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# Report on Public Finances in EMU

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European Commission  
Directorate-General for Economic and Financial Affairs

# Report on Public Finances in EMU 2019

## ABBREVIATIONS

### Member States

BE	Belgium	HU	Hungary
BG	Bulgaria	MT	Malta
HR	Croatia	NL	The Netherlands
CZ	Czech Republic	AT	Austria
DK	Denmark	PL	Poland
DE	Germany	PT	Portugal
EE	Estonia	RO	Romania
EL	Greece	SI	Slovenia
ES	Spain	SK	Slovakia
FR	France	FI	Finland
IE	Ireland	SE	Sweden
IT	Italy	EA	Euro area
CY	Cyprus	EU	European Union
LV	Latvia	EU27	European Union, 27 Member States
LT	Lithuania	EA19	Euro Area, 19 Member States
LU	Luxembourg		
UK	United Kingdom (as of 1 February 2020, the UK is no longer a Member State of the EU) <sup>(1)</sup>		

### Other

AMECO	Macro-economic database of the European Commission
CAB	Cyclically-adjusted budget balance
CAPB	Cyclically-adjusted primary budget balance
COFOG	Classification of the functions of government
COM	European Commission
CSR	Country-specific recommendation
DBP	Draft budgetary plan
DFE	Discretionary fiscal effort
DG ECFIN	Directorate-General Economic and Financial Affairs
DRM	Discretionary revenue measures
EB	Expenditure benchmark
EC	European Commission
ECB	European Central Bank
ECOFIN	Economic and Financial Affairs Council configuration
EDP	Excessive deficit procedure
EFC	Economic and Financial Committee
EFC-A	Alternates of the Economic and Financial Committee
EMU	European Economic and Monetary Union
EPC	Economic Policy Committee

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<sup>(1)</sup> The United Kingdom withdrew from the European Union as of 1 February 2020. The Agreement on the withdrawal of the United Kingdom of Great Britain and Northern Ireland from the European Union and European Atomic Energy Community (OJ L 29, 31.1.2020, p. 7) entered into force on the same date. It provides for a transition period which will end on 31 December 2020. During the transition period, Union law, with a few exceptions, is applicable to and in the United Kingdom. For the purposes of Union law applicable to it during the transition period, the United Kingdom is treated as an EU Member State, but will not participate in EU decision-making and decision-shaping.

ESA	European system of national and regional accounts
ESM	European Stability Mechanism
GDP	Gross domestic product
HICP	Harmonised index of consumer prices
IMF	International Monetary Fund
MTO	Medium-term budgetary objective
OECD	Organisation of Economic Co-operation and Development
OG	Output gap
OGWG	Output Gap Working Group
PFR	Report on Public Finances in EMU
SB	Structural balance
SCP	Stability and convergence programme
SDP	Significant deviation procedure
SGP	Stability and Growth Pact
SPB	Structural primary balance
TSCG	Treaty on Stability Coordination and Governance
TFEU	Treaty on the Functioning of European Union (TFEU)

#### **Units**

bn	Billion
mn	Million
pps	Percentage point(s)
rhs	Right-hand scale
tn	Trillion
y-o-y%	Year-on-year percentage change

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## FOREWORD

The coronavirus pandemic has hit Europe hard. It has not only endangered the health and safety of Europe's citizens, but also dramatically changed Europe's economic outlook. According to the Commission's summer 2020 interim forecast, real GDP of the European Union (EU) is expected to decline by more than 8% in 2020 before bouncing back by almost 6% in 2021. Public debt ratios are forecast to increase in the euro area to around 100% of GDP in 2021. The outlook is surrounded with a great deal of uncertainty.

The COVID-19 crisis has spurred a renewed interest in the role of fiscal policy, which faces three particular challenges in the EU. This report provides analytical insights on each of them.

First, how to design an efficient and sustainable fiscal response to the COVID-19 pandemic. The EU and its Member States have quickly reacted to contain the virus. At the national level, governments implemented large fiscal programmes to tackle the crisis, including both deficit-increasing measures and large liquidity support. As shown in part I of this report, the built-in features of the tax and benefit system, the so-called automatic stabilisers, can also provide a significant contribution in absorbing a part of the shock. Complementing the national efforts, the economic policy response in the EU has been swift and sizeable. In particular, EU leaders agreed based on a Commission proposal to a comprehensive package, which combines the Multiannual Financial Framework and an extraordinary recovery effort under the Next Generation EU instrument. In addition, the Commission set up the SURE instrument to support short-time work schemes. A quick and efficient implementation of these measures is key for supporting a timely recovery.

Second, how to ensure a viable fiscal governance framework in the medium run. The Commission released its review of the fiscal framework at the beginning of February 2020. The review was required by legislation following the overhaul of the framework in 2011 (six-pack reform) and 2013 (two-pack reform). It was meant to launch a public debate on the functioning and future evolution of the framework, which was virtually put on hold with the COVID-19 outbreak but will become very relevant again once the COVID-19 crisis has abated. Part II of this report shows that there is a growing consensus in academic and policy circles that spending rules can be an effective tool to ensure a good balance between the sustainability and stabilisation objectives of public finances. Findings from simulations indicate that public debt ratios would have been significantly lower today, particularly in highly-indebted Member States, if Member States had applied the EU spending rule, the so-called expenditure benchmark, since 1999. New evidence reveals that applying the expenditure benchmark appears more effective in reducing procyclicality compared with relying on the structural balance. Finally, part III indicates that macroeconomic developments can have a significant impact on fiscal outcomes, not least by generating large revenue shortfall or windfall. This indirectly supports the increased reliance on the expenditure benchmark in fiscal surveillance, since it is less affected by macroeconomic developments than the structural budget balance.

Third, how to improve the composition and efficiency of public expenditure. In times of stretched budgets and low potential growth, it is crucial to design fiscal policies as growth-friendly as possible. As explained in part I, this is particularly important to create the budgetary room for manoeuvre needed to promote the transition to a climate-neutral and healthy planet. This part also concludes that spending reviews, if well designed and successfully implemented, can be an important tool to improve the quality of public expenditures and to help foster sustainable growth.

Due to the exceptional situation of the COVID-19 pandemic, this report comes out a few months later than initially planned and in a more condensed format than usual. As in previous years, it provides analytical, evidence-based contributions on highly policy-relevant questions to promote a fruitful discussion among policy-makers and academics.

Maarten Verwey  
Director General Economic and Financial Affairs

## EXECUTIVE SUMMARY

The euro area has entered its deepest economic recession

The COVID-19 pandemic constitutes an unprecedented challenge with severe social and economic consequences for Europe. According to the Commission summer 2020 interim forecast, economic activity in the euro area is expected to shrink by more than 8% in 2020, before growing again by around 6% of GDP in 2021, reaching a GDP level still lower than the 2019 level.

EU and its Member States reacted quickly and decisively to contain the virus

Member States have implemented sizeable fiscal programmes in response to the pandemic to increase the capacity of health systems and support the citizens and economies. The discretionary measures amount to almost 4.5% of GDP according to Commission estimates. Member States have also adopted significant liquidity support schemes of almost 24% of GDP, which have not an immediate impact on the general government balance. The activation of the general escape clause of the Stability and Growth Pact (SGP) allows Member States to deal adequately with the situation, by providing the necessary flexibility.

At EU level, the Commission is using all available instruments to save lives and protect jobs and companies. In particular, the Commission set up a new EU instrument for temporary Support to mitigate Unemployment Risks in an Emergency. The so-called SURE instrument will provide up to EUR 100 billion in loans to Member States to finance short-time work schemes. Importantly, EU leaders agreed based on a Commission proposal to a comprehensive package of almost EUR 1825 billion to support the recovery and resilience of the Member States' economies. The funding will be composed of the regular Multiannual Financial Framework (MFF) and a new recovery instrument, Next Generation EU.

The pandemic is expected to have a severe impact on public finances ...

The unprecedented economic downturn and forceful fiscal policy response to the corona crisis are expected to significantly affect fiscal positions. According to the Commission spring forecast, the aggregate debt-to-GDP ratio is projected to increase to 103% of GDP in 2020. This should be manageable against an environment of extraordinarily low interest rates. At the same time, a rule-based fiscal framework will remain essential in the medium term in the EMU to anchoring expectations of sustainable fiscal trajectories. Should government debt remain at very high levels for a long time and debt trajectories persistently differ, economic growth could further be reduced and the risks for monetary policy transmission can become very high.

... while downside risks to the growth outlook are extraordinarily large.

The risks surrounding the growth outlook are very large and tilted to the downside. The impact from the coronavirus on public health, human lives and economic activity is a key downside risk for the economic outlook. A longer and more widespread pandemic could result in a larger number of bankruptcies, higher hysteresis effects in the labour market and lower economic growth. The pandemic could also trigger more drastic and permanent changes in attitudes towards global value chains and international cooperation. Furthermore, the risk remains that new trade barriers might be applied, which could adversely affect business investment plans. Finally, considerable uncertainty also exist concerning the long-term relationship between the EU and the UK.

The report describes developments in public finances in 2019.

The EU fiscal governance framework has evolved considerably since its creation in 1999 mainly to address shortcomings in the institutional architecture. As in previous reports, Part I provides an overview of the most recent annual fiscal surveillance cycle, that is, of the main budgetary developments throughout 2019. It has to be acknowledged though that the picture has changed considerably since 2019 by the COVID-19 outbreak and the ensuing EU and national policy responses.

First, in terms of fiscal surveillance, for the first time since 2002, no Member State was subject to an excessive deficit procedure in 2019.

Following the abrogation of the excessive deficit procedure for Spain in June 2019, no Member States was under the corrective arm of the Pact at the end of 2019. This is the first time that such a situation has arisen since 2002. Hungary and Romania, however, remained subject to significant deviation procedures. None of the 2020 Draft Budgetary Plans submitted by euro area Member States in October 2019 were found to be in particularly serious non-compliance with the requirements of the Stability and Growth Pact. However, the implementation of the Draft Budgetary Plans of eight Member States could result in a significant deviation from the adjustment path towards their respective medium-term budgetary objectives and, in four of these cases (Italy, France, Spain and Belgium), in an insufficient reduction of their high levels of public debt.

Second, the report presents the recent revisions and updates of key indicators of the preventive arm of the Pact.

Second, the report presents the updated values of two indicators that are key for fiscal surveillance in normal circumstances, namely the so-called minimum medium-term budgetary objectives (MTO) and one of its main components, the minimum benchmark. These indicators are needed to determine the targets for sound fiscal policies under the preventive arm of the Pact. The methodology to compute the minimum benchmark was revised in agreement with Member States to make it more stable and economically meaningful. The minimum MTOs were revised for the period 2020–2022 in line with the regular 3-year update: they remain the same or more stringent than before. At the same time, the activation of the general escape clause in March 2020 allows for a temporary departure from the adjustment path towards the medium-term budgetary objective, provided that this does not endanger fiscal sustainability in the medium term. It does not suspend the procedures of the Stability and Growth Pact, but it allows the Commission and the Council to undertake the necessary policy coordination measures within the framework of the Pact, while departing from the budgetary requirements that would normally apply, in order to tackle the economic consequences of the pandemic.

Third, it examines the latest developments in spending reviews.

Third, it examines the latest developments regarding spending reviews in the euro area. Spending reviews are being increasingly used, mostly to improve the quality of public services and to foster sustainable growth. A Commission survey on spending rules reports improvement as regards political commitment and the coordination of the process. It also points to weaknesses in terms of monitoring and consistency with the budgetary process. A spending review for investment could be an important tool to screen priorities within investment spending.

Fourth, the report shows that automatic stabilisers can provide a significant part in absorbing economic shocks.

Finally, it presents policy tools for public finances to support the transition to a climate-neutral economy and healthy planet.

This year's report provides an analytical focus on two topical issues. First, the performance of spending rules at EU and national level:

At EU level, we find that spending rules would have (i) contributed to lower public debt ratios ...

Automatic stabilisers are the first line of defence when the outlook deteriorates, as currently experienced in the COVID-19 crisis. They are directly related to the operation of the tax and benefit systems, which significantly offset cyclical fluctuations without the need for policymakers to intervene directly. In the EU, automatic stabilisers on average offset around 30-50% of any decline in household disposable income and they cushion up to 30% of any loss in GDP.

Finally, the report presents key policy tools for public finances to support the transition to a climate-neutral economy and healthy planet. Carbon pricing, public investment and social policies are central tools in the 'just transition' to climate neutrality by 2050. As national budgets account for almost half of GDP, 'green budgeting' tools can help address the daunting challenges of climate mitigation and environmental protection. An initial review of green budgeting practices in the Member States shows that they are used in diverse ways but only to a very limited extent. This reflects the challenge to define and identify green expenditure items. As climate change-related costs and risks are not incorporated into the EU's fiscal framework and may surge in the future, the Commission is assessing fiscal resilience and developing a climate risk module for the framework of debt sustainability analysis.

Part II provides a quantitative assessment of spending rules at EU and national level. The emerging consensus in academia and among policy observers is that spending rules promote a better balance between budgetary discipline and macroeconomic stabilisation objectives, are less pro-cyclical, more transparent and easier to monitor. Consequently, a main innovation in the 2011 reform of the institutional architecture was a greater focus on spending rules. At EU level, the expenditure benchmark was introduced as a second key indicator of the preventive arm of the Stability and Growth Pact. Many Member States also introduced expenditure rules at the national level. However, evidence on the performance of spending rules used at EU and Member State level is very scarce so far. Against this background, this analysis brings an important contribution by assessing the performance of spending rules at EU and Member State level by way of a quantitative assessment.

The report assesses the performance of the expenditure benchmark across three dimensions, namely (i) promoting sustainability, (ii) reducing procyclicality and (iii) ensuring predictability. In terms of sustainability, counterfactual simulations are used to assess the impact of a fiscal adjustment path in line with today's settings of the preventive arm on fiscal outcomes. The simulations take into account direct effects from fiscal adjustment on real GDP (via a fiscal multiplier) as well as indirect effects on prices (Phillips curve) and interest rates (Taylor rule). The findings show that public debt ratios would have been significantly lower today, particularly in highly indebted Member States, if Member States had applied the expenditure benchmark since 1999. The simulations show that the positive effects from a more front-loaded fiscal adjustment (improved primary budget balance, also generating lower interest payments) outweigh the negative effects of temporarily lower economic growth and inflation on the public debt ratio. We also find that strict

compliance with the expenditure benchmark, compared with the structural balance requirement, would have resulted in a more growth-friendly adjustment, as demonstrated by the lower loss in output. The reason for this is that compliance with the expenditure benchmark would have required a larger fiscal adjustment in good times.

... (ii) reduced pro-cyclical fiscal policies ...

As regards stabilisation, we find that discretionary fiscal policy in the EU has been pro-cyclical on average over the past 20 years. This implies that discretionary fiscal policy has been expansionary in good times and contractionary in bad times, confirming a general feature of fiscal policy, irrespective of the existence or not of fiscal rules. The cost of such pro-cyclicality can be high, as discretionary fiscal policy measures can increase volatility and counteract the functioning of automatic stabilisers. The empirical findings show that pro-cyclicality of discretionary fiscal policy happens in particular in good economic times. Importantly, the expenditure benchmark appears more effective in reducing pro-cyclicality, since it requests a larger fiscal adjustment in good times and a smaller one in bad times compared with the structural balance. Finally, the analysis shows that complying strictly with the fiscal rules of the preventive arm would have resulted in acyclical fiscal policy in the EU on average, while large deviations from the fiscal rules aggravate pro-cyclicality.

... and (iii) ensured predictability.

In terms of predictability, unbiased and realistic macroeconomic and budgetary projections are cornerstones of effective fiscal surveillance. The introduction of the SGP has increased interest in fiscal forecasting in Europe, since budgetary forecasts play a crucial role in the implementation of the fiscal surveillance framework. It is therefore reassuring that indicators used to assess the fiscal effort in the preventive arm of the SGP do not appear to be systematically biased at the EU, euro area or Member State level. Overall, the size of forecast errors appears broadly similar regardless of whether the fiscal effort is based on the expenditure benchmark or the structural balance.

At national level, spending rules have contributed to lower pro-cyclicality.

New evidence for expenditure rules at national level over the past 20 years also shows that expenditure rules mitigate the pro-cyclical bias of fiscal policy. The findings demonstrate that the size of the pro-cyclical bias is lower in the presence of expenditure rules. The pro-cyclicality is also reduced by a better design of the expenditure rule (in terms of legal base, independent monitoring, coverage and enforcement). Furthermore, a combination of expenditure rules and balanced budget rules attenuates the pro-cyclical pattern of fiscal policy more than when no rule operates.

The second theme of the report deals with the impact of macroeconomic developments on fiscal outcomes:

We identify three transmission channels of macroeconomic developments on public finances ...

... show new evidence that macroeconomic developments much impact revenue windfalls ...

... and illustrate how these estimated windfall effects have affected the fiscal effort.

Part III provides new empirical evidence on the impact of macroeconomic developments on fiscal outcomes.

Macroeconomic developments can affect public finances via three key channels. First, they affect fiscal outcomes in terms of headline deficit and debt-to-GDP via economic growth. Second, they can induce policymakers to use discretionary fiscal policy measures in response to those macroeconomic developments. Third, they can have an impact on revenue windfalls or shortfalls. Revenue windfalls (shortfalls) are unexpected gains (losses) in revenues that are not the result of discretionary fiscal policy or real GDP growth. The analysis in the report focuses on this third factor.

Panel regressions for a sample of EU Member States over the past 20 years show that macroeconomic developments can have a significant impact on revenue windfalls and shortfalls. In particular, the analysis finds that an increase in household debt results in higher revenue windfalls for the EU on average. A higher trade balance, for instance resulting from a decrease in imports with regard to exports, leads to revenue shortfalls. Finally, windfall revenues – often temporary by nature – frequently trigger long-lasting increases in spending or decreases in tax rates, posing risks to fiscal sustainability.

Taking account of macroeconomic developments can help better understand the underlying fiscal effort and fiscal positions. Findings from panel estimates show that developments in trade balance and household debt had a sizeable impact on revenue windfalls (shortfalls) over the past 20 years. These developments have affected the fiscal effort (as measured by the change in the structural balance), although they were not directly linked to fiscal measures and budgetary control. The analysis also supports the increased reliance on the expenditure benchmark in measurement of the fiscal effort. As it does not rely on revenue windfalls and shortfalls, the expenditure benchmark is less affected by macroeconomic developments than the structural budget balance.

# Part I

## Developments in public finances in EMU in 2019

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## KEY FINDINGS

This part provides an overview of the public finance developments in 2019, i.e. before the COVID-19 outbreak.

### **The budgetary positions of some Member States in 2019 warranted SGP procedural steps.**

- Following the abrogation of Spain's excessive deficit procedure in June 2019, for the first time since 2002, no Member State was subject to an excessive deficit procedure at the end of 2019.
- Hungary and Romania were still subject to significant deviation procedures in 2019.
- None of the 2020 draft budgetary plans submitted by euro area Member States were found to be in particularly serious non-compliance with the Stability and Growth Pact's requirements. However, the draft budgetary plans of eight Member States could result in a significant deviation from their adjustment paths towards their respective medium-term budgetary objectives and, in four of these cases, in an insufficient reduction in their high levels of public debt.

### **Key indicators of the preventive arm of the SGP were revised in 2019.**

- In February 2019, the Economic and Financial Committee agreed on a new methodology to compute the minimum benchmark, one of the key components of the minimum medium-term budgetary objective (MTO). The new methodology is more stable, exhibits better properties.
- The minimum MTOs were revised accordingly for the period 2020-2022. The majority of Member States have set a more demanding MTO than required by their minimum MTO. However, the activation of the General Escape Clause in March 2020, has allowed for a temporary departure from the adjustment path towards the medium-term budgetary objective, provided that this does not endanger fiscal sustainability in the medium term.

### **Well-designed spending reviews can foster sustainable growth.**

- Spending reviews are increasingly being used in the euro area, mostly to improve the quality of public services and foster sustainable growth.
- A Commission survey on spending rules shows improvements in political commitment and process coordination, but weaknesses in terms of monitoring and consistency with the budgetary process.
- A spending review for investment could be an important tool to screen priorities within investment spending.

### **Automatic stabilisers can smooth a sizeable part of cyclical fluctuations.**

- Automatic stabilisers can significantly offset cyclical fluctuations: In the EU, they offset an average of around 30–50% of any loss in household disposable income and up to 30% of any loss in GDP.
- However, there are considerable differences across Member States. Overall, evidence shows that automatic stabilisers are larger in the EU than in the US.

### **Public finances can play an important role in the transition to a climate-neutral economy and healthy planet.**

- On the one hand, the mitigation and adaptation investments and the social policies needed to help the citizens and regions most affected by the transition imply higher public expenditure. On the other hand, carbon pricing instruments to address distorted price signals may raise revenues and cut expenditure by phasing out fossil fuel subsidies.
- Green budgeting can contribute to a mainstreaming of green budgetary policies and processes by linking budgetary tools and environmental and climate change goals.
- The Commission is exploring ways to integrate the risks associated with climate change and the transition to a carbon-neutral economy into its debt sustainability analysis framework.

# 1. IMPLEMENTATION OF FISCAL SURVEILLANCE IN 2019

EU fiscal surveillance is designed to ensure sound public finances in Member States. It involves the Council and the Commission assessing Member States' compliance with the Stability and Growth Pact. The Pact has two different sets of requirements. First, its corrective arm requires Member States to keep their general government deficit below the reference value of 3% of GDP, and their general government debt below 60% of GDP, or to reduce general government debt sufficiently to approach 60% at a satisfactory pace. Member States have to prompt a correction of their excessive deficit if those two criteria are not met <sup>(2)</sup><sup>(3)</sup>. Second, the Pact's preventive arm requires Member States to achieve and maintain their medium-term budgetary objective, which corresponds to a cyclically-adjusted target for the budget balance, net of one-offs and temporary measures <sup>(4)</sup>. Country-specific medium-term budgetary objectives are defined so as to secure the sustainability of public finances and allow the automatic stabilisers to operate without breaching the reference value for the deficit as defined in the Treaty.

This chapter summarises the main developments in the implementation of fiscal surveillance in the EU in 2019.<sup>5</sup> First it presents key developments and procedural steps taken under the corrective arm's excessive deficit procedure (Section 1.1.) and the preventive arm's significant deviation procedure (Section 1.2.). It then summarises the 2019 country-specific recommendations on fiscal policy (Section 1.3.). Finally, it presents the Commission's assessment of the euro area Member States' draft budgetary plans for 2020 (Section 1.4.).

## 1.1. EXCESSIVE DEFICIT PROCEDURE

This section focuses on the implementation of the excessive deficit procedure in 2019. Under this procedure, Member States are recommended to correct their excessive deficit and debt positions, measured against the reference values of 3% and 60% of GDP. Country-specific developments are summarised in Tables I.A.1, I.A.2, I.A.3 and I.A.4. in the Annex <sup>(6)</sup>.

### 1.1.1. Euro area Member States

**On 5 June 2019, the Commission adopted reports pursuant to Article 126(3) TFEU on Belgium, France, Italy and Cyprus.**

**The Commission report of June 2019 on Italy concluded that the debt criterion should be considered as not complied with.** According to notified data for 2018 and the Commission spring 2019 forecast, Italy's gross government debt reached 132.2% of GDP in 2018, well above the 60% reference value, and the country did not comply with the debt reduction benchmark in 2018. Moreover, both Italy's 2019 stability programme and the Commission spring 2019 forecast projected that the debt-to-GDP ratio would not comply with the debt reduction benchmark in either 2019 or 2020. The Commission report of 5 June 2019 concluded that the debt criterion as defined in the Treaty should be considered as not complied with and that a debt-based excessive deficit procedure was therefore warranted. The Commission reached this

<sup>(2)</sup> Article 126 TFEU sets out the excessive deficit procedure, which is further specified in Regulation (EC) 1467/97 'on speeding up and clarifying the implementation of the excessive deficit procedure', amended in 2005 and 2011.

<sup>(3)</sup> A Member State is not compliant with the debt criterion if its general government gross debt exceeds 60% of GDP and it is not cutting that debt sufficiently to approach 60% of GDP at a satisfactory pace. The concepts of 'sufficiently diminishing' and 'satisfactory pace' are crucial in assessing compliance with the debt criterion of Member States whose general government gross debt exceeds 60% of GDP. Regulation 1467/97 states that these requirements are met if 'the differential [of the general government gross debt] with respect to the reference value has decreased over the previous three years at an average one twentieth per year as a benchmark'. The Regulation provides that 'the requirement under the debt criterion shall also be considered to be fulfilled if the budgetary forecasts of the Commission indicate that the required reduction in the differential will occur over the three-year period encompassing the two years following the final year for which data are available'. It further indicates that 'the influence of the cycle on the pace of debt reduction' should be taken into account. However, it is not automatically decided to start an excessive deficit procedure on that basis, as the Commission has to take account of a long list of relevant factors, detailed in Article 2(3) of Regulation (EC) No 1467/97.

<sup>(4)</sup> The preventive arm of the Stability and Growth Pact is set out in Regulation (EC) 1466/97 'on the strengthening of the surveillance of budgetary positions and the surveillance and coordination of economic policies', which was amended in 2005 and 2011.

<sup>(5)</sup> The main developments in fiscal surveillance in 2020 will be covered in the Report on Public Finances in EMU 2020.

<sup>(6)</sup> The Commission's website details all country-specific developments pertaining to the excessive deficit procedure.

conclusion after examining all relevant factors, namely (i) non-compliance with the recommended adjustment path towards the medium-term budgetary objective in 2018 based on *ex-post* data, together with a risk of significant deviation from the preventive arm requirement in 2019 and a headline deficit above 3% of GDP in 2020 based on the Commission spring 2019 forecast; (ii) the macroeconomic slowdown recorded in Italy from the second half of 2018, which could only partly explain Italy's large gaps to compliance with the debt reduction benchmark; and (iii) Italy's limited progress in addressing the 2018 country-specific recommendations, including its backtracking on past growth-enhancing reforms, and the lack of details of the commitments set out in Italy's 2019 National Reform Programme.

**Following Italy's updated fiscal plans of 1 July 2019, the Commission issued a communication on 3 July 2019 concluding not to start an excessive deficit procedure for Italy at that stage.** The Italian authorities' updated fiscal plans included revenues that were higher than expected and public expenditure that was lower than expected resulting from the budget execution in 2019. A further guarantee for lower expenditure was a new clause to freeze spending in case of underachievement of the new fiscal target. Those updates corresponded to a structural improvement of around 0.2% of GDP, compared to a deterioration of 0.2% of GDP in the Commission spring 2019 forecast. Italy was thus expected to be broadly compliant with the required effort under the preventive arm of the Stability and Growth Pact in 2019. Furthermore, in a letter sent to the Commission on 2 July 2019, the Italian authorities committed to achieving a structural improvement in 2020, by ensuring that the VAT hike legislated as a safeguard clause for that year would be fully replaced by offsetting fiscal measures, including a spending review designed to reduce expenditure and a revision of tax expenditures. The Commission communication of 3 July 2019 concluded that the package of measures was sufficient not to propose the opening of a debt-based excessive deficit procedure to the Council at that stage. The Commission noted that it would check the effective implementation of that package by closely monitoring the execution of the 2019 budget and by assessing the compliance of the 2020 draft budgetary plan with the Stability and Growth Pact. It would also assess progress in

implementing the structural reforms referred to in the country-specific recommendations in the context of the European Semester. These were key to ensuring higher economic growth and thereby helping to reduce the debt-to-GDP ratio.

**The Commission report of June 2019 on Belgium concluded that the analysis was not fully conclusive as to whether or not the debt criterion was complied with.** According to notified data for 2018 and the Commission spring 2019 forecast, gross government debt stood at 102% of GDP in 2018, well above the 60% reference value in the Treaty and Belgium did not comply with the debt reduction benchmark in 2018. Moreover, the Commission spring 2019 forecast projected that Belgium would not comply with the debt reduction benchmark in 2019 and 2020.

**After examining all relevant factors, the Commission report concluded that analysis was not fully conclusive as to whether or not the debt criterion was complied with.** The following relevant factors were examined: (i) the macroeconomic conditions, which were no longer considered a factor to explain Belgium's gap to the debt reduction benchmark; (ii) the implementation of growth-enhancing structural reforms in past years, several of which were considered substantial and which were projected to help improve debt sustainability, even if they had a temporary non-neutral budgetary impact; and (iii) the lack of sufficiently robust evidence to conclude whether there was a significant deviation from Belgium's adjustment path towards the medium-term budgetary objective in 2018, and over 2017 and 2018 taken together, owing to high uncertainty as to the extent of the temporary nature of the evolution of corporate income tax revenues.

**The Commission report of June 2019 on France concluded that the deficit and debt criteria defined in the Treaty should be considered as complied with.** According to notified data for 2018 and the Commission spring 2019 forecast, gross government debt stood at 98.4% of GDP in 2018, well above the 60% reference value, and France made insufficient progress in 2018 towards compliance with the debt reduction benchmark. Moreover, the headline general government deficit was planned to increase to 3.1% of GDP in 2019, remaining close to, though exceeding, the

reference value of 3% of GDP. The excess was not considered exceptional, although it was marginal and temporary for the purposes of the Treaty and the Stability and Growth Pact. Moreover, the increase in the deficit to 3.1% was solely due to the one-off statistical impact of transforming the tax credit for competitiveness and employment (CICE) into a permanent outright reduction in employers' social contributions. After examining all relevant factors, the report concluded that the deficit and debt criteria should be considered as complied with. The following relevant factors were examined: (i) France was found to be broadly compliant with the recommended adjustment path towards the medium-term budgetary objective in 2018; (ii) short-term sustainability risks were low; (iii) the breach of the reference value (3% of GDP) in 2019 was marginal, temporary and solely due to a one-off effect, and (iv) growth-enhancing structural reforms had been implemented in the last years, in response to the country-specific recommendations addressed to France.

**The Commission report of June 2019 on Cyprus concluded that further steps leading to a decision on the existence of an excessive deficit should not be taken.** According to notified data for 2018 and the Commission spring 2019 forecast, the general government headline balance in Cyprus reached a deficit of 4.8% of GDP in 2018, much above the Treaty reference value of 3% of GDP. The excess over the reference value was not considered exceptional, although it was temporary within the meaning of the Treaty and the Stability and Growth Pact. In the absence of the 8.3% of GDP one-off impact of the banking support measures, the general government balance would have amounted to a surplus of 3.5% of GDP in 2018. Furthermore, according to the Commission spring 2019 forecast and Cyprus's 2019 stability programme, the general government headline balance was projected to return to surpluses of around 3% of GDP in 2019 and above 2.5% of GDP in 2020, in compliance with and well below the Treaty reference value. Cyprus was also expected to be compliant with the debt reduction benchmark in 2019 and 2020. The relevant factors could not be taken into account in the steps leading to the decision on the existence of Cyprus's excessive deficit; as the government debt-to-GDP ratio exceeded the 60% reference value, the deficit did not remain close to the reference value. Overall, however, the Commission considered that

further steps leading to a decision on the existence of an excessive deficit for Cyprus should not be taken, since the opening of an excessive deficit procedure would not have served any meaningful purpose for fiscal surveillance.

**For the first time since 2002, no euro area Member States are undergoing the excessive deficit procedure.** The excessive deficit procedure for Spain was abrogated on 14 June 2019, as the deficit had been brought below 3% of GDP in 2018 and it was projected to stay below 3% in 2019 and 2020 <sup>(7)</sup>. According to the Commission autumn 2019 forecast, the headline deficits were projected to be below the Treaty reference value (3% of GDP) in all euro area Member States but France in 2019.

#### 1.1.2. Non-euro area Member States

**No non-euro area Member State were subject to excessive deficit procedures in 2019.** Government deficits in nearly all non-euro area Member States were below 3% of GDP in 2018. The sole exception was Romania, with a headline deficit of 3% of GDP. According to the Commission autumn 2019 forecast, government deficits were expected to remain below 3% of GDP in 2019 in all non-euro Member States but Romania, where the general government deficit was projected to reach 3.6% of GDP (Section I.1.2.).

### 1.2. SIGNIFICANT DEVIATION PROCEDURE

**A significant deviation procedure is launched if a Member State has deviated significantly from its medium-term budgetary objective or the adjustment path towards it, on the basis of outturn data.** When such a deviation is observed, the Commission must issue a warning. Within one month, the Council must issue a recommendation to the Member State concerned to take measures to tackle the deviation.

**In 2019, new significant deviation procedures were launched for Hungary and Romania, based on the deviation observed in 2018** (Table I.A.4.). The Council also concluded that both Member States did not take effective action in response to the Council Recommendations of

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<sup>(7)</sup> OJ L 163, 20.6.2019, p. 59.

4 December 2018 with a view to correcting the observed significant deviation.

**Hungary has been subject to a significant deviation procedure since June 2018.** On 14 June 2019 the Council adopted a decision establishing that no effective action had been taken in response to its recommendation of December 2018 <sup>(8)</sup>. After Hungary had failed to take effective action in response to the Council recommendation of 22 June 2018 <sup>(9)</sup>, the Council adopted a revised recommendation on 4 December 2018. This called on Hungary to take the necessary measures to ensure that the nominal growth rate of net primary government expenditure did not exceed 3.3% in 2019, corresponding to an annual structural adjustment of 1.0% of GDP. Hungary was asked to report to the Council by 15 April 2019 on action taken <sup>(10)</sup>.

**On 20 March 2019, the Commission undertook an enhanced surveillance mission in Hungary.** The mission report concluded that the Hungarian authorities did not plan to act on the Council recommendation. On 15 April 2019, the Hungarian authorities submitted a report on action taken, in which they reiterated that their target for 2019 remained a headline deficit of 1.8% of GDP. However, the report did not comply with the Council's reporting requirements, and the improvement in the underlying structural deficit fell significantly short of what was recommended. As the overall assessment based on the Commission spring 2019 forecast confirmed a deviation from the recommended adjustment, on 14 June 2019 the Council adopted a decision that Hungary had not taken effective action in response to its recommendation of 4 December 2018.

**On the basis of a Commission recommendation, on 14 June 2019 the Council also adopted a new recommendation for Hungary with a view to correcting the significant observed deviation from the adjustment path towards the medium-term budgetary objective <sup>(11)</sup>.** The Commission spring 2019 forecast and the 2018 outturn data indicated that Hungary had deviated significantly from the required adjustment path towards the medium-term budgetary objective in

2018. Hungary was recommended to take the necessary measures to ensure that the nominal growth rate of net primary government expenditure did not exceed 3.3% in 2019 and 4.7% in 2020, corresponding to an annual structural adjustment of 1% of GDP in 2019 and 0.75% in 2020. The country was also recommended to use any windfall gains to reduce the deficit, while budgetary consolidation measures should secure a lasting improvement in the general government structural balance in a growth-friendly manner. Hungary was recommended to report on action taken to the Council by 15 October 2019. On 26 September 2019, the Commission undertook an enhanced surveillance mission under Article 11(2) of Regulation (EC) No 1466/97. The mission report concluded that the Hungarian authorities planned to act on the Council recommendation only with respect to the year 2020. On 15 October 2019, in line with the deadline set by the Council, the Hungarian authorities submitted a report on action taken in response to the Council recommendation of 14 June 2019. The report did not comply with the reporting requirements recommended by the Council.

**In line with Commission recommendations, the Council adopted a decision on 5 December 2019 establishing that Hungary had not taken effective action, plus a revised recommendation on measures to take to correct the significant deviation <sup>(12)</sup>.** Based on the Commission 2019 autumn forecast, Hungary was projected to deviate from the recommended adjustment for 2019, while it was projected to achieve the recommended adjustment in 2020. Consequently, on 20 November 2019 the Commission adopted a recommendation for a Council decision establishing that no effective action had been taken and a revised recommendation for a Council recommendation. Acting on those recommendations, the Council called on Hungary to take the necessary measures to ensure that the nominal growth rate of net primary government expenditure does not exceed 4.7% in 2020, corresponding to an annual structural adjustment of 0.75% of GDP. Hungary should also use any windfall gains for deficit reduction and to compensate for unexpected revenue shortfalls with high-quality permanent fiscal measures.

<sup>(8)</sup> OJ L 163, 20.6.2019, p. 64.

<sup>(9)</sup> OJ C 223, 27.6.2018, p. 1.

<sup>(10)</sup> OJ C 460, 21.12.2018, p. 4.

<sup>(11)</sup> OJ C 210, 21.6.2019, p. 4.

<sup>(12)</sup> OJ L 329, 19.12.2019, p. 91 and OJ C 420, 13.12.2019, p. 1.

Furthermore, budgetary consolidation measures should secure a lasting improvement in the general government structural balance in a growth-friendly manner. Hungary was asked to report to the Council by 15 April 2020 on action taken in response to the recommendation.

**Romania has been subject to a significant deviation procedure since June 2017.** Based on a Commission recommendation, in June 2019 the Council adopted a decision establishing that Romania had taken no effective action in response to its recommendation of 4 December 2018<sup>(13)</sup>. That recommendation had called on Romania to take the necessary measures to ensure that the nominal growth rate of net primary government expenditure did not exceed 4.5% in 2019, corresponding to an annual structural adjustment of 1% of GDP. Romania was asked to report on action taken to the Council by 15 April 2019<sup>(14)</sup>. On 14 and 15 March 2019, the Commission undertook an enhanced surveillance mission in Romania. The mission report concluded that the Romanian authorities did not intend to act on the Council recommendation. On 20 April 2019, after the deadline set by the Council, the Romanian authorities submitted a report on action taken in which they reiterated that they were targeting a headline deficit of just below 3% of GDP in 2019 and only a marginal decrease in the structural deficit. However, the fiscal impact of the reported measures fell significantly short of what was recommended. As the overall assessment based on the Commission spring 2019 forecast confirmed a deviation from the recommended adjustment by a wide margin, the Council adopted a decision on 14 June 2019 stating that Romania had not taken effective action in response to its recommendation of 4 December 2018.

**Following a recommendation by the Commission, on 14 June 2019 the Council also adopted a new recommendation for Romania with a view to correcting the significant deviation observed in 2018**<sup>(15)</sup>. In 2018, based on the Commission 2019 spring forecast and the 2018 outturn data, Romania was found to have deviated significantly from the required adjustment path towards the medium-term budgetary objective. Moreover, the general government deficit was

projected to reach 3.5% of GDP in 2019 and 4.7% of GDP in 2020, thus exceeding the Treaty reference value (3% of GDP). The Council concluded that the failure to act on earlier recommendations and the risk of exceeding the reference value called for urgent action to put Romania's fiscal policy back on a prudent path. Romania was therefore recommended to ensure that the nominal growth rate of net primary government expenditure did not exceed 4.5% in 2019 and 5.1% in 2020, corresponding to an annual structural adjustment of 1% of GDP in 2019 and 0.75% of GDP in 2020. Romania was also recommended to use any windfall gains to reduce its deficit and secure a lasting improvement in the general government structural balance in a growth-friendly manner. Finally, Romania was recommended to report to the Council by 15 October 2019 on action taken. On 25 September 2019, the Commission undertook an enhanced surveillance mission in Romania. The mission report found that the authorities planned to undertake structural adjustment only from 2022 and thus did not intend to act on the recommendation. On 15 October 2019, the Romanian authorities submitted a report on action taken. The report did not comply with the reporting requirements, as it contained no comprehensive projection of individual budgetary categories, nor did it include the budgetary impact of each measure mentioned. Overall, the fiscal impact of the reported measures fell short of the requirements.

**In line with Commission recommendations, the Commission adopted a decision on 5 December 2019 establishing that Romania had not taken effective action, plus a revised recommendation on measures to take to correct the significant deviation**<sup>(16)</sup>. Based on the Commission autumn 2019 forecast, the projected fiscal effort fell short of the requirements in both 2019 and 2020. Moreover, the Commission projected a general government deficit of 3.6% in 2019 and 4.4% in 2020, thus exceeding the reference value (3% of GDP). Consequently, the Council called on Romania to take the necessary measures to ensure that the nominal growth rate of net primary government expenditure does not exceed 4.4% in 2020, corresponding to an annual structural adjustment of 1.0% of GDP, thereby putting the

<sup>(13)</sup> OJ L 163, 20.6.2019, p. 62.

<sup>(14)</sup> OJ C 460, 21.12.2018, p. 1.

<sup>(15)</sup> OJ C 210, 21.6.2019, p. 3.

<sup>(16)</sup> OJ L 324, 13.12.2019, p. 5 and OJ C 420, 13.12.2019, p. 4.

country on an appropriate adjustment path towards the medium-term budgetary objective. Romania should use any windfall gains to reduce its deficit, and budgetary consolidation measures should secure a lasting improvement in the general government structural balance, in a growth-friendly manner. Romania should report to the Council by 15 April 2020 on action taken in response to the recommendation.

### 1.3. FISCAL COUNTRY-SPECIFIC RECOMMENDATIONS

According to the 2019 Stability and Convergence Programmes submitted in April 2019, 23 Member States would be at or above the medium-term budgetary objective by 2022, compared with the 12 which reached this in 2018. Of the 12 Member States that had reached their medium-term budgetary objective in 2018, all would remain at or above their medium-term budgetary objective in 2022, with nine of them planning a fiscal expansion in the course of the programme. However, some highly indebted Member States, such as Spain, France and Italy, have stated that they plan to remain far from their medium-term budgetary objective by the end of the programme period.

**Based on the Member States' programmes, the aggregate headline deficit would be slightly below the 2018 deficit level by the end of the programme.** The headline deficit would rise to 0.9% of GDP in both the EU and the euro area in 2019. After this, it would decline to a deficit of 0.4% of GDP in the EU and 0.3% in the euro area by 2022. It is expected that the (recalculated) aggregate structural balance will have worsened in 2019 by around 0.2 pps. of GDP in both the EU and the euro area. In contrast, it is expected to improve by 0.3 pps. of GDP in last year's programmes. The (recalculated) structural balance is projected to improve but to remain in deficit in 2022, at 0.5% of GDP in the EU and 0.6% in the euro area.

**Based on the Commission spring 2019 forecast, risks to the Member States' programmes are expected to increase in 2020.** While risks to the budgetary projections for 2019 seem limited, the Member States' budgetary targets for 2020 were more favourable than the Commission forecast. The latter projected an aggregate headline deficit

of 1.0% of GDP in the EU (0.9% of GDP in the euro area). This is 0.4 pps. (0.4 pps.) higher than in the Member States' programmes. The assessment of the future budgetary measures ('policy gap') accounts for most of the difference.

**On 28 March 2019 the Council adopted the recommendations for the euro area as a whole, to allow the euro area dimension to be taken into account in the Member States' national reform and stability programmes and in the country-specific recommendations.**

On the basis of the information provided in the 2019 stability and convergence programmes (and in the national reform programmes), the Council adopted country-specific recommendations to all 28 Member States on 9 July 2019, as part of the 2019 European Semester. This was the first time that country-specific recommendations were addressed to Greece, following its exit from the third macroeconomic adjustment programme in August 2018<sup>(17)</sup>.

**The Council recommended that Member States comply with the requirements of the Stability and Growth Pact.** Guidance on how to achieve the medium-term budgetary objective or to make sufficient progress towards it was provided in terms of the maximum allowed nominal growth rate of net primary government expenditure and the corresponding adjustment in the structural balance. No fiscal recommendation was made to Member States that were expected to be at or above their medium-term budgetary objective in 2020. For those undergoing a significant deviation procedure (Hungary and Romania), the recommendations called for compliance with the respective Council decisions under those procedures. In addition, Member States with large debt-to-GDP ratios were recommended to use windfall gains to accelerate the reduction of the general government debt ratio. In the area of fiscal-structural policies, some Member States were recommended to take measures to ensure the sustainability of the pension, healthcare, or long-term care systems. The Council also

<sup>(17)</sup> Under Article 12 of Regulation (EU) No 472/2013, Member States that are subject to a macroeconomic adjustment programme are exempt from the monitoring and assessment of the European Semester for economic policy coordination under Article 2(a) of Regulation (EC) No 1466/97 for the duration of that programme.

recommended that some Member States improve the efficiency and composition of public spending, improve tax collection, strengthen fiscal frameworks, and broaden the tax base towards more growth-friendly taxes. All country-specific recommendations concerning fiscal matters are set out in Table I.A.5.

#### 1.4. DRAFT BUDGETARY PLANS

**In October 2019, all euro area Member States submitted their draft budgetary plans for the 2020 budgetary year, which were then assessed by the Commission.** All euro area Member States submitted their draft budgetary plans broadly in time. Austria, Portugal and Spain submitted no-policy-change draft budgetary plans because of national elections held between the end of September and the first half of November 2019. Belgium also submitted a no-policy-change draft budgetary plan, as it is in the process of forming a new government.

**While no draft budgetary plan was found in particularly serious non-compliance, some draft budgetary plans gave rise to concerns about the planned fiscal effort.** The Commission sent letters requesting further information to Finland on 14 October 2019 and to Belgium, France, Italy, Spain and Portugal on 22 October 2019. The letters set out some preliminary observations on their draft budgetary plans. In the cases of Belgium, Spain and Portugal, they also underlined the importance of submitting updated draft budgetary plans. Finland replied on 16 October and France and Italy on 23 October 2019. The information in their replies was taken into account in the Commission's assessment of budgetary developments and risks. Overall, the assessments of the draft budgetary plans flagged up different degrees of risk. The Commission opinions called on the Member States to take appropriate action where necessary to ensure compliance with the Stability and Growth Pact.

**The assessment of the plans was summarised in three broad categories:** (i) 'compliant', (ii) 'broadly compliant' and (iii) 'at risk of non-compliance'. For all Member States, the compliance assessments for 2020 were made against the requirements of the preventive arm and based on the Commission autumn 2019 forecast. Table I.A.6 sets out the Commission's opinions.

**Nine draft budgetary plans were found to be 'compliant' with the requirements under the Stability and Growth Pact.** They were submitted by the following Member States: Germany, Ireland, Greece, Cyprus, Lithuania, Luxembourg, Malta, the Netherlands and Austria. In the case of Germany and the Netherlands, in view of the size of their fiscal space, the Commission invited the authorities to undertake additional expenditures to support an upward trend in investment and to focus investment-related economic policy on those areas recommended by the Council in the context of the European Semester.

**The draft budgetary plans of two Member States –Estonia and Latvia– were found to be 'broadly compliant' with the requirements of the Stability and Growth Pact.** Latvia's draft budgetary plan might result in some deviation from its medium-term budgetary objective, while Estonia's plan might result in some deviation from the adjustment path towards it. If Latvia's structural balance is no longer projected to be close to the medium-term budgetary objective in future assessments, the overall assessment of compliance will need to take into account the extent of the deviation from the requirement set by the Council.

**Finally, the draft budgetary plans of eight Member States were found to be 'at risk of non-compliance' with the Stability and Growth Pact's requirements.** In the case of Belgium, Spain, France and Italy, those risks relate both to the insufficient reduction of the high level of public debt and the projected significant deviation from the adjustment path towards their respective medium-term budgetary objectives. For Portugal, Slovenia, Slovakia and Finland, public debt has either been brought below the Treaty reference value (60% of GDP) or is on an appropriate path towards it. Those Member States also achieved a budgetary balance that provides a sizeable margin towards the Treaty reference value (3% of GDP). Nonetheless, the implementation of the draft budgetary plans of these euro area Member States might result in a significant deviation from the adjustment path towards their respective medium-term budgetary objectives.



## 2. MINIMUM BENCHMARKS AND MINIMUM MEDIUM-TERM BUDGETARY OBJECTIVES – AN UPDATE

### 2.1. INTRODUCTION

**The preventive arm of the Stability and Growth Pact (SGP) supports Member States in achieving sound budgetary positions by setting a budgetary target, known as the medium-term budgetary objective (MTO).** The MTO is differentiated across Member States and pursues a threefold objective. First, it must account for evolving long-term sustainability challenges; second, it provides a safety margin with respect to the 3% of GDP deficit limit; and finally, it should allow room for sufficient budgetary manoeuvre, taking particular account of the need for public investment <sup>(18)</sup>.

**The country-specific MTO is determined by three components.**

- First, the minimum benchmark component (MTO<sup>MB</sup>) provides a safety margin to the 3% of GDP (headline) deficit criterion.
- Second, the implicit liabilities and debt component (MTO<sup>LD</sup>) reflects the need to contain or reduce current and future debt.
- Third, for members of the euro area and ERMII, there is a supplementary lower limit of -1% of GDP <sup>(19)</sup>.

The *minimum* MTO corresponds to the most demanding value of the three components defined above, rounded to the less stringent quarter percentage point. Member States are free to set a more ambitious MTO in their stability (and convergence) programmes.

**This Chapter presents the updated values of the minimum MTOs and one of its key components, the minimum benchmark (MB).** The minimum benchmark was revised applying a new

methodology, which was agreed by the Economic and Financial Committee (EFC) in February 2019. The update of the minimum MTO follows the regular institutional calendar, which foresees an update every 3 years <sup>(20)</sup>. The revised minimum benchmarks and MTOs will be used in the fiscal surveillance process to assess budgetary positions from 2020 onwards.

**The rest of this chapter is structured as follows:** Section I.2.2. describes and assesses the changes in the MB methodology and presents the updated MBs. Section I.2.3. shows the updated minimum MTOs. Finally, Section I.2.4. sets out conclusions.

### 2.2. NEW MINIMUM BENCHMARKS

#### 2.2.1. Concept

**The key purpose of the minimum benchmark is to ensure sustainable fiscal positions that provide Member States sufficient fiscal space to let automatic stabilisers operate freely.** The MB is an indicator used in the EU fiscal surveillance process that operationalises the concept of a safety margin, mentioned in the secondary legislation. The MB indicates the budgetary position in structural terms that provides a safety margin for Member States under the preventive arm of the SGP to avoid incurring excessive deficits under the corrective arm of the SGP in normal cyclical fluctuations. This should make sure that Member States have sufficient budgetary manoeuvre vis-à-vis the 3% deficit reference value to let the automatic stabilisers, features of the tax and benefit system, play freely (Part II.4.) <sup>(21)</sup>.

**The minimum benchmark is assessed for each Member State based on the following two factors <sup>(22)</sup>:**

- **Past business cycle volatility.** Member States with larger swings in the economic cycle should have a larger safety margin, i.e. a larger

<sup>(18)</sup> See Article 2(a) of Council Regulation (EC) No 1466/97 of 7 July 1997 on the strengthening of the surveillance of budgetary positions and the surveillance and coordination of economic policies, OJ L 209, 2.8.1997, p. 1–5.

<sup>(19)</sup> Signatory parties of the Treaty on Stability, Coordination and Governance (TSCG) additionally committed to an even lower limit of -0.5% of GDP unless the debt ratio is well below 60% of GDP and there are low sustainability risks.

<sup>(20)</sup> The update is typically conducted following the publication of the Commission's Ageing Report or after reforms with a significant impact on sustainability.

<sup>(21)</sup> Mohl et al. (2019), European Commission (2017), Dolls et al. (2012).

<sup>(22)</sup> Council of the European Union (2017).

minimum benchmark. The output gap provides an estimate of the difference between potential and actual GDP in each particular year, which can be used to assess the volatility of the economic cycle.

- **Responsiveness of the government budget to past business cycle fluctuations:** Member States with a stronger response to cyclical conditions (e.g. due to a sizeable government budget) should have a larger safety margin. The responsiveness of the government budget to output fluctuations is represented by the fiscal semi-elasticity. It measures the percentage change of the budget balance-to-GDP ratio that corresponds to a one percent change in the level of output<sup>(23)</sup>.

## 2.2.2. Methodology

### 2006 methodology

The 2006 methodology was introduced in the context of the 2005 reform of the SGP. The Commission introduced the MB concept in 2000 to provide Member States with an indication of how to operationalise the concept of a safety margin. Following the 2005 reform of the SGP and the introduction of the safety margin concept as one of the criteria to define the country-specific MTOs, Member States invited the Economic Policy Committee to explore methodological improvements to the MB. A method for calculating the MB was agreed in September 2006 ('the 2006 methodology') and has been applied consistently between 2006 and 2019.

**Under the 2006 methodology, past business cycle fluctuations were assessed using the concept of a representative output gap (ROG).** The MB was calculated as follows:

$$MB_i = -3 - \varepsilon_i * ROG_i$$

where the responsiveness of the general budget to the business cycle was measured by the semi-elasticity of the budget ( $\varepsilon_i$ ) and past business cycle

volatility was represented by the 'representative output gap'.

**The ROG measures past negative cyclical conditions that Member States experienced in times of normal business cycles.** It reflects the fact that the volatility of the economic cycle differs across Member States, which has an impact on budget balances. The ROG was calculated as follows:

$$ROG_i = \frac{N_i}{N_i + N_T} P^{5\%}(OG_i) + \frac{N_T}{N_i + N_T} P^{5\%}(OG_{EU})$$

where  $P^{5\%}(OG_i)$  and  $P^{5\%}(OG_{EU})$  represent the fifth percentile of the distribution of the country-specific and EU common output gap series, respectively.  $N_i$  stands for the number of country-specific observations since EU membership, whereas  $N_T$  refers to the available observations at EU level, respectively over a 25-year rolling time window (i.e.  $N_T$  was set at 25). The relative weights of the country-specific and common components in the equation could differ across Member States due to limited data availability (for instance for the more recently acceded Member States).

**Outliers were removed for the calculation of the ROG.** The percentile of the country-specific and EU common components were calculated after deleting outlier values. These were defined as observations below the 2.5% and above the 97.5% percentiles of the entire EU sample of output gaps, i.e. considering all the available observations for Member States in the past 25 years. In addition, the most negative output gap value of each Member State recorded between 2009 and 2010 was also removed from the country-specific series, as the Great Recession years cannot be considered as *normal* negative cyclical fluctuations.

### New methodology

**In February 2019, the EFC agreed on a new methodology.** The Commission prepared several options to address design flaws of the 2006 methodology and discussed them with Member States. The new methodology for calculating the MBs in the fiscal surveillance process was agreed by the EFC on 1 February 2019. It will be used to assess budgetary positions from 2020 onwards.

<sup>(23)</sup> The size of the fiscal semi-elasticity depends on non-cyclical government expenditure (as a share of potential GDP), the size of cyclical unemployment benefits and the progressivity of the tax system; see Moure et al. (2019); Moure and Poissonnier (2019).

**The new methodology addresses design flaws in the measurement of past business cycle volatility.** The new MB methodology addresses two design flaws of the 2006 methodology: (i) the MB had become more stringent and volatile for most Member States and (ii) there was no longer any correlation between the MB and the country-specific volatility of the economic cycle <sup>(24)</sup>.

**Under the new methodology, the minimum benchmark is calculated as follows:**

$$MB_i = -3 + 1.2 \frac{stdev(\varepsilon_i * OG_i) + stdev(\varepsilon_{EU} * OG_{EU})}{2}$$

subject to  $-0.7 \geq MB_i \geq -1.5$

This implies that the safety margin with respect to the 3% of GDP deficit reference value is now calculated as the simple average of the standard deviation of the country-specific and EU common cyclical components of the budget balance since 1985 multiplied by a coefficient of 1.2. That coefficient was chosen to ensure that the new methodology did not lead to a significant loosening of the MBs relative to the 2006 methodology. The new methodology includes an MB floor of -1.5% and a MB ceiling of -0.7% to avoid excessively lenient or stringent MBs <sup>(25)</sup>.

#### Assessment of the new methodology

**The new methodology has two key benefits: First, it ensures stability.** The new methodology is more stable as it is based on a longer time window. It is also less sensitive to outliers, since it is based on the standard deviation rather than the 5<sup>th</sup> percentile of the distribution.

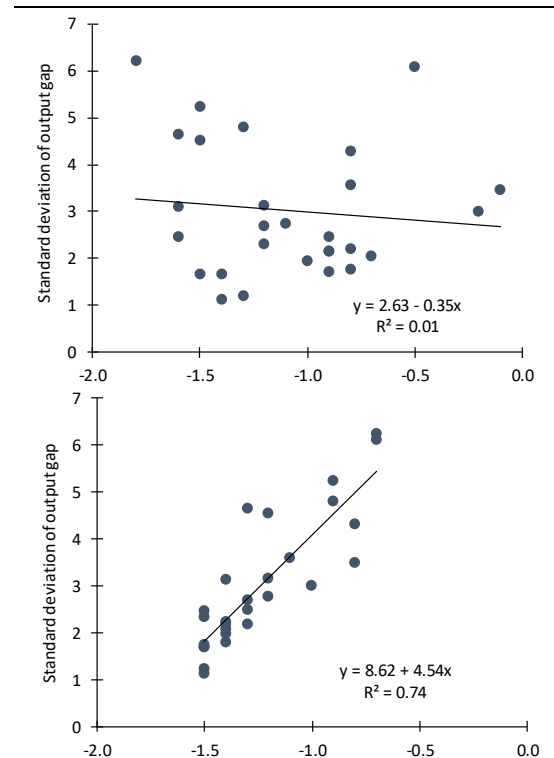
**Second, it ensures a positive correlation between the minimum benchmark and the volatility of the economic cycle** (Graph I.2.1).

<sup>(24)</sup> Those flaws were related to two factors. First, the gradual incorporation of the significant negative output gaps recorded during the Great Recession in the 25-year rolling time window led to a significant downward adjustment of the ROG and the minimum benchmark. That tightening appeared unwarranted, as these negative output gaps were clearly not representative of normal cyclical conditions. Second, the fact that the output gap outliers were trimmed using the entire EU sample implied that the negative output gap outliers (those below the 2.5% percentile) trimmed at EU level were those recorded in a small number of Member States, especially in Greece.

<sup>(25)</sup> The corridor corresponds to the EU average for the MB when using 1 and 1.5 standard deviations of the cyclical component of the budget balance, respectively.

The new methodology exhibits a positive relationship between the minimum benchmark and the volatility of the economic cycle for two reasons: First, the volatility of the cycle, as measured by the standard deviation of the output gap, is one of the main determinants of the new MB methodology. Second, the new methodology assigns a higher weight on average to the country-specific component relative to the 2006 methodology.

Graph I.2.1: Correlation between the volatility of the output gap and the minimum benchmarks (2006 vs. new methodology)



**The new methodology ensures broadly similar MBs for 2020 for the EU on average, but significant differences exist for some Member States** (Table I.2.1). While the impact of the change in methodology is modest for the EU on average, there are more sizeable differences for some Member States. In particular, the MB has tightened significantly in Greece, as outliers are no longer removed from the calculation. In general, there has been a tightening of MBs in Member States with greater past output volatility and a

loosening in Member States with less volatile economies <sup>(26)</sup>.

### New minimum benchmarks for 2020

The MBs for 2021 are largely unchanged compared to 2020 (Table I.2.1). The updated results for 2021 are largely unchanged confirming one of the key benefits of the new methodology, namely the greater stability of the results.

Table I.2.1: Minimum benchmarks under the 2006 and new methodology

Year	2020			2021	
	old (2006)	new (2020)	Difference old vs. new	new (2020)	Difference 2001 vs. 2000
	(a)	(b)	(c=b-a)	(d)	(e=d-b)
BE	-1.3	-1.5	-0.2	-1.5	0.0
BG	-1.6	-1.3	0.3	-1.3	0.0
CZ	-1.6	-1.5	0.1	-1.5	0.0
DK	-0.9	-1.3	-0.4	-1.3	0.0
DE	-1.5	-1.5	0.0	-1.5	0.0
EE	-0.5	-0.7	-0.2	-0.7	0.0
IE	-1.1	-1.2	-0.1	-1.2	0.0
EL	-1.8	-0.7	1.1	-0.7	0.0
ES	-0.1	-0.8	-0.7	-0.9	-0.1
FR	-0.8	-1.4	-0.6	-1.4	0.0
HR	-1.2	-1.2	0.0	-1.2	0.0
IT	-0.7	-1.4	-0.7	-1.4	0.0
CY	-0.8	-0.8	0.0	-0.8	0.0
LV	-1.5	-0.9	0.6	-0.9	0.0
LT	-1.3	-0.9	0.4	-0.9	0.0
LU	-1.2	-1.3	-0.1	-1.3	0.0
HU	-1.2	-1.5	-0.3	-1.4	0.1
MT	-1.4	-1.5	-0.1	-1.5	0.0
NL	-0.9	-1.5	-0.6	-1.5	0.0
AT	-1.4	-1.5	-0.1	-1.5	0.0
PL	-0.8	-1.4	-0.6	-1.4	0.0
PT	-0.9	-1.3	-0.4	-1.2	0.1
RO	-1.5	-1.2	0.3	-1.4	-0.2
SI	-0.8	-1.1	-0.3	-1.1	0.0
SK	-1.6	-1.4	0.2	-1.4	0.0
FI	-0.2	-1.0	-0.8	-1.1	-0.1
SE	-0.9	-1.4	-0.5	-1.4	0.0
EU27	-1.1	-1.2	-0.1	-1.2	0.0
St.dev.	0.4	0.3	0.1	0.3	0.0
UK	-1.0	-1.4	-0.4	-1.4	0.0

Minimum benchmarks will continue to be updated on an annual basis. Given their importance for the fiscal surveillance process, MBs are scheduled to be updated every year <sup>(27)(28)</sup>.

<sup>(26)</sup> Four Member States are impacted by the floor of -1.5% (AT, BE, DE and MT) while two Member States are affected by the ceiling of -0.7% (EE and EL).

<sup>(27)</sup> MBs are an eligibility condition for granting access to the structural reform and investment clause in the preventive arm of the SGP.

<sup>(28)</sup> While the MB is updated on an annual basis, its contribution to the minimum MTO is only updated every 3 years along with the other minimum MTO components.

### 2.3. NEW MINIMUM MEDIUM-TERM BUDGETARY OBJECTIVES

The updated minimum MTOs reveal three features (Table I.2.2). The minimum MTO results for the period 2020-2022 incorporate up-to-date projections for ageing costs from the Commission's 2018 Ageing Report <sup>(29)</sup> and MBs for 2020 computed with the new methodology described earlier.

**First, for most Member States, the new minimum MTO is the same or more stringent than before.** Compared to the minimum MTOs for 2017-2019, the new minimum MTOs are unchanged for 10 Member States (AT, CY, DK, ES, FI, FR, LT, LV, NL and SK), more stringent for 9 Member States (BE, BG, CZ, EE, HR, IT, LU, HU and RO) and less stringent for 7 Member States (DE, IE, MT, PL, PT, SI and SE). In the case of Greece, the calculation of the minimum MTO for 2020-2022 is the first since Greece exited the ESM Stability Support Programme.

**Second, the implicit liabilities and debt component is the most demanding component for most Member States.** The most binding component is the implicit liabilities and debt component for 13 Member States (AT, BE, BG, CY, CZ, DE, EL, HU, IT, LU, MT, PT and SI), followed by the minimum benchmark for 9 Member States (EE, ES, FI, HR, LV, LY, PL, SE and RO) and the lower limit of -1% of GDP for euro area and ERM II Member States for 5 Member States (DK, FR, IE, NL and SK) <sup>(30)</sup>.

**Finally, the majority of Member States have set a more demanding MTO than required by their minimum MTO.** The majority of Member States have set their current MTOs for 2020-2022 at levels that are more demanding than required by their minimum MTOs. This is partly due to Member States that are signatories of the Fiscal Compact, which in many cases requires setting an MTO above the minimum MTO <sup>(31)</sup>. However, it also confirms that the minimum MTO is not a recommendation of a medium-term budgetary target but rather a lower bound to ensure sustainable public finances.

<sup>(29)</sup> European Commission (2018b).

<sup>(30)</sup> As the minimum MTOs are rounded to the less stringent quarter, a number of MS are in practice equally constrained by two or more components.

<sup>(31)</sup> Bulgaria and Croatia have chosen a more demanding MTO because they aim to join the ERM2.

Table I.2.2: Updated minimum MTOs for 2020-2022

Country	Old minimum MTO 2017-2019	Minimum MTO 2020-2022	Binding factor*	MTO set for 2020-2022	Applicability of the Fiscal Compact**
BE	-0.50	0.00	ILD	0.00	Yes
BG	-2.25	-1.25	ILD	-1.00	Yes
CZ	-1.50	-0.75	ILD	-0.75	No
DK	-1.00	-1.00	EA-ERM2	-0.50	Yes
DE	-0.50	-1.00	ILD	-0.50	Yes
EE	-1.00	-0.75	MB	-0.50	Yes
IE	-0.50	-1.00	EA-ERM2	-0.50	Yes
EL***	NA	0.25	ILD	0.25	Yes
ES	-1.00	-1.00	MB	0.00	Yes
FR	-1.00	-1.00	EA-ERM2	-0.40	Yes
HR	-1.75	-1.25	MB	-1.00	No
IT	-0.50	0.50	ILD	0.50	Yes
CY	-1.00	-1.00	ILD	0.00	Yes
LV	-1.00	-1.00	MB	-1.00	Yes
LT	-1.00	-1.00	MB	-1.00	Yes
LU	-1.00	0.50	ILD	0.50	Yes
HU	-1.50	-1.00	ILD	-1.00	No
MT	-0.50	-1.00	ILD	0.00	Yes
NL	-1.00	-1.00	EA-ERM2	-0.50	Yes
AT	-0.75	-0.75	ILD	-0.50	Yes
PL	-1.25	-1.50	MB	-1.00	No
PT	0.25	0.00	ILD	0.00	Yes
RO	-1.75	-1.25	MB	-1.00	Yes
SI	0.25	-0.25	ILD	-0.25	Yes
SK	-1.00	-1.00	EA-ERM2	-1.00	Yes
FI	-1.00	-1.00	MB	-0.50	Yes
SE	-1.25	-1.50	MB	-1.00	No
UK	-0.75	-0.50	ILD	-0.50****	No

Notes: Those values represent a lower bound for the MTOs to be nominated by Member States in their SCPs. In order to promote ownership of the MTOs, it is up to each Member State to choose an MTO that reflects its individual needs.

\* Binding factor refers to the component that gives rise to the most demanding value for the minimum MTO (ILD = lower bound taking into account implicit liabilities and debt; EA-ERM2 = lower bound for euro area or ERM2 Member States; MB = minimum benchmark).

\*\* Contracting parties that are bound by the Fiscal Compact. They are subject to more stringent MTO-related requirements than the one envisaged in the SGP. A limit of -0.5% of GDP is required except for Member States with debt significantly below 60% of GDP and where risks in terms of long-term sustainability of public finances are low, in which case a limit of -1.0% is possible.

\*\*\* MTO to be set for the first time since the economic adjustment programme.

\*\*\*\* For the UK this is based on the minimum MTO since the MTO has not been set in the convergence programme.

## 2.4. CONCLUSIONS

**This Chapter presents the updated values of the minimum MTO and one of its key components, the minimum benchmark.** The minimum benchmark was revised applying a new methodology, which was agreed by the Economic and Financial Committee (EFC) in February 2019. The revised minimum benchmarks and MTOs will be used in the fiscal surveillance process to assess budgetary positions from 2020 onwards. The minimum MTOs were updated for the period 2020-2022 in line with the regular institutional calendar.

**The new minimum benchmarks are similar to those computed with the old methodology for the EU on average, but significant differences exist for some Member States.** The new MB methodology addresses two flaws of the 2006 methodology. Specifically, the 2006 methodology showed a great deal of instability from one year to another and there was no longer any correlation with the country-specific volatility of the economic cycle. While the impact of the change in methodology is modest for the EU on average, there are more sizeable differences for some Member States. In general, with the new methodology, there has been a tightening of MBs in Member States with greater past output volatility and a loosening in Member States with less volatile economies. This is a desirable feature for a safety margin. Incidentally, by removing the two-step calculation and using a well-established statistical concept (standard deviation), the new methodology has provided a marginal simplification to the EU fiscal rules.

**For most Member States, the new minimum MTO is the same or more stringent than before.** The majority of Member States have set a more demanding MTO than required by their minimum MTO.

# 3. LATEST DEVELOPMENTS IN SPENDING REVIEWS FOR THE EURO AREA

## 3.1. BACKGROUND

**This chapter reviews the latest developments in spending reviews, which can be an effective way of fostering sustainable growth.** In times of stretched public finances and low potential growth, it is essential to improve the composition and efficiency of public expenditure in order to make fiscal policies as growth-friendly as possible <sup>(32)</sup>. Spending reviews can provide in-depth insights into budget allocations. If well-designed and rigorously-implemented, they can be an effective means of boosting high-quality public spending and enhance sustainable growth. They can make room for more investment by suppressing or reducing non-priority expenditure items, and their scrutiny of expenditure items can also improve the value for money of investment programmes <sup>(33)</sup>.

**The Eurogroup encouraged the use of spending reviews in 2016** <sup>(34)</sup>. In September 2016, the Eurogroup endorsed a set of common principles for improving expenditure allocation. They called for (i) a strong and sustained political commitment throughout the entire spending review process; (ii) using best practices in the design and implementation phases of the review; (iii) the need for continuous monitoring and communicating on progress; and (iv) consistency with the budgetary cycle. On those grounds, the Eurogroup invited its preparatory committees and the Commission to develop a work stream on the exchange of best practices and lessons learned on spending reviews.

## 3.2. COMMISSION SURVEY ON SPENDING RULES

### General results of the survey

**According to a 2019 Commission survey, spending reviews are increasingly used in the euro area, mostly to improve the quality of public services** <sup>(35)</sup>. A 2019 Commission survey

points to a wider use of spending reviews than in the past, with 46 reviews reported in the questionnaire, up from the 30 spending reviews reported in 2017. In some cases, those reviews are said to be conducted as part of regular or multiannual processes. Most reviews focus on specific spending items, such as social and educational programmes, healthcare or public services, while only one review in six covers all public expenditure, or a large share of it. A major objective for those reviews is to improve the quality of public services and promote spending reallocation to other or new policies, followed by fiscal consolidation and growth-enhancing goals.

**The survey points to some progress in the conduct of those reviews in 2019 compared to 2017, but challenges remain.** Political commitment is stronger than in 2017, although it is weaker in the implementation phase. New forms of coordination are being developed, with greater use of a permanent coordination unit or task force. Although the use of fact-based analyses still seems to be limited, diagnoses are increasingly based on comprehensive analyses. Monitoring and evaluation are still weak, but media coverage is quite frequent, focusing mainly on reform decisions. Only a minority of euro area Member States report that they have incorporated decisions from spending reviews into their budget planning. The practice of spending reviews is well-established in law and/or in administrative processes in only a few Member States. Finally, compared to 2017, more attention seems to be given to growth and equity concerns, as well as to satisfaction among the general public, in particular when developing reform options.

**Some reviews are already bearing fruits.** As implementation is still ongoing, the results are not yet tangible for most reviews. Only 24 reviews are at a result phase, and the objectives could be said to have been met for only 3 of these, since the implementation of proposed reforms is still under way for many of the others. Nonetheless, interesting reforms have already emerged from the spending review exercise in some Member States.

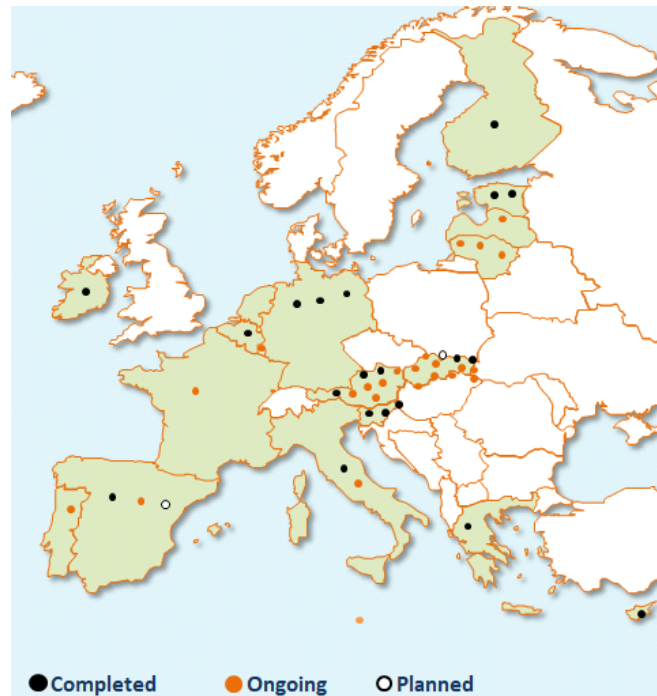
<sup>(32)</sup> Afonso et al. (2005), Cepparulo and Mourre (2020).

<sup>(33)</sup> Vandierendonck (2014).

<sup>(34)</sup> European Council (2016).

<sup>(35)</sup> European Commission (2019a).

Graph I.3.1: Overview of spending reviews (euro area, 2019)



Note: The graph indicates the number of spending reviews reported in the 2019 survey by Member States (for 18 euro area Member States). Reviews are said to be 'completed' if reform options have been presented or implemented by April 2019, and finished over the past 2 years. They are 'ongoing' if the scrutiny of expenditure items is conducted, and 'planned' if a mandate has been issued but the examination of expenditure items has not started.  
**Source:** European Commission survey 2019.

**Examples for interesting reforms are:**

- centralised procurement systems in Italy, Portugal and Spain;
- the creation of an enterprise gateway for enterprises and more resources to support innovation in Estonia;
- reform of the care insurance scheme (*assurance dépendance*) and merging of public research institutions in Luxembourg;
- reduced electricity costs for the Greek government and improvements in the use of land;
- improved maintenance of water pipes in Cyprus and;
- more equitable allocation of resources to regional schools in Slovakia.

**The survey points out that there is still much to be done to better align spending review practices with common principles.** Commitment

during the implementation phase of spending reviews is particularly weak, with many respondents indicating as major challenge during the implementation the absence or lack of clarity of decisions from the political level. Further, implementation would strongly benefit from a larger use of roadmaps, as recommended in the Eurogroup common principles, which would provide guidance and predictability in carrying out the reforms. Monitoring and evaluation are still lacking and when they are carried out, they focus mostly on processes while failing to assess the impact of these reviews on outcomes. When an assessment of outcomes could be provided, in most cases, objectives are said to be met only to a limited extent. Furthermore, the link with budgetary process continues to be weak, while institutionalising spending reviews within the budgetary process proves to enhance their success and can have a positive impact on budget preparation as well. Challenges remain as regards availability of data, resources (in terms of both



### Box 1.3.1: Key features for effective spending reviews

**Asked what was particularly effective in their spending reviews, Member States pointed to some important elements that help make them more successful.**

**Commitment:** High-level political ownership was particularly important, as was the communication of the mandate, seen as a major factor in building internal and external support.

**Open discussions with stakeholders:** Discussions with all stakeholders from the outset of the process are a key factor to the effectiveness of spending reviews, as they can encourage stakeholders to think ‘outside the box’. Line ministries and stakeholders should be encouraged to propose changes, with no limits on the number of proposals or the size/type of measure: *‘no measure is too small to be rejected’*.

**Empowering line ministries:** It is key to secure the engagement of line ministries early in the process using a cross-departmental approach, and to grant them some room for manoeuvre in the process. In Germany, a collaborative process where line ministries had to work jointly turned out to be beneficial for the entire review, encouraging an open and fair exchange of views and a common search for solutions. In Finland, cooperation between line ministries and the Ministry of Finance was said to be quite effective and boosted awareness of the detailed items of the government budget.

**Independence and diversity of the task force conducting the review:** The independence of the task force is key to the process and, to this end, it is particularly important not to pre-set any results, so as to fully transfer the ownership of the exercise to those involved. In practice, it helps to have external and independent stakeholders with a clear mandate to propose measures without necessarily taking into account the official view of the institutions. Having a variety of skills, and members from the academic and business worlds, along with top civil servants, enriches the outcomes of the task force.

**A roadmap with deadlines and a multiannual perspective.** Having a well-planned roadmap with a calendar for regular meetings and tight deadlines seems to have been a major recipe for success. Strategically aligning the publication of spending review papers with the annual budgetary process was effective in terms of providing evidence to inform the negotiation process.

**Conditions for generating results:** Other success factors are:

- (i) joint treatment of policy design and implementation considerations, selecting what to scrutinise based on what could be feasible to reform;
- (ii) use of accounting data and cross-cutting of multiple databases to feed into concrete proposals with an impact assessment; and
- (iii) reviewing performance indicators during the evaluation.

skills and staff) and time for the proper conduct of spending reviews.

#### Specific case of investment-oriented spending reviews

**Spending reviews designed to improve the efficiency of public investment are quite relevant for the euro area, given its overall limited fiscal space and high investment needs.**

Council recommendations on the economic policy in the euro area emphasise the importance of investment –both public and private– in the context of effective and efficient public expenditure <sup>(36)</sup>. More recently, the Eurogroup has politically agreed on the main features of the budgetary instrument for convergence and competitiveness (BICC) for the euro area <sup>(37)</sup>,

<sup>(36)</sup> European Commission (2017b).

<sup>(37)</sup> European Council (2019).

which is part of a larger package that aims to promote structural reforms and public investment. As the BICC takes shape, there is a collective interest in the euro area in reviewing and improving the performance of private and public investment, in particular with a view to boosting innovation, competitiveness and convergence.

**To date, there are few spending reviews designed to improve investment.** Ireland has recently conducted a comprehensive revision of its capital stock, through the 2016-2021 Capital Plan Review<sup>(38)</sup>. Based on submissions from ministries and stakeholders, that review identifies priorities for future capital spending. The exercise was also supported by an assessment by the Irish Government Economic and Evaluation Service on the adequacy of the current capital stock. In 2016, Slovakia launched a review of its transport infrastructure, which identified a series of shortcomings in the sector, including lack and inaccuracy of data, poor conditions for roads and railways and lack of coherence between different modes of transport<sup>(39)</sup>. The review recommended improved project evaluation, through better data gathering and disclosure, and cost-benefit analyses.

**Some specific features of investment need to be borne in mind when conducting spending reviews for public investment**<sup>(40)</sup>. First, since capital spending means changes in assets, an examination of the stocks is warranted<sup>(41)</sup>. Unlike current spending, investment relates to both stocks and flows. Looking at stocks raises besides those commonly examined for current spending, including ownership, maintenance and depreciation of the stock. Second, investment has a time dimension, as it usually spans over a number

of years. An investment programme or project typically involves several phases: planning, financing, implementation or execution, and evaluation<sup>(42)</sup>. The focus of a review tends to change along those phases. While the bulk of financing decisions are taken at the planning phase, many changes also occur during implementation, with financing being possibly increased or reduced, and at times some projects that are part of the programme sometimes even being abandoned. Finally, investment yields medium- to long-term economic and social returns. Since those returns, and the entire project execution, entail some risks, performance budgeting should be extended to include an assessment of returns and risks.

### 3.3. CONCLUSIONS

**In brief, spending reviews can promote sustainable growth if well-designed and rigorously implemented.** Spending reviews are increasingly used in euro area Member States. As the 2019 Commission survey shows, the conduct of those reviews seems to have improved compared to 2017. Political commitment appears stronger, and governments are setting up new types of coordination unit to manage the spending review process. There is still room for improvement in implementation, through the development of roadmaps and a stronger political commitment. Also, a more frequent monitoring focused on results as well as process would enhance the effectiveness of the reviews. Spending reviews can also be a means of boosting good-quality public investment. A spending review for investment could improve the performance of private and public investment in the euro area.

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<sup>(38)</sup> Irish Government Economic and Evaluation Service (2017).

<sup>(39)</sup> Slovak Ministry of Finance (2016).

<sup>(40)</sup> Public investment is expressed by gross fixed capital formation, namely government acquisitions, less disposal, of tangible and non-tangible assets. Tangible assets include dwellings, other buildings and structures, machinery and equipment, and cultivated biological resources. Intangible assets comprise R&D, computer software and databases, intellectual property rights, entertainment and literary originals. Its expenditure category counterpart is capital expenditure, and more precisely investment expenditure, which includes gross capital formation, plus acquisitions less disposals of non-produced non-financial assets.

<sup>(41)</sup> European Commission (2019b).

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<sup>(42)</sup> European Commission (2017b).

## 4. AUTOMATIC STABILISERS IN EUROPE – AN OVERVIEW

### 4.1. INTRODUCTION

**Fiscal policy can make an important contribution to stabilising the economy, in particular in times of constrained monetary policy.** The 2007-2008 economic and financial crisis has revived the debate on the importance of fiscal policy as a tool for stabilising economic activity in times of deep crisis. The current low interest rate environment and impaired monetary transmission channel have spurred renewed interest in the cushioning role of fiscal policy.

**There are two ways to conduct countercyclical fiscal policy** <sup>(43)</sup>.

**First, automatic stabilisers can help smooth cyclical fluctuations at unchanged policies.** They work through automatic countercyclical changes in tax revenues and government expenditure, based on the rules built into the tax and transfer system at unchanged legislation. During economic downturns, tax revenues (mainly income taxes) decline, while government expenditure rises (particularly due to unemployment benefits). This supports income, consumption and GDP and worsens the government budgetary position. Conversely, during booms, tax revenues rise, while government spending tends to decline. This has a curtailing effect on income, demand and GDP, and improves the government budgetary position. The crucial question is whether automatic stabilisers can deliver a significant degree of output stabilisation, especially in the event of large shocks.

**Second, discretionary fiscal policy measures can be designed in a countercyclical manner to smooth output fluctuations.** When used in a timely and targeted fashion, discretionary action can play an important role in stabilising the economy following a large negative shock, especially if monetary policy is constrained by the effective lower bound. In practice, however, effective implementation of discretionary measures

can face a number of obstacles, including implementation lags, procyclical bias, and/or poorly targeted measures. Furthermore, discretionary measures are not automatically reversed when the economic cycle improves, which may be a potential source of future fiscal imbalances. These measures should therefore only be used in case of clearly identified needs (e.g. in the event of large shocks) and when there is sufficient fiscal space, to prevent risks to the sustainability of public finances.

**This chapter reviews the size of automatic stabilisers in the European Union** <sup>(44)</sup>. Section 4.2. reviews the literature on the size of automatic stabilisers. Finally, Section 4.3. summarises the main findings.

### 4.2. HOW SIZEABLE ARE AUTOMATIC STABILISERS IN EUROPE?

**Two main approaches have been used in the literature to analyse the effectiveness of automatic stabilisers.** The first, microeconomic-based, approach analyses the stabilisation properties of the tax and benefit system using micro, i.e. household, data. This approach focuses on the *direct* stabilisation effect on disposable income and consumption. This literature typically assumes a certain shock to market income (i.e. before taxes and benefits) and quantifies the direct stabilisation effect of the tax and benefit system on household disposable income and consumption using a microsimulation model <sup>(45)</sup>. The second, macroeconomic-based, approach concentrates instead on the *total*, i.e. *direct* and *indirect* stabilisation properties based on macro data. It focuses on the stabilisation effect on GDP and its components, taking into account

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<sup>(43)</sup> Mohl et al. (2019).

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<sup>(44)</sup> We examine the case of Italy, since it represents a large EU economy with a size of automatic stabilisers close to the EU average and good data availability. The implications of high pension expenditure in Italy and of the degree of tax compliance are not analysed in this chapter but are interesting avenues for future work.

<sup>(45)</sup> Knieser and Ziliak (2002), Auerbach (2009).

behavioural responses (affecting for instance labour supply or consumption decisions) and macroeconomic feedback (e.g. affecting inflation, GDP or employment) <sup>(46)</sup>.

**Microeconomic studies find that the tax and benefit system automatically smooths around 30-50% of the loss in disposable income for the EU as a whole, with sizeable differences across Member States.** Dolls et al. (2012) find that in the EU the tax and benefit system absorbs 38% of the effects of an income shock and 47% of the effects of an unemployment shock on disposable income <sup>(47)</sup>. The effects on household demand are 4-22% for an income shock and 13-30% for an unemployment shock, depending on assumptions on liquidity constraints. The authors also find substantial heterogeneity within the EU, with automatic stabilisers in eastern and southern Europe being considerably smaller than in central and northern European countries. Using a similar micro approach, the European Commission (2017a) concludes that in the EU on average around 33% of a shock to market income is absorbed by the tax and benefit system and hence not transmitted to disposable income <sup>(48)</sup>.

**Macroeconomic studies find that the tax and benefit system stabilises up to 30% of GDP fluctuations in Europe as a whole, with sizeable differences existing across Member States.** Barrell and Pina (2004) find that automatic stabilisers smooth output by 11% in the euro area, while the study by Barrell et al. (2002) finds a value of 9% <sup>(49)</sup>. Van den Noord (2000) reports a degree of smoothing effectiveness between 25% and 30%, while in 't Veld, Larch and Vandeweyer (2013) estimate that automatic stabilisers smooth economic fluctuations by 13-27% <sup>(50)</sup>. Estimates for individual Member States are also wide-ranging. For example, Brunila et al. Veld (2003) find for a sample of EU countries that the smoothing capacity of automatic stabilisers is in the 20-30% range for a consumption shock, and 3-10% for an investment shock <sup>(51)</sup>. Buti et al. (2002) find a value of 14% for Belgium and 22%

<sup>(46)</sup> McKay and Reis (2016a, b).

<sup>(47)</sup> Dolls et al. (2012).

<sup>(48)</sup> European Commission (2017a).

<sup>(49)</sup> Barrell and Pina (2004), Barrell et al. (2002).

<sup>(50)</sup> van den Noord (2000), in 't Veld et al. (2013).

<sup>(51)</sup> Brunila et al. (2003).

for France, while Tödter and Scharnagl (2004) estimate a degree of stabilisation of up to 26% for Germany <sup>(52)</sup>. The European Commission (2017) concludes that automatic stabilisers smooth around 6% of GDP fluctuations for a combination of productivity and export shocks in Italy.

**Overall, automatic stabilisers appear larger in the EU than in the US.** Based on a microeconomic approach, Dolls et al. (2012) find that in the US automatic stabilisers absorb 32% of the effects on disposable income of an income shock (38% in the EU) and 34% of an unemployment shock (47% in the EU). Using a macroeconomic approach, Cohen and Follette (2000) conclude that automatic stabilisers dampen only about 10% of the effect of aggregate demand shocks on US real GDP. McKay and Reis (2016) find that stabilisers have had little effect on the volatility of output and hours worked in the US but have lowered the volatility of aggregate consumption <sup>(53)</sup>.

**Several factors explain the differences in the estimated size of automatic stabilisers.** These include:

- **Direct versus total effects (micro- and macro-based approach):** Overall, automatic stabilisers tend to be larger in the microeconomic than in the macroeconomic approach. This is because the microeconomic approach focuses on the *direct* stabilisation effect of the tax and benefit system on household income and consumption. The macroeconomic approach tries to capture the *total* stabilisation effect by considering also *indirect* effects from behavioural responses and macroeconomic feedback effects, which appear to weigh on growth and thereby reduce the degree of stabilisation <sup>(54)</sup>.

<sup>(52)</sup> Buti et al. (2002), Tödter and Scharnagl (2004), Wijkander and Roeger (2002).

<sup>(53)</sup> Cohen and Follette (2000), McKay and Reis (2016a).

<sup>(54)</sup> For instance, higher social transfers or taxes can weaken incentives to work and to invest in skills and increase unemployment (Conesa and Krueger 2006). In addition, high debt can weigh on growth (Chudik et al. 2017) and/or expose the economies to risk of deeper recessions (Jorda et al. 2016), while fiscal policy can also mitigate skill degradation in a depressed economy (DeLong and Summers 2012).

- **Degree of progressivity** (*micro- and macro-based approach*): The degree of labour tax progressivity is an important factor affecting the smoothing capacity of automatic stabilisers. The stabilising effect of taxes will be greater the higher the tax rates applied and the more progressive the income tax schedule.
- **Share of liquidity (un-)constrained households** (*micro- and macro-based approach*): Liquidity-constrained households cannot save or borrow against future income variations, and therefore cannot smooth their consumption over the cycle. As a consequence, the effectiveness of automatic stabilisers will be higher in economies with a larger share of liquidity-constrained households.
- **Nature of shocks** (*macro-based approach*): Automatic stabilisers are generally found to be relatively powerful in the event of shocks to private consumption, but less so in the case of shocks to private investment and exports. For supply side shocks, the effectiveness of automatic stabilisers is considerably reduced <sup>(55)</sup>.

**Choice of the counterfactual benchmark scenario in macroeconomic models** (*macro-based approach*): The choice of the counterfactual benchmark scenario against which the functioning of automatic stabilisers is compared in macroeconomic models matters for the size of automatic stabilisers <sup>(56)</sup>. If the benchmark scenario is defined as a budget where expenditure and revenues are fixed in levels, changes in the level of taxation and unemployment benefits are seen as automatically stabilising. Since unemployment benefits represent a relatively small share of total public spending, the bulk of stabilisation is associated with the revenue side of the budget. On the other hand, if the benchmark budget is defined as one where revenue and expenditure are constant as a share of GDP, automatic stabilisation mainly stems from progressive taxation and the size of government, particularly from the fact that the bulk of government expenditure does not respond to cyclical fluctuations.

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<sup>(55)</sup> Brunila et al. (2003).

<sup>(56)</sup> in 't Veld et al. (2013).

#### 4.3. CONCLUSIONS

**This chapter shows that automatic stabilisers can play an important role in reducing business cycle fluctuations.** A review of the literature shows that the tax and benefit system absorbs around 30-50% of the loss of household disposable income and up to 30% of GDP in the EU on average. However, sizeable differences exist across Member States. Overall, automatic stabilisers appear larger in the EU than in the US.

Table I.4.1: **Size of automatic stabilisers – overview of the literature**

Study	Approach	Type of shock and sample	Benchmark	Variable	Size of automatic stabilisation (percentage smoothing)
Cohen and Follette (2000)	Macro	Demand shock US	Fixed level of revenues	Output	10%
van den Noord (2000)	Macro	Combination of shocks over the 1990s 19 OECD countries	Fixed ratios of revenues and expenditure	Output	25-30%
Buti et al. (2002)	Macro	Combination of demand and supply shocks	Fixed ratio of fiscal balance	Output	Belgium: 14% France: 22%
Barrell et al. (2002)	Macro	All 1993q1 shocks Euro area	Fixed levels of revenues and expenditure	Output	9%
Brunila et al. (2003)	Macro	Consumption and investment shock EU	Fixed level of fiscal balance	Output	Consumption shock: 20-30% Private investment shock: 3-10%
Barrell and Pina (2004)	Macro	All 1993q1 shocks Euro area	Fixed levels of revenue and expenditure	Output	11% on average
Tödter and Scharnagl (2004)	Macro	Consumption and investment shock Germany	Fixed level of fiscal balance	Output	Consumption shock: 18-26% Investment shock: 10-15%
Dolls et al. (2012)	Micro	Income and unemployment shock EU	/	Disposable income Demand	Income shock: disposable income: 38%; demand: 4-22% Unemployment shock: disposable income: 46%; demand: 13-30%
in 't Veld et al. (2013)	Macro	Combination of shocks to consumption, export demand and risk premia (2009 shocks) Euro area	Fixed levels of revenues and expenditure Fixed ratios of revenues and expenditure	Output	Fixed levels of revenue and expenditure: 13% Fixed ratios of revenues and expenditure: 27%
McKay and Reis (2016b)	Macro	US	Fixed levels of revenues and expenditure	Output Consumption	Output volatility: close to 0 Consumption volatility: -12.3%
European Commission (2017a)	Micro/ macro	Micro: Income shock Macro: Combination of productivity and export shocks	Fixed levels of revenues and expenditure	Disposable income Output	Disposable income (micro): 33% Output (macro): around 6%

# 5. ROLE OF PUBLIC FINANCES IN THE TRANSITION TO A CLIMATE-NEUTRAL AND HEALTHY PLANET

## 5.1. INTRODUCTION

With the European Green Deal, the Commission stated the ambition for the EU to lead the transition to a ‘climate-neutral and healthy planet’<sup>(57)</sup>. This includes an endorsement of the objective of climate neutrality by 2050, which will be enshrined into a European Climate Law. The speed of the carbon emission reductions is to be stepped up. By autumn 2020, the Commission will present a plan to increase the EU’s greenhouse gas emission reductions target for 2030 from the current 40% to at least 50% and towards 55% in a responsible way. A high level of ambition in other environmental domains (e.g. biodiversity, air pollution, circular economy, and plastics) will be translated into further policy measures. Addressing this challenge will require investments and behavioural change by citizens, firms and institutions. The transition could be around the globe, facilitated by technological progress. The global nature of the externality requires coordinated action and international governance systems<sup>(58)</sup>.

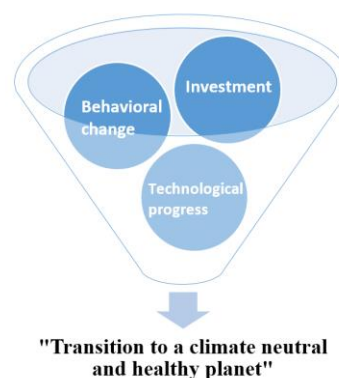
This chapter provides an overview of the fiscal policy dimension of the European Green Deal. Section 5.2. presents tools for public finances to support the climate and environmental transition. Section 5.3. discusses implications and challenges of the transition for the EU fiscal governance framework. Finally, Section 5.4. concludes.

## 5.2. TOOLS FOR PUBLIC FINANCES TO SUPPORT THE CLIMATE AND ENVIRONMENTAL TRANSITION

Public finances will be subject to significant challenges on account of climate change but, equally, will play a central role in the climate transition. On the one hand, the transition may imply higher public expenditure. Risks to the sustainability of public finances may increase as a result of the projected surge in losses resulting

from extreme weather events<sup>(59)</sup>, while the climate transition will require substantial public investments. Social and compensatory policies will also be needed to help citizens, regions and industries that will be particularly negatively affected. Moreover, climate adaptation investments will weigh on government finances in the short and medium run, while reducing risks and costs of climate change in the longer run. On the other hand, transition policies may raise revenues and reduce expenditure. Carbon pricing instruments such as higher carbon taxes, increased use of emissions trading schemes and reductions in harmful subsidies, may raise revenues and reduce expenditures by phasing out fossil fuel subsidies.

Graph I.5.1: Schematic overview of the transition to a climate-neutral and healthy planet



Carbon pricing is an essential element of the policies to reduce greenhouse gas emissions as distorted price signals, together with economic growth, are at the origin of the harmful rapid rise of emissions<sup>(60)</sup>.

<sup>(57)</sup> European Commission (2019c).

<sup>(58)</sup> Nordhaus (2019) discusses the economics of climate change, addressing the climate-change externality – its sources, its potential impacts, and the policy tools that are available.

<sup>(59)</sup> The ecological, social and economic impacts of climate change are beginning to be visible. According to Munich Re NatCatSERVICE, the number of major natural disasters in the world is increasing, notably due to weather phenomena. Weather-related disasters globally caused a record economic damage of nearly EUR 290 billion in 2017, roughly a doubling of the average of the last ten years. This trend is set to continue and may accelerate if certain tipping points trigger major irreversible processes such as the rapid melting of ice caps and changes in ocean circulation.

<sup>(60)</sup> The social costs of GHG emissions are not fully reflected in the market price. Howard and Sterner (2017) explain that the social cost of carbon (SCC) is one of the primary tools that has been used for calibrating the socially optimal

### 5.2.1. Carbon pricing

**Internalising environmental costs using carbon pricing is widely considered a flexible and efficient way to achieve emission reduction goals** <sup>(61)</sup>. For example, according to an IMF study <sup>(62)</sup>, efficient fossil fuel pricing would lower global carbon emissions by 28%, reduce deaths linked to air pollution, and increase government revenue by 3.8% GDP. If these revenues are used to reduce more distortionary taxes or to increase productive investment, carbon taxation could actually lead to higher growth and employment <sup>(63)</sup>. Even so, carbon pricing programmes in most countries are fairly modest, while harmful subsidies remain large <sup>(64)</sup>.

### 5.2.2. Green budgeting practices

**The greening of Member States' budgets is an important tool to address the challenges of climate mitigation and environmental protection.** With the budgets of Member States representing close to half of their GDP (on average), budgetary policies must play a crucial role in the promotion of the climate and ecological transitions. By establishing connections between budgetary tools and environmental and climate change goals, green budgeting can contribute to a mainstreaming of green budgetary policies and processes.

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policy response. The SCC is estimated using integrated assessment models (IAMs), which capture the various steps in the climate and economic processes that translate a marginal unit of CO<sub>2</sub> emissions into a measurement of economic damage.

<sup>(61)</sup> IMF (2019) analyses the global use of carbon taxes and suggest that it is the single most powerful way to address the climate crisis. They stress that to make carbon taxes politically feasible and economically efficient, governments need to choose how to use the new revenue. Options include cutting other kinds of taxes, supporting vulnerable households and communities, increasing investment in green energy, or simply returning the money to people as a dividend.

<sup>(62)</sup> Coady et al. (2019).

<sup>(63)</sup> Note that, if effective in reducing emissions, the revenues from carbon prices should only be of a temporary nature as the tax base should shrink in line with the objective of carbon neutrality by 2050. Abolishing harmful (carbon) subsidies would, however, lead to permanent savings.

<sup>(64)</sup> In Member States energy and transport taxes have remained fairly constant as share of GDP between 1999 and 2018 at about 2.5% on average (Graph II.4.2).

**Encompassing a wide array of elements, the concept of 'green budgeting' is understood differently across policy makers and practitioners.** The OECD (2018) provides a broad definition: "Green budgeting means using the tools of budgetary policy-making to help achieve environmental goals. This includes evaluating the environmental impact of budgetary or fiscal policies and assessing their coherence towards the delivery of national and international commitments. Green budgeting can also contribute to informed, evidence-based debate and discussion on sustainable growth". Within this, a wide range of practices, which are quite different in nature and level of ambition, are considered.

**In a nutshell, green budgeting means gauging how environmentally-friendly a budget is.** Within the array of elements considered, a more focused definition of green budgeting relates to addressing the fundamental question: '*How green is a country's fiscal policy?*'. This implies establishing a practice of presenting green measures in national budgetary documents, as well as identifying harmful expenditures or harmful features of the tax system.

**An initial review of practices conducted by the Commission points to very limited use of green budgeting in the EU.** Commission's staff screened budgetary documents published over the last few years in order to identify whether and how the green impact of expenditure items is highlighted (e.g. dedicated section, tables, annexes). By and large, the review points to a very limited use of green budgeting practices in the EU with information found only for France, Ireland, Italy and Sweden. For a more comprehensive analysis, information was supplemented by practices in use outside the EU (Mexico, New Zealand and Norway).

**This first review of practices across Member States points to two main presentational approaches of green budgeting.** The more common one consists of tagging those components of the budget (programmes or actions of programmes) that explicitly contribute to climate and environmental objectives. An alternative approach assesses the 'greenness' of the entire budget, distinguishing items that are favourable, unfavourable or neutral in terms of their contribution to green objectives.



Overall, the evidence gathered shows a wide variety of practices (Table I.5.1). First of all, the scope of budgetary items differs quite widely, with some Member States looking at the entirety of the budget (France) and others only covering allocated expenditures (Ireland, Italy). The coverage might also differ with regards to the type of expenditure, with some exclusively focusing on climate-related expenditure (e.g. Ireland, Sweden) and others looking more broadly at environmental/ecological expenditure (e.g. France, Italy, Mexico). Even when Member States focus on the same type of expenditure, underlying definitions differ, leading to aggregates that are not comparable. For example, Italy examines expenditure items following the Environmental Protection Expenditure Accounts (EPEA) approach, as applied in COFOG. This includes those programmes featuring environment as a primary goal. France, in contrast, includes all expenditures

Table I.5.1: Summary of green budgeting practices

Country	Scope	Coverage	Definition	Link with long-term goals
France	Revenue + allocated expenditure	Climate + environment (also harmful)	All contribution considered	No
Italy	Allocated + executed expenditure	Environment	ESTAT environmental protection	No
Ireland	Allocated expenditure	Climate	Clear objective	No
Sweden	Allocated expenditure	Climate	Clear objective	Yes
Mexico	Allocated + executed expenditure	Environment + climate	Clear objective	No
Norway	Allocated expenditure	Environment + climate	Clear objective	Yes
New Zealand	Allocated expenditure	Environment	Clear objective	No

that contribute in any way to environmental goals (e.g. railways). At times, a scoring of items based on the environmental content is applied (France). In some cases, presenting environmental considerations is part of farther-reaching efforts to create ‘green’ budgetary frameworks (Ireland, Norway, Sweden). Interestingly, in Italy and New Zealand environmental considerations are included in the more overarching goal of ‘well-being’.

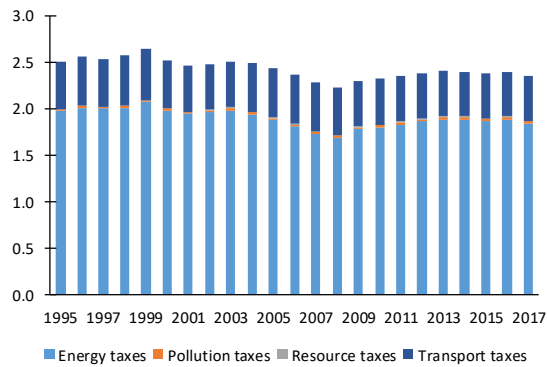
The evidence points to relatively small amounts of spending dedicated explicitly to environment and climate objectives. Expenditure favourable to the environment (including climate) as a percentage of GDP amounts to: less than 0.1% of GDP in Sweden; around 0.1% in Italy and Norway; around 0.3% in Mexico and New Zealand; 0.5% in Ireland; and 1.5% of GDP of in France. These small amounts may reflect quite conservative approaches to identifying what is ‘green’ within a budget, particularly in Member States that have only recently embarked on this process (e.g. Ireland).

This variety of approaches partly results from a lack of consensus on the way to define and identify green expenditure items. In contrast, the definition and understanding of environmental revenues rely on a broad-based and longstanding methodological consensus. The challenges associated with defining environmental-related expenditure mainly stem from three factors. First is the multi-dimensional nature of environmental objectives, which encompass a variety of goals, including climate action, pollution reduction and biodiversity. As a result, a measure favourable to a specific goal could turn to be unfavourable to another goal. Second is the different shades of green: Carney (2019) suggests that it may be hard to classify measures in a binary way (green or brown) as they can contribute to the environment with various degrees. This gives rise to the question of whether to include secondary and indirect impacts, as well as direct impacts, and if so how to appropriately weigh or scale the allocated expenditure amount. Finally, the long-term dimension of environmental challenges implies that the impacts of some measures will only be properly understood in the long term, possibly following an impact-assessment analysis.

At EU levels, two emerging initiatives are worth considering. In May 2018, the Commission proposed a taxonomy for sustainable activities, which defines general principles to determine whether an economic activity is environmentally sustainable. The principles take into account the multi-dimension of the environmental objective and should allow distinguishing activities that contribute to these objectives. At the same time, in the context of the Commission’s proposal for the EU multiannual financial framework 2021-2027, an intensive work to streamline and improve the

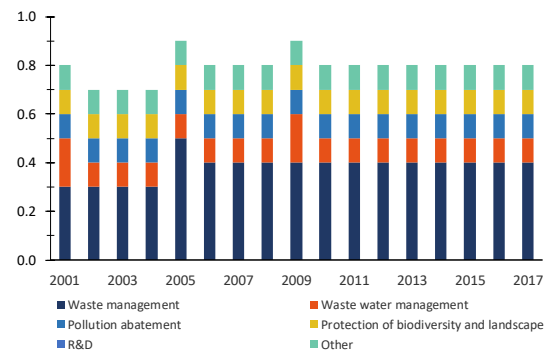
climate tracking methodology, based on the OECD Rio marker, has been carried out. This methodology assigns a weight (0%, 40% or 100%) to expenditure items based on their climate content.

Graph I.5.2: Environmental tax revenues in the EU (1995-2017, % of GDP)



Note: Resource tax revenues (% of GDP) are too small to be visible in this graph.  
 Source: Eurostat.

Graph I.5.3: Environmental protection expenditure (2001-2017, % of GDP)



Source: Eurostat, COFOG database.

**Available databases report scarce information on environmental revenue (mostly taxes) and environmental protection expenditure.** In particular, Eurostat provides data for all Member States on different types of environmental taxes (energy, transport, pollution and resources) since 1995. The Eurostat COFOG database on government expenditure by function also includes data on environmental protection expenditure<sup>(65)</sup>, with the expenditure item only included if environmental protection is its primary goal (e.g.

<sup>(65)</sup> Note that environmental protection expenditure according to the COFOG classification does not cover climate transition expenditure on energy, transport and housing.

railways are excluded). In 2017, environmental tax revenue and environmental protection expenditure in the EU were around 2.4% of GDP and 0.8% of GDP, respectively (Graphs II.4.2 and II.4.3).

### 5.3. EU FISCAL GOVERNANCE AND SURVEILLANCE INSTRUMENTS

At EU level, governance for the Energy Union and Climate Action has been established for steering the delivery of the 2030 European climate and energy targets. It came into force at the end of 2018. Under this framework, all Member States are requested to develop ten-year National Energy and Climate Plans (NECPs), in which they define their national objectives and targets along the five dimensions of the Energy Union Strategy, including the associated policy measures to reach them. The first NECPs have been published for the period 2021-2030. Progress reporting and reviews of the plans are expected at regular intervals. Member States are requested to assess the macroeconomic and social impacts of the policies and measures that they will promote to achieve their national objectives and targets. Coordination at national and EU level across different fora will be important to ensure consistency of NECPs with budgetary priorities and the EU fiscal framework.

At present, there are no specific provisions regarding climate-change-related costs and risks in the EU’s fiscal framework. Given the impact that climate and transition risks may have on fiscal outcomes, a conceptual analytical framework could help in identifying the main links and possible trade-offs involved. For instance, as fiscal sustainability risks and investment needs increase, trade-offs may arise between catering for higher investment needs on the one hand and anticipating future costs by raising saving on the other.

**Climate change and climate change policies affect public debt sustainability risks.** As the frequency and intensity of extreme weather events rises worldwide, they may increasingly lead to large economic losses that are shared by the public and private sectors. Fiscal policy responses to climate change-related extreme weather events tend to increase general government deficits and debts, often beyond what is anticipated in

budgetary documents. At the same time, existing empirical evidence shows heterogeneity across the EU, with some Member States being less directly exposed than others. Climate risks are generally not considered in the medium and long-term budgetary risk assessments because they have historically been limited in size in most cases. The Debt Sustainability Monitor 2019 discusses how the climate change impacts could be incorporated in debt sustainability analysis.

**Debt sustainability may be affected by climate change through the direct physical impact of extreme weather events and the gradual transformation of the environment.** The Debt Sustainability Monitor 2019 discusses how the climate change impacts could be incorporated in debt sustainability analysis. Relief and reconstruction efforts after extreme weather events (heatwaves, draughts, floods, forest and wildfires, etc.) may increase government expenditure<sup>(66)</sup>. In addition to spending to replace damaged public infrastructure, fiscal costs may cover compensation of private sector losses as well as the materialisation of contingent liabilities linked to the financial sector in case of major disasters. If production capacity is affected, it may result in a temporary or permanent economic slowdown, lower revenues and increased social protection expenditure.

**The share of losses that will be absorbed by the public sector is uncertain and may differ depending on the severity of the event<sup>(67)</sup>.** Economic and financial losses from climate-related events are distributed across different risk-owners<sup>(68)</sup>: governments (at local, central and at European level); the (re)insurance industry<sup>(69)</sup>;

businesses and citizens; and (international) investors in capital markets, either by taking explicit climate risks (e.g. cat bonds, insurance-linked securities, contingent credit, weather derivatives) or through private sector defaults. The distribution of losses across these risk-owners is organised differently across Member States, and is often ad hoc and not explicit. While the use of sovereign risk-sharing instruments has increased in recent years, it has mostly developed outside the European Union. Such instruments can take a range of forms, from self-insurance funds, contingent credit lines, ‘hurricane clauses’ in debt instruments to parametric insurance through a regional pooling mechanism<sup>(70)</sup>.

**Another challenge is the high degree of uncertainty about future economic impacts as reflected in wide range of model projections.** Howard and Sterner (2017) find a wide range of potential average damage estimates (from 1.9% to 17.3% of GDP) for a 3 degrees increase in global average surface temperature (compared to the pre-industrial period). According to their preferred specification, non-catastrophic damages are likely to be between 7% and 8% of GDP for a 3 degree global temperature increase. This compares to lower estimates from, for example, the Nordhaus DICE model, which predicts a 2.4% GDP loss. The impact is likely to be heterogeneous across regions and sectors, with greater impact for regions with higher initial temperature. In Europe, Member States in the north are projected to have negligible or –in some models– even beneficial effects, while climate damage will be high in the south<sup>(71)</sup>.

**Beyond the direct physical impact, climate change adaptation and mitigation can have substantial fiscal costs.** Estimates of the total costs of climate commitments for the economy and government finances are made in several Member States’ NECPs. Where estimates exist, uncertainty is very large, especially in the medium and long run.

<sup>(66)</sup> Benson and Clay (2004), Heipertz and Nickel (2008), Lis and Nickel (2010), IMF (2016).

<sup>(67)</sup> Better risk pricing and better information on potential losses induced by insurance may also stimulate adaptation investment and raise resilience.

<sup>(68)</sup> Risk allocation may also be affected by the litigation claims of risk bearers to companies and governments allegedly responsible for climate change losses (e.g. energy producers for past emissions, or local governments for neglect as to adaptation investment needs).

<sup>(69)</sup> In the EU only 35% of losses caused by climate-related events are insured, with a high degree of variation across Member States. Heat waves, drought and forest fires are the least insured and show increasingly sizeable losses due to climate change. The European Insurance and Occupational Pensions Authority (EIOPA) has warned that insurability and affordability is likely to become an

increasing concern from the supervisory and consumer protection points of view.

<sup>(70)</sup> If risks are not diversified internationally (through reinsurance and other instruments), major disasters may also have domestic balance sheet effects, thus affecting the financial sector and interacting with sovereign risks.

<sup>(71)</sup> IMF 2016.

**Commission services are exploring ways to integrate climate change impacts into their debt sustainability analysis framework.** Taking account of the uncertain and contingent nature of many of the impacts, climate-related stress tests can be designed to country-specific risk exposures. Alternative customized policy scenarios can be built to illustrate the impact of the gradual transformation of the environment on debt sustainability, under different paths for GHG emissions and climate impacts. The design of such stress tests and alternative scenarios will prove challenging in practice, given economic modelling limitations already discussed, and important data gaps.

#### 5.4. CONCLUSIONS

**Commission President Ursula von der Leyen has stated the EU's ambition to lead the transition to a 'climate-neutral and healthy planet'.**

**The transition has implications for fiscal policy.** On the one hand, the mitigation and adaptation investments and the social policies needed to help the citizens and regions most affected by the transition imply higher public expenditure. On the other hand, carbon-pricing instruments to address distorted price signals may raise revenues and cut expenditure by phasing out fossil fuel subsidies.

**The Commission is exploring ways to integrate the risks associated with climate change and the transition to a carbon-neutral economy in the fiscal governance and surveillance framework.** Despite a high degree of uncertainty about future economic impacts and other methodological challenges, better integration of the transition and physical risks into the Commission's debt sustainability analysis framework seems a promising option. More at large, a conceptual analytical framework identifying the main links and possible trade-offs would help better understanding the different roles fiscal policy can play for the transition.

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Table I.A.1: Overview EDP steps – euro area Member States

Starting phase	Treaty Art.	Member State																			
		IE	FR	ES	LV	MT	LT	BE	DE	IT	NL	AT	PT	SI	SK	CY	FI	MT			
<b>Steps in EDP procedure</b> Commission adopts EDP-report – start of the procedure Economic and Financial Committee adopts opinion Commission adopts: opinion on existence of excessive deficit recommendation for Council decision on existence of excessive deficit recommendation for Council recommendation to end this situation Council adopts: decision on existence of excessive deficit recommendation to end this situation <i>deadline for correction of excessive deficit</i>	126(3)	18.02.2009	18.02.2009	18.02.2009	18.02.2009	13.05.2009	15.05.2009	07.10.2009	07.10.2009	07.10.2009	07.10.2009	07.10.2009	07.10.2009	07.10.2009	07.10.2009	07.10.2009	07.10.2009	07.10.2009	07.10.2009		
	126(4)	27.02.2009	27.02.2009	27.02.2009	27.02.2009	29.05.2009	29.05.2009	27.10.2009	27.10.2009	27.10.2009	27.10.2009	27.10.2009	27.10.2009	27.10.2009	27.10.2009	27.10.2009	27.05.2010	27.05.2010	27.05.2010		
	126(5)	24.03.2009	24.03.2009	24.03.2009	02.07.2009	24.06.2009	24.06.2009	11.11.2009	11.11.2009	11.11.2009	11.11.2009	11.11.2009	11.11.2009	11.11.2009	11.11.2009	11.11.2009	15.06.2010	15.06.2010	15.06.2010	29.05.2013	
	126(6)	27.04.2009	27.04.2009	27.04.2009	07.07.2009	07.07.2009	07.07.2009	02.12.2009	02.12.2009	02.12.2009	02.12.2009	02.12.2009	02.12.2009	02.12.2009	02.12.2009	02.12.2009	13.07.2010	13.07.2010	13.07.2010	21.06.2013	
	126(7)	11.11.2009	11.11.2009	11.11.2009	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2011	27.01.2011	27.01.2011	15.11.2013	
	126(8)	02.12.2009	02.12.2009	02.12.2009	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010
	126(9)	15.06.2010	15.06.2010	15.06.2010	06.01.2011	21.09.2010	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012
	126(10)	03.12.2010	29.05.2013	06.07.2012	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013
	126(11)	07.12.2010	21.06.2013	10.07.2012	15.11.2013	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012
	126(12)	24.08.2011	15.11.2013	29.05.2013	27.02.2015	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013
<b>Follow-up</b> Commission adopts communication on action taken Commission adopts recommendation for NEW Council recommendation to end situation of excessive deficit Council adopts recommendation for NEW Council recommendation to end situation of excessive deficit <i>new deadline for correction of excessive deficit</i> Commission adopts communication on action taken Commission adopts recommendation for Council decision establishing inadequate action Council adopts decision establishing inadequate action Commission adopts recommendation for a Council decision to give notice Council adopts decision to give notice Commission adopts recommendation for NEW Council recommendation to end situation of excessive deficit Council adopts recommendation for NEW Council recommendation to end situation of excessive deficit <i>new deadline for correction of excessive deficit</i> Commission adopts communication on action taken Commission adopts recommendation for Council decision imposing a fine for failure to take effective action Council adopts decision to give notice <i>new deadline for correction of excessive deficit</i> Council adopts implementing decision on imposing a fine for failure to take effective action Commission adopts communication on action taken Commission adopts proposal for Council opinion on Economic Partnership Programme	126(7)	11.11.2009	11.11.2009	11.11.2009	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	27.01.2010	
	126(8)	02.12.2009	02.12.2009	02.12.2009	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010	16.02.2010
	126(9)	15.06.2010	15.06.2010	15.06.2010	06.01.2011	21.09.2010	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012	11.01.2012
	126(10)	03.12.2010	29.05.2013	06.07.2012	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013
	126(11)	07.12.2010	21.06.2013	10.07.2012	15.11.2013	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012	14.11.2012
	126(12)	24.08.2011	15.11.2013	29.05.2013	27.02.2015	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013	29.05.2013
	126(13)	10.03.2015	21.06.2013	21.06.2013	21.06.2013	21.06.2013	21.06.2013	21.06.2013	21.06.2013	21.06.2013	21.06.2013	21.06.2013	21.06.2013	21.06.2013	21.06.2013	21.06.2013	21.06.2013	21.06.2013	21.06.2013	21.06.2013	21.06.2013
	126(14)	01.07.2015	15.11.2013	15.11.2013	07.07.2016	07.07.2016	07.07.2016	07.07.2016	07.07.2016	07.07.2016	07.07.2016	07.07.2016	07.07.2016	07.07.2016	07.07.2016	07.07.2016	07.07.2016	07.07.2016	07.07.2016	07.07.2016	07.07.2016
	126(15)	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016	12.07.2016
	126(16)	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016	27.07.2016
126(17)	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	
126(18)	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	08.08.2016	
126(19)	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	
126(20)	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	16.11.2016	
126(21)	18.05.2016	23.05.2018	05.06.2019	29.05.2013	14.11.2012	29.05.2013	02.06.2014	30.05.2012	29.05.2013	02.06.2014	02.06.2014	02.06.2014	02.06.2014	02.06.2014	02.06.2014	02.06.2014	02.06.2014	02.06.2014	02.06.2014	02.06.2014	
126(22)	17.06.2016	22.06.2018	14.06.2019	21.06.2013	04.12.2012	21.06.2013	20.06.2014	22.06.2012	21.06.2013	20.06.2014	20.06.2014	20.06.2014	20.06.2014	20.06.2014	20.06.2014	20.06.2014	20.06.2014	20.06.2014	20.06.2014	20.06.2014	

Note: \* In line with Regulation (EU) No 472/2013 on the strengthening of economic and budgetary surveillance of Member States in the euro area experiencing or threatened with serious difficulties with respect to their financial stability (two-pack) the assessment of effective action is carried out in the context of the programme surveillance.



Table I.A.2: Overview EDP steps – non-euro area Member States and UK

Steps in EDP procedure	Treaty Art.	Member State							UK
		HU	PL	RO	CZ	BG	DK	HR	
<b>Starting phase</b>									
Commission adopts EDP-report = start of the procedure	126(3)	12.05.2004	13.05.2009	13.05.2009	07.10.2009	12.05.2010	12.05.2010	15.11.2013	11.06.2008
Economic and Financial Committee adopts opinion	126(4)	24.05.2004	29.05.2009	29.05.2009	27.10.2009	27.05.2010	27.05.2010	29.11.2013	25.06.2008
Commission adopts:									
opinion on existence of excessive deficit	126(5)								
recommendation for Council decision on existence of excessive deficit	126(6)	24.06.2004	24.06.2009	24.06.2009	11.11.2009	06.07.2010	15.06.2010	10.12.2013	02.07.2008
recommendation for Council recommendation to end this situation	126(7)								
Council adopts:									
decision on existence of excessive deficit	126(6)	05.07.2004	07.07.2009	07.07.2009	02.12.2009	13.07.2010	13.07.2010	21.01.2014	08.07.2008
recommendation to end this situation	126(7)								
<i>deadline for correction of excessive deficit</i>		<b>2008</b>	<b>2012</b>	<b>2011</b>	<b>2013</b>	<b>2011</b>	<b>2013</b>	<b>2016</b>	<i>fin. year 2009/10</i>
<b>Follow-up</b>									
Commission adopts communication on action taken			03.02.2010		15.06.2010	27.01.2011	27.01.2011	02.06.2014	
Commission adopts recommendations for Council decision establishing inadequate action	126(8)	22.12.2004							24.03.2009
Council adopts decision establishing inadequate action	126(8)	18.01.2005							27.04.2009
Commission adopts recommendation for NEW Council recommendation to end excessive deficit situation	126(7)	16.02.2005		08.02.2010					24.03.2009
Council adopts NEW recommendation to end excessive deficit situation	126(7)	08.03.2005		16.02.2010					27.04.2009
<i>new deadline for correction of excessive deficit</i>		<b>2008</b>		<b>2012</b>					<i>fin. year 2009/10</i>
Commission adopts communication on action taken		13.07.2005	11.01.2012	21.09.2010					
Commission adopts recommendations for Council decision establishing inadequate action	126(8)	20.10.2005							
Council adopts decision establishing inadequate action	126(8)	08.11.2005							11.11.2009
Commission adopts recommendation for NEW Council recommendation to end excessive deficit situation	126(7)	26.09.2006							02.12.2009
Council adopts NEW recommendation to end excessive deficit situation	126(7)	10.10.2006							<i>fin. year 2014/15</i>
<i>new deadline for correction of excessive deficit</i>		<b>2009</b>							06.07.2010
Commission adopts communication on action taken		13.06.2007							12.05.2015
Commission adopts recommendations for Council decision establishing inadequate action	126(8)								19.06.2015
Council adopts decision establishing inadequate action	126(8)								12.05.2015
Commission adopts recommendation for NEW Council recommendation to end excessive deficit situation	126(7)	24.06.2009	29.05.2013						19.06.2015
Council adopts NEW recommendation to end excessive deficit situation	126(7)	07.07.2009	21.06.2013						<i>fin. year 2016/17</i>
<i>new deadline for correction of excessive deficit</i>		<b>2011</b>	<b>2014</b>						16.11.2015
Commission adopts communication on action taken		27.01.2010							
Commission adopts recommendations for Council decision establishing inadequate action	126(8)	11.01.2012	15.11.2013						
Council adopts decision establishing inadequate action	126(8)	24.01.2012	10.12.2013						
Commission adopts recommendation for NEW Council recommendation to end excessive deficit situation	126(7)	06.03.2012	15.11.2013						
Council adopts NEW recommendation to end excessive deficit situation	126(7)	13.03.2012	10.12.2013						
<i>new deadline for correction of excessive deficit</i>		<b>2012</b>	<b>2015</b>						
Commission adopts communication on action taken		30.05.2012	02.06.2014						
<b>Abrogation</b>									
Commission adopts recommendation for Council decision abrogating existence of excessive deficit	126(12)	29.05.2013	12.05.2015	29.05.2013	02.06.2014	30.05.2012	02.06.2014	22.05.2017	22.11.2017
Council adopts decision abrogating existence of excessive deficit	126(12)	21.06.2013	19.06.2015	21.06.2013	20.06.2014	22.06.2012	20.06.2014	16.06.2017	04.12.2017

Table I.A.3: Overview EDP steps – Greece

Steps in EDP procedure	Treaty Art.	Greece
<b>Starting phase</b>		
Commission adopts EDP-report = start of the procedure	126(3)	18.02.2009
Economic and Financial Committee adopts opinion	126(4)	27.02.2009
Commission adopts:		
opinion on existence of excessive deficit	126(5)	
recommendation for Council decision on existence of excessive deficit	126(6)	24.03.2009
recommendation for Council recommendation to end this situation	126(7)	
Council adopts:		
decision on existence of excessive deficit	126(6)	27.04.2009
recommendation to end this situation	126(7)	
<i>deadline for correction of excessive deficit</i>		<b>2010</b>
<b>Follow-up</b>		
Commission adopts recommendations for Council decision establishing inadequate action	126(8)	11.11.2009
Council adopts decision establishing inadequate action	126(8)	02.12.2009
<i>Commission adopts Council recommendation for decision to give notice</i>	126(9)	03.02.2010
Council decision to give notice	126(9)	16.02.2010
<i>new deadline for correction of the excessive deficit</i>		<b>2012</b>
Commission adopts communication on action taken		09.03.2010
Council adopts conclusions thereon		16.03.2010
Commission adopts recommendation for NEW Council decision to give notice	126(9)	04.05.2010
Council decision to give notice	126(9)	10.05.2010
<i>new deadline for correction of the excessive deficit</i>		<b>2014</b>
<b>Follow-up - 1st review</b>		
Commission adopts communication on action taken		19.08.2010
Commission adopts recommendation for Council decision amending the Council decision to give notice	126(9)	19.08.2010
Council decision amending the Council decision to give notice	126(9)	07.09.2010
<b>Follow-up - 2nd review</b>		
Commission adopts communication on action taken		09.12.2010
Commission adopts recommendation for Council decision amending the Council decision to give notice	126(9)	09.12.2010
Council decision amending the Council decision to give notice	126(9)	20.12.2010
<b>Follow-up - 3rd review</b>		
Commission adopts communication on action taken		24.02.2011
Commission adopts recommendation for Council decision amending the Council decision to give notice	126(9)	24.02.2011
Council decision amending the Council decision to give notice	126(9)	07.03.2011
<b>Follow-up - 4th review</b>		
Commission adopts communication on action taken		01.07.2011
Commission adopts recommendation for Council decision amending the Council decision to give notice	126(9)	05.07.2011
Council decision amending the Council decision to give notice	126(9)	12.07.2011
<b>Follow-up - 5th review</b>		
Commission adopts communication on action taken		26.10.2011
Commission adopts recommendation for Council decision amending the Council decision to give notice	126(9)	26.10.2011
Council decision amending the Council decision to give notice	126(9)	08.11.2011
<b>Follow-up - Second Adjustment Programme</b>		
Commission adopts communication on action taken		09.03.2012
Commission adopts recommendation for Council decision amending the Council decision to give notice	126(9)	09.03.2012
Council decision amending the Council decision to give notice	126(9)	13.03.2012
<b>Follow-up - Second Adjustment Programme</b>		
Commission adopts communication on action taken		30.11.2012
Commission adopts recommendation for Council decision amending the Council decision to give notice	126(9)	30.11.2012
Council decision amending the Council decision to give notice	126(9)	04.12.2012
<i>new deadline for correction of the excessive deficit</i>		<b>2016</b>
<b>Follow-up - Third Adjustment Programme</b>		
Council adopts decision to give notice	126(9)	20.08.2015
<b>Abrogation</b>		
Commission adopts recommendation for Council decision abrogating existence of excessive deficit	126(12)	12.07.2017
Council adopts decision abrogating existence of excessive deficit	126(12)	25.09.2017

Table I.A.4: Overview SDP steps – Romania and Hungary

Steps in SDP procedure	Treaty Art.	Romania	Romania (cont.)	Romania (cont.)	Hungary	Hungary (cont.)
<b>Starting phase</b>						
Commission adopts: recommendation with a view to giving warning on the existence of a significant observed deviation	121(4)	22.05.2017	23.05.2018	05.06.2019	23.05.2018	05.06.2019
recommendation for Council recommendation with a view to correcting the significant observed deviation	121(4)	22.05.2017	23.05.2018	05.06.2019	23.05.2018	05.06.2019
Council adopts recommendation with a view to correcting the significant observed deviation	121(4)	16.06.2017	22.06.2018	14.06.2019	22.06.2018	14.06.2019
<i>deadline for report on action taken</i>		<b>15.10.2017</b>	<b>15.10.2018</b>	<b>15.10.2019</b>	<b>15.10.2018</b>	<b>15.10.2019</b>
<b>Follow-up</b>						
Commission adopts: recommendation for Council decision on no effective action	121(4)	22.11.2017	21.11.2018	20.11.2019	21.11.2018	20.11.2019
recommendation for Council recommendation with a view to correcting the significant observed deviation	121(4)	22.11.2017	21.11.2018	20.11.2019	21.11.2018	20.11.2019
Council adopts: decision on no effective action	121(4)	05.12.2017	04.12.2018		04.12.2018	
recommendation with a view to correcting the significant observed deviation	121(4)	05.12.2017	04.12.2018		04.12.2018	
<i>new deadline for report on action taken</i>		<b>15.04.2018</b>	<b>15.04.2019</b>		<b>15.04.2019</b>	
Commission adopts: recommendation for Council decision on no effective action	121(4)	23.05.2018	05.06.2019		05.06.2019	
Council adopts: decision on no effective action	121(4)	22.06.2018	14.06.2019		14.06.2019	

Table I.A.5: Overview of Council country-specific recommendations related to fiscal policy

	Applicable provisions of the SGP (spring 2019)	Other relevant information	CSR on SGP	CSR on fiscal policy and fiscal governance	CSR on reducing the tax burden on labour and broadening tax bases	CSR on long-term sustainability of public finances, including pensions	CSR on fight against tax evasion, improve tax administration and tackle tax avoidance	
BE	<ul style="list-style-type: none"> <li>Preventive arm</li> <li>Debt benchmark</li> </ul>	<ul style="list-style-type: none"> <li>MTO: 0%</li> <li>Debt &gt; 60%</li> </ul>	Ensure that the nominal growth rate of net primary government expenditure does not exceed 1.6% in 2020, corresponding to an annual structural adjustment of 0.6% of GDP. Use windfall gains to accelerate the reduction of the general government debt ratio.	Improve the composition and efficiency of public spending, in particular through spending reviews, and the coordination of fiscal policies by all levels of government to create room for public investment.			Continue reforms to ensure the fiscal sustainability of the long-term care and pension systems, including by limiting early exit possibilities from the labour market.	
BG	Preventive arm	MTO: -1%					Improve tax collection through targeted measures in areas such as fuel and labour taxes.	
CZ	Preventive arm	MTO: -1% in 2019 and -0.75% as of 2020				Improve long-term fiscal sustainability of the pension and health-care systems.		
DK	Preventive arm	MTO: -0.5%						
DE	Preventive arm	MTO: -0.5%	While respecting the medium-term budgetary objective, use fiscal and structural policies to achieve a sustained upward trend in private and public investment, in particular at regional and municipal level.		Shift taxes away from labour to sources less detrimental to inclusive and sustainable growth.  Reduce disincentives to work more hours, including the high tax wedge, in particular for low-wage and second earners.	Take measures to safeguard the long-term sustainability of the pension system, while preserving adequacy.		
EE	Preventive arm	MTO: -0.5%	Ensure that the nominal growth rate of net primary government expenditure does not exceed 4.1% in 2020, corresponding to an annual structural adjustment of 0.6% of GDP.					
IE	Preventive arm	MTO: -0.5%	Achieve the medium-term budgetary objective in 2020. Use windfall gains to accelerate the reduction of the general government debt ratio.		Limit the scope and number of tax expenditures, and broaden the tax base.	Address the expected increase in age-related expenditure by making the healthcare system more cost-effective and by fully implementing pension reform plans.	Continue to address features of the tax system that may facilitate aggressive tax planning, and focus in particular on outbound payments.	
EL	<ul style="list-style-type: none"> <li>Preventive arm<sup>(1)</sup></li> <li>Transition period debt rule until 2019; debt benchmark as of 2020</li> </ul>	<ul style="list-style-type: none"> <li>MTO: 0.25% as of 2020</li> <li>Debt &gt; 60%</li> </ul>	To avoid duplication with measures set out in the Economic Adjustment Programme, the CSR for Greece refers to achieving a sustainable economic recovery and tackling the excessive macroeconomic imbalances by continuing and completing reforms in line with the post-programme commitments given at the Eurogroup of 22 June 2018.					
ES	<ul style="list-style-type: none"> <li>Preventive arm</li> <li>Transition period debt rule</li> </ul>	<ul style="list-style-type: none"> <li>MTO: 0%</li> <li>Debt &gt; 60%</li> </ul>	Ensure that the nominal growth rate of net primary government expenditure does not exceed 0.9% in 2020, corresponding to an annual structural adjustment of 0.65% of GDP. Use windfall gains to accelerate the reduction of the general government debt ratio.	Take measures to strengthen the fiscal and public procurement frameworks at all levels of government.		Preserve the sustainability of the pension system.		
FR	<ul style="list-style-type: none"> <li>Preventive arm</li> <li>Transition period debt rule</li> </ul>	<ul style="list-style-type: none"> <li>MTO: -0.4%</li> <li>Debt &gt; 60%</li> </ul>	Ensure that the nominal growth rate of net primary government expenditure does not exceed 1.2% in 2020, corresponding to an annual structural adjustment of 0.6% of GDP. Use windfall gains to accelerate the reduction of the general government debt ratio.	Achieve expenditure savings and efficiency gains across all sub-sectors of the government, including by fully specifying and monitoring the implementation of the concrete measures needed in the context of Public Action 2022.	Continue to simplify the tax system, in particular by limiting the use of tax expenditures, further removing inefficient taxes and reducing taxes on production.	Reform the pension system to progressively unify the rules of the different pension regimes, with the view to enhance their fairness and sustainability.		
HR	<ul style="list-style-type: none"> <li>Preventive arm</li> <li>Debt benchmark</li> </ul>	<ul style="list-style-type: none"> <li>MTO: -1.75% in 2019 and -1% as of 2020</li> <li>Debt &gt; 60%</li> </ul>		Reinforce the budgetary framework and monitoring of contingent liabilities at central and local level.				
IT	<ul style="list-style-type: none"> <li>Preventive arm</li> <li>Debt benchmark</li> </ul>	<ul style="list-style-type: none"> <li>MTO: 0% in 2019 and -0.5% as of 2020</li> <li>Debt &gt; 60%</li> </ul>	Ensure a nominal reduction of net primary government expenditure of 0.1% in 2020, corresponding to an annual structural adjustment of 0.6% of GDP. Use windfall gains to accelerate the reduction of the general government debt ratio.		Shift taxation away from labour, including by reducing tax expenditure and reforming the outdated cadastral values.	Implement fully past pension reforms to reduce the share of old-age pensions in public spending and create space for other social and growth-enhancing spending.	Fight tax evasion, especially in the form of omitted invoicing, including by strengthening the compulsory use of e-payments including through lower legal thresholds for cash payments.	
CY	<ul style="list-style-type: none"> <li>Preventive arm</li> <li>Debt benchmark</li> </ul>	<ul style="list-style-type: none"> <li>MTO: 0%</li> <li>Debt &gt; 60%</li> </ul>				Take measures to ensure that the National Health System becomes operational in 2020, as planned, while preserving its long-term sustainability.	Address features of the tax system that may facilitate aggressive tax planning by individuals and multinationals, in particular by means of outbound payments by multinationals.	

<sup>(1)</sup> Following the abrogation of the Excessive Deficit Procedure on 19 September 2017 and the completion of the ESM stability support programme on 20 August 2018, Greece became subject to the preventive arm of the Stability and Growth Pact and should preserve a sound fiscal position which ensures compliance with the primary surplus target set by Decision (EU) 2017/1226 on 30 June 2017 of 3.5% of GDP for 2018 and over the medium term. Since Greece was exempt from submitting Stability Programmes while it was under the programme, the Greek authorities did not establish a medium-term budgetary objective for 2018 and 2019.

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Table (continued)

LV	Preventive arm	MTO: -1%	Ensure that the nominal growth rate of net primary government expenditure does not exceed 3.5% in 2020, corresponding to an annual structural adjustment of 0.5% of GDP.		Reduce taxation for low-income earners by shifting it to other sources, particularly capital and property, and by improving tax compliance.	Increase the accessibility, quality and cost-effectiveness of the healthcare system.	
LT	Preventive arm	MTO: -1%			Improve tax compliance and broaden the tax base to sources less detrimental to growth.		
LU	Preventive arm	MTO: -0.5% in 2019 and 0.5% as of 2020				Improve the long-term sustainability of the pension system, including by further limiting early retirement.	Address features of the tax system that may facilitate aggressive tax planning, in particular by means of outbound payments.
HU	• Preventive arm • Debt benchmark	• MTO: -1.5% in 2019 and -1% as of 2020 • Debt > 60%	Ensure compliance with the Council Recommendation of 14 June 2019 with a view to correcting the significant deviation from the adjustment path towards the medium-term budgetary objective.				Continue simplifying the tax system, while strengthening it against the risk of aggressive tax planning.
MT	Preventive arm	MTO: 0%				Ensure the fiscal sustainability of the healthcare and pension systems, including by restricting early retirement and adjusting the statutory retirement age in view of expected gains in life expectancy.	Address features of the tax system that may facilitate aggressive tax planning by individuals and multinationals, in particular by means of outbound payments.
NL	Preventive arm	MTO: -0.5%	While respecting the medium-term budgetary objective, use fiscal and structural policies to support an upward trend in investment.			Ensure that the second pillar of the pension system is more transparent, inter-generationally fairer and more resilient to shocks.	Address features of the tax system that may facilitate aggressive tax planning, in particular by means of outbound payments, notably by implementing the announced measures.
AT	• Preventive arm • Debt benchmark	• MTO: -0.5% • Debt: 60%		Simplify and rationalise fiscal relations and responsibilities across layers of government and align financing and spending responsibilities.	Shift taxes away from labour to sources less detrimental to inclusive and sustainable growth.	Ensure the sustainability of the health, long-term care, and pension systems, including by adjusting the statutory retirement age in view of expected gains in life expectancy.	
PL	Preventive arm	MTO: -1%	Ensure that the nominal growth rate of net primary government expenditure does not exceed 4.4% in 2020, corresponding to an annual structural adjustment of 0.6% of GDP.	Take further steps to improve the efficiency of public spending, including by improving the budgetary process.		Ensure the adequacy of future pension benefits and the sustainability of the pension system by taking measures to increase the effective retirement age and by reforming the preferential pension schemes.	
PT	• Preventive arm • Transition period debt rule until 2019; debt benchmark as of 2020	• MTO: 0.25% in 2019 and 0% as of 2020 • Debt > 60%	Achieve the medium-term budgetary objective in 2020, taking into account the allowance linked to unusual events for which a temporary deviation is granted. Use windfall gains to accelerate the reduction of the general government debt ratio.			Improve the quality of public finances by prioritising growth-enhancing spending while strengthening overall expenditure control, cost efficiency and adequate budgeting, with a focus in particular on a durable reduction of arrears in hospitals.  Improve the financial sustainability of State-owned enterprises, while ensuring more timely, transparent and comprehensive monitoring.	
RO	Preventive arm	MTO: -1%	Ensure compliance with the Council Recommendation of 14 June 2019 with a view to correcting the significant deviation from the adjustment path towards the medium-term budgetary objective.	Ensure the full application of the fiscal framework.		Ensure the sustainability of the public pension system and the long-term viability of the second pillar pension funds.	Strengthen tax compliance and collection.
SI	• Preventive arm • Debt benchmark	• MTO: 0.25% in 2019 and -0.25% as of 2020 • Debt > 60%	Achieve the medium-term budgetary objective in 2020.			Adopt and implement reforms in healthcare and long-term care that ensure quality, accessibility and long-term fiscal sustainability.  Ensure the long-term sustainability and adequacy of the pension system, including by adjusting the statutory retirement age restricting early retirement and other forms of early exit from the labour market.	
SK	Preventive arm	MTO: -0.5% in 2019 and -1% as of 2020	Achieve the medium-term budgetary objective in 2020.			Safeguard the long-term sustainability of public finances, notably that of the healthcare and pension systems.	

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Table (continued)

<b>FI</b>	Preventive arm	MTO: -0.5%	Ensure that the nominal growth rate of net primary government expenditure does not exceed 1.9% in 2020, corresponding to an annual structural adjustment of 0.5% of GDP.			Improve the cost-effectiveness of and equal access to social and healthcare services.	
<b>SE</b>	Preventive arm	MTO: -1%					
<b>UK</b>	<ul style="list-style-type: none"> <li>• Preventive arm</li> <li>• Transition period of the debt rule until 2019; debt benchmark as of 2020</li> </ul>	<ul style="list-style-type: none"> <li>• MTO: -0.8% in 2019 and -0.5% as of 2020</li> <li>• Debt &gt; 60%</li> </ul>	Ensure that the nominal growth rate of net primary government expenditure does not exceed 1.9% in 2020-2021, corresponding to an annual structural adjustment of 0.6% of GDP.				

Table I.A.6: Overview of individual Commission opinions on the draft budgetary plans

Member States	Overall compliance of the draft budgetary plan with the Stability and Growth Pact		Progress with implementing the fiscal-structural part of the 2019 country-specific recommendations
	Overall conclusion of compliance based on the Commission 2019 autumn forecast	Compliance with the preventive arm requirements in 2019 and 2020	
BE <sup>(1),(2)</sup>	Risk of non-compliance	2019: risk of a significant deviation from the adjustment path towards the medium-term budgetary objective, prima facie non-compliance with the debt reduction benchmark; 2020: risk of a significant deviation from the adjustment path towards the medium-term budgetary objective, prima facie non-compliance with the debt reduction benchmark.	Limited progress
ES <sup>(3),(4)</sup>	Risk of non-compliance	2019: risk of a significant deviation from the adjustment path towards the medium-term budgetary objective, prima facie non-compliance with the transitional debt reduction benchmark; 2020: risk of a significant deviation from the adjustment path towards the medium-term budgetary objective, prima facie non-compliance with the transitional debt reduction benchmark.	Limited progress
FR <sup>(5)</sup>	Risk of non-compliance	2019: risk of a significant deviation from the adjustment path towards the medium-term budgetary objective, prima facie non-compliance with the transitional debt reduction benchmark; 2020: risk of a significant deviation from the adjustment path towards the medium-term budgetary objective, prima facie non-compliance with the transitional debt reduction benchmark.	Limited progress
IT <sup>(6)</sup>	Risk of non-compliance	2019: risk of a significant deviation from the adjustment path towards the medium-term budgetary objective, prima facie non-compliance with the debt reduction benchmark; 2020: risk of a significant deviation from the adjustment path towards the medium-term budgetary objective, prima facie non-compliance with the debt reduction benchmark.	Some progress
PT <sup>(7)</sup>	Risk of non-compliance	2019: risk of a significant deviation from the adjustment path towards the medium-term budgetary objective, compliance with the transitional debt reduction benchmark; 2020: risk of a significant deviation from the adjustment path towards the medium-term budgetary objective, compliance with the debt reduction benchmark.	Limited progress
SI	Risk of non-compliance	2019: risk of a significant deviation from the adjustment path towards the medium-term budgetary objective, compliance with the debt reduction benchmark; 2020: risk of some deviation from the adjustment path towards the medium-term budgetary objective in 2020; risk of a significant deviation from the adjustment path towards the medium-term budgetary objective based on 2019 and 2020 taken together, compliance with the debt reduction benchmark.	Limited progress
SK	Risk of non-compliance	2019: risk of a significant deviation from the adjustment path towards the medium-term budgetary objective; 2020: risk of some deviation from the adjustment path towards the medium-term budgetary objective in 2020; risk of a significant deviation from the adjustment path towards the medium-term budgetary objective based on 2019 and 2020 taken together.	Limited progress
FI	Risk of non-compliance	2019: risk of some deviation from the adjustment path towards the medium-term budgetary objective; 2020: risk of a significant deviation from the adjustment path towards the medium-term budgetary objective.	Limited progress
EE	Broadly compliant	2019: risk of some deviation from the adjustment path towards the medium-term budgetary objective; 2020: risk of some deviation from the adjustment path towards the medium-term budgetary objective.	n.r.
LV	Broadly	2019: close to the medium-term budgetary objective adjusted for a temporary deviation allowance, while risk of a significant deviation	Some progress

- (<sup>1</sup>) The Commission issued a report on 5 June 2019 in accordance with Article 126(3) TFEU in which it concluded that the analysis was not fully conclusive as to whether the debt criterion was or was not complied with.
- (<sup>2</sup>) Draft budgetary plan submitted on a no-policy-change basis.
- (<sup>3</sup>) Draft budgetary plan submitted on a no-policy-change basis.
- (<sup>4</sup>) The EDP for Spain was abrogated on 14 June 2019 as the deficit had been brought below 3% of GDP in 2018 and it was projected to stay below 3% in 2019 and 2020. Spain is therefore subject to the preventive arm of the Stability and Growth Pact.
- (<sup>5</sup>) The Commission issued a report on 5 June 2019 in accordance with Article 126(3) TFEU in which it concluded that the deficit and debt criteria as defined in the Treaty should be considered as complied with.
- (<sup>6</sup>) The Commission issued a report on 5 June 2019 in accordance with Article 126(3) TFEU in which it concluded that the debt criterion should be considered as not complied with. Following Italy's updated fiscal plans of 1 July 2019 entailing a fiscal correction for 2019, the Commission issued a communication and sent a letter to the Italian authorities in July 2019, concluding that the package of measures adopted was sufficient not to open an EDP for Italy's lack of compliance with the debt criterion in 2018 at that stage.
- (<sup>7</sup>) Draft budgetary plan submitted on a no-policy-change basis.

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Table (continued)

	compliant	from the expenditure benchmark requirement based on 2018 and 2019 taken together; 2020: close to the medium-term budgetary objective, while risk of significant deviation from the expenditure benchmark requirement	
<b>DE</b>	Compliant	2019: medium-term budgetary objective respected; 2020: medium-term budgetary objective respected.	Some progress
<b>IE</b>	Compliant	2019: compliance with the adjustment path towards the medium-term budgetary objective, compliance with the debt reduction benchmark; 2020: medium-term budgetary objective respected.	Limited progress
<b>EL<sup>(8)</sup></b>	Compliant	2019: compliance with the transitional debt reduction benchmark; 2020: medium-term budgetary objective respected, compliance with the debt reduction benchmark.	n.r. <sup>(9)</sup>
<b>CY<sup>(10)</sup></b>	Compliant	2019: medium-term budgetary objective respected, compliance with the debt reduction benchmark; 2020: medium-term budgetary objective respected, compliance with the debt reduction benchmark.	Limited progress
<b>LT</b>	Compliant	2019: close to the medium-term budgetary objective adjusted for a temporary deviation allowance, while risk of a significant deviation from the expenditure benchmark requirement; 2020: medium-term budgetary objective respected.	Some progress
<b>LU</b>	Compliant	2019: medium-term budgetary objective respected; 2020: medium-term budgetary objective respected.	Limited progress
<b>MT</b>	Compliant	2019: medium-term budgetary objective respected; 2020: medium-term budgetary objective respected.	Limited progress
<b>NL</b>	Compliant	2019: medium-term budgetary objective respected; 2020: medium-term budgetary objective respected.	Some progress
<b>AT<sup>(11)</sup></b>	Compliant	2019: medium-term budgetary objective respected, compliance with the debt reduction benchmark; 2020: medium-term budgetary objective respected, compliance with the debt reduction benchmark.	Limited progress

<sup>(8)</sup> Following the abrogation of the Excessive Deficit Procedure on 19 September 2017 and the completion of the ESM stability support programme on 20 August 2018, Greece became subject to the preventive arm of the Stability and Growth Pact and should preserve a sound fiscal position which ensures compliance with the primary surplus target set by Decision (EU) 2017/1226 on 30 June 2017 of 3.5% of GDP for 2018 and over the medium term. Since Greece was exempt from submitting Stability Programmes while it was under the programme, the Greek authorities did not establish a medium-term budgetary objective for 2018 and 2019. Greece established its medium-term objective of 0.25% of GDP for 2020-2022 in the 2019 Stability Programme.

<sup>(9)</sup> The progress with implementation of the fiscal-structural part of the 2019 country-specific recommendations is monitored under the enhanced surveillance framework.

<sup>(10)</sup> The Commission issued a report on 5 June 2019 in accordance with Article 126(3) TFEU in which it concluded that further steps leading to a decision on the existence of an excessive deficit should not be taken.

<sup>(11)</sup> Draft budgetary plan submitted on a no-policy-change basis.



# Part II

## Performance of spending rules at EU and national level – a quantitative assessment

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## KEY FINDINGS

This Part provides a novel quantitative assessment of spending rules in the EU and the Member States.

### **At EU level, simulations show that public debt ratios would have been significantly lower today if Member States had applied the expenditure benchmark consistently since 1999.**

- The findings from counterfactual simulations show that a more front-loaded fiscal adjustment would have reduced public debt significantly, despite the negative effects of temporary lower economic growth and inflation.
- Debt reduction would have been particularly marked in high-debt Member States.
- The fiscal adjustment would have been slightly more growth-friendly based on the expenditure benchmark than on the structural balance requirement.

### **New evidence shows that the expenditure benchmark is more effective in reducing procyclicality than the change in the structural balance.**

- Evidence from panel regressions shows that discretionary fiscal policies have, on average, been procyclical in the EU since 2000, with the main reason for this being fiscal loosening in good times.
- The expenditure benchmark appears to be a more effective indicator in reducing procyclicality than the structural balance.
- Strict compliance with the fiscal rules of the preventive arm would have resulted in an acyclical fiscal effort in the EU, while large deviations from the rules aggravate pro-cyclicality.

### **In terms of predictability, unbiased and realistic macroeconomic and budgetary projections are essential to effective fiscal surveillance.**

- Indicators used to assess the fiscal effort in the preventive arm of the Pact do not appear to be systematically biased at EU, euro area or Member State level.
- While forecast errors can be sizeable, they are broadly similar regardless of whether the fiscal effort is based on the expenditure benchmark or the structural balance methodology.

### **New evidence shows that expenditure rules mitigate the procyclical bias of fiscal policies in the Member States.**

- Empirical estimates over the last 20 years demonstrate that procyclicality is lower where there are expenditure rules in place.
- Designing expenditure rules better (in terms of their legal basis, independent monitoring, coverage and the consequences of non-compliance) also reduces procyclicality.
- A combination of expenditure rules and balanced budget rules attenuates the procyclical pattern of fiscal policy more than no rule.

# 1. INTRODUCTION

**The EU fiscal governance system promotes a rules-based approach to fiscal policy whose primary objective is to tame the deficit bias and ensure sustainable public finances.** A rules-based fiscal policy has been shown to be superior to a discretionary approach, since the latter is frequently time inconsistent and therefore leads to a deficit bias <sup>(72)</sup>. The European Economic and Monetary Union (EMU) may actually exacerbate this deficit bias, in particular as negative externalities (e.g. a banking or debt crisis) can more easily spill over to other Member States, leading to ‘contagion’ effects <sup>(73)</sup>. The Maastricht Treaty signed in 1992, obliges Member States to pursue sound fiscal policies and to abide by two main reference values: 3% of GDP for government deficit and 60% of GDP for government debt <sup>(74)</sup>. The Stability and Growth Pact (SGP) agreed in 1997 was designed primarily as a means to keep public debt at sustainable levels, by both preventing excessive deficits (‘preventive arm’) and, where necessary, correcting them diligently (‘corrective arm’) <sup>(75)</sup>. Without prejudice to the objective of sustainability, the SGP is also intended to allow for macroeconomic stabilisation.

**The fiscal framework has evolved considerably in recent years: a key innovation was a greater focus on spending rules at EU and Member State level.** Following the Great Recession, the fiscal governance framework was reinforced in 2011 (the ‘six-pack’ reform) and 2013 (the ‘two-pack’ reform) for three main reasons <sup>(76)</sup>: (i) to foster fiscal sustainability <sup>(77)</sup>, (ii) to allow

for better macroeconomic stabilisation <sup>(78)</sup> and (iii) to improve the quality and effectiveness of national fiscal frameworks <sup>(79)</sup>. A central element of the 2011 reform was the introduction of an expenditure benchmark at EU level, which complements the structural balance as a second indicator in the fiscal surveillance process of the preventive arm of the SGP. In parallel, many Member States introduced national spending rules –often in addition to balanced budget or debt rules– in the wake of the new directive of the ‘six-pack’ on the national fiscal framework.

**The greater relevance of spending rules reflects the growing consensus in academia and policy circles that such rules constitute a more effective approach.** The key rationale for introducing the expenditure benchmark at EU level was that it provides more operational guidance to Member States in the conduct of prudent fiscal policies, by focussing surveillance on indicators that are under direct government control. Many experts in international institutions, academia and think tanks have concluded that spending rules are generally more effective in reducing procyclical fiscal policy and promoting a better balance between budgetary discipline and macroeconomic stabilisation. They also tend to be more transparent and easier to monitor.

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<sup>(72)</sup> See Kydland and Prescott (1977) on the time inconsistency argument and Alesina and Perotti (1995) or Issing (2000) on the deficit bias.

<sup>(73)</sup> Allen and Gale (2000).

<sup>(74)</sup> The reference values were defined in the Protocol on the EDP annexed to the Maastricht Treaty.

<sup>(75)</sup> While Member States agreed in 1997 on the Pact, the preventive/corrective arm of the Pact entered into force in 1998/1999.

<sup>(76)</sup> Deroose and Mohl (2016), Buti (2019), European Commission (2019a).

<sup>(77)</sup> Not enough advantage was taken of the favourable macroeconomic conditions in the years before the Great Recession to build up fiscal buffers (Schuknecht et al. 2011). High debt delayed the recovery from the recession (Jordà et al., 2016) and both rule design problems and governance failures contributed to poor enforcement of the SGP (Eyraud and Wu 2015). In a response, more emphasis was placed on the need for debt reduction in the corrective

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arm and a system to correct significant deviations from fiscal requirements was established in the preventive arm.

<sup>(78)</sup> It was recognised that automatic stabilisers did not play out fully in practice throughout the cycle. There was greater acceptance of discretionary support under well-defined circumstances, such as at a time of deep economic shocks and/or if monetary policy is constrained, as spillovers can be larger and multipliers higher (Blanchard et al. 2013, Blanchard and Leigh 2013 or Christiano et al. 2011). In a response, a collective escape clause was inserted in the EU fiscal governance framework, allowing (but not prescribing) a suspension of the rules in the event of a ‘severe economic downturn’ in the EU or the euro area as a whole. In 2015, the framework was improved without changing the rules by better modulating the required fiscal effort across the economic cycle.

<sup>(79)</sup> The gap between national budget discussions and European surveillance was a fundamental weakness of the framework in the pre-Great Recession decade.

**However, quantitative analyses on the performance of the expenditure benchmark at EU level and spending rules at national level have been rare, a gap filled by this part of the report.** This part examines how spending rules perform at both EU and national level on the basis of a quantitative assessment. Chapter II.2 reviews the academic literature surrounding expenditure rules. Chapter II.3 assesses how such rules perform at EU level. Chapter II.4 focuses on their performance at the national level. The analyses are factual and based on quantitative evidence and simulations. Finally, Chapter II.5 concludes this part of the report.

## 2. LITERATURE REVIEW

**Well-designed expenditure rules can be an effective tool for reducing the deficit bias.** By targeting the budget item that is most directly under the policymaker's control (i.e. expenditure as opposed to the budget balance or debt), expenditure rules can ensure compliance and hence reduce the deficit bias. Moreover, as expenditure overruns have been found to be a major factor in large deficits and increasing debt ratios in the EU, expenditure rules play an important role through addressing the main source of the deficit bias (Ayuso-i-Casals 2012).

**Expenditure rules tend to lower procyclicality more than other type of rules.** While a large proportion of revenue is sensitive to economic fluctuations and would thus react in a procyclical way during shocks, many components of expenditure are not. This means that an expenditure rule is better suited than other rules to protect expenditure from the economic cycle. In this way, it confers either acyclical or countercyclical behaviour on the fiscal balance. Turrini (2008) finds evidence of procyclical expenditure in the euro area over 1980-2005. Similarly, Wierds (2008) presents evidence (involving 15 countries over a time period from 1998-2005) that national expenditure rules can limit procyclical expenditure, especially at times of revenue shortfalls. Finally, Holm-Hadulla et al. (2012) find that expenditure rules reduced EU countries' procyclical spending bias in 1998-2005.

**Expenditure rules are associated with lower expenditure volatility, higher investment efficiency and more transparency.** Evidence for a sample of almost 30 advanced and developing countries in 1985-2013 shows that when these rules are present a country has higher spending control, countercyclical fiscal policy and improved fiscal discipline (Cordes et al. 2015). The study also finds that expenditure rules are associated with lower expenditure volatility and higher public investment efficiency. In addition, most expenditure aggregates tend to be more easily understood than alternative indicators, such as the structural balance, although arguably the targeted rate of growth can still be based on unobserved variables (e.g. for the EU expenditure benchmark). This is because they rely less on estimated and unobservable variables, making expenditure rules more transparent and easier to monitor in real time.

**Only a few studies examine the interaction between national and international rules, and their conclusions differ.** Looking at 74 developing countries over 1990-2007, Tapsoba (2012) finds that the effect of fiscal rules is reduced by the presence of supranational rules, an impact explained by the generally weak enforcement of supranational rules in these countries. In contrast, Heinemann et al. (2018) find in their metadata analysis of fiscal rules that when the model controls for supranational rules, then the impact of national rules has higher levels of statistical significance.

**There seems to be a tendency to comply more with expenditure rules than with other fiscal rules, especially when the targeted aggregate is directly under government control.** Given the challenges posed by assessing compliance with fiscal rules, only a few studies provide evidence of compliance. The study by Cordes et al. (2015) finds that countries comply more often with expenditure rules than with other fiscal rules. Moreover, compliance is higher if the expenditure target is directly under governmental control and if the rule is enshrined in law or in a coalition agreement. Reuter (2015) examines compliance with 23 national numerical fiscal rules in force between 1994 and 2012. The study finds compliance for about 50% of the observations. It also shows that national numerical fiscal rules have a strong and positive impact on budgetary discipline, even if compliance is less than total.

**Drawbacks of expenditure rules include a change in expenditure composition and reduced incentives for efficient revenue policies.** Expenditure rules also have some less desirable properties, so it is important to design them carefully (Box II.2.1). Specifying a target in terms of expenditure as a percentage of GDP would confer a procyclical behaviour on expenditure. This means it is preferable to specify the target in a different way. In raising the fiscal effort on the expenditure side, expenditure rules could change the composition of spending, by giving preferential treatment to items that are politically harder to cut (wages and public consumption) at the expense of capital investment, which is much more likely to produce growth. This is confirmed by empirical studies by Dahan and Strawczynski (2013), and Bedogni and Meaney (2017). Moreover,

introducing expenditure rules could result in less attention being paid to revenue mobilisation and reforms (OECD 2010). Taking those shortcomings into account, the literature often advises supplementing expenditure rules with a budget balance rule or revenue rule (Ayuso-i-Casals 2012, IMF 2018).

#### Box II.2.1: Key features for an effective design of expenditure rules

**How you specify the target affects the properties of the expenditure rule** <sup>(1)</sup>. As thoroughly documented by Ayuso-i-Casals (2012), each way of specifying the target has its own advantages and disadvantages.

- ***The expenditure rule target can be expressed as a ratio of expenditure to GDP, in numerical terms or as a growth rate.*** If the aim is to avoid a procyclical bias, it is unadvisable to specify a target as a percentage of GDP, as that encourages higher expenditure at times of economic expansion and lower expenditure when the economy is contracting. Conversely, a ceiling with a numerical target (expressed in nominal or real terms) or a reference to a growth rate (e.g. GDP, nominal output) would be less procyclical and be perceived, at least in the case of a numerical target, as a more observable and hence binding objective.
- ***Spending can refer to nominal or real expenditure.*** On the one hand, spending targets specified in nominal terms can be more transparent and hence easier to monitor. They can also require a higher-than-expected adjustment in the event of positive inflation surprises. On the other hand, if the target is specified in real terms, compliance is not affected by inflation and the target can be valid if the government intends to keep the volume of goods and services stable. However, a real target could be prone to revisions of the deflator, making the target less visible and firm. It is also challenging to design the appropriate benchmark (i.e. counterfactual scenario) with which spending developments should be compared <sup>(2)</sup>.
- ***The target can refer to different coverages of expenditure.*** Interest payments are often excluded, as they are not under direct government control in the short term. In some instances, public investment is also excluded, to avoid a composition bias against the important growth-oriented item of public investment. Cyclically-sensitive items are also usually excluded, as they are not under government control in the short run. This applies to unemployment benefits, for example.
- ***Finally, the same elements of national fiscal frameworks that help to strengthen national fiscal rules also contribute in general to stepping up expenditure rules.*** These include i) a statutory basis that makes them hard to modify (Inman 1996); ii) enforcement and monitoring by an independent body; iii) mechanisms to correct for past deviations from the target or the adjustment path to it; iv) and consistency with medium-term budgetary plans. In addition, and as put forward by Kopits and Symansky (1998) fiscal rules would benefit from a wide range of properties, including simplicity, transparency, flexibility (i.e., the possibility for the rules to adapt to changing conditions), consistency with their final goal, and compatibility with structural reforms. Finally, fiscal rules and fiscal frameworks more generally need strong political commitment and social consensus, and should be both transparent and comprehensive.

<sup>(1)</sup> This part draws largely on Ayuso-i-Casals (2012).

<sup>(2)</sup> Instead of using the 10-year potential growth rate, the spending developments could be compared to a price index (e.g. HICP), so that neutral spending policy is defined as spending that is constant in real terms (ECB, 2014).

# 3. PERFORMANCE OF SPENDING RULES AT EU LEVEL

## 3.1. BACKGROUND AND CONCEPTUAL FRAMEWORK

One main lesson of the pre-Great Recession period was that the change in the structural balance is an imperfect indicator of the actual fiscal effort. Since the SGP reform in 2005, a key indicator of the discretionary fiscal effort of the preventive arm of the SGP has been the change in the structural balance. The change in the structural balance corresponds to a top-down indicator of the fiscal effort<sup>(80)</sup>. It corrects the budget balance for the economic cycle and certain one-off measures, since they have only a temporary effect and thus cannot lead to a sustained impact on the government’s fiscal position (Box II.3.1). While the change in the structural balance is well-established and widely-known, it can be distorted by non-policy effects. If that happens, it will measure the fiscal effort imperfectly. This, for instance, was what happened in Spain in the pre-Great Recession period, where unsustainable revenue windfalls stemming from asset bubbles gave a too rosy picture of the underlying budgetary position (Graph II.3.1).

potential growth. The expenditure benchmark can be considered a quasi-bottom-up measure: It is based on a bottom-up narrative approach to identify discretionary revenue measures<sup>(81)</sup> and relies on a top-down approach on the expenditure side<sup>(82)</sup>. The expenditure benchmark nets out factors that are beyond government control in the short run, namely the economic cycle, one-off measures, interest payments and government expenditure on EU programmes that is fully matched by revenue from EU funds. Discretionary revenue measures are removed to measure the fiscal effort irrespective of the size of the government. In addition, public investment in excess of smoothed public investment is subtracted from total expenditure to protect the sustainable part of public investment. Finally, the expenditure benchmark smooths potential GDP over 10 years to mitigate the impact of revisions (Graph II.3.2, Box II.3.1)<sup>(83)</sup>. Despite the positive features, the expenditure benchmark faces challenges, in particular in terms of data availability and measurement of discretionary revenue measures (accuracy may depend on government information, while indirect effects are difficult to capture).

Graph II.3.1: Fiscal effort in Spain (1999-2019, % of GDP)



Note: Positive (negative) values correspond to a fiscal tightening (loosening).

Source: Commission spring 2019 forecast.

As a consequence, the 2011 reform of the SGP introduced the expenditure benchmark as a second indicator of the actual fiscal effort in the preventive arm of the SGP. The basic idea of the expenditure benchmark is to identify the actual fiscal effort by comparing expenditure growth (net of discretionary revenue measures and other factors) against the benchmark of 10-year average

Graph II.3.2: Measurement of the fiscal effort through the expenditure benchmark and the structural balance – a comparison

	Net of business cycle	Net of one-offs	Net of interest exp.	Net of EU funds	Net of discr. revenue measures	Smooth investment	Smooth potential GDP
EB fiscal effort	✓	✓	✓	✓	✓	✓	✓
SB fiscal effort	✓	✓	✗	✗	✗	✗	✗

Quantitative analyses on the performance of the EU expenditure benchmark do not exist to the best of our knowledge. There is a literature on the theoretical and empirical performance of fiscal rules in general<sup>(84)</sup> and spending rules in particular (Chapter II.2). However, a thorough quantitative assessment of the key indicators of the preventive arm of the SGP, namely the EU expenditure benchmark also with respect to the structural balance, does not exist as far as we are aware.

<sup>(80)</sup> Alesina and Perotti (1995).

<sup>(81)</sup> Romer and Romer (2010).

<sup>(82)</sup> Carnot and de Castro (2015).

<sup>(83)</sup> European Commission (2019a).

<sup>(84)</sup> For a survey, see Heinemann et al. (2018).



**The chapters that follow assesses the performance of the EU expenditure benchmark also vis-à-vis the structural balance across three dimensions, which are considered particularly relevant to a well-functioning fiscal framework.**

- **Sustainability:** Would the indicators have ensured the long-term sustainability of public finances if the Member States had applied and complied with them since 1999 (Chapter II.3.2)?

The SGP was designed primarily to tame the deficit bias and prevent and, whenever necessary, correct excessive deficits and debt and to keep public finances sustainable. High public debt can hamper economic growth<sup>(85)</sup>, delay the recovery process<sup>(86)</sup>, jeopardise financial stability<sup>(87)</sup> and distort the effective functioning of monetary policy<sup>(88)</sup>.

- **Stabilisation:** Do the indicators provide an appropriate degree of stabilisation (Chapter II.3.3)?

While the main goal of the SGP is to prevent excessive deficits and debt, it should, in principle, allow Member States to deal with normal cyclical fluctuations by letting automatic stabilisers operate freely<sup>(89)</sup> (Chapter II.3.2). In the case of very large shocks<sup>(90)</sup> or constrained monetary policy<sup>(91)</sup>, automatic stabilisers alone may not be sufficient to smooth income and demand and may need to be supplemented by discretionary fiscal policy. However, discretionary fiscal policy interventions can have drawbacks (e.g. imprecise design, implementation lags, not being offset in bad times, objectives unrelated to stabilisation) and they should be used only if needs are clear and they pose no risk to the sustainability of public finances.

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<sup>(85)</sup> While there is clear evidence that countries with high public debt grow more slowly (Reinhart and Rogoff 2010, Woo and Kumar 2015, Chudik et al. 2017), there is a disagreement about the precise threshold level of debt-to-GDP beyond which growth slows down significantly.

<sup>(86)</sup> Jordà et al. (2016).

<sup>(87)</sup> Beck (2012).

<sup>(88)</sup> Issing (2017).

<sup>(89)</sup> For an assessment of automatic stabilisers in the EU, see Chapter I.2 of this report or Mohl et al. (2019), European Commission (2017), in 't Veld et al. (2013), Dolls et al. (2012).

<sup>(90)</sup> Christiano et al. (2011).

<sup>(91)</sup> Blanchard et al. (2013), Blanchard and Leigh (2013).

- **Predictability:** Do the indicators display the properties of reliable indicators, i.e. are they unbiased and do they guarantee a high level of predictability (Chapter II.3.4)?

The Commission forecast has implications for fiscal surveillance in that it triggers procedural steps under the preventive and/or corrective arm of the SGP. Unbiased, high-quality projections are thus essential for fiscal surveillance to work effectively<sup>(92)</sup>. The latest reforms of the SGP put greater emphasis on the quality of forecasts. For instance, the Directive on budgetary frameworks as part of the six-pack reform of 2011 requires Member States to engage regularly in a technical dialogue with the Commission. The two-pack reform requires euro area Member States to prepare or at least endorse macroeconomic projections for draft budgets by independent bodies.

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<sup>(92)</sup> Leal et al. (2007).

*Box II.3.1: Assessing the actual fiscal effort under the preventive arm of the SGP*

**This box describes the two indicators used to measure the actual fiscal effort in the preventive arm of the Stability and Growth Pact (SGP).** The concept of the fiscal effort plays a crucial role in assessing compliance with the SGP. While not observable, the fiscal effort is intended to measure the sustainable, i.e. non-temporary, effect of government policy on the budget balance and thereby to serve as an indicator for which the government can be held accountable <sup>(1)</sup>.

**Since the reform of the SGP in 2005, the actual fiscal effort in the preventive arm has been assessed by the change in the structural balance <sup>(2)</sup>:**

$$actual\ effort_t^{SB} = \Delta sb_t = \Delta(hb_t - \epsilon_t og_t - oo_t)$$

The change in the structural balance ( $\Delta sb$ ) corresponds to a top-down indicator of the fiscal effort. It corrects the general government headline balance ( $hb$ ) for the economic cycle and certain one-off measures ( $oo$ ) <sup>(3)</sup>. The impact of the economic cycle is measured by applying a commonly agreed method of cyclical adjustment which was developed by the Commission <sup>(4)</sup>. In this method, the cyclical component of the budget balance is the product of the output gap ( $OG$ ), i.e. the difference between real and potential GDP, and the estimated sensitivity of the government balance with respect to output ( $\epsilon$ ) <sup>(5)</sup>. A positive (negative) value corresponds to a fiscal tightening (loosening).

**Since the 2011 reform of the SGP (the six-pack reform), the actual fiscal effort has also been assessed by applying the expenditure benchmark methodology.** The basic idea is to compare the growth of general government expenditure net of several factors with an appropriate benchmark. The expenditure benchmark can be considered a quasi-bottom-up measure: It is based on a bottom-up narrative approach to identify discretionary revenue measures <sup>(6)</sup> and relies on a top-down approach on the expenditure side <sup>(7)</sup>. This indicator can be constructed in three steps.

**First, the net expenditure growth rate is determined.** For this purpose, a modified expenditure aggregate (MAE) is calculated:

$$MAE_t = TE_t - IE_t - EU_t - UB_t - OO_t - INV_t + \frac{1}{4} \cdot \sum_{t=-3}^1 INV_t$$

The modified expenditure aggregate nets out several factors from total expenditure ( $TE$ ) for which the government is not considered accountable in the short term, namely interest expenditure ( $IE$ ), expenditure on EU programmes fully matched by revenue from EU funds ( $EU$ ) and cyclical unemployment benefit expenditure ( $UB$ ). One-off measures ( $OO$ ) are not taken into account either, since they have only a temporary effect. Finally, public investment in excess of smoothed public investment ( $INV$ ) is subtracted from total expenditure to protect the non-excessive part of public investment. The net expenditure growth rate ( $g$ ) is then obtained by subtracting discretionary revenue measures ( $DRM$ ) from the modified expenditure aggregate that have an incremental effect on revenues collected in  $t$  with respect to  $t-1$ :

$$g_t = \frac{MAE_t - DRM_t - MAE_{t-1}}{MAE_{t-1}}$$

<sup>(1)</sup> European Commission (2013).

<sup>(2)</sup> In terms of notation, we denote variables in percent of (actual or potential) GDP in lower cases and variables in levels (e.g. in millions of euro) in capital letters.

<sup>(3)</sup> These measures capture certain one-off revenues (e.g. sales of telecommunication licences) and one-off capital transfers (e.g. financial assistance to the banking sector).

<sup>(4)</sup> Havik et al. (2014), Larch and Turrini (2009).

<sup>(5)</sup> The semi-elasticity of the headline balance measures the percentage by which the general government budget reacts following a change in the economic cycle (Mourre et al. 2019).

<sup>(6)</sup> Romer and Romer (2010).

<sup>(7)</sup> Carnot and de Castro (2015).

*(Continued on the next page)*

Box (continued)

**Second, the benchmark against which the net expenditure growth rate is compared is calculated.** Net expenditure growth is compared with potential GDP growth. Since annual potential GDP growth rates have been frequently revised during the surveillance cycle, net expenditure growth is compared against the more stable 10-year geometric average potential GDP growth rate ( $y$ ), taking into account growth rates from  $t-5$  to  $t+4$ , i.e.:

$$\bar{y}_t^{SF,t-1} = \left( \sqrt[10]{\prod_{t=-5}^4 (1 + y_t)} - 1 \right)$$

where potential growth is measured at the time of the Commission spring forecast of the preceding year and then ‘frozen’ throughout the surveillance cycle. While potential GDP is measured in real terms, expenditure plans are typically set in nominal terms. The benchmark ( $\bar{y}_t^*$ ) therefore corresponds to the 10-year potential growth rate inflated using the GDP inflation rate ( $p_t$ ):

$$\bar{y}_t^* = (1 + \bar{y}_t^{SF,t-1}) \cdot (1 + p_t^{SF,t-1}) - 1$$

**Finally, the actual fiscal effort based on the expenditure benchmark methodology is determined as follows:**

$$actual\ effort_t^{EB} = (\bar{y}_t^* - g_t) \cdot \frac{MEA_{t-1}}{GDP_t}$$

To make it comparable to the structural balance-based effort, it is expressed (i) as a percentage of GDP and (ii) as a difference between benchmark and net expenditure growth rate. This implies that positive (negative) values correspond to a fiscal tightening (loosening) <sup>(8)</sup>.

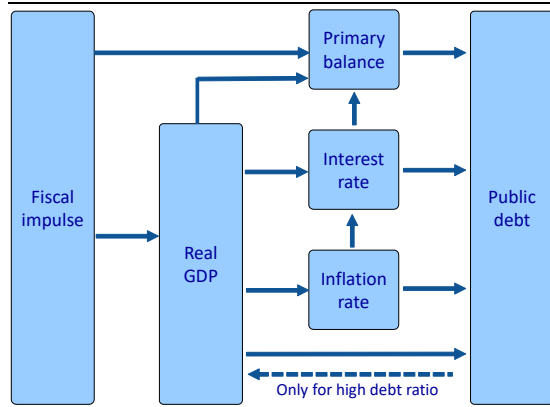
<sup>(8)</sup> Note that some expenditure components are only partly available in previous Commission forecast vintages. This includes government expenditure on EU programmes, which is fully matched by EU funds revenues (only available since Commission spring 2017 forecast), cyclical unemployment benefits, discretionary revenue measures (since Commission autumn 2009 forecast).

### 3.2. ASSESSING OF SUSTAINABILITY

#### 3.2.1. Approach to assessing sustainability

A simple dynamic model is used to assess whether the rules of the preventive arm of the SGP would have ensured sustainable public finances if Member States had applied and complied with them since 1999 (see Box II.3.2 for a detailed description of the model). Summarised in one sentence, the framework models the effects of a fiscal adjustment path in compliance with the preventive arm on output, prices, interest rates, fiscal balances and debt starting from the data baseline over the 1999-2019 period<sup>(93)</sup>. In greater detail, the model first determines the fiscal adjustment compared to the baseline scenario required to comply with the preventive arm (in the following fiscal impulse). The fiscal impulse has a direct impact on the level of real GDP (via a fiscal multiplier)<sup>(94)</sup> and the primary balance as well as an indirect impact on prices (Phillips curve) and interest rates (Taylor rule). This makes it possible to determine a counterfactual public-debt-to-GDP path (Graph III.3.3). While the model borrows some elements of standard macroeconomic models (such as Phillips curve and Taylor rule), it abstracts from most behavioural equations.

Graph II.3.3: Main transmission channels of the fiscal impulse on public debt under the counterfactual scenario



<sup>(93)</sup> Our work draws on similar counterfactual exercises, which are currently in the making, see Arnold and Garcia-Macia (2020), Hauptmeier and Kamps (2020).

<sup>(94)</sup> The design of the fiscal multiplier follows Ramey (2019); see for an empirical overview of fiscal multipliers Gechert and Rannenberg (2018).

The model compares the fiscal path of the baseline scenario with three counterfactual scenarios.

- **Strict compliance (S.1):** Under the strict compliance scenario, the fiscal impulse is defined as the difference between the *required* fiscal adjustment to comply strictly with the preventive arm and the *actual* fiscal effort under the baseline scenario. The required fiscal effort is equivalent to the fiscal adjustment requested by the matrix of requirements<sup>(95)</sup> or, if smaller, the distance of the structural balance to the medium-term budgetary objective (MTO)<sup>(96)</sup>. The actual fiscal effort corresponds to one of the two key indicators of the preventive arm of the SGP, namely the effort derived from the expenditure benchmark methodology and the change in the structural balance (Box II.3.1). Data for the baseline scenario are taken from the Commission spring 2019 forecast. Note that the adjustment path between the two fiscal efforts differs only for Member States on their adjustment path towards the MTO. The model assumes that Member States reaching their MTO will then stay at their MTO.
- **Compliance with a capped fiscal effort (S.2):** The fiscal impulse is defined as in S.1 but capped at an interval between +1 and -1 to prevent a too demanding speed of fiscal adjustment. Compared with the strict compliance scenario, broad compliance implies a somewhat more back-loaded fiscal adjustment path for some Member States.
- **Compliance with a capped fiscal effort and an escape clause (S.3):** The fiscal impulse is defined as in S.2, but an escape clause is introduced. That escape clause is triggered in severe downturns, which are defined in line with the SGP’s rationale as ‘exceptionally bad times’, i.e. a (counterfactual) output gap below -4% of potential GDP and/or a negative real GDP growth rate. In severe downturns, the fiscal impulse corresponds to the minimum

<sup>(95)</sup> In the EU fiscal governance framework, the required annual fiscal adjustment is modulated over the economic cycle in line with the so-called ‘matrix of requirement’ (European Commission 2019a).

<sup>(96)</sup> The MTO is defined in structural terms. We use the country-specific MTOs as defined since 2006. For the time before 2006, we set the MTO for each Member State to a (structural) deficit of 0.5% of GDP.

between the fiscal effort under the baseline scenario and zero. Compared to the previous scenarios, this results in a looser fiscal policy response during severe downturns.

### 3.2.2. Main findings

**The main findings of the analysis are presented in three blocks.** First, developments in spending dynamics under the baseline scenario are introduced, i.e. based on the Commission spring 2019 forecast. Second, the counterfactual scenarios for both types of fiscal efforts (based on expenditure benchmark and structural balance methodology) are shown. Finally, sensitivity analyses are presented.

#### Baseline scenario: spending dynamics and size of fiscal effort

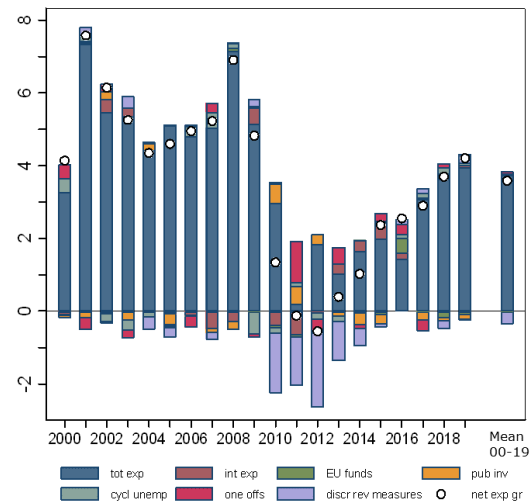
**Net expenditure grew by an average of about 3.5 percent annually in the EU between 2000 and 2019** (Graph II.3.4) <sup>(97)</sup>. Among the expenditure benchmark components, the largest positive contributions to expenditure growth came from total general government expenditure (3.7 pps.), followed by one-off and temporary measures (0.1 pps.). Discretionary revenue measures contributed negatively to net expenditure growth (-0.3 pps.), mainly because of tax hikes in the years following the outbreak of the Great Recession (between 2009 and 2014). The remaining factors have a non-negligible impact on the net expenditure growth rate in certain years, but their contributions cancel out over the 2000-2019 period as a whole <sup>(98)</sup>.

**The actual fiscal effort over the past twenty years corresponds to a moderate annual fiscal tightening of around 0.2 pps. of GDP in the EU on average** (Table II.3.1, Graph II.3.4). The tightening is slightly stronger when measured in ‘real time’, i.e. based on the Commission spring forecast vintages for the preceding year, than when

measured ‘*ex post*’, i.e. based on the Commission spring 2019 forecast <sup>(99)</sup>. The difference between both datasets is however small (0.1 pps.).

**The tightening of the actual fiscal effort was slightly stronger when measured with the expenditure benchmark than with the structural balance methodology.** However, the difference between the two indicators is small (0.1 pps.).

Graph II.3.4: Key contributions to net expenditure growth (EU, 2000-2019, y-o-y growth rate)



Source: Commission spring 2019 forecast.

Table II.3.1: Descriptive statistics of the fiscal effort (EU, 1999-2019, % of GDP)

	EB fiscal effort		SB fiscal effort		Differ- ence
	Mean	(Obs)	Mean	(Obs)	
Full sample					
Real time	0.3	(434)	0.2	(470)	0.1
Ex post	0.2	(491)	0.1	(493)	0.1
Good times (OG > 0)					
Real time	-0.6	(146)	0.0	(174)	-0.6
Ex post	-0.5	(256)	-0.1	(258)	-0.4
Bad times (OG < 0)					
Real time	0.8	(288)	0.3	(296)	0.5
Ex post	1.0	(235)	0.3	(235)	0.7

Note: Real time refers to the Commission spring forecast vintages over the 2000 to 2019 period; ex-post stems from the Commission spring 2019 forecast. The table shows simple unweighted averages of the fiscal effort for the EU (changing composition).

<sup>(97)</sup> Contributions are calculated as  $\% \Delta_{i,t} = 100 \cdot \frac{q_{i,t} - q_{i,t-1}}{\sum_i q_{i,t-1}} \cdot \left( \frac{q_{i,t}}{q_{i,t-1}} - 1 \right)$ , with  $q_{i,t}$  is the volume of the  $i^{\text{th}}$  component of year  $t$ . EU aggregates are calculated using nominal GDP weights.

<sup>(98)</sup> Small positive, i.e. expenditure decreasing, contributions came from interest expenditure (0.02 pps.) and cyclical unemployment (0.01 pps.), while small negative, i.e. expenditure increasing, contributions arose from investment smoothing (-0.02 pps.) and EU funds (-0.01 pps.).

<sup>(99)</sup> Real-time observations stem from the Commission spring forecast vintages for the preceding year, while *ex-post* data come from the Commission spring 2019 forecast.

**The actual fiscal effort measured with the expenditure benchmark methodology turned out to be more expansionary in good times and more contractionary in bad times than the change in the structural balance.** This in turn means that it is more demanding to achieve the required fiscal requirements based on the expenditure benchmark than the structural balance in good times, while it is less demanding to achieve those requirements based on the expenditure benchmark than the structural balance in bad times. The finding holds irrespective of the type of database used (real time vs. *ex post*).

#### Counterfactual scenario: expenditure benchmark

**Strict compliance with the expenditure benchmark would have required a more front-loaded and tighter fiscal adjustment compared with the baseline scenario** (green line in upper left panel of Graph II.3.5). To start with, we focus on the six largest euro area Member States corresponding to around 85% of total euro area public debt and nominal GDP in 2020. In the strict compliance scenario, the relatively good economic times prior to the outbreak of the Great Recession would have been used to build up fiscal buffers and converge towards the MTO. By 2010, the fiscal adjustment would have been 3.5 pps. of GDP tighter than under the baseline scenario (see cumulated fiscal impulse of Graph II.3.5). After having reached their MTO, Member States would have stayed there. As a result, the fiscal adjustment would have been significantly looser than under the baseline scenario since 2010. Over the entire 20-year period, fiscal tightening under the counterfactual scenario would have been only 0.5 pps. of GDP higher than under the baseline scenario.

**Under the strict compliance scenario, public debt ratios would have declined despite lower growth and inflation thanks to higher primary surpluses and lower interest payments** (green bars in the lower left panel of Graph II.3.5). The more front-loaded and tighter fiscal adjustment in the pre-Great Recession decade would have led to higher primary surpluses and lower interest payments, which would have reduced public debt ratios significantly. The stock flow adjustment is assumed to remain unchanged compared with the baseline scenario.

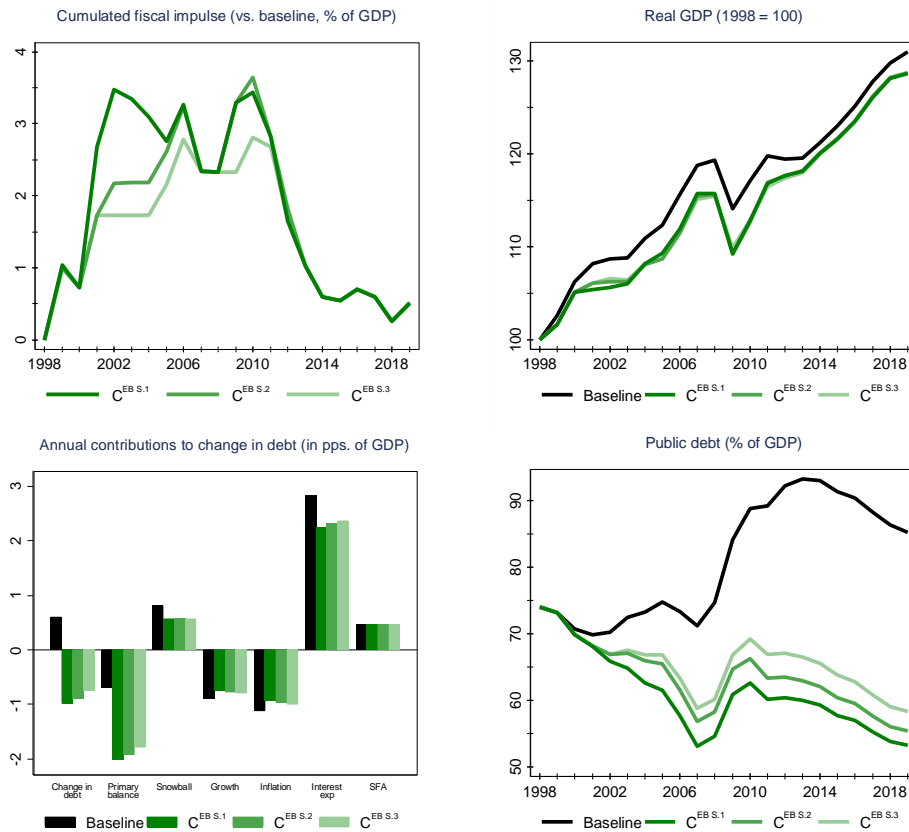
**The size of the adverse GDP effects depends on the assumptions for the fiscal multiplier.** In our baseline scenarios, there is no free lunch with such a fiscal adjustment: debt reduction would have been slowed by lower growth and inflation in comparison with the baseline scenario. The level of real GDP would have been reduced by almost 2% of GDP by the end of 2019 compared with the baseline (green line in the upper right panel of Graph II.3.5). The baseline scenarios shown below are based on a sizeable, non-time varying fiscal multiplier of 0.7 on impact, cumulating to around 1.2 over three years <sup>(100)</sup>. Assuming a more moderate adverse impact (following for instance Giavazzi et al. 2019) would mitigate or even offset the negative impact on GDP (see Box II.3.2. for further details). In addition, the build up of fiscal buffers under the counterfactual scenario would allow Member States to better react to future negative shocks by letting automatic stabiliser play freely and potentially supporting the economy with well-designed discretionary fiscal interventions in case of deep shocks. This would reduce the adverse GDP effects in the future.

**As a result, public debt would have fallen below 60% of GDP in 2019** (green line in the lower right panel of Graph II.3.5). Following the build-up of fiscal buffers, the public-debt-to-GDP ratio would have declined to around 53% of GDP in 2007, i.e. by more than 20 pps. of GDP below the baseline. Public debt would have soared to around 63% of GDP after the outbreak of the Great Recession, before declining again to around 53% of GDP in 2019. Overall, the public-debt-to-GDP ratio would have been significantly lower than under the baseline scenario in both 1999 and 2019.

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<sup>(100)</sup> Ramey (2019).

Graph II.3.5: Counterfactual scenarios: expenditure benchmark (EU6, 1999-2019)



Note: A positive (negative) impulse points to a fiscal tightening (loosening) compared to the baseline scenario.

**The public debt ratio would have been somewhat higher in the event of capping the fiscal effort** (lighter green lines and bars of Graph II.3.5). Under the S.2 scenario, there would be a somewhat slower fiscal adjustment path, owing to the capping of the fiscal impulse at maximum 1% of GDP. Compared with the strict compliance scenario, the impact of primary surplus and interest payments on debt reduction would have been smaller, while the effect of real growth and inflation would have been stronger. As a result, the public debt ratio would have been somewhat higher than under strict compliance (55% of GDP in 2019).

**The public debt ratio would have been somewhat higher in the event of an escape clause** (light green lines and bars of Graph II.3.5). Compared with the previous scenarios, the escape clause would have allowed for a greater fiscal easing during severe downturns, resulting in a more growth-friendly and more back-loaded fiscal

adjustment (S.3 scenario). In the specific example of the six largest euro area Member States shown here, the escape clause would have been triggered twice, namely at the beginning of the 2000s and after the outbreak of the Great Recession. Under the escape clause, public debt would end up about 5 pps. of GDP higher in 2019 than in the S.1 scenario. Still, the public debt ratio would have been lower than under the baseline scenario in 1999 and 2019.

Graph II.3.6: Counterfactual scenarios: expenditure benchmark vs. structural balance (EU6, 1999-2019)



### Counterfactual scenarios: expenditure benchmark vs. structural balance

**The counterfactual scenarios of the expenditure benchmark and structural balance are broadly similar** (Graph II.3.6). The expenditure benchmark typically requires a slightly larger fiscal adjustment in good times and smaller in bad times than the change in the structural balance <sup>(101)</sup>. In the specific case of the EU6 as an aggregate, this leads to a slightly more front-loaded fiscal adjustment path under the expenditure benchmark, resulting in a slightly smaller debt-to-GDP ratio at the end of 2019. Overall, the differences between the two adjustment paths are rather small for two reasons. First, the required fiscal impulses are assumed to differ only for Member States on their

adjustment path towards the MTO, but identical for Member States at their MTO. Second, the baseline scenarios assume that the size of the fiscal multiplier is identical in good and bad times, leading to rather similar counterfactual GDP effects. Assuming that fiscal adjustment has smaller adverse growth effects in good than in bad times, <sup>(102)</sup> implies that the expenditure benchmark ensures a slightly more growth-friendly adjustment path.

**Overall, irrespective of the type of fiscal effort, public debt reduction would have been particularly strong for high-debt Member States** (Graph II.3.7). The simulations show that the counterfactual public-debt-to-GDP ratios are rather close to the baseline scenario for Member States with lower public debt (DE and NL). In Member States with public debt close to or above 100% of GDP (BE, FR, ES, and IT), the

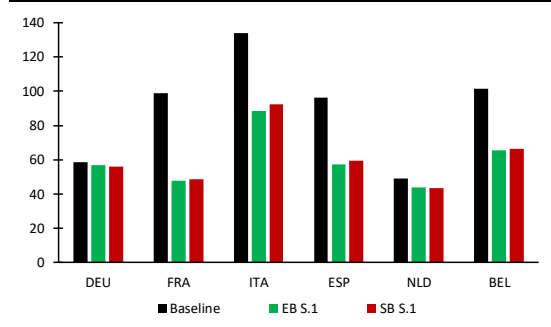
<sup>(101)</sup> The reason for this is that the actual fiscal effort based on the expenditure methodology appears to be slightly smaller in good times and larger in bad times than the structural balance requirement (Table II.3.1).

<sup>(102)</sup> Auerbach and Gorodnichenko (2012).



counterfactual public debt-to-GDP ratios are significantly below the baseline scenario.

Graph II.3.7: Counterfactual debt ratios for the six largest euro area Member States (2019, % of GDP)



**Counterfactual scenarios: robustness analyses**

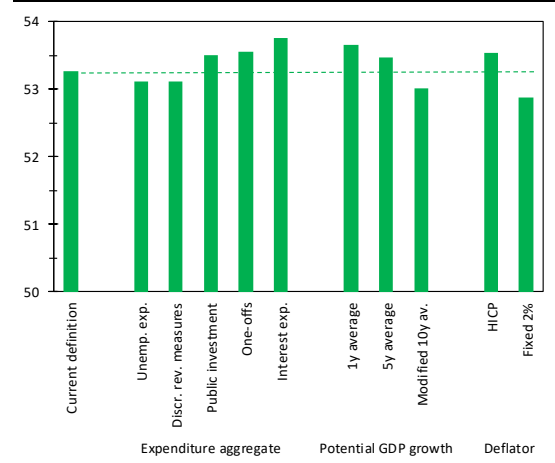
**Modifying the definition of the expenditure benchmark would have had only a minor impact on the counterfactual debt-to-GDP ratios** (Graph II.3.8). We checked the impact of modifying the definition of the *actual* fiscal effort based on the expenditure benchmark methodology. Overall, the impact is rather small.

**Expenditure aggregate:** The debt-to-GDP ratios would be slightly larger if interest expenditure, one-off measures and public investment were *not* netted out from the expenditure aggregate and slightly smaller if unemployment expenditure and discretionary revenue measures were not removed.

**Potential GDP:** Public debt ratios would have been slightly higher if potential growth were measured with an annual or 5-year average growth rate, while it would have been slightly lower based on a modified 10-year average growth rate <sup>(103)</sup>.

**Deflator:** Inflating potential by a fixed 2% would have led to a slightly smaller debt ratio. This is because the counterfactual fiscal adjustment would have been slightly more front-loaded (higher adjustment requirement in the pre-Great Recession years because of inflation exceeding 2%), which would have more than offset the smaller required fiscal adjustment in the post-Great Recession period.

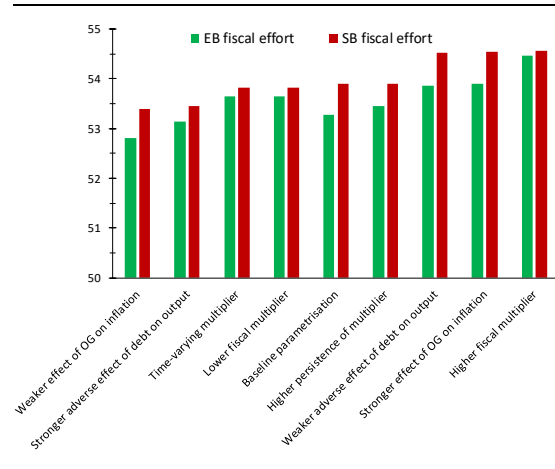
Graph II.3.8: Counterfactual debt ratios – different definitions of the EB-based fiscal effort (EU6, 2019, % of GDP)



Note: The following modifications are assessed: expenditure aggregate: assume that the 5 listed components are not netted out from the modified expenditure benchmark. Potential GDP: Instead of using the 10-year average potential GDP growth (based on the growth rates from t-5 to t+4), use: (i) 1-year potential GDP growth, (ii) 5-year potential GDP growth (t-3, ..., t+1), (iii) modified 10-year potential GDP (t-8, ..., t+1). Deflators: Instead of using the GDP inflation use (i) HICP inflation, (ii) a fixed 2% inflation rate in line with the ECB’s medium-term price stability objective.

**Finally, sensitivity tests on the model parameters broadly confirm the main findings** (Graph II.3.9). We ran robustness tests assessing the effects of different parametrisation of the (i) fiscal multiplier, (ii) pass-through of output gap on inflation and (iii) strength of adverse effects of debt on output. Overall, the main findings hardly differ for the specific case of the EU6 aggregate.

Graph II.3.9: Counterfactual debt ratios – sensitivity analysis (EU6, 2019, % of GDP)



<sup>(103)</sup> The modified 10-year average gives less weight to forecast values, since it is based on the 10-year average ranging from t-8 to t+1 compared with the currently used definition (10-year average from t-5 to t+4).

### Box II.3.2: Assessing fiscal sustainability – a simple dynamic model for counterfactual simulations

This box describes the main features of the simple dynamic model used for the counterfactual fiscal simulations. In a nutshell, the model assesses the impact of an alternative fiscal adjustment path on output, prices, interest rates, fiscal balances and debt departing from the data baseline over the 1999-2019 period. A distinct feature of the framework is to model the counterfactual fiscal adjustment needed to comply with the preventive arm (in the following fiscal impulse). The modelling of the pass-through from the fiscal impulse on real GDP (fiscal multiplier), prices (Phillips curve) and interest rates (Taylor rule) is fairly standard.

#### Notation

In the following, we denote variables from the baseline model, i.e. the Commission spring 2019 forecast, with a superscript  $b$ , variables in levels (e.g. in millions of EUR) in capital letters and variables in ratios (to (potential) GDP or to previous value) in lower case letters.

#### Fiscal impulse

The model is initiated in each year from 1999 to 2019 by determining the fiscal adjustment required under the counterfactual scenario to comply with the preventive arm. We define the fiscal impulse ( $f$ ) as the difference between the *required* fiscal effort to comply with the preventive arm and the *actual* fiscal effort under the baseline scenario:

$$f_t = \text{required effort}_t - \text{actual effort}_t^b \quad (1)$$

where the *required* fiscal effort under the counterfactual scenario is determined in line with the rationale of the SGP's preventive arm as the matrix requirement or, if smaller, the distance of the MTO to the lagged structural balance. The *actual* effort under the baseline scenario corresponds to the two key indicators measuring the actual fiscal effort under the preventive arm, namely (i) the effort derived from the expenditure benchmark methodology and (ii) the change in the structural balance (Box II.3.1). A positive (negative) impulse corresponds to a fiscal tightening (loosening) compared with the baseline scenario.

#### Real side of the economy

The fiscal impulse is supposed to have a direct impact on the real GDP level ( $\tilde{Y}$ ):

$$\tilde{Y}_t = \tilde{Y}_{t-1} \frac{\tilde{Y}_t^b}{\tilde{Y}_{t-1}^b} \left( 1 - \epsilon \left( \sum_{s=0}^S \rho^s (f_{t-s} - f_{t-s-1}) \right) \right) (1 - \tau (d_{t-1} - d_{t-1}^b)) \quad (3)$$

with  $f$  the fiscal impulse as defined in equation (1),  $\epsilon$  the fiscal multiplier,  $S$  an indicator for the persistence (the number of years for which the fiscal impulse affects real GDP), and  $\rho$  a discount factor (measuring the strength of persistence of the fiscal multiplier)<sup>(1)</sup>. Like Chudik et al. (2017), we assume that a high public debt ratio compared to the baseline adversely affects the level of real GDP ( $\tau$ ).<sup>(2)</sup> We assume that this effect only kicks in if public debt under the counterfactual scenario exceeds 60% of GDP.

<sup>(1)</sup> The set-up follows Ramey (2019).

<sup>(2)</sup> Similarly, Bocola (2015) and Rachel and Summers (2019) assume that the negative impact of public debt on output is channelled via a risk premium. Bocola finds that a 60 bps. quarterly increase in risk premium leads to a 1.1.-1.4% loss in annualised output. Rachel and Summers show that a permanent increase in the level of debt of 1% yields to a permanent decrease of 0.01-0.04% in the level of output.

(Continued on the next page)

Box (continued)

The above equation can be transformed into nominal GDP:

$$Y_t = Y_{t-1} \frac{Y_t^b}{Y_{t-1}^b} \frac{1 + \pi_t}{1 + \pi_t^b} \left( 1 - \epsilon \left( \sum_{s=0}^S \rho^s (f_{t-s} - f_{t-s-1}) \right) \right) (1 - \tau (d_{t-1} - d_{t-1}^b)) \quad (4)$$

with  $Y$  the nominal GDP and  $\pi$  the inflation rate.

The output gap is defined as follows:

$$\hat{y}_t = \frac{\tilde{Y}_t}{\tilde{Y}_t^{pot}} - 1 \quad (5)$$

The potential GDP is assumed to be equal to the baseline potential GDP, i.e.  $\tilde{Y}^{pot} = \tilde{Y}^{pot^b}$ .

#### Price effect

The link between the inflation rate and the real side of the economy is modelled via a (backward) Phillips curve <sup>(3)</sup>:

$$\pi_t = \lambda \pi_{t-1} + \beta \hat{y}_t \quad (6)$$

where  $\lambda$  and  $\beta$  are parameters measuring the persistence of past inflation and the strength of the pass-through from the output gap respectively.

#### Interest rate

We define the short-term nominal interest rate on the basis of a Taylor rule <sup>(4)</sup>:

$$i_t = i_0 + \gamma (\rho_\pi (\pi_t - \pi^*) + \rho_y \hat{y}_t) \quad (7)$$

with  $i^0$  the central bankers nominal target,  $\pi^*$  its inflation target,  $\rho_y$  and  $\rho_\pi$  are parameters for the reaction of the central bank to output gap and inflation respectively and  $\gamma$  the weight of the Member State taken into account the central bank's decision. The weight is 1 if the Member State concerned has a fully independent monetary authority, 0 if its interest rate is pegged to another monetary authority and it corresponds to nominal GDP as a proportion of euro area GDP for euro area Member States.

To compute the government's interest burden, we calculate the sovereign interest rate due on the newly emitted bonds as follows <sup>(5)</sup>:

$$si_t = i_t + tp_t^b + rp_t \quad (8)$$

with  $i$  the short-term interest rate as defined above,  $tp$  the term premium and  $rp$  the risk premium. The term premium is defined as the difference between the sovereign interest rate and the short-term rate of Germany and is assumed to be unchanged with respect to the baseline. The risk premium is estimated by applying a panel data approach to a sample of Member States covering the 1998-2019 period, using data from the Commission spring 2019 forecast. In a nutshell, the panel approach assumes that the risk premium depends

<sup>(3)</sup> Mankiw and Reis (2002), Gali and Gertler (1999), Gali (2008).

<sup>(4)</sup> Taylor (1993).

<sup>(5)</sup> Missale and Blanchard (1991), Wolswijk and de Haan (2005), Missale et al. (2002).

(Continued on the next page)

Box (continued)

on past fiscal performance, the economic cycle and country- and time-specific features <sup>(6)</sup>. We use the estimated coefficients to predict the risk premium in each year.

As a simplifying assumption, we derive the implicit interest rate as follows (assuming the maturity ( $m$ ) is long enough):

$$\tilde{s}i_t = \frac{1}{m} \tilde{s}i_t + \frac{m-1}{m} \tilde{s}i_{t-1} \quad (9)$$

### Fiscal block

The structural balance is defined as follows:

$$sb_t = sb_t^b + cf_t \quad (10)$$

where  $cf$  is the cumulated fiscal effort.

We can then link the headline balance, the fiscal impulse and the output gap <sup>(7)</sup>:

$$hb_t = hb_t^b + cf + \varepsilon (\hat{y}_t - \hat{y}_t^b) \quad (11)$$

and determine the primary balance:

$$pb_t = hb_t^b + ip_t = hb_t^b + d_{t-1} \tilde{s}i_t \quad (12)$$

where  $ip$  corresponds to interest payments and  $d$  refers to the public-debt-to-GDP ratio.

The debt accumulation can then be computed as follows:

$$d_t = pb_t + \frac{1 + \tilde{s}i_t}{(1 + g_t)(1 + \pi_t)} d_{t-1} + sfa_t \quad (13)$$

with  $\tilde{s}i$  the implicit (or sovereign) interest rate and  $g$  the nominal GDP growth rate. A simplifying assumption is that the stock flow adjustment is identical in the baseline and counterfactual simulation ( $sfa_t = sfa_t^b$ ).

The change in debt can be broken down in the following contributions:

$$\Delta d_t = -pb_t + \underbrace{d_{t-1} \frac{\tilde{s}i_t}{(1 + g_t)}}_{\text{interest rate}} - \underbrace{d_{t-1} \frac{\tilde{g}_t}{(1 + g_t)}}_{\text{real growth h}} - \underbrace{d_{t-1} \frac{\pi_t(1 + \tilde{g}_t)}{(1 + g_t)}}_{\text{inflation rate}} + sfa_t \quad (14)$$

snowball

where  $\tilde{g}/g$  corresponds to the real/nominal GDP growth rate <sup>(8)</sup>. Note that a higher interest rate contributes to an increase in the debt ratio, while higher real GDP growth and higher inflation erode the debt-to-GDP ratio.

<sup>(6)</sup> The dependent variable is defined as the difference between long- and short-term nominal interest rates. It is explained by the following independent variables (*size of estimated coefficient shown in brackets*): (i) difference of lagged public debt ratio from the country-specific mean (+0.04), (ii) squared difference of the public debt ratio from 80% of GDP (+0.004), (iii) difference between the lagged change in public debt from the debt reduction benchmark, defined as one twentieth of the difference between the lagged public debt and 60% of GDP (+0.07), real GDP growth rate (-0.1) and country and time dummies. The model is estimated using a LSDV estimator. The R-squared is 0.62.

<sup>(7)</sup> Mourre et al. (2019).

(Continued on the next page)

Box (continued)

### Calibration

The counterfactual scenarios shown in Graph II.3.5 and II.3.6 are based on the baseline parametrisation (Table 1, column 1). The sensitivity of the results is checked by changing the parameters (Table 1, column 2, 3). The findings appear broadly robust to those changes (Graph II.3.9).

Table 1: Calibration of counterfactual model

Block	Parameter	Baseline	Sensitivity	
		(1)	low (2)	high (3)
	Fiscal multiplier ( $\epsilon$ )	0.7	0.5	1
Real economy	Duration of impact on GDP ( $S$ )	3		
	Persistence of multiplier on GDP ( $\rho$ )	0.5		
	Pass-through from debt to GDP ( $\tau$ )	0.001	0.0005	0.0015
Prices	Persistence of past inflation ( $\lambda$ )	0.5		1
	Pass-through from output gap to inflation ( $\beta$ )	0.1	0.05	0.15
Interest rate	Pass-through from inflation to interest rate ( $\rho_\pi$ )	1.5		
	Pass-through from output to interest rate ( $\rho_y$ )	0.5		
	Length of maturity ( $m$ )	7		

Source:

### Solving the model

The model is solved iteratively for each year going forward from 1998 to 2019. In 1998, the simulation and its past values are assumed to be equal to the baseline. Data for the baseline scenario come from the Commission 2019 spring forecast.

### Caveats

- While the framework offers a fairly economical formulation and straightforward interpretation, it comes at the expense of a missing micro-foundation.
- There is extensive literature on the value of fiscal multipliers. In particular, the multiplier can vary depending on the channel of the fiscal impulse (revenue vs. spending side)<sup>(9)</sup> or to the phase of the economic cycle<sup>(10)</sup>. The model's current set-up does only take the latter into account<sup>(11)</sup>.
- The model does not take account of the impact of the fiscal stimulus on long-term growth. By assumption, the deviation from the baseline calculated by the model is part of the business cycle and potential output is unchanged. This does not imply that the fiscal impulse needs to be temporary, but the channels by which it could influence potential growth are not modelled.

<sup>(8)</sup> The contribution from the exchange rate effect to debt is assumed to be zero.

<sup>(9)</sup> Alesina et al. (2019).

<sup>(10)</sup> Auerbach and Gorodnichenko (2012).

<sup>(11)</sup> See counterfactual scenario with time-varying multipliers shown in Graph II.3.9. It assumes a fiscal multiplier of 0.5 if the output gap is positive and 1 if the output gap is negative.

### 3.3. ASSESSING OF STABILISATION PROPERTIES

#### 3.3.1. Approach to assessing the stabilisation properties

**The cyclicity of the fiscal effort is assessed using a panel regression model** (see Box II.3.3 for a more detailed description). The empirical assessment is conducted based on a fiscal reaction function approach <sup>(104)</sup>. The key objective is to assess the economic cycle's impact on the discretionary component of fiscal policy, i.e. the actual fiscal effort. This effort is measured following the methodology of the expenditure benchmark and the structural balance (Box II.3.1). To enable comparison of the size and significance level, the indicators of the fiscal effort are standardised to have a mean of 0 and a standard deviation of 1. The main independent variable is an indicator for the economic cycle. We primarily proxy it with the *level* of the output gap, which corresponds to the key variable determining the speed of fiscal adjustment in the EU fiscal surveillance framework. The findings are broadly robust to the use of the *change* in the output gap <sup>(105)</sup>. We also control for the public indebtedness of Member States, EU fiscal rules and additional relevant independent variables in line with the literature. The sample covers data for up to 28 Member States over the period 2000 to 2019. The analysis is based on real-time data from past Commission spring forecast vintages and on *ex-post* data using the Commission spring 2019 forecast.

#### 3.3.2. Main findings

##### Cyclicity of discretionary fiscal policy

**The regression analysis points to the procyclical nature of discretionary fiscal policy, i.e. being expansionary in good times and contractionary in bad times.** The findings from the regression analysis reveals that the discretionary fiscal effort is procyclical as shown by the significant and negative coefficient of the contemporaneous output gap (Table II.3.2, columns 1–4). This implies that there has been a tightening of the fiscal effort in bad times and a loosening in good times in the EU on average over the past 20 years.

This result turns out to be robust to several sensitivity tests, namely concerning changes of the type of fiscal effort (EB vs. SB), dataset (real time vs. *ex post*), set of control variables, such as the measurement of the economic cycle and (iv) estimation techniques.

**Procyclicality of discretionary fiscal policy happens in particular in good times** (Table II.3.2). An important question is whether procyclicality occurs throughout the cycle or only during an upturn or downturn. The empirical findings from a panel interaction model show that good times are characterised by a procyclical pattern, whereas bad times exhibit an acyclical pattern.

**Apart from the economic cycle, the fiscal effort is driven by public debt ratios, EU fiscal rules, and political-economy factors** (Table II.3.2). Higher debt ratios seem to trigger a fiscal tightening to improve the budgetary position. Member States on their adjustment path to the MTO or under an excessive deficit procedure (EDP) implement a stronger consolidation. Election years are in most specifications characterised by a fiscal loosening. Finally, we find evidence that the (initial) years of the Great Recession (2008-2009) resulted in a fiscal loosening <sup>(106)</sup>.

**Based on our counterfactual scenario, full compliance with the preventive arm would have turned discretionary fiscal policy from procyclical to acyclical** (Table II.3.2). We assess the cyclicity of the fiscal effort based on the counterfactual scenario of strict compliance with the preventive arm from the previous chapter (Chapter II.3.2). For that purpose, we use as the dependent variable the fiscal effort required to comply with the preventive arm, which was determined under the counterfactual scenario <sup>(107)</sup>. We also use the counterfactual variables of the output gap and the distance towards the MTO, but keep the remaining control variables unchanged compared with the baseline specification. Those counterfactual variables are derived based on *ex-post* data from the Commission spring 2019 forecast. Overall, the findings suggest that strict

<sup>(104)</sup> Lane (2003).

<sup>(105)</sup> Previous evidence points to the sensitivity of the findings to the type of indicators used to measure the economic cycle (European Commission 2019b).

<sup>(106)</sup> See also Braz and Carnot (2019).

<sup>(107)</sup> Using the notation introduced in Chapter II.2.3, it corresponds to the sum of the *actual* fiscal effort under the baseline scenario and the fiscal impulse.

Table II.3.2: Cyclicity of fiscal policy – main regression results

Specification	Baseline				Good vs. bad times		Counterfactual	
	Actual fiscal effort				Required fiscal effort			
Dependent variable:								
Fiscal effort	EB	SB	EB	SB	EB	SB	EB	SB
Dataset	Real time (COM SF 2000-19)		Ex post (COM SF 2019)		Real time (COM SF 2000-19)		Ex post (COM SF 2019)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Output gap (t)	-0.176*** (-5.339)	-0.103** (-2.372)	-0.161*** (-7.939)	-0.144*** (-5.611)	-0.156 (-1.571)	-0.044 (-0.824)	0.040 (1.473)	0.068 (1.144)
Public debt (t-1)	0.004*** (2.854)	0.007*** (4.555)	0.006*** (3.601)	0.008*** (5.376)	0.004*** (2.802)	0.007*** (4.383)	0.012* (1.783)	0.002* (1.943)
Distance to MTO (t)	0.097*** (2.764)	0.220*** (5.250)	0.125*** (3.109)	0.196*** (4.575)	0.097*** (2.802)	0.224*** (5.250)	0.463*** (4.547)	0.288*** (5.118)
EDP (t)	0.313** (2.302)	0.291** (-2.003)	0.103 (0.808)	0.050 (0.492)	0.311** (2.312)	0.292** (2.004)	0.291** (2.013)	0.183* (1.979)
Election year (t)	-0.002* (-1.698)	-0.001 (-0.733)	-0.002** (-2.190)	-0.002* (-1.795)	-0.002* (-1.776)	-0.001 (-0.646)	-0.003 (-1.183)	-0.000 (-0.114)
Crisis dummy 2008-09	-0.897*** (-3.386)	-2.170*** (-5.419)	-1.628*** (-4.123)	-1.292** (-2.172)	-0.700** (-2.263)	-1.518*** (-4.269)	-0.373 (-1.479)	-0.359 (-1.394)
Dummy good times (t)					0.029 (0.217)	0.226 (1.455)		
Output gap * good times					-0.114 (-1.624)	-0.200 (-1.330)		
# countries	28	28	28	28	28	28	28	28
# observations	470	472	490	492	470	472	471	471
Impact of output gap in:								
- good times (size)					-0.279**	-0.245**		
- good times (p-value)					0.044	0.04		
Wald test time dummies	0	0	0	0	0	0	0	0
AR(1) (p-value)	0.001	0	0	0	0.001	0.000	0	0
AR(2) (p-value)	0.64	0.917	0.205	0.267	0.646	0.828	0.653	0.405
Hansen (p-value)	0.583	0.715	0.932	0.708	0.928	0.91	0.672	0.578
# instruments	29	29	29	29	33	33	29	29

Note: Estimations are based on the first-difference GMM (FD-GMM) estimator following Blundell and Bond (1998), where we consider the output gap and the distance to the MTO to be endogenous. Due to the small sample size, the set of internal instrumental variables is restricted to up to 2 lags and the matrix of instruments is then 'collapsed'. The standard errors are corrected following Windmeijer (2005). AR(1,2) and Hansen tests confirm the validity of the GMM specifications (Roodman 2009a, b). \*\*\*, \*\* and \* denote statistical significance at 1%, 5% and 10%, respectively.

compliance would have led to an acyclical pattern of the discretionary fiscal effort (Table II.3.2, column 5, 6). Those results can be explained by two factors: First, the matrix would have modulated the requested fiscal effort across the economic cycle for Member States on their adjustment path to the MTO, i.e. requesting a higher (lower) effort in good (bad) times. Second, Member States at their MTO would have stayed at the MTO by compensating for the negative and positive deviations from the MTO under the baseline scenario.

#### Cyclicity of the fiscal effort: expenditure benchmark vs. structural balance

**The actual fiscal effort as measured based on the expenditure benchmark appears more reactive to the economic cycle than the fiscal effort measured based on the structural balance.** The procyclicality of the *actual* fiscal effort appears smaller (size of coefficient) and

weaker (significance level) when based on the structural balance than when based on the expenditure benchmark methodology<sup>(108)</sup>. One main reason for this is the smoothing of potential growth: In good times, annual potential growth tends to be higher than the 10-year average. Everything else unchanged, this tightens the *actual* fiscal effort based on the structural balance, but leaves the *actual* fiscal effort as measured with the expenditure benchmark methodology unchanged. This means that the lower procyclicality of the *actual* fiscal effort of the structural balance is driven by the measurement of the fiscal effort.

**Applying those findings to fiscal surveillance, the expenditure benchmark appears the more effective indicator to reduce procyclicality.** The findings suggest that for Member States it is more

<sup>(108)</sup>This finding is robust to changes to the measure of the output gap, set of independent variables, estimation techniques and datasets (Tables II.3.2 and II.3.3).

Table II.3.3: Cyclicity of fiscal policy – sensitivity analysis

Type of sensitivity	Set of independent variables						Estimators			
	EB		SB		Actual fiscal effort		EB		SB	
Dependent variable	Change in output gap		Level of output gap		Level of output gap		Level of output gap		Level of output gap	
Economic cycle	FD-GMM		FD-GMM		FD-GMM		LSDV		SYS-GMM	
Estimator	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Output gap (t)			-0.173*** (-5.226)	-0.052* (-1.949)	-0.192*** (-5.036)	-0.057* (-1.934)	-0.124*** (-5.818)	-0.011 (-0.327)	-0.159*** (-3.181)	-0.128* (-1.812)
Public debt (t-1)	0.002* (1.959)	0.006*** (2.892)	0.004*** (2.831)	0.007*** (4.547)	0.005*** (3.009)	0.008*** (3.899)	0.009*** (3.385)	0.003 (0.274)	0.004* (1.848)	0.004** (2.312)
Distance to MTO (t)	0.106** (2.174)	0.208*** (6.134)	0.099*** (2.770)	0.221*** (5.243)	0.157*** (3.996)	0.244*** (4.110)	0.163*** (7.169)	0.236*** (9.361)	0.098** (2.048)	0.112 (1.589)
EDP (t)	0.307** (2.372)	0.313** (2.402)	0.319** (2.392)	0.293** (2.039)	0.300** (2.226)	0.327** (2.149)	0.214* (1.675)	0.262* (1.799)	0.340* (1.746)	0.741** (2.419)
Crisis dummy 2008-09	-0.210 (-0.616)	-0.918** (-2.447)			-0.374 (-1.402)	-1.846*** (-4.190)	-0.298 (-0.837)	-1.381*** (-4.344)	-1.089 (-1.487)	-1.537*** (-3.263)
Election year (t)	-0.002* (-1.786)	-0.000 (-0.132)			-0.003*** (-2.688)	-0.001 (-0.607)	-0.001 (-1.302)	-0.000 (-0.489)	-0.002 (-1.234)	-0.001 (-1.584)
Change in output gap (t)	-0.118** (-2.377)	-0.020 (-0.354)								
Age dependency ratio (t-1)					0.005*** (2.606)	0.014*** (3.454)				
Current account (t-1)					0.037 (1.441)	-0.001 (-0.026)				
# countries	28	28	28	28	28	28	28	28	28	28
# observations	470	472	470	472	423	425	470	472	470	472
R-squared							0.448	0.455		
Wald test time/country dummies	0	0	0	0	0	0	0 / 0.004	0 / 0	0	0
AR(1) (p-value)	0.001	0	0.001	0	0.001	0			0.001	0.058
AR(2) (p-value)	0.182	0.824	0.589	0.901	0.391	0.353			0.612	0.218
Hansen (p-value)	0.376	0.854	0.473	0.538	0.81	0.734			0.783	0.715
# instruments	29	29	28	28	33	33			29	29

Note: Estimations are based on the real-time database. The following estimation techniques are used: Least square dummy variable estimator using heteroskedasticity-robust standard errors (LSDV), first-difference GMM (FD-GMM) and system-GMM (SYS-GMM) estimators following Blundell and Bond (1998), where we consider the output gap and the distance to the MTO to be endogenous. Due to the small sample size, the set of internal instrumental variables is restricted to up to 2 lags and the matrix of instruments is then 'collapsed'. The standard errors are corrected following Windmeijer (2005). AR(1,2) and Hansen tests confirm the validity of the GMM specifications (Roodman 2009a, b). \*\*\*, \*\* and \* denote statistical significance at 1%, 5% and 10%, respectively.

demanding in good times to comply with the required fiscal effort of the expenditure benchmark than with the structural balance methodology. In bad times, by contrast, it is less demanding to comply with the required effort as measured with the expenditure benchmark than to fulfil the structural balance requirement. Put differently, the expenditure benchmark appears the more effective indicator to reduce the procyclicality of the fiscal effort than the structural balance.

### Modifying the definition of the actual fiscal effort

**Modifying the definition of the actual fiscal effort can have an impact on the cyclicity** (Graph II.3.10). To assess the impact of different measures of the *actual* fiscal effort, we rerun our baseline regression (see columns 1 and 2 of Table II.3.2). Overall, the findings suggest that the more procyclical the measurement of the *actual* fiscal effort, the more demanding it is for Member States to meet the *required* fiscal effort in good

times and the more effective this indicator is in reducing procyclicality.

- **Expenditure aggregate:** Procyclicality would be smaller if discretionary revenue measures, cyclical unemployment benefits and one-offs were *not* subtracted from the expenditure aggregate. The reason for this is that these components tend to increase the modified expenditure aggregate in bad times (decrease in good times), implying, *ceteris paribus*, a lower (higher) actual fiscal effort. In terms of one-offs, the relatively large confidence bands point to an increased uncertainty of the findings. By contrast, public investment tends to be cut in particular in bad times. This means that procyclicality would be higher if public investment were not subtracted from the expenditure aggregate. Interest payments and EU funds do not have a major impact on the procyclicality of the fiscal effort.
- **Potential GDP:** The procyclicality of the fiscal effort would be reduced if potential growth



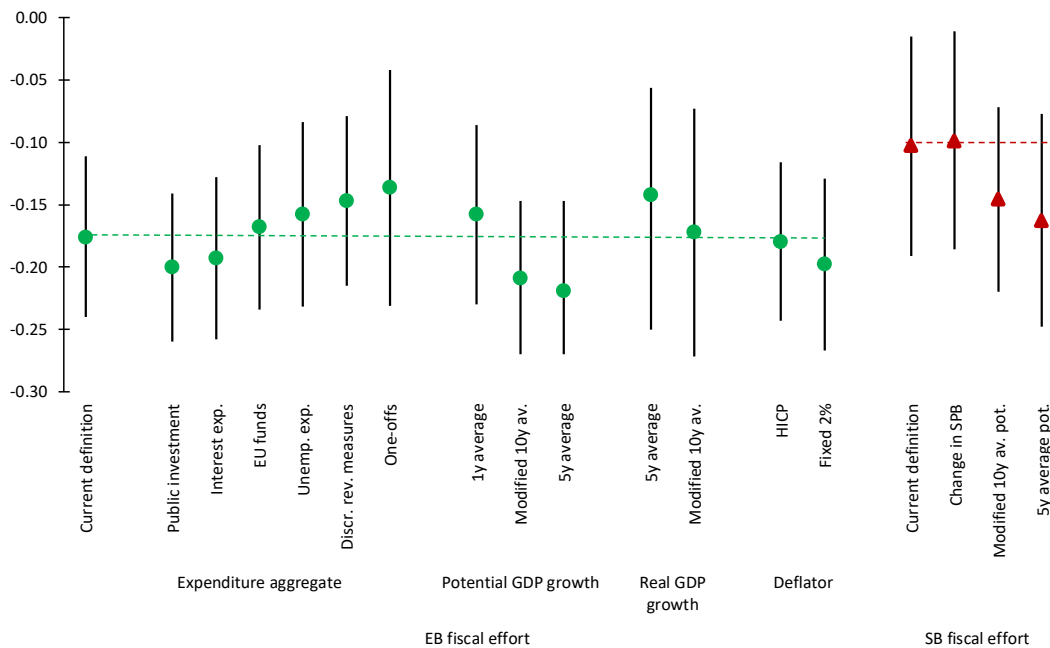
were measured with an annual average growth rate. By contrast, procyclicality would be slightly increased if a 5-year or modified 10-year average growth would have been used. The latter gives less weight to the forward-looking dimension <sup>(109)</sup>.

- **Real GDP:** The procyclicality of the fiscal effort would be similar if a modified 10-year average real GDP growth rate would have been used. By contrast, procyclicality would have been reduced if real GDP growth were measured with a 5-year average growth rate.
- **Deflator:** Using a fixed 2% inflation rate to deflate real potential growth would increase the procyclicality, since it would lead to a higher fiscal effort in good times (assuming the inflation rate exceeds 2%) and a lower effort in bad times (below 2% inflation). Changing the definition to HICP inflation would only have a minor impact.

- **Structural balance:** We also checked the impact of alternative definitions of the structural balance on the cyclicity of the actual fiscal effort. The results show that netting out interest payments would have had no significant impact on the procyclicality of the change in structural balance. By contrast, the procyclicality would increase significantly, if potential GDP growth was measured with a longer-term average. Overall, the main change between the cyclicity of the fiscal effort based on the structural balance and the expenditure benchmark methodology can be explained by differences in the definition of potential growth.

**Some caveats remain.** In particular, like for every cross-country panel approach, the results reveal relationships, which are valid only on average across Member States, but may differ from one Member State to another.

Graph II.3.10: Modulations of the definition of the actual fiscal effort on cyclicity (EU, 1999-2019)



Note: The chart shows the size and confidence intervals of the estimated coefficients of the output gap for different definitions of the expenditure benchmark and the structural balance. The same specification and estimation technique is used as in Table II.3.2, columns 2 and 3. The more negative the estimated coefficient, the higher the procyclicality of the actual fiscal effort, i.e. the more effective the indicator for fiscal surveillance in reducing procyclicality. The following modifications are assessed: expenditure aggregate: assume that the five listed components are not netted out from the modified expenditure benchmark. Potential GDP growth: Instead of using the 10-year average potential GDP growth (based on the growth rates from t-5 to t+4) use: (i) annual potential GDP growth, (ii) 5-year potential growth (t-3, ..., t+1), (iii) modified 10-year potential GDP (t-8, ..., t+1). Real GDP growth based on (i) 5-year average and (ii) modified 10-year average (t-8, ..., t+1). Deflators: Instead of using the GDP inflation use (i) HICP inflation, (ii) fixed 2% inflation rate in line with the ECB's medium-term price stability objective.

<sup>(109)</sup> The modified 10-year average is based on the data from t-8 to t+1 compared with the current definition, which is based on the average of t-5 to t+4.

### Box II.3.3: Assessing stabilisation properties – a panel regression exercise

**This box describes how the stabilisation properties of the actual fiscal efforts are assessed** <sup>(1)</sup>. Procyclical fiscal policies, that is policies that are expansionary in booms and contractionary in recessions, are generally regarded as potentially damaging for welfare, since they can increase macroeconomic volatility, hamper growth and depress investment <sup>(2)</sup>.

**Existing evidence points to a rather procyclical pattern of discretionary fiscal policy in the EU.** There is a rich literature assessing the cyclical policy. In a nutshell, the studies conclude that total fiscal policy (i.e. including automatic stabilisers) is rather acyclical or countercyclical, while *discretionary* fiscal policy appears to be procyclical <sup>(3)</sup>. The role of the reinforced EU fiscal rules on cyclical policy has only scarcely been investigated. The sparse evidence suggests that compliance with the rules of the preventive arm reduces pro-cyclical policy, notably if debt is below 60% of GDP <sup>(4)</sup>. Conversely, having high debt levels tends to amplify pro-cyclical policy.

**The cyclical policy of the fiscal effort is investigated using a panel data approach.** The analysis concentrates on up to 28 EU Member States (*i*) and 20 years (*t*), covering the period 2000 to 2019. We primarily use real-time data from past Commission spring forecast vintages <sup>(5)</sup>, but also analyse the findings with *ex-post* data from the Commission spring 2019 forecast <sup>(6)</sup>.

**The key drivers of the actual fiscal effort are determined with a fiscal reaction function approach.** Such an approach has been used extensively in the literature for assessing the behaviour of fiscal variables over the economic cycle <sup>(7)</sup>. The specification looks as follows:

$$effort_{i,t} = \beta_1 cycle_{i,t} + \beta_2 debt_{i,t-1} + \beta_3 X_{i,t-1} + \theta_t + \vartheta_i + u_{i,t} \quad (1)$$

where the dependent variable corresponds to the actual fiscal effort used in the preventive arm of the SGP (Box II.3.1). To enable comparison across different indicators, we standardise the different measures for the fiscal effort with a mean of 0 and a standard deviation of 1. *X* is a vector including additional control variables derived from the literature (see below). The specification includes year- ( $\theta$ ) and country-fixed effects ( $\vartheta$ ) to capture systematic differences across Member States and time, while *u* represents an error term.

**We include a set of relevant independent variables to prevent an omitted variable bias.** The expected sign with respect to the fiscal effort is shown in brackets, while +/- corresponds to a fiscal tightening/loosening <sup>(8)</sup>:

- **Economic cycle (-/+):** Existing studies point to the sensitivity of the findings to the choice of the economic cycle variable <sup>(9)</sup>. In line with the key rationale of the SGP and a dominant part of the

<sup>(1)</sup> A similar set-up is chosen as in European Commission (2019b).

<sup>(2)</sup> Manasse (2006).

<sup>(3)</sup> Woo (2009), Checherita-Westphal and Žďárek (2017), Baldi and Staehr (2016). The findings by Eyraud et al. (2017) indicate acyclical fiscal policy based on Member States plans, but procyclical fiscal policy based on real-time and *ex-post* data.

<sup>(4)</sup> European Commission (2019b).

<sup>(5)</sup> Cimadomo (2012, 2016).

<sup>(6)</sup> We focus on real-time data from the Commission spring forecasts. The findings are, however, very similar when based on real-time data from the Commission spring forecasts.

<sup>(7)</sup> Lane (2003).

<sup>(8)</sup> Note that most papers assess the impact of the explanatory variables on the level of the cyclically-adjusted budget balance not the fiscal effort; see in particular Checherita-Westphal and Zdarek (2017), Golinelli and Momigliano (2006).

<sup>(9)</sup> European Commission (2019b).

(Continued on the next page)

Box (continued)

literature, we measure the cycle with the level of the contemporaneous output gap. We checked the sensitivity using the change in the output gap <sup>(10)</sup>.

- **Public debt (+):** Public gross debt of the general government is included to control for the budget constraint of Member States.
- **EU fiscal rules (+):** We control for the distance of Member States to the medium-term budgetary objective (MTO), since the preventive arm requests Member States to reach their MTO. It is defined as the difference between the lagged structural balance and the MTO. Positive values imply that Member States still have to consolidate to reach their MTO. We also include a dummy variable for Member States under the excessive deficit procedure (EDP).
- **Political economy channel:** We control for the election year (-) to account for the well-established political economy literature <sup>(11)</sup>. We also tried additional variables such as partisanship, but they turned out to be insignificant and are therefore omitted.
- **Great Recession (-):** Controlling for the economic and financial crisis is debatable. On the one hand, you may not want to control for it, since it represents the major cyclical episode within the sample, for which the test on cyclicity should be conducted. On the other hand, you may want to control for it, since it represents a very atypical cyclical episode, namely the deepest crisis since World War II. While we focus in this part on specifications including a dummy for the (initial) years of the Great Recession (2008 and 2009), the results are broadly unchanged when excluding it.
- Additional **macroeconomic and demographic** factors (such as current account balance (+) and percentage of the total population over 65 years old) did not change the findings significantly and were therefore omitted in the baseline specification.

**We use an interaction model to test for the impact of the phase of the cycle on the cyclicity of the fiscal effort:**

$$effort_{i,t} = \beta_2 cycle_{i,t} + \beta_3 debt_{i,t-1} + \beta_4 X_{i,t-1} + \beta_5 dummy_{i,t} \cdot cycle_{i,t} + \beta_6 dummy_{i,t} + \theta_t + \vartheta_i + u_{i,t} \quad (2)$$

where the dummy variable defines the phase of the cycle, i.e. good versus bad times. From equation (2) we can derive the marginal effect: it measures how a marginal change of the output gap impacts the fiscal effort in good vs. bad times:

$$\frac{\partial effort}{\partial cycle} = \beta_2 + \beta_5 dummy_{i,t} \quad (3)$$

**Equation (3) shows that the marginal effect depends on the value of the conditioning dummy variable.** The marginal effect is defined as  $\beta_2 + \beta_5$  in case of good times (i.e. the dummy variable is equal to 1), whereas it simplifies to  $\beta_2$  in bad economic times (i.e. the dummy variable is 0). We report the standard errors for both events based on the variance-covariance matrix <sup>(12)</sup>.

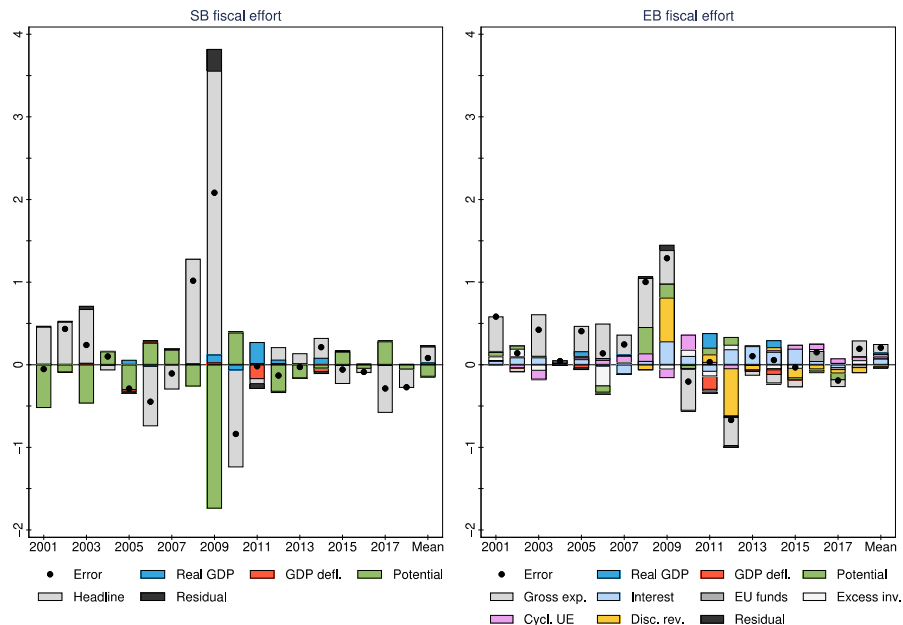
<sup>(10)</sup> We do so for at least two reasons. First, the change of the output gap is typically less affected by revisions than its level. Second, the output gap is typically computed by utilising information from periods ahead (e.g. mechanical assumptions on its speed of closure). This has a significant impact for our study when using the real-time dataset from the Commission spring 2019 forecast, since the estimates of the output gap in the pre-crisis period are severely affected by the subsequent downturn. Using the change rather than the level of the output gap mitigates this problem to some extent.

<sup>(11)</sup> Buchanan and Wagner (1977).

<sup>(12)</sup> For the specification and interpretation of interaction terms see Brambor et al. (2006), Braumoeller (2004).



Graph II.3.13: Decomposition of mean error by components (EU, one-year ahead autumn forecast)



Note: A positive (negative) forecast error corresponds to an overestimation (underestimation) of the fiscal effort, implying a negative (positive) surprise. Decomposition is based on the methodology described in Box II.3.4.

slightly right-skewed, whereas it is slightly left-skewed based on the change in the structural balance. The fiscal effort based on the structural balance is more tilted towards positive surprises, since it can, in contrast to the expenditure benchmark, benefit from revenue or interest windfalls.

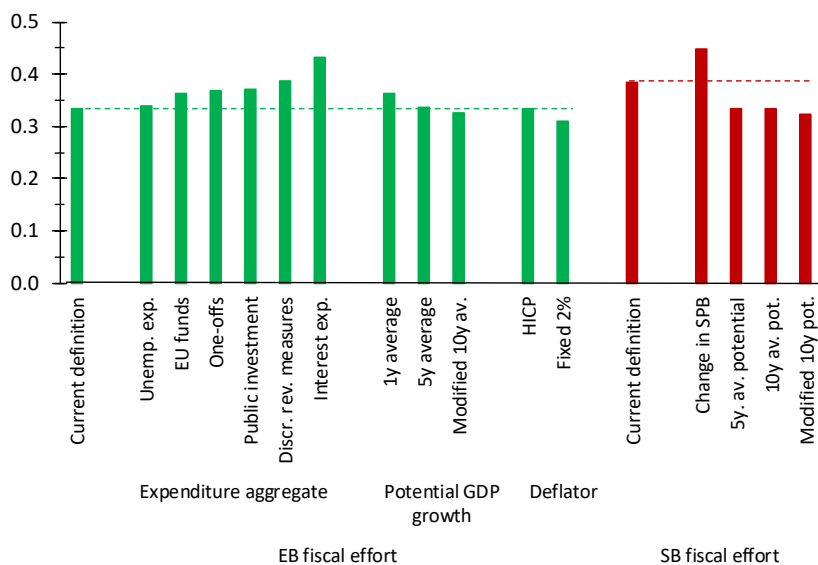
**Decomposing the actual fiscal effort provides insights into the main drivers of the forecast error (Graph II.3.13).** For the change in structural balance forecast error, the contributions of headline deficit and output gap forecast error stemming from potential GDP estimation tend to offset one another. Times when the output gap variation is lower than expected because of potential growth revision, contributing negatively to the change in structural balance forecast error (for example in 2009), are times when the headline balance is also lower than expected and contributes positively to the structural balance forecast error. The structural balance is therefore more robust to forecast error than the headline balance. On the other hand, expenditure benchmark forecast error appears less robust to forecast error than the uncorrected growth of expenditure forecast error. Between 2010 and 2015, both the expenditure

growth and the discretionary revenue measures forecast error contributed negatively to the fiscal effort forecast error according to the expenditure benchmark, because the gross of expenditure was lower than expected and discretionary measures were higher than expected.

#### Modifying the definition of the actual fiscal effort

**The forecast error is sensitive to modifications in the expenditure benchmark definition (Graph II.3.14).** We assess the impact of changing the expenditure benchmark definition on the size of the forecast error. We focus on the mean absolute error, which provides an indication for the margin of error. In terms of changing the definition of the modified expenditure aggregate, adding additional components increases the forecast error. As regards changes in the potential GDP, we find that using the 1- or 5-year potential growth rate would increase the forecast error, whereas the modified indicator of 10-year potential growth, which is less dependent on forecast years, would slightly lower the forecast error. Finally, in terms of deflators, inflating the potential with a fixed 2% would reduce the forecast error. We also assessed

Graph II.3.14: Impact of modifications of the fiscal effort on the forecast error (EU, 2000-2019)



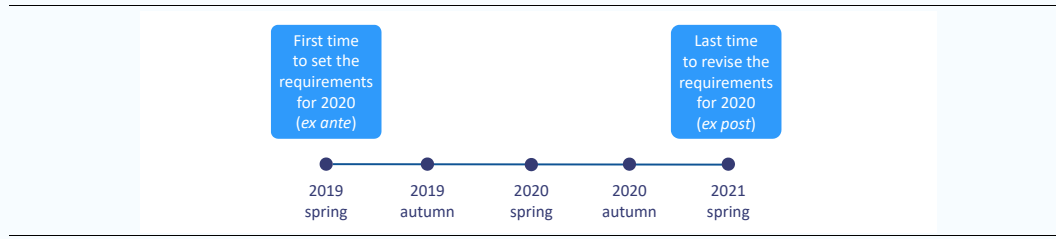
modifications of the change in the structural balance. We find that netting out interest payments would slightly increase the forecast error. By contrast, using a structural balance indicator based on the 10-year potential growth would lower the forecast error.

### Box II.3.4: Assessing predictability – a forecast error analysis

This box describes how the predictability of the fiscal effort is assessed.

The analysis focuses on the one-year ahead forecast error of the actual fiscal effort, which is highly relevant for the EU fiscal surveillance process. Member State compliance with the fiscal requirements of the preventive arm of the SGP for a given year is assessed five times over the surveillance cycle (Graph 1). The first assessment is conducted in spring for the year ahead (*ex-ante* assessment), the time when the fiscal requirement is set. Subsequently, compliance is assessed in autumn of the preceding year and in spring and autumn of that year (in-year assessment). The final assessment is made in spring of the next year based on outturn data (*ex-post* assessment). It is this final assessment that can trigger the significant deviation procedure, which for euro area Member States can also lead to sanctions.

Graph 1: Assessing Member States' compliance with the preventive arm of the SGP: An illustration for the 2020 surveillance cycle



#### Definition of forecast error

The one-year ahead forecast error of the actual fiscal effort for Member State  $i$  for year  $t$  is defined as the difference between the forecast made in autumn of the preceding year and the realised value made in spring of the next year. Formally:

$$e_{i,t}^{AF,t+1} = \text{actual effort}_{i,t}^{AF,t-1} - \text{actual effort}_{i,t}^{SF,t+1}$$

where a superscript indicates the year of publication of the figure, while a subscript refers to the year to which the value applies <sup>(1)</sup>. Hence, positive errors indicate an overestimation, whereas negative ones point to an underestimation of the true value. In the specific case of the fiscal effort, positive errors correspond to negative surprises (fiscal effort is looser than expected), while negative ones correspond to positive surprises (fiscal effort is stronger than expected). The forecast errors are assessed over the period 2000 to 2019 based on the Commission forecasts, which are published in autumn and spring. We primarily focus on the one-year ahead forecasts from autumn, since they include the budget measures for the next year.

#### Bias of forecasts

In order to test whether the Commission forecasts are systematically biased, the forecast errors are regressed on a constant ( $\alpha$ ):

$$e_{i,t}^{AF,t+1} = \alpha_i + \varepsilon_{i,t}^{AF,t+1}$$

where  $e_{i,t}^{t+1}$  stands for the one year-ahead forecast errors for Member State  $i$  at time  $t$  and  $\varepsilon$  for an independently and identically distributed error term. In the absence of bias  $\alpha_i = 0$ . The bias is investigated for each Member State as well as for the euro area and EU aggregates.

<sup>(1)</sup> Beetsma et al. (2009).

(Continued on the next page)

Box (continued)

### Quality of forecasts

The quality of forecast errors is assessed with two indicators. First, the mean error (*ME*) estimates the bias (over- vs. underestimation). It is defined as the average forecast error for each Member State *i* over a given period *T*. Positive and negative errors can offset each other. Formally:

$$ME_i = \frac{1}{T} \cdot \sum_{t=1}^T e_{i,t}^{SF,t+1}$$

Second, the mean absolute error (*MAE*) provides information on the margin of error. It is defined as the average of the absolute values of the forecast errors for each Member State *i* over a given period *T*. Errors are equally weighted in the average whatever their size and negative errors cannot cancel positive ones. Formally:

$$MAE_i = \frac{1}{T} \cdot \sum_{t=1}^T |e_{i,t}^{SF,t+1}|$$

The forecast errors are computed for 28 Member States and for the euro area and European Union (EU) aggregates. For the EU and the euro area, the aggregate reflects the changing composition over time.

### Decomposition of forecast error

Understanding the sources of the fiscal effort forecast errors is important to assess the strength and weaknesses of fiscal indicators used in the fiscal surveillance exercise. Therefore, we compute the contributions (all other things being equal) of the forecast error of each fiscal and macroeconomic variable to the overall fiscal effort forecast error.

Formally, let the fiscal effort in year *t* be a function of fiscal and macroeconomic variables  $X_{i,1,t}, \dots, X_{i,n,t}$ .

$$actual\ effort_{i,t} = F(X_{i,1,t}, \dots, X_{i,n,t})$$

The forecast error can be decomposed into the contributions of each of the  $X_{i,j,t}$  even when  $F(\cdot)$  is not a linear function. We define  $e_{X_{i,j,t}}^{AF,t+1}$ , the forecast error of variable  $X_{i,j,t}$ , as the difference between the forecast made in autumn of the preceding year and the realised value made in spring of the next year. Formally:

$$e_{X_{i,j,t}}^{AF,t+1} = X_{i,j,t}^{AF,t-1} - X_{i,j,t}^{SF,t+1}$$

We assume that these errors are close to zero, which allows us to write the approximation of the fiscal effort forecast error to the first-order as follows:

$$e_{i,t}^{AF,t+1} = \sum_{j=1}^n e_{X_{i,j,t}}^{AF,t+1} \frac{\partial F}{\partial X_{i,j,t}}(X_{i,1,t}^{AF,t-1}, \dots, X_{i,n,t}^{AF,t-1}) + v_{i,t}^{AF,t+1}$$

where  $v_{i,t}^{AF,t+1}$  is an unexplained residual contribution, which could be non-negligible if forecast errors are large. Computing the decomposition only requires computing the partial derivatives of function  $F(\cdot)$  with respect to each of the variables, evaluated at the forecast. Note that if a variable contributes positively to the fiscal effort forecast error, it means that the variable contributes to a lower than expected fiscal effort. For a variable that enters positively into the calculation of the fiscal effort <sup>(2)</sup>, the variable was lower than expected.

<sup>(2)</sup> This means the partial derivative of the fiscal effort with respect to that variable is positive.

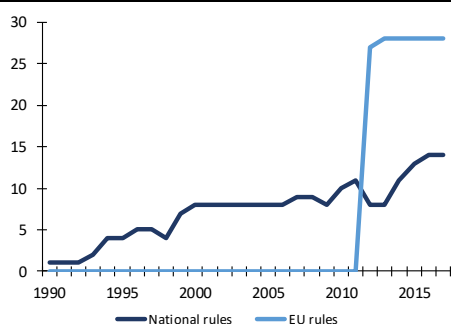


## 4. PERFORMANCE OF SPENDING RULES AT NATIONAL LEVEL

As more Member States have adopted domestic expenditure rules in recent years, a close look at the way these rules have performed in the EU is warranted. Drawing on the evidence provided by the Commission's Fiscal Governance Database (FGD), this Chapter provides some details on the expenditure rules adopted in the Member States, looking at their design features and compliance. This part then investigates if these rules seem to contribute to a reduction of procyclicality.

### 4.1. STYLISTED FACTS

Graph II.4.1: Adoption of expenditure rules in the EU

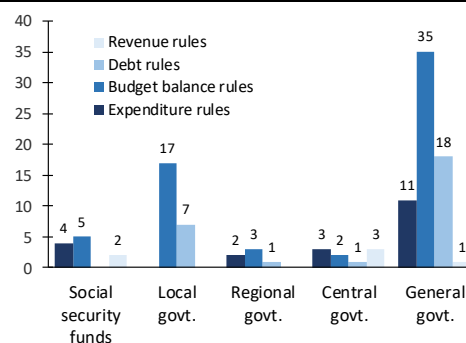


Note: National rules include those covering the general government (GG) and central government (CG).  
Source: Commission Fiscal Governance Database.

Over the last 20 years, the adoption of national expenditure rules has proceeded at an uneven pace. As with other national rules, Member States started adopting expenditure rules already in the 1990s (Graph II.4.1). By the early 2000s, expenditure rules were in place in eight Member States<sup>(11)</sup>. Over the 2000s, new rules are introduced, some are abandoned or modified, usually in response to the financial crisis and its ensuing strains on public finances. After that period, expenditure rules display a marked increase, and some revisions, with in most cases, new or revised rules mirroring either fully or in some aspects the EU 'expenditure benchmark' (Box II.2.2).

<sup>(11)</sup>These are Germany (1990), Denmark (1994), the Netherlands (1994), Sweden (1996), Finland (1999), Luxembourg (1999), Austria (1999) and Ireland (2000). Belgium adopted an expenditure rule in 1993, but then abandoned it in 1998.

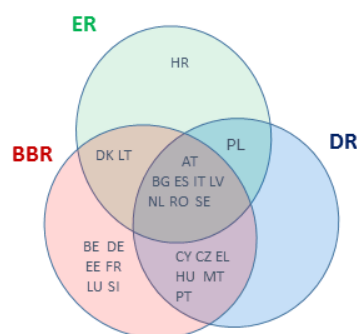
Graph II.4.2: Types of national fiscal rules and coverage (EU, 2017)



Source: Commission Fiscal Governance Database.

National expenditure rules in the EU mostly cover the general government and coexist with other rules at national level. In 2017, 14 Member States had expenditure rules in place, making up a total of 20 rules. Within these, 14 rules cover general and central governments (Graph II.4.2). In many Member States expenditure rules are in place and operate jointly with other national rules, such as budget balance rules and debt rules (Graph II.4.3).

Graph II.4.3: National expenditure rules (2017)

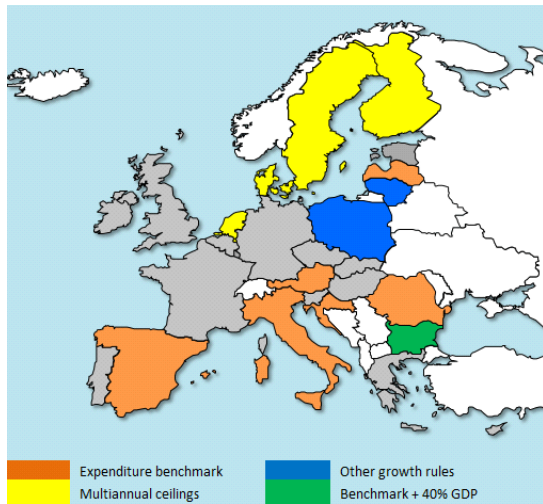


Note: BBR – budget balance rule, ER – expenditure rule, DR – debt rule. GG and CG rules in place; NL also has a revenue rule.

Source: Commission Fiscal Governance Database.

National expenditure rules have various specifications (Graph II.4.4) and coverage of expenditure items (Graph II.4.5). Out of the 14 rules at the general and central government levels,

Graph II.4.4: Geographical distribution of expenditure rules in the EU (2017)

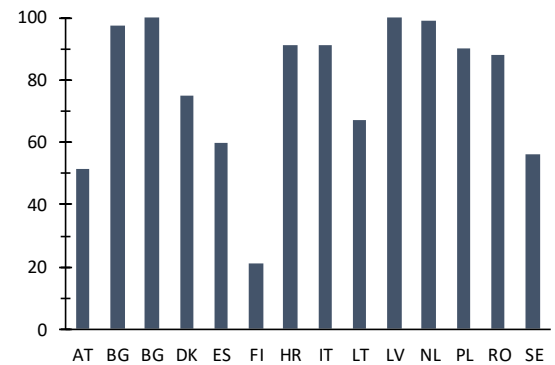


Note: Only rules covering the general and central government.  
Source: Commission Fiscal Governance Database.

- Seven national rules mirror the expenditure benchmark (AT, BG, ES, HR, IT, LV, RO). While the required growth rate of expenditure is in line with that specified in EU law, the targeted expenditure aggregate may differ <sup>(112)</sup>. Both Austria and Spain, for example, exclude social security spending from the aggregate (corresponding to about 38% of total expenditure in Austria and 40% in Spain);
- Four rules are multiannual expenditure ceilings, set for a multi-year horizon and covering a large part of expenditure (DK and NL for general government, FI and SE for the central government). These ceilings exclude some items from the targeted aggregate such as interest payments, unemployment benefits, and allows for some revisions due to a change in government, or price and wage developments or technical corrections;

<sup>(112)</sup>As a reminder, the EU expenditure benchmark targets an aggregate of expenditure, which excludes the following items: interest spending, expenditure on EU programmes fully matched by EU funds revenue and cyclical elements of unemployment benefit expenditure. In addition, investment spending is averaged over a four-year period to smooth the impact of any large investment projects.

Graph II.4.5: Coverage of national expenditure rules



Note: Only rules covering the general and central government.  
Source: Commission staff calculations based on the Fiscal Governance Database.

- Three others (BG, LT, PL) are rules with own specific design. In Poland, the expenditure aggregate, while netting out spending matched by EU funds and other grants, also excludes all expenses of government units that do not generate high deficits. This aggregate is then set to grow in line with medium-term growth. Bulgaria targets a 40% of GDP ceiling for total nominal expenditure. In Lithuania, the expenditure rule establishes that if the general government balance is in deficit on average over the last five years, the annual growth rate of total expenditure should not exceed half of the average multiannual growth rate of potential GDP.

**Expenditure rules tend to be legally binding and subject to independent monitoring, while the provision of escape clauses is limited.** As documented in the Commission's FGD, expenditure rules, like other fiscal rules, are introduced along with a series of institutional features aimed at strengthening their performance. Among these features are:

- *The legal status of the statutory basis:* For 10 out of the 14 rules in force which cover the general and central government, the statutory basis is at the highest possible level, either at a constitutional level or at a higher level than ordinary law. Another three rules are established by ordinary law (LV, PL, SE), and one by a coalition agreement (FI).
- *The existence of a monitoring body:* Domestic independent fiscal institutions (IFIs) monitor

almost all rules, with only one rule monitored by the Court of Auditors (PL).

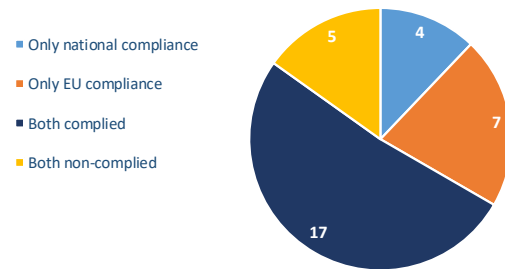
- *A correction mechanism in case of non-compliance:* For four rules (FI, LV, PL, RO) there is no legally pre-defined correction action and for two rules the action is not automatic but it is legally defined (IT, NL). For all other rules, the correction is triggered automatically after non-compliance is detected.
- The option to invoke *escape clauses* in some difficult conditions to enhance resilience to shocks while not compromising the credibility of the rule: only two rules allow the option to invoke them (LV, PL).

**This analysis gathers data on simple and numerical compliance for national expenditure rules over the period 2011-2017, based on national sources.** First, this analysis focuses on simple numerical compliance, which provides an indication on whether targets have been met. It does not look at legal compliance, where instead additional information plays a role, like escape clauses of flexibility. Also, the analysis is primarily focused on *national* fiscal rules, making reference to *EU* rules only loosely. Hence, no implications on EU fiscal surveillance can be drawn. Second, the discussion on simple compliance is complemented with data on numerical compliance, which provide an indication of the magnitude at which a rule has been complied or non-complied with. As an exploratory exercise, this study covers only the period 2011-2017<sup>(113)</sup>. In line with Reuter's (2015), this analysis provides values of numerical compliance, but with no reference to escape clauses nor flexibility. Data were retrieved from the Ministry of Finance, Independent Fiscal Institutions (IFIs), from self-reported information on compliance from the Fiscal Governance Database (FGD) available for 2017 or the stability and convergence programmes (SCPs). As far as the Romanian expenditure benchmark is concerned, the target, plans and outturns have been calculated following the formula indicated in the law. Overall, data has been gathered on *ex-ante* compliance for 9 Member States, for a total of 42 observations, and

on *ex-post* compliance for 13 Member States, for a total of 61 observations. In both cases, most observations are concentrated in the years 2014-2017<sup>(114)</sup>.

**Based on the sample used for the present analysis, expenditure rules were complied with in almost 80 percent of cases.** Expenditures rules are always complied with between 2011 and 2013 and mostly complied with between 2014 and 2017 (Graph II.4.6). This applies to both *ex-ante* and *ex-post* compliance, although rules appear to be more complied with *ex ante* than *ex post*. In most cases of national rule compliance, the EU expenditure benchmark is also complied with. Graph II.4.7 shows that when compliance could be ascertained for the EU and national expenditure rules, both rules were in most cases complied with at the same time.

Graph II.4.6: Matching of compliance for EU and national expenditure rules

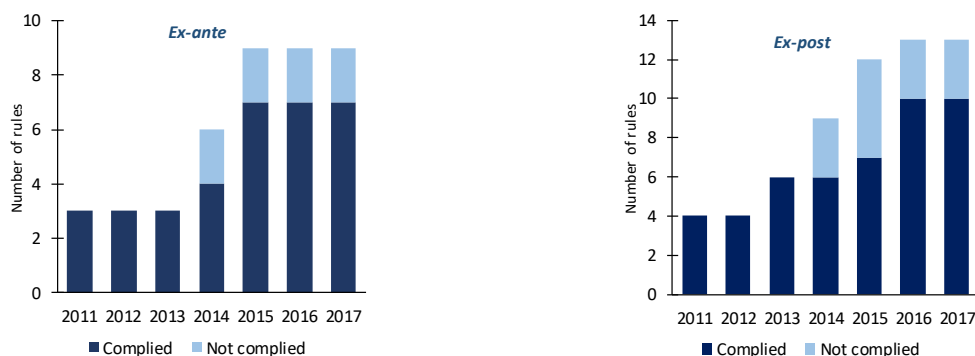


Source: Commission staff calculations from various sources.

<sup>(113)</sup> Rules not in force in 2017 are not included, but previous versions of rules currently in force are included (DK, LT and NL).

<sup>(114)</sup> In the case of the Netherlands and Slovenia, data on plans coincide with targets, hence *ex-ante* compliance could not be established.

Graph II.4.7: Simple compliance



Source: Commission staff calculations from various sources.

## 4.2. ASSESSING OF STABILISATION PROPERTIES

To test for the effectiveness of national expenditure rules in reducing the procyclical bias, we insert a proxy for expenditure rules in a typical model for the procyclicality of fiscal policy. As discussed, an ample literature sees expenditure rules as a powerful tool in mitigating this pattern and enhancing fiscal policy stabilisation<sup>(115)</sup>. In line with Wierts (2008), the model used herein explains the response of surprises on the expenditure side to macroeconomic shocks as captured by total revenues, while controlling for a large number of standard variables suggested by the literature (see below)<sup>(116)</sup>. The baseline model specification can be expressed as:

$$\begin{aligned}
 FE \Delta exp\ ratio_{i,t} = & \beta_0 + \\
 & \beta_1 FE \Delta revenue\ ratio_{i,t} + \\
 & \beta_2 FE \Delta revenue\ ratio_{i,t} * \\
 & ER\ fiscal\ rules\ index_{i,t} + \\
 & \beta_3 ER\ fiscal\ rules\ index_{i,t} + \beta_4 X_{i,t-1} + \delta_i + \\
 & \tau_t + \varepsilon_{i,t} \quad (1)
 \end{aligned}$$

where FE stands for the forecast error, t for the years and i for the country, covering up to 28 EU Member States.

The budgetary aggregates of interest are the planned *change* –or adjustment– in the primary expenditure and the planned *change* in the total revenue in year  $t+1$  with respect to year  $t$ , both expressed as a percentage of GDP. Focusing on the *change* in the ratios rather than the ratios themselves helps to neutralise base effects and the influence of statistical revisions (Moulin and Wierts 2006). Expenditure surprises and shocks to revenues –also called forecast errors– are then calculated as the difference of outturns from plans for these budgetary aggregates. Specifically, the dependent variable (*FE Δ exp ratio*) is the forecast error in the change in primary expenditure ratio for country  $i$  at year  $t$ , while the explanatory variables include: the forecast error in the change in total revenue ratio and the interaction term of the revenue forecast errors and the expenditure rule index, measuring the strength of the design of the expenditure rules in force (or a dummy variable taking values of 1 in the presence of expenditure rules and 0 in their absence)<sup>(117)</sup>. Forecast errors are measured as the difference between plans and outturns, where negative values indicate overspending (or higher-than-projected revenues). Finally, the model includes country-specific effects ( $\delta_i$ ) and year-specific effects ( $\tau_t$ ).

**The selection of control variables follows the academic literature.** Following Wierts (2008) and Holm-Hadulla et al. (2012), the following explanatory variables are included:

<sup>(115)</sup> Wierts (2008), Holm-Hadulla et al. (2012).

<sup>(116)</sup> An alternative specification of the model, as considered in Holm-Hadulla et al. (2012), uses surprises in the output gap instead of revenue surprises. Such specification has been run in this analysis, but due to some inconsistencies in the first vintages of the data, the results were not meaningful.

<sup>(117)</sup> The expenditure rules considered here cover all levels of the general government. The fiscal rules index is calculated as the average over the five dimensions defined in the Fiscal Governance Database, multiplied by the sector coverage of the rules and by a penalty for the second and third rule covering the same government sector.

- *Forecast error in real GDP growth rate (-)*: to capture the role of automatic stabilisers on the expenditure side of the budget (mainly unemployment expenditure).
- *Initial level of total expenditure (-)*: the lagged total expenditure, given that countries with high expenditure ratios may be more under pressure to respect the expenditure plans.
- *Initial level of the headline balance and debt to GDP ratio (-)*: the lagged headline balance as a ratio to GDP and the lagged stock of government debt as a ratio to GDP, given that the overall fiscal position may influence the extent to which external fiscal surveillance and the financial market force government to comply with their expenditure targets.
- *Initial level of inflation (-)*: the lagged GDP deflator, as inflation may affect government expenditure and nominal GDP differently thus giving rise to a ‘mechanical correlation’ between the denominator of the dependent variable and revenue surprises.
- *Election cycle (+)*: a dummy variable which equals 1 in years of parliamentary elections and 0 otherwise, to take into account that upcoming elections may reinforce the incentive to ‘buy political support’ in the short-run.
- *Existence of other fiscal rules than expenditure rules in force (-)*: a dummy variable taking the value of 1 in case of other fiscal rules in force such as budget balance rules and debt rules, and the value of zero otherwise, to control for the possible downward pressure on expenditure stemming from these other fiscal rules.

**Real-time fiscal data are used to estimate the model to take better into account the information at the disposal of policymakers when implementing their fiscal plans.** All projected data are available from the stability and convergence programmes <sup>(118)</sup>, while the outturn data and control variables are obtained from the real-time spring vintages of the Commission’s AMECO database; the expenditure rules data derives from the Commission’s FGD. Projected

<sup>(118)</sup> The SCP dataset is published on DG ECFIN’s homepage and discussed in European Commission (2014).

data for year  $t+1$  is obtained from the SCPs submitted in year  $t$ , while outturn data for year  $t+1$  is derived from the year  $t+2$  spring vintages of the Commission’s AMECO database <sup>(119)</sup>. Based on these data, forecast errors are computed by subtracting the forecast value from the outturn data (i.e. positive values indicate spending overruns relative to the objective or that total revenues as a share of GDP turned out higher than expected). While all EU Member States are required to submit SCPs, lack of data availability regarding some variables reduces the sample to 349 observations during the 1999-2016 period <sup>(120)</sup>. This fiscal dataset is complemented with the expenditure and other fiscal rule index/dummies based on the FGD, and a dummy for election years obtained from the World Bank’s Database of Political Institutions <sup>(121)</sup>.

**Descriptive data statistics show that budget execution results in higher-than-planned expenditure and also slightly higher-than-planned revenues.** At the planning phase, primary expenditure for the next year is envisaged to decrease by 0.4 pps. of GDP, on average, compared to the previous year (first row of Table II.4.1). However, after budget execution, it tends to be higher by 0.7 pps. of GDP, on average, in year  $t$  compared to what had been foreseen the year before (in line with European Commission, 2014). Conversely, Member States are usually prudent when they plan their revenue developments as in year  $t$  the change in the revenue-to-GDP ratio is on average about 0.2 pps. of GDP higher than planned the year before. At the same time, the data also confirms the so-called ‘optimism bias’ in growth forecasts, with real GDP growth being on average overestimated by 0.7 pps. In terms of fiscal rules, the dummy variables indicate that expenditure rules have generally been

<sup>(119)</sup> For example, the forecast error for year 1999 is the difference between the outturn data as reported in the 2000 Spring AMECO vintage and the planned value as reported in the 1998 SCP.

<sup>(120)</sup> As detailed data requirements for the SCPs were formulated only in 2001, format and content of the SCPs varied quite substantially during their first years, which explains the missing data. In addition, the SCPs submission deadline changed in 2009, from the end of the year to April. The transition between these two submission dates implied that no SCP was submitted in 2010.

<sup>(121)</sup> The last available outturn data concerns year 2018 (reported in the 2019 SCPs). However, the sample size is limited to 2016, the last year for which the expenditure rule data was available by the cut-off date of the analysis.

much less common over time than other types of rules, in particular budget balance rules.

**Findings from panel regression show that government spending in the EU is indeed procyclical and that expenditure rules reduce the procyclical bias.** The positive coefficient on the forecast error in revenues in points to procyclical behaviour in primary expenditure (Table II.4.2, column 1). Specifically, a surprise in total revenues of one pp of GDP translates into a deviation between spending outcomes and plans of 0.45 pps. of GDP during the same period. This finding is in line with some of the literature, in particular Wierts (2008), Deroose et al. (2008) and Turrini (2008), but it departs somehow from studies that find overall fiscal policy to be acyclical or countercyclical in the EU (European Commission 2019a). The regression results also show that most of the control variables have the expected sign, although not all are statistically significant in this specification <sup>(122)</sup>. In addition, country-specific features and specific events over the period of the sample are found to be statistically significant and therefore relevant for the estimated relationship of interest. All these estimates are broadly in line with Wierts (2008) and Holm-Hadulla et al. (2012). Finally, the negative coefficient on the interaction term between forecast errors in revenues and the expenditure rule dummy (Table II.4.2, column 2), which is statistically significant, indicates that indeed expenditure rules help to mitigate the procyclicality of fiscal policy. Specifically, the procyclical bias mentioned above decreases by about half when expenditure rules are present <sup>(123)</sup>.

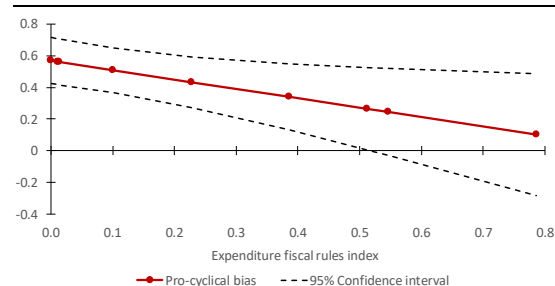
<sup>(122)</sup> Only two control variables are consistently statistically significant across most specifications (Table 2, Columns 1-4). The first is the forecast error of real GDP which indicates an immediate strong response in the form of lower (higher) primary expenditure for a positive (negative) surprise in real GDP, which possibly captures a denominator effect (i.e. higher GDP implies a lower expenditure to GDP ratio, all else being equal) and the role of the automatic stabilisers on the expenditure side of the budget (mainly unemployment benefits). The second is a high initial level of debt, which is indeed found to put pressure towards more expenditure control. In the baseline specification (Table II.3.2, Column 1), the initial level of debt is not statistically significant, but the initial level of total expenditure is,

<sup>(123)</sup> This estimated impact of the national expenditure rules is robust to the crisis period. Specifically, results remained largely unchanged when controlling for the specific impact of the 2008-2012 recession (and ensuing consolidation) through a dummy variable.

Finally, endogeneity tests were run using internal instruments (lagged forecast errors for total revenue and for real GDP growth rate) and pointed to no endogeneity issues in the estimation <sup>(124)</sup>.

**Stronger expenditure rules (better designed and with large coverage) contribute more to the reduction of the procyclical bias than weaker rules.** An alternative specification is used to estimate how the procyclical bias varies as a function of the strength of the expenditure rules, captured by an index which measures the strength of the rule design along five dimensions <sup>(125)</sup>. Graph II.4.8 shows how the procyclical bias varies as a function of the expenditure rule index values, which are listed along the X-axis. It suggests that the stronger the expenditure rules (either through better design features or through a wider coverage) the lower the procyclical bias of fiscal policy.

Graph II.4.8: Decreasing procyclical bias as a function of the design strength of expenditure rules



Note: The graph shows by how much expenditure increases/decreases to a 1 pps. of GDP unexpected revenue shortfall/windfall, as a function of the strength of the expenditure rule index. The fiscal rules index is calculated as the average across five dimensions defined in the Fiscal Governance Database, summed over all rules in force weighted by the sector coverage and a penalty in case of a second or third rule covering the same sector. It has a theoretical lower bound of 0 in case there are no rules in force and no theoretical upper bound (in this sample the maximum value of the index is 0.8). The procyclical bias coefficient is illustrated for centiles 60, 65, 70, 75, 80, 85, 90, 95, and 100 of the expenditure rule index distribution. The 95% confidence interval is calculated based on Brambor et al. (2006).

Source: SCPs, AMECO spring vintage and Commission Fiscal Governance Database 2016 vintage.

<sup>(124)</sup> Endogeneity was tested following Wierts and using the endog command in Stata for the instrumental variable estimation.

<sup>(125)</sup> These dimensions are the legal basis, the binding nature of the rule, the nature of the enforcement and monitoring body, the correction mechanism and media visibility. When the interaction term includes a continuous variable (the expenditure rule index) rather than a discrete variable (a dummy variable), the estimated impact conditional on that variable will be a function of the continuous variable (Brambor et al. 2006).

Table II.4.1: Descriptive statistics

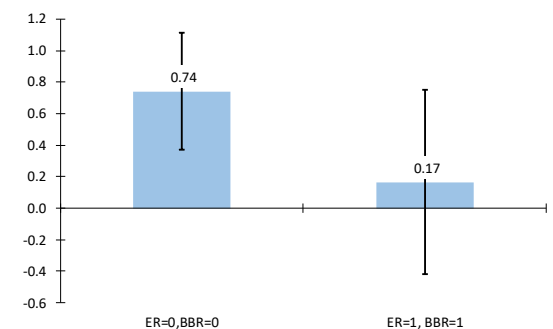
	Obs.	Mean	Std. dev.	Min	Max
$\Delta$ primary exp.-to-GDP ratio (% of GDP, t+1)	349	-0.4	1.3	-8.0	4.2
FE $\Delta$ primary exp.-to-GDP ratio (% of GDP)	349	-0.7	2.0	-17.6	6.6
$\Delta$ total revenue-to-GDP ratio (% of GDP, t+1)	349	-0.2	1.2	-10.0	3.5
FE $\Delta$ total revenue-to-GDP ratio (% of GDP)	349	-0.3	1.4	-9.0	4.4
FE real GDP growth rate (y-o-y)	348	0.7	2.4	-5.1	13.0
Headline balance (% of GDP, t-1)	434	-2.4	3.7	-32.4	6.7
Debt-to-GDP ratio (% GDP, t-1)	428	58.0	32.1	2.9	177.1
GDP inflation (y-o-y, t-1)	461	2.9	4.3	-3.2	48.6
Election year dummy	531	0.3	0.4	0.0	1.0
Dummy expenditure rules	529	0.3	0.5	0.0	1.0
Index of expenditure rules	529	0.1	0.2	0.0	0.8
Dummy budget balance rules	529	0.7	0.5	0.0	1.0
Dummy debt rules	529	0.4	0.5	0.0	1.0

Note: FE refers to the forecast error.

Source: SCPs, AMECO spring vintages, Commission Fiscal Governance Database 2016 vintage, self-collected data on compliance and World Bank (electoral dummy). Unweighted statistics over the time period 1999-2016.

**Furthermore, fiscal policy is least procyclical when expenditure rules operate in combination with budget balance rules.** Results suggest that the combination of budget balance rules and expenditure rules provides for the least procyclical fiscal policy, namely an acyclical fiscal policy (Graph II.4.9). In the absence of both expenditure and budget balance rules, fiscal policy would have a procyclical coefficient of 0.74 pps. of GDP (Table II.4.2, column 4), which is higher than what was estimated in the baseline. However, the combination of expenditure rule and budget balance rule has a considerable effect as it reduces this procyclical bias to essentially zero when taking the uncertainty around it into account <sup>(126)</sup>.

Graph II.4.9: The procyclical bias for different combinations of rules



Note: The graph shows the procyclical bias, i.e. by how much expenditure increases/decreases to a 1pp of GDP unexpected revenue shortfall/windfall in different combination of rules, based on estimates presented in Table II.3.2 Column 4 ER stands for expenditure rule while BBR stands for budget balance rule. Four combinations of rules are shown: no expenditure or budget balance rules, only expenditure rules, only budget balance rules and both expenditure and budget balance rules. The bars indicate the 95% confidence interval.

Source: SCPs, AMECO spring vintage and Commission Fiscal Governance Database 2016 vintage.

<sup>(126)</sup>The procyclical bias conditional on the presence of different combinations of rules (and its statistical significance) is calculated on the basis of various interaction terms as reported in Table II.4.2, column 4, in line with Brambor et al. (2006).

Table II.4.2: Panel regressions (EU Member States, 1999-2016)

Dependent variable	Forecast error change in expenditure ratio			
	Baseline	Baseline augmented with fiscal rule		
	No fiscal rule	ER dummy	ER index	ER and BBR dummy
	(1)	(2)	(3)	(4)
FE $\Delta$ revenue ratio	0.45*** (7.93)	0.59*** (7.93)	0.57*** (7.68)	0.74*** (4.1)
FE real GDP growth rate	-0.30*** (-5.11)	-0.29*** (-5.24)	-0.29*** (-4.97)	-0.29*** (-5.14)
Total expenditure (stand. levels) (t-1)	-0.15* (-1.78)	-0.12 (-1.18)	-0.12 (-1.19)	-0.11 (-0.85)
Debt-to-GDP ratio (t-1)	-0.01 (-1.52)	-0.01* (-2.06)	-0.01** (-2.31)	-0.01** (-1.91)
FE $\Delta$ revenue ratio * ER dummy		-0.34* (-1.79)		-0.03 (-0.06)
FE $\Delta$ revenue ratio * ER index			-0.58** (-2.32)	
FE $\Delta$ revenue ratio * BBR dummy				-0.2 (-0.96)
FE $\Delta$ revenue ratio * ER dummy * BBR dummy				-0.35 (-0.85)
# observations	366	339	339	339
# countries	28	28	28	28
R-squared	0.4	0.41	0.41	0.42
Wald test time dummies	6.23***	6.32***	8.92***	6.23***

Note: FE indicates to the forecast error, ER refers to expenditure rule, while BBR refers to budget balance rule. Estimates are based on the fixed effects panel estimator with robust standard errors, as in Wierds (2008). \*, \*\*, \*\*\* denote, respectively, significance at the 10, 5 and 1% level. T-values in parentheses. Other control variables (lagged inflation, headline balance and an election year dummy) are included in all specifications but not reported due to lack of significance. Each variable that is part of the interaction terms was also included as stand-alone variable in each specification but not reported in the table. Three outliers of the expenditure rules index (i.e. the three years during which Bulgaria has had two expenditure rules targeting the general government with exactly the same coverage) were excluded from the estimation sample.

Source: SCPs, AMECO Spring vintages and Commission's Fiscal Governance Database 2016 vintage.



## 5. CONCLUSIONS

**A key innovation of the 2011 reform of the institutional architecture was a greater focus on spending rules.** At EU level, the expenditure benchmark was introduced as a second key indicator of the preventive arm of the SGP. In parallel, many Member States introduced national spending rules –often in addition to balanced budget or debt rules– in the wake of the six-pack directive that concerned the national fiscal frameworks. The greater reliance on spending rules reflects the growing consensus in academia and policy spheres that spending rules promote a better balance between budgetary discipline and macroeconomic stabilisation objective, are less procyclical, more transparent and easier to monitor. However, evidence on the performance of spending rules used at EU and Member State level has been very scarce so far.

**Against this background, this part assesses the performance of spending rules at EU and Member State level with quantitative analyses.**

It investigates the ability of fiscal spending rules to (i) ensure sustainable public finances, (ii) offer space for countercyclical stabilisation and (iii) guarantee predictability. The analyses are factual, backward looking and conducted primarily based on quantitative analyses.

**Our main findings can be summarised as follows:**

**Conceptually, the expenditure benchmark seems to better reflect the fiscal effort of governments than the structural balance.** While the change in the structural balance is a well-established and widely-known indicator to measure the fiscal effort, it can be distorted by non-policy effects such as revenue windfalls or shortfalls and therefore imperfectly measure the fiscal effort. From a conceptual point of view, the expenditure benchmark seems to better reflect the fiscal effort of the government, since it nets out several factors which are out of control of the governments in the short run and mitigates the frequent revisions of potential growth by using a ten-year average. However, expenditure rules also face challenges, in particular in terms of measurement of discretionary revenue measures and reduced incentives for efficient revenue policies.

**In terms of sustainability, counterfactual simulations show that public debt ratios would have been significantly lower today if Member States had applied and complied with the expenditure benchmark since 1999.** The counterfactual simulations take into account direct effects from fiscal adjustment on the real GDP level (via a fiscal multiplier) as well as indirect effects on prices (Phillips curve) and interest rates (Taylor rule). The findings reveal that a more front-loaded fiscal adjustment would have reduced public debt significantly, despite the negative effects of temporary lower economic growth and inflation. Debt reduction would have been particularly marked in high-debt Member States. We also find that compliance with the expenditure benchmark compared with the structural balance requirement would have resulted in a slightly more growth-friendly adjustment, if one considers that fiscal adjustment has larger adverse growth effects in good than in bad times. The reason for this is that compliance with the expenditure benchmark would have required a larger fiscal adjustment in good times and a smaller one in bad times.

**As regards stabilisation, new evidence shows that the expenditure benchmark would have been more effective in reducing procyclicality than the change in the structural balance.** We find evidence of a procyclical fiscal effort since 2000, implying that discretionary fiscal policy is contractionary in bad times and expansionary in good times in the EU on average. The cost of such policy can be high, as discretionary fiscal policy measures counteracts the functioning of automatic stabilisers and increases volatility. The empirical findings show that discretionary fiscal policy tends to be more procyclical in good than in bad times. Importantly, complying with fiscal rules of the preventive arm would have reduced the procyclicality of fiscal policy in the EU. The findings suggest that for Member States it is more (less) demanding in good (bad) times to comply with the required fiscal effort of the expenditure benchmark than with the structural balance methodology. Put differently, the expenditure benchmark appears the more effective indicator to reduce the procyclicality of the fiscal effort than the structural balance.

**In terms of predictability, unbiased and realistic macroeconomic and budgetary projections are cornerstones of effective fiscal surveillance.** The introduction of the Pact has increased interest in fiscal forecasting in Europe, since budgetary forecasts can play a crucial role in the implementation of the fiscal surveillance framework. It is therefore reassuring that the indicators used to assess the fiscal effort in the preventive arm of the Pact do not appear to be systematically biased. Overall, the size of forecast errors appears broadly similar when the fiscal effort is based on the expenditure benchmark methodology or measured by the structural balance.

**New evidence at national level shows that expenditure rules reduce the procyclical bias of fiscal policy.** Empirical estimates over the last 20 years demonstrate that the size of the procyclical bias is lower in the presence of expenditure rules. The procyclicality is also reduced by a better design of the expenditure rule (in terms of legal basis, independent monitoring, coverage and consequences of not complying). Furthermore, a combination of expenditure rules and budget balance rules attenuates the procyclical pattern of fiscal policy more than when one of the rules operates alone. Finally, rule compliance enhances the reduction in procyclicality, and for the case of national rules, it even makes fiscal policy acyclical.

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# Part III

## Impact of macroeconomic developments on fiscal outcomes

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## KEY FINDINGS

This part provides new empirical evidence on the impact of macroeconomic developments on fiscal outcomes.

### **Macroeconomic developments can have an impact on fiscal outcomes via three main channels.**

- Growth effects: Macroeconomic developments can have an effect on fiscal outcomes via actual and/or potential growth. For instance, evidence shows that high public debt can weigh on actual growth and high private debt can slow down potential growth.
- Discretionary fiscal policy effects: They can induce policymakers to implement discretionary policy measures. For example, in the wake of a housing boom, governments may decide to change property taxation or increase spending in the wake of additional revenues.
- Revenue windfalls/shortfalls: They can have a direct impact on revenue windfalls and shortfalls. Revenue windfalls (shortfalls) are unexpected gains (losses) in revenues that are not the result of GDP growth or discretionary fiscal policy. They stem, for instance, from developments in asset or housing markets and related transaction, property or wealth taxes that are decoupled from GDP growth.

### **Our empirical findings show that macroeconomic developments can have a significant impact on revenue windfalls.**

- Results from panel regressions for a sample of EU Member States over the past 20 years show that macroeconomic developments have a significant impact on revenue windfalls and shortfalls.
- In particular, we find that for the EU on average, an increase in household debt results in higher revenue windfalls. A higher trade balance, for instance a decrease in imports with regard to exports, leads to revenue shortfalls.
- Results also show that temporary windfall revenues often trigger permanent increases in spending or decreases in tax rates.

### **Taking account of macroeconomic developments can lead to a better understanding of the fiscal effort.**

- Findings from panel estimates show that developments in trade balance and household debt have had a sizable impact on revenue windfalls (shortfalls) over the past 20 years. These developments have been reflected in the fiscal effort as measured by the change in the structural balance, as it captures the revenue windfalls/shortfalls.
- The analysis also supports the increased reliance on the expenditure benchmark in measurement of the fiscal effort. The expenditure benchmark is less affected by macroeconomic factors than the structural budget balance, since it does not rely on revenue windfalls and shortfalls, respectively.

# 1. INTRODUCTION

**The financial and sovereign debt crisis drew attention to the fact that large fluctuations in government revenues beyond those explained by fluctuations in GDP may have a major impact on fiscal outturns and public finance prospects.** Before the crisis, several EU Member States had experienced a build-up of macroeconomic imbalances, including in the external sector, property prices and private debt. While building up, these imbalances generated large windfall revenues, which governments spent in the absence of governance instruments detecting their temporary nature. As imbalances and the associated windfall revenues reversed, they amplified the effect of the cyclical downturn itself on fiscal outcomes. Reversing excessive expenditure growth (and tax cuts) that were based on windfall revenues proved difficult in the downturn, leading to large and persistent fiscal imbalances and protracted adverse impacts on growth and employment caused by fiscal consolidation.

**Those effects of macroeconomic and financial sector developments on fiscal outcomes are not limited to the financial crisis and its aftermath.** Large revenue windfalls and shortfalls occur every year in Member States, and trigger debates on the appropriate fiscal response <sup>(127)</sup>.

**Over time, fiscal surveillance has relied on a range of indicators to gauge the fiscal stance, the fiscal outlook and fiscal risks.** The set of core indicators in the EU fiscal surveillance framework has over time been expanded to account for temporary factors, in particular cyclical developments and one-off policy effects, in order to better measure the underlying fiscal trends and risks. Cyclically-adjusted fiscal indicators, such as the cyclically-adjusted budget balance (CAB) and the structural balance (SB) are central elements in the EU fiscal framework.

**Still, regular patterns in budgetary elasticities are not explicitly considered when assessing the fiscal position.** Cyclically-adjusted fiscal indicators are frequently substantially affected by unplanned or unexpected revenue windfalls and shortfalls that are not the result of (discretionary)

fiscal policy and do not reflect real GDP developments. They result in particular from changes in tax bases and effective tax rates that relate to macro-financial developments. Tax base effects beyond GDP stem from factors such as financial transactions (property), stock variables (wealth, property prices) or capital inflows. In addition, impacts on effective tax rates may result from price developments in the context of nominal tax brackets <sup>(128)</sup>. If the link between macro-financial developments and revenue windfalls and shortfalls that are not fully captured by surveillance instruments such as the structural balance can be better understood, this will provide insights into their likely permanent or temporary nature.

**Information on fiscal risks associated with macroeconomic and financial developments may provide a better understanding of the underlying fiscal position and fiscal effort.** The aftermath of the crisis saw the introduction of the Macroeconomic Imbalance Procedure (MIP), with the aim of complementing the existing economic surveillance framework and monitoring, preventing and correcting the build-up of imbalances. A large number of variables aimed at capturing macroeconomic imbalances are regularly screened in the context of MIP surveillance to identify possible risks to macroeconomic stability at large. Macroeconomic imbalances were also recognised as, at least, an important imperfect predictor not only of macroeconomic, but also fiscal, perspectives. More recently, the Commission has emphasised the use of the expenditure benchmark in budgetary surveillance, which helps to identify whether government expenditure developments are in line with underlying economic activity over the longer run. It strengthens the ability of the fiscal framework to deal with these revenue windfalls/shortfalls. This Chapter analyses the extent to which fluctuations in budgetary elasticities resulting from macroeconomic developments can be better captured, in order to improve the understanding of

<sup>(127)</sup>Graph A.1. in the Annex shows the occurrence of (unexpected) windfall revenues over time in Member States.

<sup>(128)</sup>In addition, macroeconomic imbalances may also substantially affect potential output, in terms of both level and composition (through sectoral reallocations, over- or under-investment and hysteresis effects), as well as potential output measurement leading to *ex-post* potential output revisions. Both indirectly affect cyclically-adjusted fiscal indicators (Box III.2.1).

the underlying fiscal positions and fiscal effort.

**Since the financial crisis, a few studies have further investigated the link between macroeconomic developments and cyclically-adjusted fiscal indicators.** Those studies suggest that the assessment of the fiscal position, fiscal stance and fiscal risks should more explicitly consider budgetary fluctuations linked to macroeconomic and financial developments in addition to the output gap. More broadly, the existing literature looks at either the impact of macroeconomic developments that are potentially associated with external macroeconomic factors (e.g. current account developments) *or* that of the financial cycle (often associated with internal macroeconomic factors, e.g. housing prices developments) on public finance indicators. However, no comprehensive analysis exists that covers the impact of a broad range of macroeconomic developments together <sup>(129)</sup>.

**This Part elaborates on the literature by combining the different elements in an empirical analysis adding a novel feature, that of netting out the impact of discretionary revenue measures.** To demonstrate how consideration of macroeconomic developments can improve the understanding of the underlying fiscal outcomes (i.e. the fiscal effort and the fiscal position), we capture their estimated effects based on a panel analysis, and illustrate the extent to which it has affected fiscal outcomes in Member States since 2000.

**To that end, we proceed in two steps. A first step is to estimate the sensitivity of fiscal outcomes to macroeconomic developments on top of those linked to the economic cycle.** This part of the analysis investigates the extent to which macroeconomic developments may be drivers of revenue windfalls and shortfalls. The focus on

revenues, together with the netting out of discretionary policy measures, gives a clean measure of the direct fiscal impact of macroeconomic developments that is not polluted by policy reactions, and reduces estimation challenges due to endogenous effects of fiscal policy on macroeconomic variables <sup>(130)</sup>. In a second step, the findings of that empirical analysis are used to illustrate the potential impact over time of macroeconomic developments on fiscal indicators.

**The structure is as follows.** Chapter 2 discusses the empirical literature and presents the conceptual framework more in detail. Chapter 3 presents the regression analysis and results of the effects of macroeconomic developments on revenue windfalls and shortfalls. Based on those findings of the regression analysis, Chapter 4 shows the extent to which the consideration of macroeconomic developments can help improve understanding of the underlying fiscal position.

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<sup>(129)</sup>Note that the 'twin-deficit hypothesis' literature on external and fiscal imbalances is beyond the scope of this study. As explained by e.g. Corsetti and Mueller (2006) and Afonso et al. (2018), the twin-deficit hypothesis suggests that the government and current account balance move in the same direction. Chinn and Ito (2019) also suggest a causal link going from fiscal tightening to external surpluses, consistent with a 'twin-surplus hypothesis'. The effect that this chapter aims to capture goes in the opposite direction, with revenues improving as the current account balance deteriorates. Section 2.2. discusses how endogeneity concerns that may arise from this hypothesis are addressed.

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<sup>(130)</sup>Morris and Schuknecht (2007) note that the impact of discretionary tax changes makes it extremely difficult to estimate budget elasticities (to changes in asset prices) in a reliable way using econometric estimation. They suggest that ideally, these effects should be netted out, but notes that no such estimates of the revenue impacts of policy changes were available in a consistent data series across countries and time.

## 2. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

**Cyclically-adjusted fiscal indicators, such as the structural balance (SB), are used to assess the underlying fiscal position.** The structural balance is a central element in the EU fiscal framework though its centrality has been attenuated by increased reliance on expenditure benchmarks. Changes in those cyclically-adjusted fiscal indicators that are not the result of discretionary fiscal policy may reflect in particular changes and revisions of potential output and changes in the revenue to GDP ratio (windfalls/shortfalls). The latter can be due to revenues not directly linked to GDP but to other macroeconomic developments such as financial transactions (property), stock variables (wealth, property) or imports (since, ceteris paribus, an increase in imports does not affect GDP but does raise indirect taxes) <sup>(131)</sup>. Graph III.2.1 shows the channels through which macroeconomic developments may affect fiscal outcomes (both public revenue and expenditure), and breaks down the cyclical effects (associated with the automatic stabilisers), the discretionary fiscal policies (that depend on many factors) and the cyclically-adjusted expenditure and revenue net of discretionary policies (our focus). The section below provides a discussion of the empirical literature on the effect of those macroeconomic variables on fiscal indicators, with a focus on the effect on revenues.

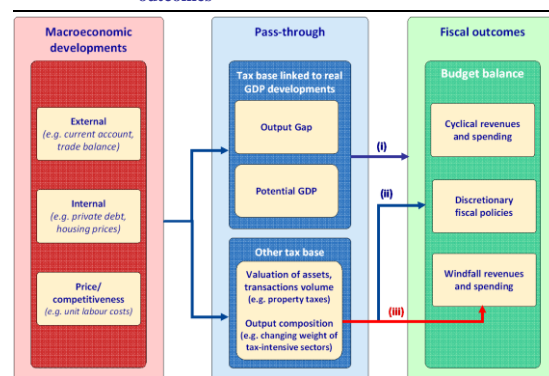
### 2.1. LITERATURE REVIEW

**The literature on the effects of macroeconomic developments on fiscal outcomes can be broadly categorised into three groups: external, internal and price factors.** As regards external macroeconomic developments, imports are a tax base for indirect revenues and the import share of GDP can fluctuate substantially. The effect on cyclically-adjusted government revenues of the fluctuation of this tax base that is not closely linked to GDP is represented by channel (ii) and (iii) if this triggers a policy reaction in Graph III.2.1. Typically, a deteriorating current account balance improves indirect tax revenues, since net capital inflows finance a higher level of domestic absorption (thus imports). Dobrescu and Salman (2011) and Lendvai et al. (2011) highlight

<sup>(131)</sup> Such as customs duty, excise duty, anti-dumping duty and value added tax.

the effects of current account movements and positions that are not captured by conventional (even cyclically-adjusted) fiscal indicators <sup>(132)</sup>. Lendvai et al. (2011) find that the government revenue ratio increases significantly during boom years (i.e. the tax elasticity to GDP is above 1), and look at the effects on revenue components. They find that the revenue ratio increase is primarily driven by indirect taxes (as imports increase more than GDP). The ratio of direct taxes

Graph III.2.1: Effect of macroeconomic developments on fiscal outcomes



Note: Spending shortfalls may also occur, but they can be hardly distinguished from discretionary policies and are therefore not the focus of the analysis.

to GDP follows a similar path, but fluctuations are less pronounced. Social contributions are constant as a share of GDP during the boom phase, and tend to increase in the post-boom phase <sup>(133)</sup>. Conversely, an increase in exports would generally lead to shortfalls (as a % of GDP), since such increase is reflected in GDP (denominator of the revenue ratio) and since the tax take on exports is generally lower than on other parts of GDP (diminishing the numerator of the revenue ratio) <sup>(134)</sup>. In addition, external financial flows may also

<sup>(132)</sup> Lendvai et al. (2011) adjust cyclically-adjusted balances for absorption booms and show that standard approaches used to adjust budget balances for the cycle could miss part of the temporary revenues accruing during absorption booms when the current account deteriorates sharply.

<sup>(133)</sup> Note that a breakdown of trade balances in exports and imports may provide additional information on drivers of tax windfalls, because imports and exports are not equally tax-rich. Therefore, a constant trade balance with different levels of imports and exports can have different fiscal effects via different budgetary elasticities.

<sup>(134)</sup> An exception is revenues derived from exports of government-owned resources, on which the revenues may be higher than on the other parts of GDP. In this case, exports may lead to windfalls.



Table III.2.1: Summary of the expected impact of macroeconomic developments on fiscal outcomes

	External macroeconomic developments (current account (CA), trade balance, exports and imports)	Internal macroeconomic developments (febt/credit/asset prices)	Prices, wages and competitiveness (CPI/ULC)
<b>Revenue and components (PIT, CIT, VAT, SSC, nTax)</b>	The government revenue to GDP ratio increases significantly during boom years. In particular, the CA deficit improves indirect tax revenues (Dobrescu and Salman 2011, Lendvai et al. 2011). Direct taxes follow a similar but less pronounced path. Social contributions to GDP are constant during the boom phase, and increase in the post-boom phase (Lendvai et al. 2011).	Asset price booms raise revenues from asset-related taxes and lead to generalised revenue growth (wealth effects of increasing asset values) (Eschenbach and Schuknecht 2004, Girouard and Price 2004). Asset prices affect transaction taxes and corporate taxes, while their effects on direct household taxes and indirect taxes tend to be smaller (Morris and Schuknecht 2007) (2).	An increase in inflation rates might have positive consequences for tax revenues. Inflation's effects tend to be positive for personal income taxes and social security contributions, and negative for corporate income taxes (Heinemann 2001). RULC increases imply a rise in SSC and PIT to GDP ratios (ceteris paribus). However, prolonged wage increases above productivity developments may lead to losses of competitiveness, with countervailing effects on public revenues, as exemplified by periphery euro area countries in the 2000s (Osbat et al. 2012) (1).
<b>Expenditures</b>	The public expenditure to GDP ratio tends to decline significantly during absorption booms. However, in the late phase of the absorption boom, the expenditure ratio stabilises, suggesting a shift to a pro-cyclical policy stance (Lendvai et al. 2011).	<p>Boom-bust phases tend to exacerbate already existing pro-cyclical policy biases, as well as political-economy biases, toward higher spending (Jaeger and Schuknecht 2007) (2).</p> <p>Political-economy factors can accentuate this pattern especially if booms fall into election periods (Buti and van den Noord 2003).</p> <p>During a bust phase, financial instability may force governments to provide bank support measures, further increasing spending (Eschenbach and Schuknecht 2004).</p>	Public expenditure-to-GDP may decline due to denominator effects and nominal expenditure control frameworks. Inflation can affect means-tested benefits, if eligibility for them or their level are not fully indexed to inflation. Wage increases in the private sector can trigger rises in public sector wages and thus expenditure (Fernández-de-Córdoba et al. 2012).
<b>Debt</b>	During the absorption boom, the dynamism of nominal GDP and reduction in the government deficit lead to a decline in the debt ratio. This decline is more than reversed in the post-boom phase (Lendvai et al. 2011).	Pro-cyclical policy biases accentuated by boom-bust phases could cause a deficit and debt bias where fiscal accounts improve only slightly in periods of asset price boom, and deteriorate strongly in the subsequent downturn. Over time this pattern may imply debt increases (Eschenbach and Schuknecht 2004). Excessive asset prices volatility itself can harm output (Zandi 1999), contributing to increase debt ratios.	Higher inflation first implies (ceteris paribus) a decrease in the debt-to-GDP ratio, which can then be reversed due to interest rate rises, or if inflation undermines competitiveness (especially in a monetary union).

(1) Osbat et al. (2012).

(2) Examples are Ireland and Spain just before the 2008 financial crisis (Pierluigi and Sondermann, 2018).

contribute to asset prices fluctuations, with government revenue effects as described below.

**Internal macroeconomic developments can also shape public finances.** These developments include asset prices and financial stock and transaction variables that affect property, wealth and financial transaction taxes. Those tax bases are not directly associated with real GDP developments and may thus affect cyclically-adjusted revenues, triggering revenue windfalls or shortfalls (channel (ii) and (iii) if this triggers a policy reaction in Graph III.2.1). Liu et al. (2015) provide an overview of the literature on the effects

of internal macroeconomic developments on taxes, noting that most studies focus on housing and equity prices. In particular, asset price booms may not only (temporarily) raise revenues from asset-related taxes, but also lead to generalised revenue growth, due to the wealth effect of increasing asset values on consumption (Eschenbach and Schuknecht 2002 <sup>(135)</sup>, Eschenbach and Schuknecht 2004 and Girouard and Price 2004). Looking at revenue components, asset price developments seem to affect transaction taxes and corporate taxes, while their effects on direct

<sup>(135)</sup>Liu et al. (2015) incorporate the impact of asset price cycles in the calculation of structural fiscal balances.

household taxes and indirect taxes tend to be smaller. The magnitude and nature (contemporaneous or lagged) of the effects differ across countries due to heterogeneity in the respective tax structures, with differences in the size of the tax base related to housing transactions or housing wealth, as well as in the lag structure of taxation (Morris and Schuknecht 2007). The heterogeneity makes empirical estimates challenging <sup>(136)</sup>.

**Price and wage inflation have various effects on public finances.** *Ceteris paribus*, an increase in inflation might have positive consequences for tax revenues (as a % of GDP) <sup>(137)</sup>, although with opposite effects across tax components and depending on the design of taxes <sup>(138)</sup>. Wage increases trigger rises in SSC and PIT ratios to GDP (*ceteris paribus*), also due to income earners being pushed into higher tax brackets in a progressive tax system. However, wage increases may also adversely affect CIT as production cost rises put pressure on corporate profits. Depending on the extent to which profit margins –and thereby CIT– are squeezed by higher wage costs, the resulting direct effect on windfall revenues could be positive or negative. Any revenue windfalls effects may well be of temporary nature, depending on the degree to which competitiveness is affected by prolonged wage increases above productivity.

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<sup>(136)</sup> See also Claessens et al. (2011), Bénétrix and Lane (2013). Credit growth and household debt indicators are relatively easily comparable across countries and highly correlated to house prices and equity prices, and so can consist of good proxies for internal macroeconomic developments. Bénétrix and Lane (2015) show how fiscal variables covary with the financial cycle, which they capture by the credit growth and current account balance.

<sup>(137)</sup> Heinemann (2001), based on an econometric panel analysis on a sample of OECD countries over 1972–1996.

<sup>(138)</sup> With progressive income tax and an imperfect indexation of brackets, for instance, inflation increases real tax revenues, at policy unchanged (Oates 1988). However, inflation may reduce real tax revenues for taxes with considerable lag between the taxable event and the moment the tax is paid (Olivera 1967, Tanzi 1977). Alesina and Perotti (1995) find that inflation tends to have positive effects on individual income taxes and social security contributions, and negative effects for corporate income taxation. In addition, inflation is expected to be neutral for proportional taxes without a significant collection lag, such as VAT. For social security contributions, two opposite effects are at play: as social security contributions are often paid as a flat rate of income up to a maximum value, inflation may dampen government revenues by reducing the real levels.

**Concerning expenditures, the ratio of total government expenditure to GDP tends to decline significantly during the first years of absorption booms (i.e. phases of buoyant domestic demand), but then stabilises, suggesting a shift to a procyclical policy stance** (Lendvai et al. 2011). During the early years of the boom, government spending increases in line with its historical trend, and the boom in nominal GDP brings the expenditure ratio down. In the late phase of the absorption boom, the expenditure ratio raises, as nominal spending growth is adjusted upward to match buoyant government revenue. Jaeger and Schuknecht (2007) also find that boom-bust phases tend to exacerbate already existing procyclical policy biases toward higher spending. During a boom phase, revenue windfalls from large asset price increases tend to result in expansionary expenditure policies that erode the positive effects on the budget, due to perceived larger room for discretionary spending. Political-economy factors can accentuate procyclical policy biases further, especially if booms fall in election periods (Buti and van den Noord 2003). Higher inflation also tends to reduce public expenditure ratios in the short run, with potential adverse effects in the longer run <sup>(139)</sup>.

**Macroeconomic developments also contribute to public debt ratio developments.** During an absorption boom, high nominal GDP growth together with the reduction in the government deficit typically lead to a sharp decline in the debt ratio. However, that decline is generally reversed in the post-boom phase (Lendvai et al. 2011). If higher inflation undermines competitiveness in a monetary union or fixed exchange rate regime, downward price and wage adjustment eventually reverses the favourable public finance dynamics.

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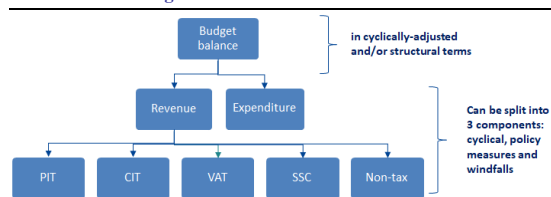
<sup>(139)</sup> With imperfect indexation of eligibility for means-tested benefits (and of their level), inflation automatically decreases expenditure ratios. In addition, government expenditure limits are often set in nominal terms, so higher-than-expected inflation may decrease spending in real terms, absent discretionary measures. However, in the long run, private sector wage increases affect public sector wages with a lag, at least in OECD countries (Fernández-de-Córdoba et al. 2012), possibly triggering increases in public expenditure. In particular, during booms, governments expand employment and wages, while in downturns, lack of tax revenues can force the government to cut back the wage bill – the latter occurring with rigidities (Afonso and Gomes 2014).

## 2.2. CONCEPTUAL FRAMEWORK

**To assess how macroeconomic developments can affect cyclically-adjusted fiscal outcomes, we focus on government revenues.** Empirical studies generally find weak significance for the effects of macroeconomic developments apart from cyclical factors on budget balance measures, whether cyclically adjusted or not. By focusing on effects on revenues, rather than budget balance measures, we address the countervailing effect of discretionary expenditures increasing (resp. decreasing) when revenue windfalls (resp. shortfalls) occur. While public expenditure is subject to budgeting processes and control, budgetary outcomes for expenditure are more subject to government decisions (except expenditure linked to automatic stabilisers), including decisions not to correct budget overruns<sup>(140)</sup>.

**Graph III.2.2 illustrates the breakdown for the empirical analysis.** Rather than looking at budget balance measures, we focus on revenues and further disaggregate revenues into the different revenue components (personal income tax, corporate income tax, indirect taxes (VAT)<sup>(141)</sup>, social security contributions and non-tax revenues), all cyclically-adjusted, as % of GDP.

Graph III.2.2: Breakdown of the cyclically-adjusted components of budget balance



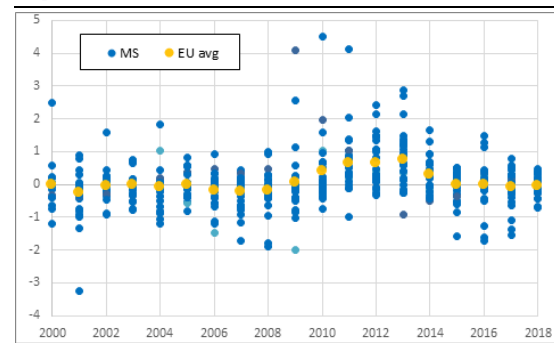
**To better identify the impact of macroeconomic developments on revenues, we also correct revenues for the impact of policy measures.** The aim is to focus on the windfall revenues that correspond to the direct effects of macroeconomic developments, netting out fiscal policy reactions

<sup>(140)</sup> It is also more difficult to make a distinction between policy and macroeconomic effects for expenditures, partly due to data availability. Discretionary tax measure and discretionary fiscal measure databases cover the years 2000-2015 and 2009-2018 respectively. Unlike the former, the latter covers both revenue and expenditure policy decisions.

<sup>(141)</sup> Throughout the text, tables and graphs indirect taxes are referred to as VAT.

(both one-offs and permanent) in addition to the business cycle effects. To do so, we adjust the annual cyclically-adjusted revenue data for the impact of discretionary revenue measures in each Member State using the Commission services database on discretionary tax measures as well as internal estimates of discretionary revenue measures. Endogeneity concerns stemming from the effects of fiscal policy on macroeconomic variables, as discussed by Bénétrix and Lane (2013), may be also attenuated<sup>(142)</sup>. Discretionary measures can be potentially large, and are quite heterogeneous across Member States (Graph III.2.3).

Graph III.2.3: Discretionary revenue measures in the EU



Note: DRM after 2008 are completed with DTM before 2008. If DRM are indicated as zero, they are replaced by DTM (in particular between 2008 and 2010).

Source: Own calculations based on AMECO, discretionary tax measure database and internal estimates for discretionary fiscal measures.

**The analysis focuses on short-term direct effects of macroeconomic developments on cyclically-adjusted revenues.** The complex longer-term developments of macroeconomic developments and their interactions are not part of this study. For instance, a prolonged rise in unit labour costs may

<sup>(142)</sup> Endogeneity concerns should be seen in the context of the 'twin-deficit hypothesis' that suggests that a larger fiscal deficit, through its effect on national saving, leads to an expanded current account deficit. If the twin-deficit hypothesis holds, both budget balance and current account balance (or trade balance) would be jointly determined and move in the same direction. The tax elasticity effect that we investigate, on the contrary, suggests that the budget deficit improves as the current account deteriorates. By netting out the effect of government expenditure and of discretionary revenue policy measures from our LHS variable of interest, the potential for endogenous effects is much reduced when compared to studies in the literature. What remains is the disposable income effect of windfall revenues which stem from e.g. the tax take on increased consumption of imports. This effect is of secondary order but may imply minor endogeneity issues. Correcting for Nickel bias and applying instrumental variables estimates confirm that these effects are minor in our setting.

trigger an increase in revenues in the short term but could have negative effects through competitiveness losses in the longer term. This would lead to a decline in exports and a shift to the non-tradeable sector, and eventually declining investment and asset prices and a possible rise in risk premia. While we do not capture those dynamics and interactions in the medium and longer term, we do capture their direct impacts on fiscal outcomes at the time they occur, by incorporating dependent variables reflecting these effects.

**As the current analysis is based on *ex-post* cyclically-adjusted fiscal data, any measurement ‘errors’ of the potential output in real time are not captured.** This can lead to underestimation of the effects of macroeconomic developments on cyclically-adjusted revenues compared to an analysis using real time data. Indeed, the measurement of cyclically-adjusted revenues depends on the measurement of the output gap. Therefore, for a given change in the revenue ratio triggered by a given macroeconomic development, the measurement of the change in cyclically-adjusted revenue may depend on whether a change in real GDP is considered a change in either potential output or the output gap. In the years before the 2008-2009 economic and financial crisis, with buoyant economies triggered by imbalances, part of the fluctuations of real GDP had been considered as changes in potential GDP in real time – but then revised *ex post* as changes in output gap. The cyclically-adjusted revenues associated with those developments would therefore be lower when measured *ex post*, compared to when they would have been measured in real time, as part of the revenues are assigned *ex post* to cyclical fluctuations and netted out from cyclically-adjusted revenues <sup>(143)</sup>.

**After looking at the direct effects of macroeconomic developments on aggregate windfall revenues, we estimate the effects on revenue components (personal income tax, corporate income tax, VAT, social security contributions and non-tax revenues), also cyclically-adjusted and corrected from the**

**impact of policy measures.** This disaggregation allows deeper understanding of the effects on revenues, and may underpin the robustness of the findings.

**Second, based on those regressions, we illustrate the potential impact of macroeconomic developments on the fiscal efforts for every country in the panel.** This helps better understand the underlying fiscal efforts, since the revenue windfalls (shortfalls) triggered by macroeconomic developments affect the (estimated) fiscal effort as measured by the change in the structural balance (which captures the windfalls/shortfalls), whereas they are not directly linked to fiscal measures taken. This helps better understand the underlying budgetary positions and fiscal risks, since reversal of macroeconomic variables to their equilibrium values would trigger revenue shortfalls (windfalls).

**The country-specific results should be considered indicative.** National tax systems have many country-specificities that may not be reflected in a panel analysis, since tax bases, rates and lags differ. As a result, the impact of macroeconomic developments may differ substantially. Yet, this methodology requires panel data, and due to data limitations, we cannot estimate the country-specific impact coefficients. We therefore rely on common impact coefficients across EU Member States. Tests for a range of country groupings (not shown in this report) find that the coefficients reflecting the revenue impacts of macroeconomic developments are relatively similar across the range of different country groupings. Finally, estimating the potential revenue effects of a reversal of macroeconomic variables to their ‘equilibrium’ levels requires assumptions on the latter, which are uncertain.

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<sup>(143)</sup> Borio et al. (2014, 2016) develop a potential output measure that takes account of the financial cycle. They find that a finance-neutral output gap measure helps correct the flatter effect of financial booms on the fiscal accounts.

**Box III.2.1: Breaking down the effects of macroeconomic developments on cyclically-adjusted revenues**

The effect of a development in a macroeconomic variable  $x$  on the cyclically-adjusted ratio-to-GDP of public revenues  $\frac{Rev^*}{Y^*}$  (with  $Rev^*$  the cyclically-adjusted revenue and  $Y^*$  the potential output) can be written <sup>(1)</sup>:

$$\begin{aligned} \frac{\partial \left( \frac{Rev^*}{Y^*} \right)}{\partial x} &= \frac{\partial}{\partial x} \sum_i \left( \frac{Taxrate_i \cdot Taxbase_i^*}{Y^*} \right) = \sum_i \frac{\partial}{\partial x} Taxrate_i \cdot \left( \frac{Taxbase_i^*}{Y^*} \right) \\ &= \sum_i \frac{\partial Taxrate_i}{\partial x} \cdot \left( \frac{Taxbase_i^*}{Y^*} \right) + \sum_i Taxrate_i \cdot \left( \frac{1}{Y^*} \left\{ \frac{\partial Taxbase_i^*}{\partial x} - \frac{\partial Y^*}{\partial x} \cdot \frac{Taxbase_i^*}{Y^*} \right\} \right) \\ &= \underbrace{\frac{1}{Y^*} \cdot \sum_i Taxrate_i \cdot \frac{\partial Taxbase_i^*}{\partial x}}_{\text{Effects on the tax base and effective rates (I)}} - \underbrace{\frac{1}{Y^*} \cdot \sum_i Taxrate_i \cdot \frac{Taxbase_i^*}{Y^*} \cdot \frac{\partial Y^*}{\partial x}}_{\text{Effects via potential GDP (II)}} + \underbrace{\sum_i \left( \frac{Taxbase_i^*}{Y^*} \right) \cdot \frac{\partial Taxrate_i}{\partial x}}_{\text{Discretionary revenue measures (III)}} \end{aligned}$$

where  $Taxbase_i^*$  represents different components of the cyclically-adjusted tax base, for all tax payers (i.e. all tax bases broken down by tax brackets/rates). Tax bases are cyclically-adjusted, which nets out cyclical effects linked to the output gap.  $Taxrate_i$  represents the tax rate applied to the corresponding tax base. Sums are made over all different tax bases.

The effects of macroeconomic developments on the tax bases include (I) both immediate and lagged effects, and (ii) structural effects due to e.g. level shifts in (asset) prices and changes to the economic structure <sup>(2)</sup>, and temporary effects. When estimating the impact coefficient of the macroeconomic indicators on fiscal outcomes, we are agnostic on whether they are temporary or structural as we aim to measure the immediate and direct effect of changes in non-GDP related tax bases. To the extent that the structural shifts in tax bases are reflected in the macroeconomic indicators that we cover, we capture their effects on revenues. If changes to the tax bases affect revenues only with a lag, we may fail to capture their effect due to differences in tax structures and lags across Member States. Since the effects on revenue beyond 1 year should also have the same sign as the change in the respective tax base, failure to capture lagged effects on revenue accruals implies an underestimation of the coefficient. Moreover, to the extent that macroeconomic developments indirectly affect real GDP (e.g. if a collapse in property prices triggers declining GDP through demand effects as consumption and investment fall due to wealth and balance sheet effects) we do not capture it as it is reflected in the cyclical adjustment of GDP. We focus on short-term effects of macroeconomic developments that do not directly affect real GDP, and therefore on the direct effects beyond GDP only.

The effects of macroeconomic developments on potential GDP and measurement of potential GDP (II) can be large, particularly in the medium term, as exemplified by adjustment dynamics and hysteresis effects triggered by corrections of macroeconomic imbalances in the aftermath of the financial crisis.

We capture the ‘true’ short-term effects by using *ex-post* (revised) potential output data (the term ‘true’ is relative, as further revisions of potential output are still possible, in particular towards the end of the sample). The effect of macroeconomic developments on potential output is indeed often underestimated in

<sup>(1)</sup> The GDP-ratio of each component (i.e. personal income tax, corporate income tax, VAT, social security contributions and non-tax revenues) can be expressed in the same manner.

<sup>(2)</sup> For instance, large capital inflows can trigger real currency appreciation and increase real wages, which can lead to competitiveness losses for the tradable sectors and a rise in demand for services, implying a shift towards non-tradable sectors.

(Continued on the next page)

Box (continued)

real time. This concerns both real effects related to unsustainable changes in the real economy (such as excess production capacity in construction or financial sectors), and measurement issues, since estimated potential GDP behaves rather pro-cyclically and increases in booming economies including when reflecting rising imbalances. Borio et al. (2014, 2016) have for instance studied the effect of the financial cycle on (potential) GDP and found that the cyclical correction done when compiling the output gap and potential output does not factor in the financial cycle. This can trigger ‘myopic’ fiscal policy, notably by incentivising governments to commit to expenditure over the long run. Schematically, in year  $t_0$  (real time), for year  $t$ , with  $Y_{0,t}^*$  the potential output estimated/forecast at year  $t_0$  for year  $t$ , and  $Y_t^*$  the revised measure for potential output, these effects can be re-written as:

$$\text{Effects via potential GDP (II)} = -\frac{1}{Y_t^*} \left\{ \sum_i \text{Taxrate}_i \cdot \frac{\text{Taxbase}_i^*}{Y_t^*} \cdot \frac{\partial Y_{0,t}^*}{\partial x} + \sum_i \text{Taxrate}_i \cdot \frac{\text{Taxbase}_i^*}{Y_t^*} \cdot \left( \frac{\partial (Y_t^* - Y_{0,t}^*)}{\partial x} \right) \right\}$$

$(Y_t^* - Y_{0,t}^*)$  represents measurement errors of potential output in real time, due to underestimation of the effects of macroeconomic factors (such as the financial cycle). Let us illustrate the magnitude of the measurement error during the great crisis. When comparing the potential GDP growth forecast in 2011, estimated in the Commission spring 2010 forecast (considered as a ‘real time’ estimate), with the one calculated in the Commission spring 2019 forecast (considered as ‘*ex post*’ and true estimate), we can find large differences. There was more than +3% measurement difference for countries such as Greece, Poland, Romania and Slovakia; more than -3% for countries such as Latvia and Portugal, around +0.9% for Italy and +0.4% for Germany. Correction of the fiscal indicators for these potential output effects is beyond the scope of this analysis.

**Discretionary revenue measures (III) are represented by changes in tax rates (at given tax bases) <sup>(3)</sup>.** In practice, it is difficult to assess whether a measure is a direct response to macroeconomic developments <sup>(4)</sup>, or due to other factors (e.g. political programme, longer-term policy objectives). In this study, we also aim to estimate the direct policy response to macroeconomic developments.

<sup>(3)</sup> To simplify, a measure that affects the tax base would here be considered as a change in tax rate - e.g. tax rate changed for zero, or increased from zero, to be applied on the corresponding tax base.

<sup>(4)</sup> An example is when a government adjusts tax rates applied to housing construction, in response to developments in housing prices.

### 3. EFFECTS OF MACROECONOMIC DEVELOPMENTS ON FISCAL INDICATORS

**We want to estimate the effect of macroeconomic developments on fiscal outcome, based on panel data for the EU.** We specify dynamic panel regressions, including both country- and year- fixed effects <sup>(144)</sup>. By taking first differences, we also avoid some complex issues linked to the identification of equilibrium values for macroeconomic variables, and address issues of fixed effects and non-stationarity of the series <sup>(145)</sup>.

$$w_{i,c,t} = \alpha + \rho w_{i,c,t-1} + \beta \Delta M_t + \gamma X_t + \delta_c + \delta_t + \varepsilon_{i,c,t} \quad (1)$$

where  $w_{i,c,t}$  are revenue windfalls (shortfalls if negative),  $\delta_c$  and  $\delta_t$  are respectively the country- and time-fixed effects,  $\rho$  measures the inherent persistence of our fiscal variables,  $\beta$  is the effect of the changes in macroeconomic variables  $M_t$  and  $\gamma$  is the effect of other explanatory variables. Revenue windfalls is our main variable of interest (Box III.3.1). We also estimate similar models for components of revenue windfalls (shortfalls) as well as for changes in structural balances. For the SB, this gives:

$$\Delta SB_{i,c,t} = \alpha + \rho \Delta SB_{i,c,t-1} + \beta \Delta M_t + \gamma X_t + \delta_c + \delta_t + \varepsilon_{i,c,t} \quad (2)$$

where all variables are expressed in % of GDP <sup>(146)</sup>.

**To disentangle the direct effect of macroeconomic developments on fiscal outcomes from policy decisions, we subtract for the windfall indicators the effect of new measures decided in each of the Member States.** Those are reported in the discretionary tax measure database covering the years 2000-2015, and

internal estimates of discretionary fiscal measures over 2009-2018. Unlike the former, the latter covers both revenue and expenditure policy decisions. In their overlapping period, they correlate well in a majority of cases <sup>(147)</sup>, despite having been documented through two different workflows. The data for both discretionary tax measure and discretionary fiscal measures may be subject to some misclassifications or omissions, and have not been revised *ex post* on realised outcomes of measures. Considering AMECO data (available as from 2010, and benefitting from *ex-post* adjustment to effectively implemented measures) instead of the internal estimates of discretionary fiscal measures, does not change the overall results of the study <sup>(148)</sup>. Revenues stemming from EU transfers are also subtracted from aggregate public revenues as well as from non-tax revenues.

#### 3.1. DATA AND MODEL SELECTION

**Overall, our sample covers 28 EU Member States over more than 15 years.** Panels are unbalanced but cover on average 22 years per Member State for the structural and cyclically-adjusted variables, 15 years for revenue windfalls.

**We confront our fiscal indicators with the relevant macroeconomic variables used in the literature <sup>(149)</sup>.** The broader selection helps ensure

<sup>(144)</sup>Econometric tests show that year-fixed effects are always jointly significantly different from zero. Autocorrelation of the explained variable is not always significantly different from zero but is kept throughout for consistency. Country-fixed effects might be discarded, as our explained variable is a first difference, unless we take account of heterogeneous long-term trends across countries. However, our LSDV estimators control for them, as the LSDV corrects for the Nickell bias, following Kiviet (1995) and Bruno (2005).

<sup>(145)</sup>Unit root tests suggest that, while our independent and explanatory variables are not stationary in levels, their first differences are.

<sup>(146)</sup>Potential GDP for the change in structural balance.

<sup>(147)</sup>Correlation is above 60% for more than 80% of the Member States on aggregate and above 64% of the cases by revenue components.

<sup>(148)</sup>Another source for DRM from 2010 is the AMECO database. To use it, AMECO data from 2010 is merged with the data of the discretionary tax measure database before 2010. When using AMECO data from 2010, the discretionary fiscal measure database shares are used for the revenue breakdowns into components. Using AMECO data does not change the overall results, and the results shown are those using the discretionary tax measure and discretionary fiscal measure databases.

<sup>(149)</sup>Standard baseline explanatory variables of the fiscal reaction functions indicator are also included in the regression model but a priori not expected to affect windfall revenues. As a baseline, we consider the usual explanatory variables in this literature, including political economy ones (election years), the economic cycle, population structure and ageing, budget constraints (debt level, interest rate, EDP procedure, fiscal objectives achievement). The political economy variables are relevant for fiscal outcomes that can be affected by policy. While these variables would not be expected to affect windfall revenues, they can be expected to affect budget balance

### Box III.3.1: Windfall revenues and components

**At aggregate level, the headline budget balance ( $B$ ) is the difference between public revenue ( $R$ ) and expenditure ( $G$ ).** Correcting the headline balance for the business cycle yields the cyclically-adjusted balance:

$$CAB_t = \frac{B_t}{Y_t} - \varepsilon OG_t$$

with  $Y$  the nominal GDP,  $OG$  the output gap and  $\varepsilon$  the fiscal semi-elasticity.

**Further correcting for one-off policy measures ( $oo$ ) yields the structural balance, a key pillar of the EU fiscal framework:**

$$SB_t = CAB_t - oo_t = \frac{B_t}{Y_t} - \varepsilon OG_t - oo_t$$

**These two concepts can be restricted to revenues.** We define windfalls as the change in revenues, not explained by economic growth (either structural or cyclical) or by discretionary revenue measures (including one-offs):

$$W_t = R_t - DRM_t - R_{t-1}(1 + g_t + (\eta_R - 1)\Delta OG_t)$$

with  $\eta_R$  the elasticity of revenue to output and  $g_t$  the growth rate of nominal GDP.

**In share of GDP, windfalls can be directly related to the change in cyclically-adjusted revenues:** (see Mourre et al. (2019) for the link between  $\eta_R$  and  $\varepsilon_R$ )

$$w_t = \Delta \frac{R_t}{Y_t} - \frac{DRM_t}{Y_t} - \underbrace{\frac{R_{t-1}}{Y_t}(\eta - 1)}_{\sim \varepsilon_R} \Delta OG_t \approx \Delta CAR_t - drm_t$$

**On the expenditure side, spending windfalls could in theory be considered as well.** However, the discretionary part of public spending is de facto almost impossible to isolate. In this study, we therefore focus mainly on the revenue side.

**We investigate the effect of macroeconomic developments on windfall revenues in particular.** Further breaking revenue down into its components, we can isolate five revenue categories (personal income tax, corporate income tax, direct taxes, social security contributions, and non-tax revenues). We calculate the corresponding five cyclically-adjusted revenue components, and the corresponding windfalls which are consistent with aggregate CAB, SB or windfalls.

that there is no ‘bias’ when screening the variables. As discussed in Chapter 2, we consider three types of indicators, respectively linked to external and internal macroeconomic factors as well as competitiveness (Table III.2.1). Having identified a large set of macroeconomic variables that may potentially affect tax bases, we aim to select a limited number among those variables in our regressions. They may be mutually correlated

especially within these categories. To avoid multicollinearity in our regression, we constrain the model to include one explanatory variable per category.

**To select variables, we first test the significance of the variables of interest and their combinations, when running a large number of regressions.** The results are detailed below and

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variables or expenditures, or possibly revenue variables that have not been adjusted for discretionary policy measures.



illustrated in Graph III.3.1 <sup>(150)</sup>. This analysis also consists of a robustness check for our analysis, showing for which variables significance is high and not dependent on model choice.

Table III.3.1: **Macroeconomic variables considered in the analysis**

Baseline Non-policy variables	Type of macroeconomic development		
	External	Internal	Price/ competitiveness
<i>in first differences</i>	<i>in first differences</i>	<i>in first differences</i>	<i>in first differences</i>
Output gap	Current account balance Trade balance	Household debt  Debt of non-financial corporations	GDP deflator  Consumer price index
<i>in levels</i>	Export performance**	Financial liabilities of financial sector	Terms of trade
Public debt (lag)	Openness (X+M)/GDP	House prices adjusted for property related taxes to GDP***	Real effective exchange rate  Nominal Unit Labour Cost
<b>Policy variables</b>			
Election year*		<i>in levels</i>	
MTO overachievement*		Household credit flow	

Note: \* Dummy.

\*\* Export performance: index of market performance of exports of goods and services on export weighted imports of goods and services, as compiled in the AMECO database.

\*\*\* The adjusted indicator is: (growth rate of housing price)\*(lag of share of property-related taxes in GDP).

**Based on a systematic analysis of all possible regression models with the constraint of having one variable per category, we find that revenue windfalls (shortfalls) are best explained by developments of the following macroeconomic variables as follows <sup>(151)</sup>:**

**All external variables considered (trade balance, current account balance, openness, export performance and imports/exports) consistently significantly affect revenue windfalls (shortfalls) (Graph III.3.1, upper right quadrant).** It suggests a robust effect on the tax base and revenues that is not captured by the cyclical adjustment.

**Concerning variables related to internal factors, only the household debt and household savings ratios are systematically significant for revenue windfalls (shortfalls), and in some models house prices as well (Graph III.3.1, lower right quadrant).** As discussed in Chapter 2, less significant effects of financial and asset indicators may be due to heterogeneity in the respective tax

structures. When we add an adjusted house price indicator, reflecting the importance of property taxes for the country concerned, we capture effects also on aggregate <sup>(152)</sup>.

**As regards price/competitiveness indicators, the ULC, CPI and terms of trade are sometimes significant for revenue windfalls (shortfalls), and in some cases the GDP deflator as well (Graph III.3.1, lower left quadrant).**

**Tests for endogeneity signal no indication of reverse causality between the revenue windfalls (shortfalls) on the left-hand side and explanatory variables.** Considering the complex interactions between fiscal variables, fiscal policies and macroeconomic development, studies generally suffer from identification challenges, endogeneity and reverse causality, as for instance fiscal policy decisions could directly affect trade variables. In particular, fiscal expansion could raise imports directly which in turn would raise taxes and improve fiscal outcomes, leading to biased estimators. Similarly, the output gap and unit labour costs (through public sector wages) could be affected by fiscal policy. This may be less of a concern for our main variable of interest (revenue windfalls/shortfalls) than for the budget balances and expenditure variables, as fiscal policy effects are netted out. The estimation set-up aims to deal with this issue by netting out policy impulses (having revenue windfalls/shortfalls on the left-hand side) and focusing on first differences. The degree to which revenue windfalls (shortfalls) can be expected to affect the considered macroeconomic variables is likely to be minor. This is confirmed by regressions with instrumental variables and adjusting for the Nickell bias as results are not substantially affected.

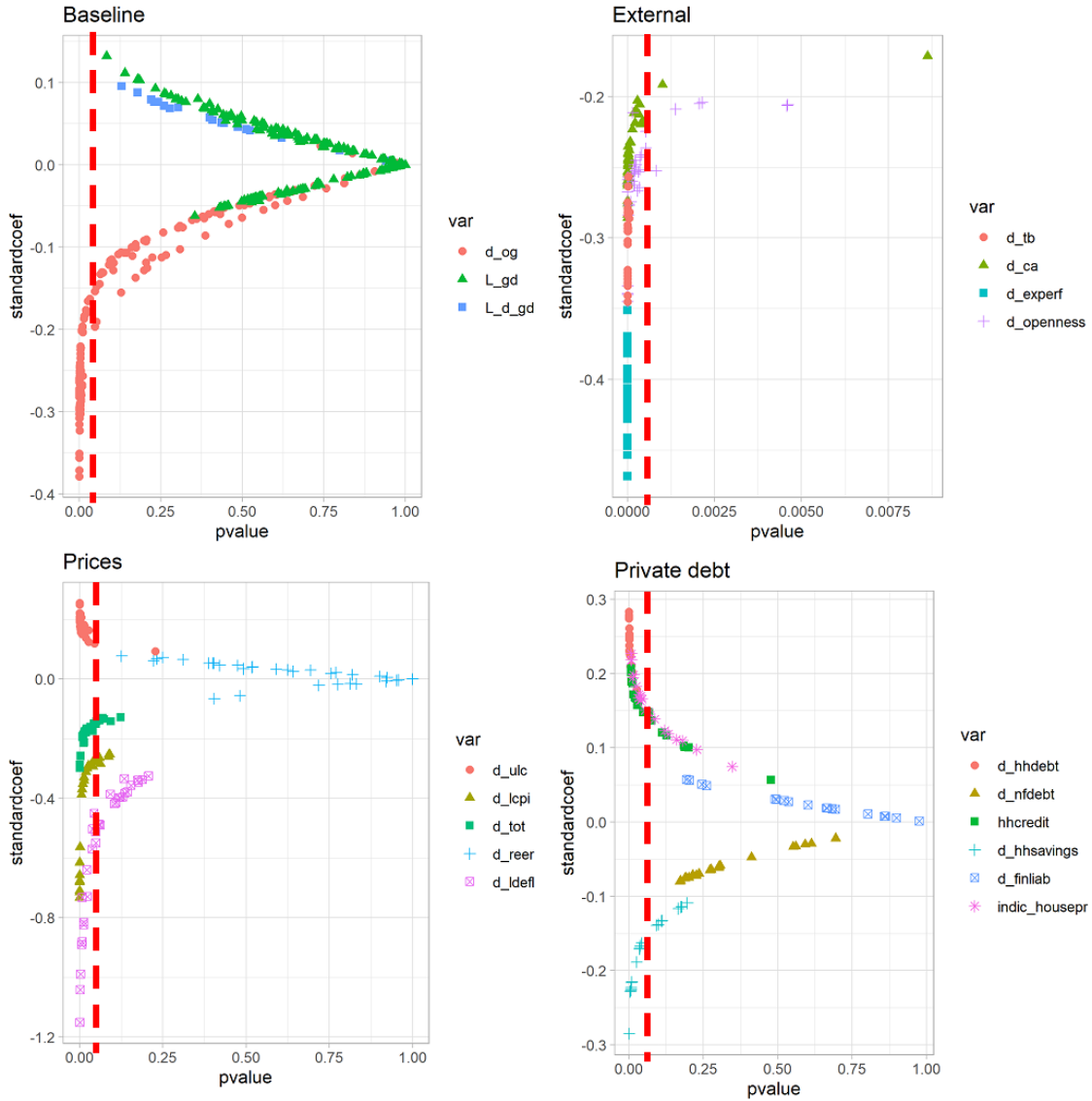
**Based on that analysis, we select the trade balance and household debt as variables for the external and internal categories in the further analysis.** Other variables tested, such as export performance and openness, would also have significant explanatory power. Yet, trade balance and household debt are easier to interpret. We also perform some additional statistical tests

<sup>(150)</sup>In addition to the data shown, we performed less systematic tests for a wider set of macroeconomic variables.

<sup>(151)</sup>A Bayesian model averaging test including all macroeconomic variables of interest and running all possible regression models also confirms the results.

<sup>(152)</sup>We add the following adjusted house price indicator: (real house price)\*(share of property related taxes in GDP), taken from Taxation Trends in the European Union, 2019 edition, DG TAXUD.

Graph III.3.1: Visualisation of the estimates and their significance across variables



Note: Keeping the baseline setting (i.e. with  $\Delta$ .OG and (public debt) $t-1$  in all regressions) and the variables in two out of the three macroeconomic variable categories unchanged, the various possible explanatory variables of the other category are tested. Coefficients are standardised with the ‘within standard deviation’. The variable *indic\_housepr* represents the growth of housing prices, adjusted by the tax structure: (growth rate of housing price)\*(lag of share of property-related taxes in GDP).  
 Source: Own calculations based on AMECO data.

(multicollinearity and cointegration) to validate this selection. <sup>(153)</sup> In the main analysis below, we also exclude price/competitiveness variables, because of correlation of unit labour costs and

other price variables with nominal GDP which is the denominator of all other variables. We therefore focus the analysis on trade balance and household debt. The results of the regressions are presented in the next section. <sup>(154)</sup>

<sup>(153)</sup>The analysis also shows that for the macroeconomic variables linked to external developments, the change in the current account balance is a strong alternative explanatory variable (instead of the trade balance). The full analysis has been performed also with the current balance results. Similar outcomes are obtained as with the trade balance. The results are not shown here.

<sup>(154)</sup>We also show the results of the regressions when considering the trade balance, household debt and nominal unit labour costs in the annex.

### 3.2. RESULTS OF THE EMPIRICAL ANALYSIS

The results for revenue windfalls (shortfalls) are remarkably robust considering a first differences set-up and important anticipated identification challenges, including differences in national tax systems, existence of and differences in tax lags (Table III.3.2).

Changes in the trade balance and household debt significantly directly affect revenue windfalls (shortfalls). We find negative effects (significant at the 1% level) on revenues from improvements in the trade balance (Table III.3.2).

Looking also at detailed results for the revenue components (Table III.3.3), we find the following results, that are highly significant and consistent with Lendvai et al. (2011):

- **An increasing share of imports to GDP raises indirect taxes.** Indeed, higher imports would increase the tax base – while real GDP may not be directly affected. More generally, fluctuations in output composition affect revenue collections by changing the weight of tax-intensive sectors in the economy: a higher reliance on imports leads to higher indirect tax collections, whereas a higher reliance on exports, which are VAT tax exempt, limits tax collections. Developments in trade balance also raise personal income taxes beyond cyclical effects (though to a smaller extent than the effects on indirect taxes). This may be linked to output composition effects: Increasing exports share in GDP may lead to lower direct taxes because the labour share in the export sectors is generally lower than the labour share of production for domestic consumption (with a higher services share) and taxation of capital/corporate profits tends to be lower than labour tax. There may be also specificities of tax systems (some taxes may be recorded as PIT)<sup>(155)</sup>.
- **Similarly, we find positive effects (significant at the 1% level) of household debt on revenues** (Table III.3.2), reflecting the mechanisms by which credit growth expands the tax base beyond GDP growth with an increase in asset values, financial transactions

and (import) demand, which is consistent with Eschenbach and Schuknecht (2004).

Table III.3.2: Regression results for the windfall revenues and structural balance

Dependent variable	Revenue windfalls		Structural balance
	LSDVc (1)	FD-GMM (2)	LSDVc (3)
Revenue windfalls (t-1)	-0.00356 (0.0479)	0.03830 (0.0617)	
Structural balance (t-1)			-0.107*** (0.0380)
Gross debt (t-1)	0.00219 (0.00510)	0.01844 (0.0225)	0.0261*** (0.00679)
Δ Output gap (t)	-0.0760*** (0.0292)	0.10457 (0.1385)	-0.277*** (0.0370)
Δ Trade balance (t)	-0.139*** (0.0296)	-0.155*** (0.0645)	-0.0273 (0.0349)
Δ Household debt (t)	0.0704*** (0.0228)	0.1809*** (0.0599)	0.0159 (0.0319)
MTO (over-)achieved (t-1)	-0.144 (0.194)	-0.187 (0.202)	-0.642*** (0.204)
Election year (t)	-0.0245 (0.129)	-0.139 (0.137)	-0.513*** (0.160)
# countries	28	28	28
# observations	433	433	501
Wald time dummies (p-value)	0	0	0
AR (1) (p-value)		7.80e-06	
AR(2) (p-value)		0.323	
Hansen (p-value)		0.705	
# instruments		39	

Note: Standard errors in parentheses \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

- **Like the trade balance, household debt contributes to revenue windfalls through increases in personal income taxes and indirect taxes** (Table III.3.3). First, changes in valuation of assets and volume of transactions are not directly reflected in real GDP developments, but are affecting indirect taxes. Wealth and capital gains taxes can benefit from rising household wealth from e.g. stock and real estate markets that move in line with household debt. Asset price developments (associated with household debt) may also affect direct household taxes in a more indirect manner: if realised capital gains are taxed in corporations they may be taxed again at the household level; small, unlisted companies may pay taxes on their capital gains if the building or stocks owned by the company are sold (revalued) and taxes are then paid on the personal account of the owner<sup>(156)</sup>.

<sup>(155)</sup> In addition, there could be some measurement issues (for discretionary measures or output gap).

<sup>(156)</sup> Morris and Schuknecht (2007).

Table III.3.3: Regression results for the windfall revenues components

Dependent variable	wR (1)	wPIT (2)	wCIT (3)	wVAT (4)	wSSC (5)	wNTR (6)
Dependent variable (t-1)	-0.00356 (0.0479)	0.00980 (0.0626)	-0.138** (0.0581)	-0.137** (0.0619)	0.118** (0.0584)	-0.215*** (0.0463)
Gross debt (t-1)	0.00219 (0.00510)	0.000534 (0.00300)	-0.00105 (0.00274)	0.00484* (0.00291)	-0.00115 (0.00218)	-0.000713 (0.00268)
Δ Output gap (t)	-0.0760*** (0.0292)	-0.0139 (0.0157)	-0.0137 (0.0142)	0.000246 (0.0160)	-0.0468*** (0.0122)	0.0433*** (0.0153)
Δ Trade balance (t)	-0.139*** (0.0296)	-0.0469*** (0.0147)	-0.00925 (0.0133)	-0.0800*** (0.0130)	-0.00226 (0.00950)	-0.00700 (0.0155)
Δ Household debt (t)	0.0704*** (0.0228)	0.0311*** (0.0120)	-0.0139 (0.0107)	0.0293** (0.0116)	0.0133 (0.00841)	0.0191 (0.0121)
MTO (over-)achieved (t-1)	-0.144 (0.194)	0.0581 (0.0788)	-0.191*** (0.0736)	0.0304 (0.0947)	0.117* (0.0685)	-0.0172 (0.101)
Election year (t)	-0.0245 (0.129)	0.0380 (0.0582)	-0.0478 (0.0534)	-0.0869 (0.0725)	0.0703 (0.0529)	0.0656 (0.0680)
# countries	28	28	28	28	28	28
# observations	433	318	318	335	335	433
year FE (p-value)	9.15e-06	4.05e-09	2.39e-10	0.0353	6.71e-06	0.137

Note: Estimation technique: LSDVc. Standard errors in parentheses, \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

**There are some further interesting findings when we compare the measured effects on the structural balance with those of the revenue windfalls (shortfalls).**

**Changes in the output gap significantly affect the structural balance, which corroborates the existence of procyclical discretionary policies.** The measured effect of the change in output gap on the structural balance is negative and highly significant, consistent with procyclical spending or revenue policy. This procyclical policy effect is however much lower when the revenue windfalls (shortfalls) are considered as left-hand side variables, as (procyclical) revenue policy effects are removed. Some effect of the output gap remains at least in the LSDV regression for revenue windfalls (shortfalls). This may be due to the procyclical nature of the potential output measure that affects the calculation of windfall revenues<sup>(157)</sup>. In addition, consistent with the findings that the structural balance is much more affected by policy variables than revenue windfalls (shortfalls), the explanatory variables that affect the policy response significantly affect the structural balance but not revenue windfalls (shortfalls) (Table III.3.2). In particular, the

dummies for election years and overachievement of the medium-term budgetary objective as well as the level of debt affect the structural balance but not the revenue windfalls (shortfalls).

**Offsetting policy measures are the likely reason for the lack of significant direct effects of macroeconomic developments on the structural balance (Table III.3.2).** This lack of significance is in line with findings in the literature (Bénétrix and Lane, 2013). Revenue windfalls may have been used for discretionary expenditure increases and revenue reducing measures in boom years. Regressions with cyclically-adjusted revenue and expenditure as dependent variables components confirm that there are counteracting effects explaining the aggregate results (not shown). The coefficients for cyclically-adjusted revenue and expenditure have the same sign and thus may cancel out the effect on the budget balance, except for the change in the output gap.

<sup>(157)</sup>Note that calculation of the expenditure benchmark in the EU fiscal framework is based on a long-term average of potential output and thus addresses effects of some procyclicality of the potential output measure.

## 4. IMPLICATIONS FOR FISCAL OUTCOMES

**This chapter illustrates the relevance of macroeconomic developments for a better understanding of the fiscal efforts and fiscal positions.** As demonstrated above, fiscal outcomes are affected by fluctuations of macroeconomic and financial indicators beyond GDP and the economic cycle. This means that macroeconomic and financial developments potentially trigger (or mitigate) fiscal risks that are not fully considered in the cyclically-adjusted fiscal indicators used in the surveillance framework. Taking into account the revenue effects of some macroeconomic developments could help better assess the underlying budgetary position, fiscal risks and fiscal effort.

**Macroeconomic developments affect Member States' fiscal effort as measured by the yearly change in the structural balance, through revenue windfalls (shortfalls).** According to the EU fiscal rules, Member States target a fiscal effort measured in terms of cyclically-adjusted balance corrected for one-off measures. However, the *ex-post* attainment of the required fiscal effort may be affected by direct revenue effects of macroeconomic developments that affect tax bases that are not directly reflected in real GDP, such as changes in imports and household debt (also as proxy for property prices and transactions). For instance, at any given amount of fiscal measures undertaken by governments, if the imports decrease/increase, the resulting revenue shortfalls/windfalls adversely/positively affect the *ex-post* measured fiscal effort. In general, any increase in revenue windfalls (shortfalls) related to yearly macroeconomic developments improves (worsens) the *ex-post* measured fiscal effort, independent of the fiscal measures undertaken.

**The effect of macroeconomic developments on the measured fiscal effort is estimated based on the analysis of the previous section.** This effect corresponds to the (additional) revenue windfalls (or shortfalls) stemming from yearly macroeconomic developments (compared to the previous year). To estimate it, we consider the macroeconomic variables whose developments have the most significant and consistent effects on windfall revenues (i.e. trade balance and household debt) and the associated coefficients  $\beta$  that reflect those effects (Table III.3.2, column 1, i.e. a coefficient of -0.139 for the trade balance, and

0.0704 for the household debt) <sup>(158)</sup>. Compared to the previous year, the additional revenue windfalls (shortfalls) estimated to have been triggered by developments in trade balance and households debt write:

$$-0.139 * \Delta TB_t + 0.0704 * \Delta HHDebt_t$$

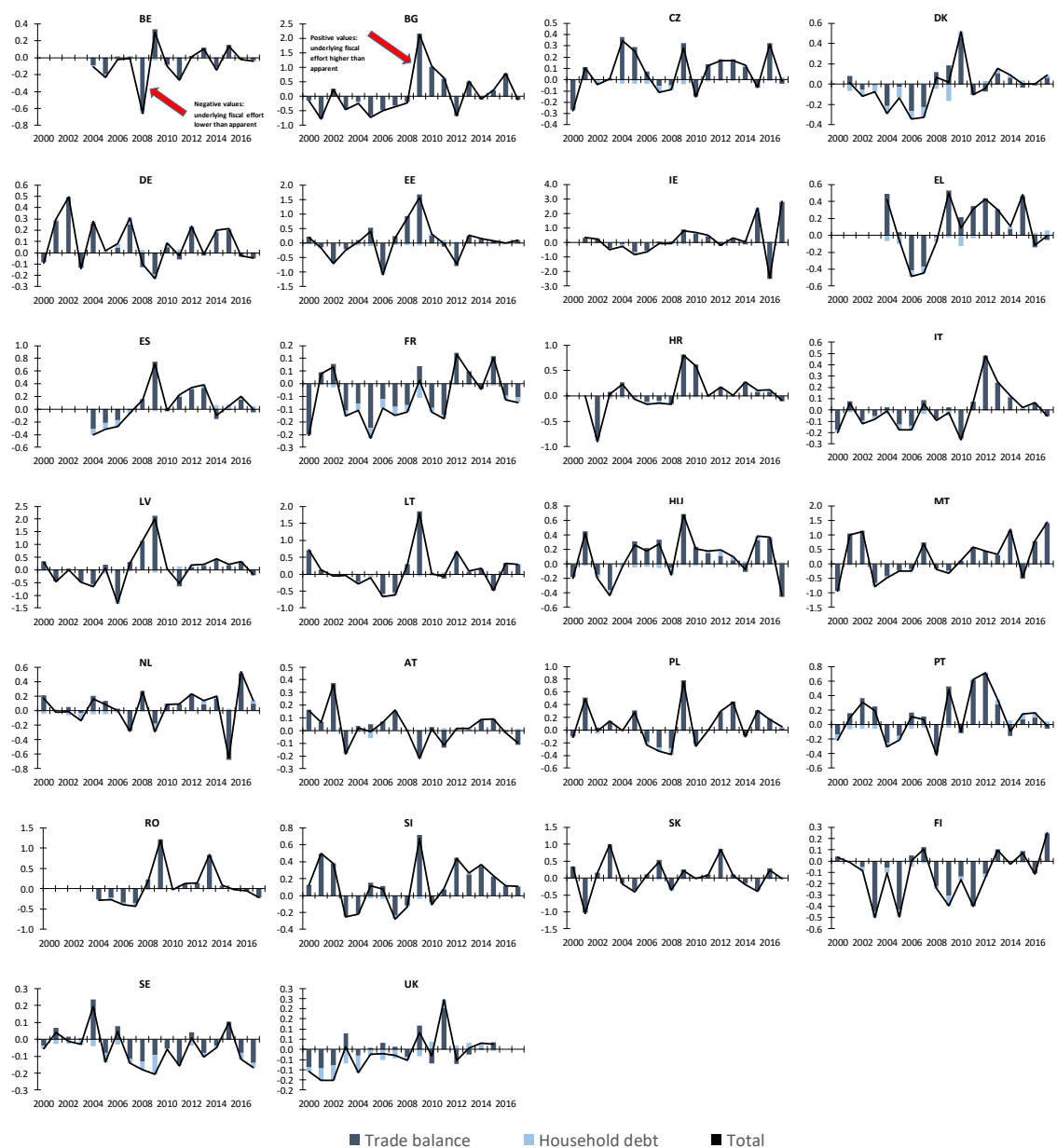
where  $\Delta TB_t$  and  $\Delta HHDebt_t$  are the yearly differences in trade balance and household debt.

**Over the two past decades, this estimated effect has been significant in many Member States.** Put differently, the 'underlying fiscal effort' (i.e. adjusted for the revenue windfalls/shortfalls related to macroeconomic developments) can be significantly different from the fiscal effort as measured by the change in the structural balance. Graph III.4.2 breaks down the effects of yearly developments in trade balance and household debt on the fiscal effort over the past two decades. The y-axis is reversed to facilitate the reading in terms of fiscal effort: positive values here signal increasing shortfall (or decreasing windfall) revenues, implying *ceteris paribus* that the underlying fiscal effort (i.e. adjusted for the effects of revenue windfalls/shortfalls related to macroeconomic developments) is higher. The negative values signal decreasing shortfall or increasing windfall revenues, implying *ceteris paribus* that the underlying fiscal effort (i.e. adjusted for the effects of the revenue windfalls/shortfalls related to macroeconomic developments) is lower. Results show that effects on fiscal effort come more from developments in trade balance than in household debt, and that they can be sizeable. <sup>(159)</sup>.

<sup>(158)</sup> We consider the same  $\beta$  for all countries, based on a panel regression with all EU countries. Tests by country group suggest that, while there are some differences between Member States, the coefficients may be close for most countries.

<sup>(159)</sup> Here as well, some caveats remain, notably as the coefficients  $\beta$  to estimate the effect of macroeconomic developments on fiscal effort are based on a panel regression, thus do not consider country specificities. Robustness test with estimates for country groups (not shown) however confirm that findings are robust. The 'underlying fiscal effort' (adjusted for the effects of macroeconomic developments) also does not rely on the definition of norms/equilibria for macroeconomic variables that are used in the next section to estimate the effects of macroeconomic developments on cyclically-adjusted fiscal positions.

Graph III.4.2: Revenue windfalls/shortfalls associated with developments in trade balance and household debt (EU + UK, without Luxembourg and Cyprus, % of GDP, reversed y-axis)



Notes: In total, positive values indicate increasing shortfall (or decreasing windfall) revenues triggered by macroeconomic developments, that adversely affect the fiscal effort measured in terms of cyclically-adjusted balance. The underlying fiscal effort (adjusted for changes in macroeconomic developments) is then higher than the fiscal effort measured in terms of cyclically-adjusted balance. Conversely, negative values indicate increasing windfall (or decreasing shortfall) revenues: the underlying fiscal effort (adjusted for macroeconomic developments) is then lower than the fiscal effort measured in terms of cyclically-adjusted balance.

The contributions to changes in windfall/shortfall revenues can be broken down (i) contribution to the trade balance developments and (ii) contribution of the household debt developments. Luxembourg and Cyprus are not shown due to data availability.

**These findings suggest that considering windfall/shortfall revenues due to macroeconomic developments such as changes in the trade balance and household debt contribute to better understanding of the underlying fiscal effort.** When analysing the yearly change in structural balance, considering the revenue windfalls and shortfalls associated with macroeconomic developments allows for better assessing fiscal effort *ex post*. For instance, in a context of an improving/deteriorating trade balance, the actual fiscal effort might be significantly larger/lower than the one measured by the change in the cyclically adjusted or structural balance. This is also why the overall assessment under the preventive arm when analysing the fiscal effort based on the changes in the structural balance, aims at carefully considering the role of windfall/shortfall revenues for the underlying fiscal effort. Similarly, better considering the revenue effects related to expected future macroeconomic developments and their implications on windfalls (shortfalls) would help better understand the underlying fiscal positions.

## 5. CONCLUSIONS

**New evidence shows that macroeconomic developments can have a direct and sizeable effect on budgetary elasticities and therefore fiscal outcomes.** Developments in macroeconomic variables –particularly the trade balance and household debt– significantly affect cyclically-adjusted government revenues. This notably reflects GDP composition effects (e.g. at constant GDP, larger imports increase revenue ratio) and tax bases effects not directly reflected in real GDP (e.g. financial transactions, wealth and property, the developments in the related tax bases being often associated with developments in household debt). A deteriorating trade balance, or rising household debt, for instance, triggers direct windfall revenues, mainly due to increased tax bases beyond GDP. This mechanically improves the structural balance.

**The results suggest that systematically considering macroeconomic developments improves understanding of the underlying fiscal efforts as measured by the change in the structural balance.** This is because the revenue windfalls (shortfalls) related to those developments mechanically affect the fiscal effort, as measured by the change in structural balance, whereas they are not directly linked to fiscal measures undertaken by countries. For instance, if a country simultaneously improves its fiscal position and trade balance, a smaller measured improvement in the structural balance may not necessarily imply a low ‘underlying fiscal effort’ (i.e. adjusted for the estimated revenue windfalls/shortfalls related to those macroeconomic developments). Over the past two decades, the estimated effects of macroeconomic developments on the measured fiscal effort have been sizable in many Member States, highlighting the relevance to consider them to better understand the underlying fiscal effort.

**The analysis also supports the increased reliance on the expenditure benchmark in measurement of the fiscal effort.** As it does not rely on revenue windfalls and shortfalls, the expenditure benchmark, introduced in the surveillance process with the six-pack reform, it is indeed less affected by macroeconomic developments than the structural budget balance.

**Further work would help better distinguish temporary from structural revenue windfalls and shortfalls.** This would help to get a better gauge of the underlying budgetary position to inform budgetary planning. Measurement of the direct impact of macroeconomic variables on fiscal outcomes may benefit from further work at country level, assessing in detail country tax structures and lags, to identify how macroeconomic developments are related to tax bases that are not directly linked to GDP.



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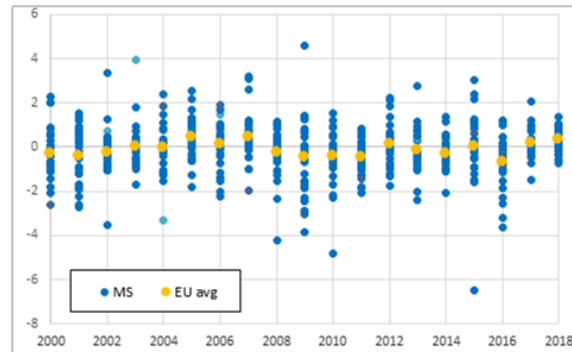
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# ANNEX

## A.1 Overview of windfall revenues in the EU

Graph III.A.1: Windfall revenues by Member States (% of GDP)



Note: DRM after 2008 are completed with DTM before 2008. If DRM are indicated as zero, they are replaced by DTM (in particular between 2008 and 2010).

Source: Own calculations based on AMECO, discretionary tax measure database and internal estimates for discretionary fiscal measures.

## A.2 Regression results with the price variable (ULC) included

We find similar conclusions for the effect of a change in trade balance or of household debt on windfall revenues (Table III.A.1). The conclusions are also similar for the components of revenues, except for the effect of change in household debt on non-tax revenues (Table III.A.2).

Table III.A.1: Sensitivity analysis – regression results for the windfall revenues and structural balance

Dependent variable	Revenue windfalls		Structural balance
	LSDVc	FD-GMM	LSDVc
Estimator	(1)	(2)	(3)
Dependent variable (t-1)	-0.0100 (0.0474)	-0.0175 (0.0393)	-0.120*** (0.0394)
Gross debt (t-1)	0.00436 (0.00492)	0.0104 (0.0233)	0.0237*** (0.00607)
Δ Output gap (t)	-0.0724** (0.0288)	-0.0538 (0.0587)	-0.283*** (0.0363)
Δ Trade balance (t)	-0.130*** (0.0310)	-0.132*** (0.0374)	-0.0460 (0.0376)
Δ Household debt (t)	0.0620*** (0.0232)	0.0736*** (0.0239)	0.0304 (0.0286)
Δ Unit Labour Cost (t)	0.0430** (0.0189)	0.0516*** (0.0182)	-0.0749*** (0.0272)
MTO (over-)achieved (t-1)	-0.135 (0.193)	-0.219 (0.188)	-0.658*** (0.219)
Election year (t)	-0.0373 (0.131)	-0.135 (0.134)	-0.485*** (0.132)
# countries	28	28	28
# observations	433	405	497
year FE (p-value)	8.81e-06	7.19e-11	0
AR (1) (p-value)		8.00e-06	
AR(2) (p-value)		0.341	
Hansen (p-value)		0.701	
# instruments		38	

Note: Standard errors in parentheses \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

In addition, we find positive effects (significant at the 5% level) of unit labour costs on revenues (Table III.A.1). Looking at detailed results for the revenue components, unit labour costs contribute to windfall revenues mainly through social security contributions and corporate income taxes (the demand effect on profits offsets the rising compensation costs for firms), while non-tax revenues tend to decrease (Table III.A.2).

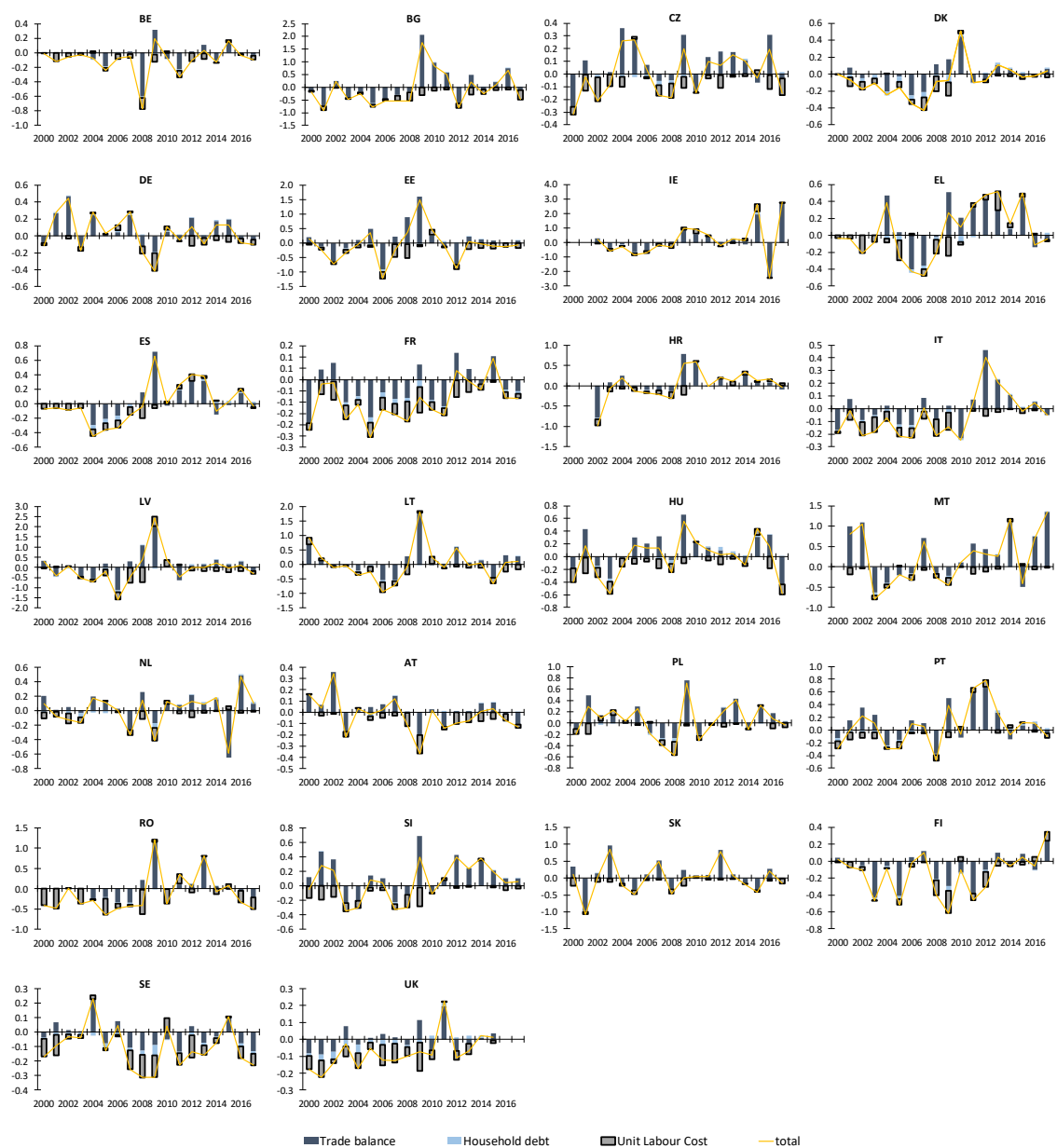
The significant negative coefficient of the unit labour costs on the structural balance may be driven by increased expenditure on public sector wages, social transfers and pensions.

Table III.A.2: Sensitivity analysis – regression results for the windfall revenues components

Dependent variable	wR	wPIT	wCIT	wVAT	wSSC	wNTR
Estimator	LSDVc	LSDVc	LSDVc	LSDVc	LSDVc	LSDVc
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable (t-1)	-0.0100 (0.0474)	0.00878 (0.0636)	-0.136** (0.0583)	-0.146** (0.0614)	0.112* (0.0581)	-0.204*** (0.0462)
Gross debt (t-1)	0.00436 (0.00492)	0.000808 (0.00298)	-0.000703 (0.00270)	0.00509* (0.00293)	-0.000300 (0.00210)	-0.00195 (0.00258)
Δ Output gap (t)	-0.0724** (0.0288)	-0.0135 (0.0156)	-0.0131 (0.0140)	0.00128 (0.0160)	-0.0447*** (0.0120)	0.0412*** (0.0151)
Δ Trade balance (t)	-0.130*** (0.0310)	-0.0442*** (0.0151)	-0.00596 (0.0137)	-0.0778*** (0.0135)	0.00489 (0.00940)	-0.0120 (0.0162)
Δ Household debt (t)	0.0620*** (0.0232)	0.0280** (0.0123)	-0.0179 (0.0110)	0.0268** (0.0118)	0.00319 (0.00836)	0.0240* (0.0123)
Δ Unit Labour Cost (t)	0.0430** (0.0189)	0.0110 (0.00871)	0.0142* (0.00794)	0.00950 (0.0101)	0.0348*** (0.00716)	-0.0241** (0.00985)
MTO (over-)achieved (t-1)	-0.135 (0.193)	0.0547 (0.0788)	-0.195*** (0.0731)	0.0260 (0.0945)	0.104 (0.0657)	-0.0242 (0.101)
Election year (t)	-0.0373 (0.131)	0.0331 (0.0588)	-0.0540 (0.0534)	-0.0896 (0.0723)	0.0579 (0.0508)	0.0716 (0.0685)
# countries	28	26	26	28	28	28
# observations	433	318	318	335	335	433
year FE (p-value)	8.81e-06	3.62e-05	0	0.00259	0.0105	0.0493

Note: Standard errors in parentheses \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

Graph III.A.3: **Difference between the fiscal effort measured in the surveillance process and adjusted for changes in macroeconomic developments**



Notes: In total, positive values indicate increasing shortfall (or decreasing windfall) revenues triggered by macroeconomic developments, that adversely affect the fiscal effort measured in terms of cyclically-adjusted balance: the underlying fiscal effort (adjusted for changes in macroeconomic developments) is then higher than the fiscal effort measured in terms of cyclically-adjusted balance. Conversely, negative values indicate increasing windfall (or decreasing shortfall) revenues: the underlying fiscal effort (adjusted for changes in macroeconomic developments) is then lower than the fiscal effort measured in terms of cyclically-adjusted balance. Luxembourg is not shown due to data issues.

The contributions to changes in windfall/shortfall revenues can be broken down (i) contribution of the trade balance developments, (ii) contribution of the households debt developments and (iii) contribution of the unit labour cost developments. These contributions do not depend on the norms (equilibria) chosen for trade balance, households debt and unit labour cost.







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