment period could be substantially reduced. This provides incentives to adopt such reforms early on.

4 Quantitative illustrations of the impact on the DSA of social investments and reforms

This section illustrates how specific social investments and reforms might change the fiscal adjustment needs prescribed by the new EU fiscal framework, using the approach described at the end of section 3.1. We adjust medium-term baseline DSA growth assumptions according to estimates in the literature and calculate respective effects on structural primary balance requirements. Our simulations assume that the upfront costs of social interventions are financed initially by reallocating the budget without affecting the overall balance – that is, by cutting other expenditures or raising extra revenues¹⁹. We do not compute the overall fiscal benefit of the intervention. To calculate this, the upfront and ongoing costs of the social intervention must be subtracted from its cumulative impact on the required structural primary balance, and the extra tax revenues generated by the intervention should be added, such as income taxes generated by the additional employment, consumption taxes generated by additional consumption, and corporate taxes generated by increased production.

We select three social policies: a childcare policy to boost labour supply; a policy to increase the quality of education; and a labour-market policy aimed at increasing the share of high-skilled workers.

4.1 Childcare policy to boost labour supply

Early childhood education and care can boost female labour-force participation and potential output. Narazani *et al* (2022) quantified the impact of formal childcare policies on labour-market participation and employment in several EU countries. Using the EU labour supply-demand microsimulation model (EUROLAB), they found that introducing formal childcare for 50 percent of under-three year olds, in line with the aims of the 2002 European Council meeting in Barcelona²⁰, would increase the labour-market participation rate of mothers with at least one child between six months and three years by 18 percent in Austria, 20 percent in Estonia, 10 percent in Finland, 32 percent in Hungary, 8 percent in Ireland, 3 percent in Italy, 10 percent in Poland and 2 percent in Portugal. These differences are determined

¹⁹ This is because (1) the growth benefits arise only after the implementation of the reform, ie a reform does not have an immediate revenue effect that would offset its upfront cost; and (2) the fiscal adjustment trajectory must satisfy the various requirements under the new fiscal framework, and the baseline scenario (before the social intervention) is already set to satisfy the minimum fiscal adjustment requirement.

²⁰ In March 2002 in Barcelona, the European Council decided to set targets for providing childcare in the EU, with a view to increase female labour participation. EU countries agreed to provide childcare to at least 33 percent of children under 3 years of age, and to at least 90 percent of children between 3 years old and the mandatory school age, by 2010.

primarily by the initial childcare coverage (column (1) in Table 1) and behavioural differences (the share of mothers who are predicted to enter the labour market among those mothers whose child can be enrolled in early childhood education and care). Hungary, for instance, has major scope for improvement of childcare coverage, while Portugal is already close to the aspired 50 percent childcare coverage target.

We assume a gradual (linear) phase-in of the childcare policy over five years from 2025 to 2029, which gradually boosts the labour-force participation rate and potential GDP via the EU's Commonly Agreed Methodology (CAM) production function. Higher GDP arising from the policy reduces the debt-to-GDP ratio and the deficit-to-GDP ratio, thereby potentially leading to lower fiscal adjustment requirement. We quantify this impact as the difference between the structural primary balance (SPB) after the policy is introduced and the baseline SPB, from 2025 up to 10 years after the adjustment period.

Importantly, this estimate of fiscal effects is partial because it disregards costs and revenues. Precise cost estimates for reforms depend on the policy design and are difficult to produce. Such estimates would have to consider direct expenditure, expenditures on ancillary services, capital expenditures, upfront capital costs (which, for example, would be needed to double the available capacity of early childhood education facilities), and imputed rents (existing publicly owned facilities used for early childhood education could be rented out, thereby generating income for the public sector – which does not happen when public early childhood education is provided in the facilities). Fiscal revenues resulting from the policy-driven increase in employment and economic activity should also be taken into account, as well as fiscal savings, such as less social transfers to working mothers than home-staying mothers.

We simulate the impacts of the policy on the fiscal adjustment that countries must undertake in the new framework, in two steps. In the first step, we focus on the fiscal adjustment required to meet the European Commission's stochastic DSA criterion. In the second step, we assume that all requirements of the new fiscal framework must be met, including the various safeguards²¹.

The fiscal adjustment requirements reported in columns 3, 4, 7 and 8 of Table 1 are those implied by an application of only the stochastic DSA criterion, while columns 5, 6, 9 and 10 report adjustment requirements implied by an application of the entire set of fiscal rules. Adjustment requirements are calculated for four and seven-year adjustment periods, using either baseline or policy-implied assumptions. As expected, the policy reduces adjustment needs for most of the countries analysed. Differences between the effect on targets implied by the stochastic criterion (columns 11 and 12) and

²¹ We separate these steps for analytic transparency. The implementation of the social policy can lead to a change in the binding criterion (eg debt resilience safeguard, deficit resilience safeguard, stochastic DSA requirement or deterministic DSA scenario) that determines the required fiscal adjustment. Hence, the change in fiscal adjustment requirement reflects not only the impact of the social policy, but also the fact that a different fiscal requirement is binding in the baseline and under the social policy scenario. To isolate the effect of the social policy on debt sustainability, we therefore also report adjustment requirements implied by only the stochastic DSA criterion.

those implied by applying all agreed requirements (13 and 14) are due to different criteria becoming binding in the latter case in response to the altered GDP growth path. Effects in the stochastic four-year scenario range from close to zero (Finland) to -0.02 (Austria, Ireland, Hungary). The largest effect can be observed for Portugal in the four-year scenario when considering all criteria, at -0.04. Effects for other countries when considering all criteria are close to zero.

Table 1: The effects on fiscal adjustment needs of a formal childcare programme (value of the structural primary balance at the end of adjustment period and cumulative fiscal effects)

| | Care share, under 3 years old | Policy induced change in 2029 GDP | Baseline SPB target | | | | Policy SPB target | | | | Effect on SPB target | | | | Cumulative effect (all criteria) | |
|----------|-------------------------------|-----------------------------------|---------------------|-------------|----------------|-------------|-------------------|-------------|----------------|-------------|----------------------|-------------|----------------|-------------|----------------------------------|-------------|
| | | | (stochastic) | | (all criteria) | | (stochastic) | | (all criteria) | | (stochastic) | | (all criteria) | | 4-year adj. | 7-year adj. |
| | | | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | |
| Austria | 20% | 0.16% | 1.1 | 1.3 | 1.2 | 1.3 | 1.1 | 1.3 | 1.2 | 1.3 | -0.01 | -0.01 | 0.00 | 0.00 | -0.01 | -0.05 |
| Estonia | 26% | 0.28% | -4.3 | -3.7 | -2.0 | -1.9 | -4.3 | -3.7 | -2.0 | -1.9 | -0.01 | 0.00 | 0.00 | 0.00 | -0.02 | -0.02 |
| Finland | 37% | 0.19% | 0.2 | 0.0 | 0.2 | 0.3 | 0.1 | 0.0 | 0.2 | 0.3 | -0.01 | 0.00 | 0.00 | -0.01 | -0.02 | -0.08 |
| Hungary | 5% | 0.32% | 2.7 | 3.1 | 2.7 | 3.1 | 2.7 | 3.1 | 2.7 | 3.1 | -0.01 | -0.02 | -0.01 | -0.03 | -0.13 | -0.33 |
| Ireland | 18% | 0.52% | -2.0 | -1.9 | -0.3 | -0.3 | -2.0 | -1.9 | -0.3 | -0.3 | -0.02 | -0.02 | 0.00 | 0.00 | -0.04 | -0.04 |
| Portugal | 40% | 0.09% | 2.5 | 2.3 | 2.5 | 2.3 | 2.5 | 2.3 | 2.4 | 2.3 | 0.00 | -0.01 | -0.04 | -0.01 | -0.54 | -0.11 |

Source: Bruegel based on European Commission November 2023 forecasts, Bloomberg, ECB, Narazani *et al* (2022) and Eurostat for the initial care share. Note: SPB = structural primary balance at the end of the adjustment period (2028 for four-year adjustments, 2031 for seven-year adjustments). Care share: the initial share of children under three in childcare.

Columns 15 and 16 show the cumulative sum of differences in the SPB path required without the policy and the SPB path required with the policy from 2025 until 10 years after the end of the adjustment period, assuming that all criteria of the new fiscal framework are applied. The net impact on adjustments is negative for all countries, ranging from -0,01 in Austria to to -0.54 in Portugal for the four-year case.

4.2 Reforms to improve educational quality

We next turn to the effects of a policy that aims at increasing the quality of education (Table 2). We build on estimates by Pfeiffer *et al* (2023), who estimated the effects of various stylised policy reforms by simulating the closing of half of the gap relative to the EU's best performers using an extended version of the QUEST model, the European Commission's global macroeconomic model. Their education policy scenario assumes a gradual improvement in the level of output productivity based on auxiliary elasticities reported by Égert *et al* (2022).

Pfeiffer *et al* (2023) reported five-year and 20-year effects on GDP. We incorporate the reported effects in the DSA by assuming a linear phase-in from the start of the adjustment period in 2025 to 20 years after the start in 2045, by when the full 20-year effect on GDP is realised. Notably, Pfeiffer *et al* (2023) reported even larger longer-term returns to educational and skills policies. However, since these effects lie outside of the projection window of the DSA, we disregard them.

Like Pfeiffer *et al* (2023), we do not explicitly model the implementation costs of the reform. While educational reforms that achieve a closing of the half of the gap to the EU's top performers is likely to incur substantial costs for some countries, other countries may be able to realise substantial improvements solely through efficiency gains, ie by improving the allocation of public resources. Canton *et al* (2018) showed that the room for such gains in the EU is significant by calculating the efficiency of public spending on education using a stochastic frontier analysis.

On average, the reform lowers the fiscal adjustment requirements of EU countries by around 0.06 percentage points, both when considering only the stochastic and when considering the entire set of criteria (Table 2). The impact on the fiscal adjustment requirement exceeds 0.1 percent of GDP in only a handful of countries, including Cyprus, Greece, Croatia, Italy, Malta, and Romania. Columns 14 and 15 of Table 2 show the cumulative effect from 2025 until the tenth year after the end of the adjustment period, taking into account all criteria. The cumulative effect is negative and ranges from -0.01 to -2.77 percent of GDP in the four-year case. To the extent that the sum of the upfront and ongoing costs of the reform are smaller than the reform's cumulative impact on the fiscal adjustment path, the reform would have a fiscal benefit, but this would likely be small. For countries where the reform's cumulative impact on the fiscal adjustment path is close to zero (e.g. Estonia, Denmark, and Finland), the policy would be likely be fiscally costly.

Table 2: The effects on fiscal adjustment needs of educational reform (value of the structural primary balance at the end of adjustment period)

| | Change in 2045 GDP (%) | Baseline SPB target | | | | Policy SPB target | | | | Effect on SPB target | | | | Cumulative effect (all criteria) | |
|-------------|------------------------------|---------------------|----------------|----------------|----------------|-------------------|----------------|----------------|----------------|----------------------|----------------|----------------|----------------|--|----------------|
| | | (stochastic) | | (all criteria) | | (stochastic) | | (all criteria) | | (stochastic) | | (all criteria) | | (all criteria) | |
| | | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | |
| Austria | 1.1 | 1.1 | 1.3 | 1.2 | 1.3 | 1.1 | 1.3 | 1.2 | 1.3 | -0.03 | -0.03 | -0.03 | -0.03 | -0.26 | -0.48 |
| Belgium | 0.8 | 1.3 | 1.6 | 1.8 | 1.9 | 1.2 | 1.5 | 1.7 | 1.9 | -0.04 | -0.04 | -0.03 | -0.03 | -0.26 | -0.29 |
| Bulgaria | 4.7 | -2.9 | -1.7 | -1.1 | -0.8 | -2.9 | -1.7 | -1.1 | -0.8 | 0.00 | -0.09 | 0.00 | -0.03 | -0.20 | -0.41 |
| Cyprus | 3.7 | -0.1 | -0.7 | -0.1 | -0.1 | -0.3 | -0.9 | -0.2 | -0.2 | -0.19 | -0.17 | -0.12 | -0.02 | -0.78 | -0.59 |
| Czech Repub | 0.9 | -1.1 | -0.8 | 0.3 | 0.6 | -1.1 | -0.8 | 0.3 | 0.6 | -0.05 | -0.02 | -0.01 | -0.01 | -0.10 | -0.13 |
| Germany | 0.7 | 0.6 | 0.3 | 0.6 | 0.3 | 0.6 | 0.2 | 0.6 | 0.2 | -0.03 | -0.03 | -0.04 | -0.03 | -0.27 | -0.25 |
| Denmark | 0.7 | -5.3 | -4.9 | -1.4 | -1.5 | -5.3 | -4.9 | -1.4 | -1.5 | -0.02 | -0.02 | 0.00 | 0.00 | -0.04 | -0.04 |
| Estonia | 0.1 | -4.3 | -3.7 | -2.0 | -1.9 | -4.3 | -3.7 | -2.0 | -1.9 | -0.01 | -0.02 | 0.00 | 0.00 | -0.01 | -0.01 |
| Greece | 3.0 | 2.6 | 2.3 | 2.6 | 2.6 | 2.3 | 2.1 | 2.4 | 2.6 | -0.25 | -0.22 | -0.21 | -0.05 | -1.14 | -0.82 |
| Spain | 1.4 | 1.8 | 1.9 | 2.1 | 2.5 | 1.8 | 1.9 | 1.9 | 2.3 | -0.07 | -0.05 | -0.27 | -0.20 | -2.77 | -2.44 |
| Finland | 0.1 | 0.1 | 0.0 | 0.2 | 0.3 | 0.1 | 0.0 | 0.2 | 0.3 | 0.00 | 0.00 | 0.00 | 0.00 | -0.02 | -0.03 |
| France | 1.0 | 0.8 | 0.6 | 0.9 | 1.6 | 0.7 | 0.5 | 0.9 | 1.5 | -0.07 | -0.05 | -0.06 | -0.19 | -0.26 | -0.89 |
| Croatia | 2.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | -0.10 | -0.09 | -0.08 | -0.10 | -0.97 | -1.46 |
| Hungary | 1.6 | 2.7 | 3.1 | 2.7 | 3.1 | 2.6 | 3.0 | 2.7 | 3.0 | -0.04 | -0.08 | -0.03 | -0.07 | -0.33 | -0.95 |
| Ireland | 0.6 | -1.9 | -1.9 | -0.3 | -0.3 | -2.0 | -1.9 | -0.3 | -0.3 | -0.04 | -0.03 | 0.00 | 0.00 | -0.04 | -0.05 |
| Italy | 1.8 | 3.2 | 3.4 | 3.8 | 3.4 | 3.1 | 3.3 | 3.7 | 3.3 | -0.14 | -0.13 | -0.11 | -0.11 | -0.69 | -1.03 |
| Lithuania | 1.7 | -2.0 | -1.6 | -0.4 | -0.5 | -2.1 | -1.6 | -0.4 | -0.6 | -0.05 | -0.05 | -0.01 | -0.02 | -0.16 | -0.21 |
| Luxembourg | 1.6 | -3.4 | -2.9 | -0.2 | -0.2 | -3.5 | -3.0 | -0.2 | -0.2 | -0.04 | -0.05 | -0.01 | -0.01 | -0.09 | -0.11 |
| Latvia | 1.4 | -1.6 | -1.0 | -0.3 | -0.1 | -1.6 | -1.1 | -0.3 | -0.1 | -0.05 | -0.06 | 0.00 | -0.01 | -0.07 | -0.14 |
| Malta | 2.3 | -0.4 | -0.1 | -0.5 | -0.1 | -0.6 | -0.2 | -0.6 | -0.2 | -0.12 | -0.08 | -0.10 | -0.08 | -0.43 | -0.39 |
| Netherlands | 0.7 | -1.2 | -1.0 | 0.4 | 0.1 | -1.3 | -1.1 | 0.4 | 0.1 | -0.03 | -0.04 | 0.00 | -0.01 | -0.06 | -0.08 |
| Poland | 0.3 | 0.5 | 0.9 | 0.5 | 0.9 | 0.5 | 0.8 | 0.5 | 0.8 | -0.01 | -0.02 | -0.01 | -0.01 | -0.06 | -0.07 |
| Portugal | 1.1 | 2.5 | 2.3 | 2.5 | 2.3 | 2.4 | 2.3 | 2.4 | 2.2 | -0.04 | -0.04 | -0.05 | -0.05 | -0.62 | -0.66 |
| Romania | 4.9 | 1.3 | 2.0 | 1.3 | 2.0 | 1.1 | 1.8 | 1.1 | 1.8 | -0.21 | -0.21 | -0.19 | -0.19 | -1.11 | -1.69 |
| Sweden | 0.6 | -4.7 | -4.3 | -1.8 | -1.7 | -4.7 | -4.3 | -1.8 | -1.7 | -0.02 | -0.02 | 0.00 | 0.00 | -0.03 | -0.04 |
| Slovenia | 0.8 | 1.4 | 1.2 | 1.6 | 1.8 | 1.4 | 1.1 | 1.6 | 1.8 | -0.03 | -0.04 | -0.01 | -0.01 | -0.08 | -0.11 |
| Slovakia | 2.0 | 1.3 | 1.7 | 1.5 | 2.0 | 1.2 | 1.7 | 1.4 | 1.9 | -0.07 | -0.05 | -0.07 | -0.08 | -0.55 | -0.76 |

Source: Bruegel based on European Commission November 2023 forecasts, Bloomberg, ECB, Pfeiffer *et al* (2023). Note: Column 1 shows the effect of closing half of the gap to the EU top performer in terms of educational quality. Columns 2-13 show the effects of fiscal adjustment targets when phasing in the increase in growth over a period from 2025 to 2045.

4.3. Skills policy

Our third example is a labour-market policy aimed at increasing the share of high-skilled workers. We again build on the estimates of the effects of a stylised policy in Pfeiffer *et al* (2023). They reported significant potential increases in GDP because of direct effects on final goods production and R&D activities. Their simulations assumed the gradual entry of new, higher-skilled cohorts into the labour market over the course of 45 years. As with the education policy, we augment the growth projections underlying the DSA by assuming a gradual increase of GDP, from the start of the adjustment period to 20 years after the start of the adjustment period, by the 20-year effect reported by Pfeiffer *et al* (2023). As in the previous example, the upfront costs of the policy are not taken into account because of lack of information.

Table 3 shows the resulting effects on fiscal adjustment targets. The effects on the end-of-adjustment period SPB targets are modest across countries, with an average reduction of about 0.03 percentage points. The largest reductions in the four-year stochastic scenario are observed for Romania (0.08

percentage points), Greece (0.07), Bulgaria, Croatia, and Italy (0.06 percentage points). As shown in columns (14) and (15), cumulative effects – assuming that all criteria are applied, and without accounting for upfront costs – range from zero to -1.29 percent of GDP.

Table 3: The effects on fiscal adjustment needs of increasing the share of high-skilled workers (value of the structural primary balance at end of adjustment period)

| | Change in 2045 GDP (%) | Baseline SPB target | | | | Policy SPB target | | | | Effect on SPB target | | | | Cumulative effect (all criteria) | |
|-------------|------------------------|---------------------|-------------|----------------|-------------|-------------------|-------------|----------------|-------------|----------------------|-------------|----------------|-------------|----------------------------------|-------------|
| | | (stochastic) | | (all criteria) | | (stochastic) | | (all criteria) | | (stochastic) | | (all criteria) | | 4-year adj. | 7-year adj. |
| | | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | |
| Austria | 0.4 | 1.1 | 1.3 | 1.2 | 1.3 | 1.1 | 1.3 | 1.2 | 1.3 | -0.02 | -0.02 | -0.01 | -0.03 | -0.10 | -0.43 |
| Belgium | 0.4 | 1.3 | 1.6 | 1.8 | 1.9 | 1.2 | 1.6 | 1.7 | 1.9 | -0.03 | 0.00 | -0.01 | -0.01 | -0.12 | -0.13 |
| Bulgaria | 1.3 | -2.8 | -1.7 | -1.1 | -0.8 | -2.9 | -1.7 | -1.1 | -0.8 | -0.06 | 0.00 | 0.00 | -0.01 | -0.06 | -0.12 |
| Cyprus | 0.8 | -0.1 | -0.7 | -0.1 | -0.2 | -0.1 | -0.8 | -0.1 | -0.2 | -0.04 | -0.03 | -0.06 | 0.00 | -0.28 | -0.17 |
| Czech Repub | 0.7 | -1.1 | -0.8 | 0.3 | 0.6 | -1.1 | -0.8 | 0.3 | 0.6 | -0.02 | -0.03 | -0.01 | -0.01 | -0.07 | -0.09 |
| Germany | 0.6 | 0.6 | 0.3 | 0.6 | 0.3 | 0.6 | 0.2 | 0.6 | 0.2 | -0.03 | -0.03 | -0.03 | -0.03 | -0.19 | -0.21 |
| Denmark | 0.1 | -5.3 | -4.9 | -1.4 | -1.5 | -5.3 | -4.9 | -1.4 | -1.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Estonia | 0.4 | -4.3 | -3.7 | -2.0 | -1.9 | -4.3 | -3.7 | -2.0 | -1.9 | -0.01 | 0.00 | 0.00 | 0.00 | -0.03 | -0.04 |
| Greece | 1.1 | 2.6 | 2.3 | 2.6 | 2.6 | 2.5 | 2.2 | 2.5 | 2.6 | -0.07 | -0.07 | -0.07 | -0.02 | -0.41 | -0.30 |
| Spain | 0.6 | 1.8 | 1.9 | 2.1 | 2.5 | 1.8 | 1.9 | 2.0 | 2.4 | -0.01 | -0.03 | -0.11 | -0.09 | -1.29 | -1.08 |
| Finland | 0.0 | 0.2 | 0.0 | 0.2 | 0.3 | 0.2 | 0.0 | 0.2 | 0.3 | 0.00 | -0.01 | 0.00 | 0.00 | -0.01 | -0.02 |
| France | 0.8 | 0.8 | 0.6 | 0.9 | 1.6 | 0.7 | 0.5 | 0.9 | 1.5 | -0.05 | -0.04 | -0.05 | -0.15 | -0.20 | -0.77 |
| Croatia | 1.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.3 | -0.06 | -0.06 | -0.03 | -0.07 | -0.42 | -1.05 |
| Hungary | 0.9 | 2.7 | 3.1 | 2.7 | 3.1 | 2.7 | 3.0 | 2.7 | 3.0 | -0.03 | -0.04 | -0.02 | -0.05 | -0.20 | -0.59 |
| Ireland | 0.1 | -1.9 | -1.9 | -0.3 | -0.3 | -1.9 | -1.9 | -0.3 | -0.3 | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | -0.01 |
| Italy | 0.9 | 3.2 | 3.4 | 3.8 | 3.5 | 3.2 | 3.4 | 3.8 | 3.4 | -0.06 | -0.07 | -0.06 | -0.06 | -0.35 | -0.56 |
| Lithuania | 0.8 | -2.0 | -1.6 | -0.4 | -0.5 | -2.0 | -1.6 | -0.4 | -0.6 | -0.02 | -0.02 | -0.01 | -0.01 | -0.07 | -0.10 |
| Luxembourg | 0.3 | -3.4 | -2.9 | -0.2 | -0.2 | -3.4 | -2.9 | -0.2 | -0.2 | -0.02 | 0.00 | 0.00 | 0.00 | -0.02 | -0.02 |
| Latvia | 1.0 | -1.6 | -1.0 | -0.3 | -0.1 | -1.6 | -1.1 | -0.3 | -0.1 | -0.03 | -0.04 | 0.00 | -0.01 | -0.05 | -0.10 |
| Malta | 0.3 | -0.5 | -0.1 | -0.5 | -0.1 | -0.5 | -0.1 | -0.5 | -0.1 | 0.00 | 0.00 | 0.00 | -0.02 | -0.03 | -0.06 |
| Netherlands | 0.1 | -1.2 | -1.0 | 0.4 | 0.1 | -1.2 | -1.0 | 0.4 | 0.1 | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | -0.01 |
| Poland | 0.9 | 0.5 | 0.9 | 0.5 | 0.9 | 0.4 | 0.8 | 0.4 | 0.8 | -0.04 | -0.03 | -0.05 | -0.04 | -0.21 | -0.35 |
| Portugal | 0.7 | 2.5 | 2.3 | 2.5 | 2.3 | 2.4 | 2.3 | 2.4 | 2.3 | -0.04 | -0.01 | -0.04 | -0.03 | -0.55 | -0.38 |
| Romania | 1.5 | 1.3 | 2.0 | 1.3 | 2.0 | 1.2 | 1.9 | 1.2 | 1.9 | -0.08 | -0.07 | -0.08 | -0.05 | -0.42 | -0.49 |
| Sweden | 0.0 | -4.7 | -4.3 | -1.8 | -1.7 | -4.7 | -4.3 | -1.8 | -1.7 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Slovenia | 0.8 | 1.4 | 1.2 | 1.6 | 1.8 | 1.3 | 1.1 | 1.6 | 1.8 | -0.04 | -0.05 | -0.01 | -0.01 | -0.08 | -0.11 |
| Slovakia | 1.2 | 1.3 | 1.7 | 1.5 | 2.0 | 1.3 | 1.7 | 1.5 | 1.9 | -0.04 | -0.05 | -0.04 | -0.04 | -0.31 | -0.43 |

Source: Bruegel based on European Commission November 2023 forecasts, Bloomberg, ECB, Pfeiffer *et al* (2023). Note: Column 1 shows the effect of closing half of the gap to the EU top performer in terms of share of high-skilled workers. Columns 2-13 show the effects of fiscal adjustment targets when phasing in the increase in growth over a period from 2025 to 2045.

An important takeaway from the three examples is that assumptions about the size and the timing of growth effects associated with social reforms and investments matter for the resulting implications for fiscal adjustment. Long implementation windows for reforms, especially those relying on gradual cohort effects, result in modest overall effects on SPB adjustment requirements. The relatively small effects on SPB adjustments point to a potentially strong role of costs and revenues in determining overall fiscal effect of the examples presented. Country-specific differences in the elasticity of growth to policy intervention and the macroeconomic fundamentals driving debt trajectories also influence the outcomes. In addition, assumptions about policy implementation goals are crucial. While the childcare policy relied on a target for childcare coverage consistent with an objective approved by the

European Council, the education and skills policy examples simply assumed a closing of half of the gap with the best performers.

5 An approach for incorporating reforms and investments in the DSA

The fiscal sustainability effects of the reforms examined in the previous section varied from the substantial to the barely noticeable (or indeed negative, if reforms have significant upfront and ongoing costs). In addition, uncertainty about the growth impact is often high, and can depend on how reforms are implemented. These uncertainties apply even for reforms that have already been put into law. For reforms that are promised but not passed into law, there is the additional uncertainty about whether they will be implemented at all.

The question is how these uncertainties should be dealt with in practice. We answer this question in two steps. The first abstracts from implementation risk, while the second focuses on it.

- Assuming that a reform is passed into law, how should uncertainty about its growth impact be managed?
- Should the Council of the EU accept reforms promised (but not yet adopted) as a justification for MTFSPs that envisage less fiscal adjustment than the Commission's reference trajectory? If so, how should the risk be managed that a country may renege on the implementation of these reforms?

5.1 Uncertain reform impact

Uncertainty about the impact of reform requires a procedure that addresses the fiscal risks resulting from lowering fiscal adjustment as if the reform had a full impact, only to discover that it did not. This could involve the following steps.

1. The Commission proposes a distribution around the estimated impact of the reform, based on the economic literature and its own models (such as QUEST), and explains to the Council how this distribution is generated. The European Fiscal Board would be asked to comment.
2. If the Council accepts the proposal, the required fiscal adjustment would be based on a conservative assumption about the growth impact of the reform – based, for example, on a 30th percentile estimate, rather than the median estimate of the impact.

This fiscal adjustment must ensure that all requirements of the new fiscal framework are met, including the various safeguards, the 3 percent Treaty-based deficit benchmark and the DSA criteria, which require the debt ratio to decline after the adjustment period by applying the stochastic and deterministic tests.

5.2 Implementation risk

One (extreme) approach to deal with implementation risk would be assume that reform promises have **no** fiscal sustainability benefits until they are passed into law. However, this would be inconsistent with the agreed economic governance regulation, for two reasons.

First, reforms and investment that qualify a country for an extension of the adjustment period are identified (among other criteria) on the basis of their propensity to raise growth and support fiscal sustainability. It is inconsistent to first select reforms because they are expected to have such effects “*based on credible and prudent assumptions*”, and subsequently assume that such effects are zero.

Second, according to Article 11(b) of the regulation, MTFSPs may deviate from the reference trajectory if member states give “*sound and data-driven economic arguments explaining the difference.*” One such argument could clearly be planned reforms and investments, particularly if these meet the high bar that is required for such reforms to justify an extension of the adjustment period from four to seven years.

A better approach to dealing with implementation risk is to link the failure to implement promised reforms to tougher fiscal adjustment requirements. Specifically, the Council and member states should agree on:

- a. A set of benchmarks that would indicate if the reform is on track. These could include actions such as cabinet approval or the submission of the reform to parliament, and the passing of the reform by the parliament.
- b. a ‘backup fiscal trajectory’, which comes into effect if the reform is not implemented. This would require fiscal adjustment as if the reform had not happened.

A difficulty with this approach is that once the Council endorses a plan, it can be revised only by another Council decision. This procedure can be made less cumbersome and time-consuming if both the conditions that must be met for the reform to count and the backup fiscal trajectory are agreed in advance, and both fiscal trajectories, as well as the benchmark indicators, are endorsed by the Council.

The proposed process could be set out in a document replacing the ‘Code of conduct’ under the existing Stability and Growth Pact, which is drafted by the Commission and approved by the Council.

6 Conclusion

Our analysis leads to five main conclusions.

First, extending the adjustment period under the new fiscal framework from four to seven years reduces the annual average adjustment need by a sizeable amount for most countries, above or close to 0.5 percent of GDP per year for some. Hence, the new EU fiscal framework contains a powerful incentive to undertake reforms and additional investments that meet the conditions for extensions.

Second, meeting the conditions that justify an extension of the adjustment period could be tough, particularly based on investment, as this requires increasing *nationally financed* public investment above the average level realised during the lifetime of the RRF. Furthermore, new public investment is subject to the various requirements of the safeguards and minimum adjustment requirement under the excessive deficit procedure. In many cases, these require increases in investment to be offset by additional fiscal consolidation in the non-investment budget, creating a significant impediment to a public investment push – as may be required, for example, to meet European Green Deal emission-reduction targets.

Third, while the current forecasting procedures of the Commission, OGWG and AWG incorporate the impact of legislated investments and reforms on the labour market at all forecasting horizons, their impact on capital and TFP is captured only to the extent that this materialises in the next two years. As a result, these methods do not capture the capital and TFP impacts of either proposed reforms or recently adopted reforms, the effects of which take some time to materialise. In such cases, reform impacts should be assessed based on either literature-based estimates or macroeconomic models, such as variants of the Commission's QUEST model.

Fourth, illustrative calculations suggest that the impact of social investments and reforms on fiscal sustainability can range from substantial to negligible (or indeed negative, once the upfront and ongoing costs of reforms are factored in). The magnitude of the impact depends on the intervention's magnitude and the time horizon through which growth effects are expected to materialise. For most countries, our illustrative calculations suggested modest impacts. However, the combined impact of several measures could be notable.

Fifth, the Council should adopt a process for deciding whether and to what extent reform or investments offered as part of a MTFSP merit less-ambitious fiscal adjustment than prescribed by the Commission's reference path. Uncertainty about the expected impact of the reform (once implemented) can be managed by taking a conservative view of reform impacts. Implementation risk can be dealt with by defining benchmarks that help decide whether a reform or investment plan has been implemented as expected, and by adopting a backup fiscal trajectory, involving greater fiscal adjustment requirements, that will be triggered if the benchmarks are not met.

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Annex 1: Fiscal adjustment requirements of the new fiscal framework

The compromise achieved at the trilogue between the European Parliament, the Council, and the European Commission on 9 February 2024 retained the Commission's initial proposal of centring the new fiscal framework on a country-specific debt sustainability analysis (DSA). This would ensure that whenever the public debt ratio is above 60 percent of GDP, it declines after the end of the four-year or seven-year long adjustment period under unchanged fiscal policy, both using a stochastic analysis (requiring a high probability of debt ratio decline) and a deterministic analysis (requiring debt ratio decline under adverse interest rate, GDP, and primary balance scenarios), even if countries do not introduce measures to offset the rising ageing costs for ten years after the end of the adjustment period.

Beyond the DSA requirements and the requirement to reduce the budget deficit below 3 of GDP by the end of the adjustment period at the latest, four simple numerical requirements constrain fiscal adjustment (we'll refer to these requirements as 'safeguards'):

- *Debt sustainability safeguard* (for countries with more than 60 percent of GDP public debt): at least one percentage point of GDP per year decline in the debt ratio for countries with a larger than 90 percent of GDP debt ratio, and half a percentage point of GDP per year for countries with a debt ratio between 60 percent and 90 percent of GDP), from either the beginning of the adjustment period or from the correction of excessive deficit (whichever is later) by the end of the adjustment period.
- *Deficit resilience safeguard* (for countries with more than 60 percent of GDP public debt or more than 3 percent of GDP budget deficit): the structural overall budget deficit should not be higher than 1.5 percent of GDP, and when it is higher, the annual improvement in the structural primary balance should be 0.4 percent of GDP when the adjustment period lasts for four years and 0.25 percent of GDP when the adjustment period lasts for seven years.
- *No backloading safeguard* (for countries with more than 60 percent of GDP public debt or more than 3 percent of GDP budget deficit): the annual fiscal adjustment cannot increase during the adjustment period.
- *Minimum annual adjustment under the deficit-based excessive deficit procedure* (for countries with more than 3 percent of GDP budget deficit): 0.5 percent of GDP annual adjustment, which is measured in terms of the structural primary balance in 2025-2027 and in terms of the overall structural balance from 2028.

Table 4 shows the adjustment requirements of the new fiscal framework at its first application in 2024, and the most binding condition for each country. Values in Table 4 correspond to the structural primary balance (SPB). For six of the twelve countries with debt above 60 percent of GDP, the DSA requirement determines the fiscal adjustment requirements (Austria, Belgium, Germany, Hungary Italy, and Portugal). For one country, Slovenia, the requirement to reduce the budget deficit below 3 percent by the end of the adjustment period is the binding constraint. For the other five countries with above 60

percent debt ratios, one of the safeguards determines the adjustment need, at least at one of the two adjustment horizons (4 years or 7 years).

The debt safeguard is binding for Finland, France²² and Spain. The binding debt safeguard substantially increases the required end-of-adjustment period structural primary balance target (that we denote as SPB*): from 0.5 percent of GDP to 2.2 percent for Finland (in case of a 4-year adjustment period) and from 0.7 percent to 1.7 percent for France (in case of a 7-year adjustment period). The increase for Spain is less pronounced, from 2.1 percent to 2.5 percent (4-year) or from 2.4 percent to 3.0 percent (7-year).

Table 4 discriminates between two cases when the deficit resilience safeguard is binding: (1) when it requires a higher SPB* (dark orange shading) and (2) when SPB* is not altered, but the minimum adjustment requirement modifies the path to it (light orange). Case (1) would be likely binding for two countries when the adjustment period lasts for four years (Greece and Poland) and for three countries when the adjustment period lasts for seven years (Greece, Cyprus, and Poland) – note that Poland has a public debt below 60 percent of GDP and thus the deficit resilience safeguard is binding until the deficit is reduced below 3 percent. It might be binding for Latvia, too, another low-debt country. However, Latvia's forecast deficit for 2024 is 3.05 percent, just marginally higher than the 3 percent Treaty-based requirement. Latvia is expected to have a deficit below 3 percent in 2025, so it is unlikely that Latvia will be subject to an excessive deficit procedure, and hence the deficit resilience safeguard. The extra adjustment requirement due to this safeguard is relatively large (around 1 percent of GDP) for Greece, but small (0.4 percent) for Cyprus and either 0.2 percent (4-year adjustment) or 0.7 percent (7-year adjustment) for Poland. Case (2) would apply to Finland (only in case of a 7-year adjustment) and Hungary (both 4-year and 7-year adjustments).

Overall, the fiscal adjustment requirements would be substantial for some high-debt countries. The average annual fiscal adjustment needed in terms of the SPB for Italy would be 1.18 percent in case of a 4-year adjustment and 0.62 percent in case of a 7-year adjustment; the same numbers for Belgium are 1.04 percent and 0.62 percent, for France 0.83 percent and 0.58 percent, and for Spain 0.78 percent and 0.50 percent.

Still, these adjustment requirements are lower than what would be required by the old framework. For example, Belgium's latest medium-term objective (MTO) for the structural balance (SB – ie the overall balance including interest payments, not the primary) was 0.75 percent, while the Commission's

²² In the four-year adjustment period, the debt safeguard is not binding for France because France would reduce its deficit below 3 percent by the last year of the adjustment period, 2028, and a decline in the debt ratio from 2028 (the correction of the excessive deficit) to 2028 (the end of the adjustment period) cannot be interpreted. In the seven-year adjustment period, the debt safeguard would not be binding for France for the same reason if the half percent minimum adjustment was measured in terms of the SPB in the full period. In that case, France would reduce its deficit below 3 percent by the last year of the adjustment period, 2031, and the required debt ratio decline from 2031 to 2031 cannot be interpreted. But the half percent minimum adjustment is measured in the SPB only in 2025, 2026 and 2027, and from 2028 onwards, the adjustment is measured in terms of the overall structural balance. This would result in France correcting its excessive deficit a year earlier, 2030, so the period of the debt safeguard is from 2030 to 2031, which happens to be binding.

forecast for the 2024 SB is -4.5 percent. The MTO must have been reached in 4 years in the old framework, implying a 1.31 percent annual fiscal consolidation in SB terms. Since interest expenditures are projected to increase, this implies an even higher annual adjustment in SPB terms, well above the numbers in Table 4.

Table 4. Fiscal adjustment requirements under the new EU fiscal framework (structural primary balance measured in percent of GDP)

| | European Commission forecasts for 2024 | | | Min. SPB required by DSA criteria | | Min. SPB required by 3% deficit cap | | Min. SPB required by EDP and the debt safeguard | | Min. SPB required by EDP, the debt safeguard and the deficit resilience | | Minimum SPB satisfying all criteria | | Average annual fiscal adjustment need | |
|----------------|--|----------------|------|-----------------------------------|-------------|-------------------------------------|-------------|---|-------------|---|-------------|-------------------------------------|--------------------|---------------------------------------|-------------------|
| | Debt | Fiscal balance | SPB | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. | 4-year adj. | 7-year adj. |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12)=max(4,6,8,10) | (13)=max(5,7,9,11) | (14)=((12)-(3))/4 | (19)=((14)-(3))/7 |
| Greece | 152 | -0.9 | 2.0 | 1.6 | 1.5 | 1.6 | 1.7 | | | 2.3 | 2.6 | 2.3 | 2.6 | 0.07 | 0.08 |
| Italy | 141 | -4.4 | -0.9 | 3.8 | 3.4 | 3.7 | 3.3 | | | | | 3.8 | 3.4 | 1.18 | 0.62 |
| France | 109 | -4.4 | -2.4 | 0.9 | 0.6 | 0.4 | 0.5 | | 1.6 | | | 0.9 | 1.6 | 0.83 | 0.58 |
| Spain | 106 | -3.2 | -1.0 | 1.8 | 2.1 | 1.1 | 1.5 | 2.1 | 2.5 | | | 2.1 | 2.5 | 0.78 | 0.50 |
| Belgium | 106 | -4.9 | -2.4 | 1.8 | 1.9 | 1.3 | 1.4 | | | | | 1.8 | 1.9 | 1.04 | 0.62 |
| Portugal | 100 | 0.1 | 2.1 | 2.4 | 2.3 | 1.2 | 0.6 | | | | | 2.4 | 2.3 | 0.08 | 0.02 |
| Finland | 77 | -3.2 | -1.0 | 0.2 | 0.0 | -1.0 | -1.2 | | | | 0.3 | 0.2 | 0.3 | 0.28 | 0.18 |
| Austria | 76 | -2.4 | -0.7 | 1.2 | 1.3 | 0.2 | -0.1 | | | | | 1.2 | 1.3 | 0.47 | 0.28 |
| Hungary | 72 | -4.3 | 1.0 | 2.7 | 3.1 | 1.9 | 2.4 | | | | | 2.7 | 3.1 | 0.43 | 0.30 |
| Cyprus | 71 | 2.1 | 3.4 | -0.4 | -0.8 | -0.7 | -0.8 | | | -0.2 | -0.1 | -0.2 | -0.1 | -0.90 | -0.51 |
| Slovenia | 68 | -3.3 | -1.1 | 1.4 | 1.3 | 1.6 | 1.9 | | | | | 1.6 | 1.9 | 0.68 | 0.42 |
| Germany | 64 | -1.6 | -0.2 | 0.6 | 0.3 | -0.3 | -0.6 | | | | | 0.6 | 0.3 | 0.21 | 0.07 |
| Slovakia | 60 | -6.5 | -5.1 | 1.5 | 2.0 | 1.3 | 1.6 | | | | | 1.5 | 2.0 | 1.65 | 1.01 |
| Croatia | 59 | -1.8 | -1.2 | -0.3 | -0.2 | -1.2 | -1.1 | | | | | -0.3 | -0.2 | 0.22 | 0.13 |
| Malta | 56 | -4.6 | -2.7 | -0.4 | -0.1 | -0.8 | -0.4 | | | | | -0.4 | -0.1 | 0.56 | 0.37 |
| Poland | 54 | -4.6 | -1.8 | 0.5 | 0.9 | 0.2 | 0.4 | | | | | 0.5 | 0.9 | 0.57 | 0.38 |
| Romania | 49 | -5.3 | -3.0 | 1.3 | 2.0 | 1.1 | 1.5 | | | | | 1.3 | 2.0 | 1.08 | 0.72 |
| Netherlands | 47 | -1.8 | -0.5 | -0.1 | -0.2 | 0.4 | 0.1 | | | | | 0.4 | 0.1 | 0.23 | 0.09 |
| Czech Republic | 45 | -2.4 | -0.1 | -0.3 | -0.1 | 0.3 | 0.6 | | | | | 0.3 | 0.6 | 0.11 | 0.11 |
| Latvia | 42 | -3.1 | -1.7 | -1.3 | -1.0 | -1.4 | -1.4 | | | -0.3 | -0.1 | -0.3 | -0.1 | 0.35 | 0.23 |
| Ireland | 41 | 0.6 | 0.8 | -1.6 | -1.6 | -0.3 | -0.3 | | | | | -0.3 | -0.3 | -0.27 | -0.15 |
| Lithuania | 38 | -2.3 | -0.5 | -1.0 | -0.9 | -0.4 | -0.6 | | | | | -0.4 | -0.6 | 0.04 | 0.00 |
| Sweden | 30 | -0.7 | 1.5 | -2.9 | -2.8 | -1.8 | -1.7 | | | | | -1.8 | -1.7 | -0.82 | -0.46 |
| Luxembourg | 29 | -2.1 | -0.6 | -1.9 | -1.8 | -0.2 | -0.2 | | | | | -0.2 | -0.2 | 0.10 | 0.06 |
| Denmark | 28 | 1.8 | 2.9 | -3.0 | -3.0 | -1.4 | -1.5 | | | | | -1.4 | -1.5 | -1.07 | -0.63 |
| Bulgaria | 24 | -3.0 | -2.7 | -2.2 | -1.6 | -1.2 | -0.8 | | | -1.1 | | -1.1 | -0.8 | 0.40 | 0.27 |
| Estonia | 21 | -2.4 | 0.0 | -3.2 | -2.8 | -2.0 | -1.9 | | | | | -2.0 | -1.9 | -0.50 | -0.27 |

Source: Bruegel based on European Commission November 2023 forecasts, Bloomberg and ECB. Data: November 2023 AMECO for macroeconomic data; January-February 2024 market expectations for interest rates and inflation rates. Methodology based on European Commission (2023a) and adjusted with the new requirements of the approved fiscal framework. Note: Methodology based on European Commission (2023) and adjusted with the new requirements of the approved fiscal framework. Light yellow shading marks cases where the SPB required by the 3 percent deficit cap (6,7) exceeds the SPB required by the DSA criteria (4,5). Light blue shading marks cases where the SPB required by the debt safeguard (8,9) exceeds the SPB required by the DSA criteria and the 3 percent deficit cap. Light orange shading marks cases in which the deficit resilience safeguard (10,11) affects the net-expenditure path without changing the SPB target. Dark orange shading marks cases where SPB required by the deficit resilience safeguard exceeds the SPB required by the DSA criteria, the deficit cap, and the debt safeguard.

Annex 2. Impact of reforms and investment on potential growth based on the Commission's current forecasting methods

DG ECFIN generates economic forecasts four main time horizons (time T denotes the year of forecast): from T to $T+2$, from $T+3$ to $T+5$, from $T+6$ to $T+10$, and from $T+11$ to $t+37$. The medium- and long-term projections methodologies are agreed with two working groups of the Economic Policy Committee: the Output Gap Working Group (OGWG) and the Working Group on Ageing Populations and Sustainability (AWG).

For near-term (T to $T+2$) forecasts, the DG ECFIN's country desks make judgment- and expert-based forecasts that attempt to incorporate the impacts of *legislated* structural reforms for employment, investment, and GDP. While desks may use empirical techniques to guide these forecasts, they do not follow a particular model of the economy. Yet the forecast is a coordinated exercise within DG ECFIN, and guidelines are provided centrally.

- Investments: investment projected by the desks enter directly into EU's Commonly Agreed Methodology's (EUCAM's) potential output estimates via a capital accumulation function (equation 2.12 in Blondeau *et al*, 2021);
- TFP impact of reforms: reforms can have an impact on TFP via the Solow residual, that is, to the extent that they are forecast to result in a larger rise in GDP than would correspond to the projected increases in factor inputs. The trend component of TFP is extracted from historical data and up to $T+2$ forecasts by using an unobserved component model written in a state-space form, using the Kalman-filter, which is estimated in a Bayesian framework given prior distributions for each EU Member State (equation 2.14-2.16 in Blondeau *et al*, 2021).

The Commission's near-term forecasts also impact the medium-term projections:

- Investments: from $T+2$ to $T+5$, the investment to potential output ratio is extended using an autoregressive process. Hence a higher level of investment registered in $T+2$ carries on for investment beyond $T+2$. Since the capital accumulation function decreases the capital stock by assuming a gradual depreciation, higher levels of investment (both up to $T+2$ and beyond) influence the capital stock beyond $T+2$.
- TFP impact of reforms: trend TFP from $T+3$ to $T+10$ is projected by the same Kalman-filter state-space model estimated with Bayesian techniques which is used to extract the trend component of TFP from historical data and forecasts up to $T+2$ (Annex 3 of European Commission, 2023b). This model has a built-in mean reversion to the historical mean, implying that any reform between year T and $T+2$ influences the medium-term TFP projections only to the extent that the temporary higher TFP growth from T to $T+2$ increases the mean TFP growth over the entire sample period.

Longer term forecasts (beyond $T+10$) are based on conventions that imply that the impact of investment and reforms on the capital stock gradually dissipates, and that there is no long-run impact on TFP:

- The capital/labour ratio (in efficiency units) is assumed to be constant as of 2042 ('capital rule'). From 2032, the capital/labour ratio is assumed to converge linearly to an assumed long-term ratio ('transition rule').
- TFP is assumed to accelerate from 0.5 percent per year in 2023 to more than 0.8 percent by 2033 (ie by T+10). According to European Commission (2023b, page 65): "*Annual TFP growth converges to 0.8% by 2070 at the latest for all Member States. For the EU, TFP growth averages 0.7% per year over 2022-30, rising to just above 1% in 2031-40 and converging to 0.8% by the end of the projection horizon.*" Country-specific convergence assumptions influence these long swings in EU average TFP growth. Country-specific TFP values are determined based on whether GDP/capita (measured at current exchange rates, not purchasing power standard-adjusted exchange rates) is above or below the EU average (Box I.3.1 of European Commission, 2023b):
 - Countries with T+10 (2032) GDP per capita above the EU average converge linearly to 1 percent annual TFP growth by T+18 (2040) and to 0.9 percent by T+25 (2048);
 - Countries with T+10 (2032) GDP per capita below the EU average converge linearly to an upper limit between 1 percent and 1.5 percent annual TFP growth by T+18 (2040) and to 0.9 percent by T+25 (2048);
 - All countries linearly converge to 0.8 percent annual TFP growth by T+37 (2070)²³.

Thus, post-2032 TFP growth assumptions do not depend on structural factors. It depends on reforms only to the extent that reforms influence the 2032 TFP estimate via the incorporation of reforms in T+2 TFP projections and its Kalman-filter extrapolation to 2032.

Reforms can also have a long-term impact on potential output through their estimated impact on the non-accelerating wage rate of unemployment (NAWRU), which in turn influences potential output²⁴, as well as the labour force participation rate.

- The NAWRU is estimated using a methodology by Hristov *et al* (2017) which anchors it to an estimated structural unemployment rate at a given horizon, typically ten years (mostly EU members before 2004) or more (mostly newer EU members). The determinants of the structural unemployment rate include the unemployment benefit replacement rate, the labour tax wedge, the degree of union density, and the expenditure on active labour market policies. Demand shocks that can affect equilibrium unemployment in the presence of labour market rigidities are also considered through the real interest rate, the growth of total factor productivity, and a construction variable that aims to account for boom-bust patterns in the housing sector.

²³ The 0.8 percent long-run annual TFP growth assumption was decided by the AWG and EPC, by lowering the earlier 1 percent long-run TFP growth assumption of the 2021 Ageing Report (Box I.3.1 of European Commission, 2023). The previous projection exercise similarly assumed a faster TFP growth for countries with below-average GDP per capita.

²⁴ The potential labour input to the production function is determined as the product of the working-age population, participation rate, (1-NAWRU), and average hours worked.

- Legislated pension reforms are incorporated into the calibration of the long-term labour force participation rate, which converges to the AWG's cohort simulation model. This model incorporates the impacts of related pension reforms (European Commission, 2023b).

Annex 3: Quantification of the GDP impacts of the early childcare policy intervention

Narazani *et al* (2022) quantified the impact on labour market participation of an intervention increasing the early childhood education and care (ECEC) participation rate of children under 3 years²⁵ to 50 percent. The crucial aspect of their analysis is the estimation of the number of mothers entering the labour market after the intervention, since not all mothers whose children could enter ECEC would decide to look for a job. They use EUROLAB, a behavioural microsimulation model that is based on discrete choice labour supply modelling.

In addition to the results reported by Narazani *et al* (2022), we use Eurostat data on current ECEC participations rates. Narazani *et al* (2022) data on ECEC participation rates are based on EUROLAB data, which is based on a representative sample of the European Statistics on Income and Living Conditions (EU-SILC) surveys. Narazani *et al* (2022) reported that some summary indicators of their representative sample slightly differ from the full EU-SILC results.

We use the latest Eurostat data (which is based on EU-SILC), which indicates some slight differences to the starting ECEC participation rates reported by Narazani *et al* (2022) based on their representative sample. To calculate the impact on mothers' labour supply increase, we assume the same percent increase in labour supply relative to one unit increase in ECEC.

Unfortunately, while data is available for the number of children under 3 years, no data is available on how many mothers they belong to. We, therefore, make an assumption: the number of such mothers is 25 percent lower than the number of children (ie 25 percent of mothers with at least one child under 3 years have more than one child under 3 years)²⁶.

Narazani *et al* (2022) reported two alternative estimates for labour supply effects: an unconstrained effect and an effect constrained by labour demand. We use their unconstrained estimate to calculate the labour supply impact and then subject it to the equilibrium unemployment rate (non-accelerating wage rate of unemployment - NAWRU) to obtain the impact on employment. Our justification for this choice is that we consider medium- and long-term effects up to 17 years ahead, by when the EU's labour force will shrink substantially, and thus limited labour demand is unlikely to be a constraint on employment. However, labour market frictions represented by the NAWRU would not allow all people entering the labour market to be employed at the same time. Our calculations on the long-run GDP impact are shown in Table 5.

²⁵ In addition, they also present estimates for two alternative child cohorts: (1) children under 3 years and over the number of months in paid maternal leave, and (2) children between 6 months and 3 years of age.

²⁶ The assumption is based on a simple back of the envelop calculation using Eurostat data on the average number of years between childbirths and the average fertility rate: with a fertility rate of ca. 1.5 and an average gap between children below 3 years, about half of all women have a second child and of this half, at least 50 percent give birth to their second child within three years after the birth of the first child.

Table 5: The long-run GDP impact of extending early childhood education participation

| | Participation rate in early childhood education of less than 3 years old (%) | | Labour force participation rate of mothers with at least one child less than 3 years old (%) | | Labour force participation rate of 15-74 cohort (%) | | Predicted employment increase (%) | Predicted GDP level increase (%) |
|----------|--|------|--|------|---|----------------------|-----------------------------------|----------------------------------|
| | 2020* (and 2024) | 2029 | 2016 (and 2024) | 2029 | 2029 baseline** | 2029 policy scenario | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | | |
| Austria | 16.0 | 50.0 | 25.9 | 31.0 | 73.94 | 74.12 | 0.25% | 0.16% |
| Estonia | 16.7 | 50.0 | 28.2 | 35.1 | 70.00 | 70.31 | 0.43% | 0.28% |
| Finland | 20.4 | 50.0 | 39.3 | 45.1 | 71.92 | 72.13 | 0.29% | 0.19% |
| Hungary | 4.0 | 50.0 | 18.1 | 28.7 | 69.90 | 70.24 | 0.49% | 0.32% |
| Ireland | 21.7 | 50.0 | 62.7 | 74.8 | 71.42 | 71.99 | 0.79% | 0.52% |
| Portugal | 29.8 | 50.0 | 73.8 | 75.2 | 70.32 | 70.42 | 0.14% | 0.09% |

Source: Bruegel. Note: * 2018 for Portugal. ** Projections for 2028 by DG ECFIN.



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