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Report on Public Finances in EMU

2018

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EUROPEAN ECONOMY

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European Commission
Directorate-General for Economic and Financial Affairs

Report on Public Finances in EMU

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Institutional Paper 095

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	UK	United Kingdom
CY	Cyprus	EA	Euro area
LV	Latvia	EU	European Union
LT	Lithuania	EU28	European Union, 28 Member States
LU	Luxembourg	EA19	Euro Area, 19 Member States

Economic variables and institutions

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 recommendations
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
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

Graphs/Tables/Units

bn	Billion
mn	Million
pp. / pps.	Percentage point / points
rhs	Right-hand scale
tn	Trillion

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FOREWORD

The EU economy is entering a period of heightened uncertainty, which has implications for fiscal policy. Much of the fiscal uncertainty comes in the short run from the business cycle and in the long run from potential growth, interest rates and health care cost. During the Great Recession and the years that followed, we also saw how the incomplete institutional architecture of the euro area added an additional layer to uncertainty for public finances.

How can we make the EU economies more resilient to uncertainty? This report provides three interesting insights for fiscal policy.

First of all, we need to better understand the implications of uncertainty on public finances. This is challenging, since uncertainty is inherently unobservable and difficult to measure. Part III of this report provides new estimates of the effect of economic shocks – a major source of uncertainty – on public finances in the EU. The analysis shows that shocks can have a significant and lasting impact on public finances, particularly on debt-to-GDP ratios. It also shows that Member States tend to adjust their planned fiscal effort only very late and asymmetrically to forecast errors, relaxing the fiscal effort in case of positive surprises and leaving it unchanged in case of negative ones. This biased reaction function to uncertain fiscal outcomes is clearly unhelpful for the sustainability of public finances, which instead calls for an approach that builds fiscal buffers.

Second, we need to ensure that the EU's fiscal governance framework strikes the right balance between fiscal sustainability and stabilisation to further mitigate uncertainty. Part IV provides a nuanced picture of the possible impact of fiscal rules on fiscal outcomes in the EU, which may help reconcile often polarised views. On the positive side, the surge in public debt-to-GDP ratios has been significantly smaller in the EU than in the US and Japan since the launch of the Stability and Growth Pact. This can be largely explained by a more prudent use of discretionary fiscal policy. Member States, even those with fragile fiscal positions, have made significant progress towards more sustainable fiscal policies. More than half of them have already reached a sound fiscal position. For the EU on average, the analysis suggests that the respect of fiscal rules reduces procyclicality. In addition, stronger national fiscal frameworks contribute to sounder fiscal policies by promoting ownership. On the less positive side, discretionary fiscal policy in the EU on average remains procyclical, particularly in good times. Moreover, public debt ratios remain high in several Member States.

Third, we need the right tools to identify fiscal uncertainty early. Our understanding of public debt typically focuses on the liabilities' side of a government's balance sheet, thereby ignoring the asset side. A key reason for this is the lack of a comprehensive database of public assets across Member States. Part V presents a first and novel overview of financial and non-financial assets owned by the public sector in all EU Member States. As a stock variable, public assets can be a good predictor for changes in flows, especially by shedding light on the drivers behind non-tax revenue or the stock-and-flow adjustment. They can thereby help identify certain sources of fiscal risks.

Like in previous years, the Report on Public Finances in EMU provides analytical, evidence-based contributions on highly-policy relevant questions to promote a fruitful discussion of policy-makers and academics. This year's report in particular suggests that an adequate and timely response to uncertainty would reduce the risk of unsustainable public finances.

Marco Buti

Director General Economic and Financial Affairs

EXECUTIVE SUMMARY

Economic activity in the EU is entering a period of less dynamic growth …

Part I of this report recalls that the EU economy is entering a period of less dynamic growth. According to the Commission's 2018 autumn economic forecast, real GDP growth in the EU is forecast to ease from 2.4% in 2017 to below 2% in 2020 mainly due to weaker external demand. The key drivers of growth are set to become increasingly domestic: stronger wage growth, growing private consumption partly due to fiscal measures in some Member States and higher public investment in 2019.

… clouded by many interrelated uncertainties, including from fiscal policy

The balance of risks to the outlook is tilted to the downside as uncertainties stemming from both domestic and external sources have increased since the beginning of 2018. In terms of domestic factors, overly expansionary fiscal policies, rather than structural reforms supporting potential growth, could weigh on fiscal sustainability, particularly in highly indebted Member States. Such a risk reappraisal could eventually raise financial stability concerns or contribute to the return of sovereign-bank doom loops, hurting the real economy. The external factors relate mainly to US economic and trade policies. These could alter the risk attitude of investors, resulting in negative spillovers for emerging and advanced economies.

Fiscal positions benefit from the cyclical upswing and low interest rates …

The fiscal outlook is supported by the cyclical upswing and the low interest rate environment rather than discretionary fiscal policy measures. The EU's general government deficit is set to fall from 1.0% of GDP in 2017 to below 1% of GDP in 2018 and then to stabilise over the forecast horizon. Overall, compared to ten years ago when the deficit peaked at 6.6% of GDP in 2009, the improvements have been sizeable. The reduction in deficits and the continued GDP growth are projected to reduce the debt-to-GDP ratios in the EU on average from 83.2% of GDP in 2017 to around 78% of GDP in 2020.

… and only one Member State is still under the excessive deficit procedure.

In June 2018, the Council abrogated the excessive deficit procedure (EDP) for France. Spain is now the only remaining Member State in the corrective arm, with a deadline for correcting its excessive deficit in 2018. A decision on the abrogation of Spain's EDP will be taken in spring 2019 based on 2018 outturn data. For Italy, the revised Draft Budgetary Plan was found to be in particularly serious non-compliance with the Council's recommendations. On that basis, the Commission re-assessed Italy's prima facie non-compliance with the debt criterion and concluded that, after consideration of all relevant factors, the debt criterion was not complied with. Following the dialogue between the Commission and the Italian authorities, the final 2019 budget law adopted by Parliament included additional measures, which allowed the Commission not to recommend the opening of a debt-based EDP at this stage.

However, public debt ratios remain high and fiscal buffers limited

Despite heightened economic and fiscal risks mentioned above, public debt-to-GDP ratios remain high and fiscal buffers limited in several Member States. This weighs on economic growth and offers little room for manoeuvre in a future downturn. At the same time, there are considerable differences at national level, with some countries facing the need to consolidate, while others have some fiscal space. A differentiated approach to national fiscal policies in line with the country-specific and euro area recommendation 2018 is thus needed in order to balance the objectives of stabilising the economy and ensuring the long-term sustainability of public finances.

In 2018, some fiscal surveillance provisions were reviewed to enhance the economic underpinning of the rules.

Part II provides an overview of recent developments in the fiscal governance framework in 2018.

First, the report presents the so-called fiscal semi-elasticities, which have been slightly adjusted based on new estimates. The updates will be used in fiscal surveillance as of spring 2019 in order to compute the cyclical adjustment of the budget balance and the minimum medium-term budgetary objectives (MTO), which are the corner stones of EU fiscal surveillance.

Second, it clarifies how to identify and deal with significant revenue windfalls in the preventive arm of the Stability and Growth Pact (SGP). Since revenue windfalls are not a sustainable financing source for spending increases, they should be factored into country-specific fiscal surveillance.

Third, it shows the main findings of the Commission's review of the flexibility under the SGP. The review finds that the design of the SGP strikes a good balance between flexibility and fiscal sustainability. The design of the so-called 'matrix of requirements', which specifies the required annual fiscal adjustment for Member States under the preventive arm of the SGP, promotes an effective modulation of the required fiscal adjustment according to the economic cycle and the level of public debt, while ensuring a sustained adjustment on average. Regarding the 'structural reform' and 'investment clauses', the eligibility criteria appear effective in practice, without discouraging Member States from implementing structural reforms and promoting public investment.

Finally, the report presents the Commission's proposal for a European Investment Stabilisation Function (EISF). In the event of a large asymmetric shock, the EISF would provide back-to-back loans guaranteed by the EU budget to Member States complying with eligibility criteria based on sound financial and macroeconomic policies. Simulations of the proposal using data from the last few decades show that the proposed mechanism would have benefitted all Member States at different points in time. The members of the Eurogroup did not reach a common view on the need and design of a stabilisation function in December 2018. Technical discussions will continue.

This year's report focuses on three themes: First, the impact of shocks on fiscal policy:

Part III assesses the impact of economic shocks on fiscal policy from two different perspectives. First, it provides new estimates of the impact of economic shocks on fiscal outcomes. Second, it empirically assesses the effect of economic shocks on the projected fiscal adjustment effort.

Macroeconomic shocks can have a sizeable impact on public debt …

Our results show that macroeconomic shocks can have a significant and lasting impact on fiscal positions in the EU, particularly on the public debt-to-GDP ratios. A negative productivity (supply) shock results in a temporary decline in the primary balance, which yields a progressive increase in public debt ratios. A positive inflation (demand) shock has a positive, but short-lived impact on the primary balance. At the same time, it inflates away public debt temporarily. A positive sovereign interest rate (financial) shock causes a steady increase in the public debt ratio.

… but Member States tend to conduct fiscal policies as if they were not exposed to uncertainty …

Our findings suggest that Member States often conduct fiscal policy without taking into account the uncertainty surrounding their fiscal forecast. Our analysis shows that uncertain economic outcomes in the form of the forecast error of the fiscal effort have been a rather common event in the EU since 2000. Nevertheless, the results from panel regressions reveal that Member States tend to adjust their planned fiscal effort only very late and asymmetrically to forecast errors: good surprises tend to be used to relax the fiscal effort, while bad ones are often ignored.

… which can have undesired implications for fiscal policy.

A sound approach to fiscal policy requires Member States to react to uncertainty. In particular, a disregard of repeated or large-scale uncertainty, i.e. no learning from past episodes of uncertainty, can lead to insufficient fiscal buffers and jeopardise the sustainability of public finances. As a result, an appropriate policy response to uncertainty should include taking precautionary measures against the possibility of worse-than-expected outcomes. In addition, policies that foster economic resilience can reduce the likelihood of large negative macroeconomic shocks and limit their adverse consequences.

Second, the report analyses fiscal outcomes in the EU in a rules-based environment:

Part IV of this report analyses fiscal outcomes in the EU in the presence of fiscal rules. The analysis takes three complementary – albeit non-exhaustive – angles. It assesses the fiscal rules' ability to i) contribute to sustainable public finances, ii) mitigate procyclicality and iii) strengthen national ownership. The analysis is factual, backward looking and based on quantitative or econometric analysis.

The EU's fiscal governance framework appears to have contributed to sustainable fiscal positions; …

Public debt-to-GDP ratios in the EU have increased far less than in the US and Japan over the past two decades thanks to more prudent fiscal policies. Member States with the most fragile fiscal positions improved their fiscal positions following the introduction and subsequent reforms of the fiscal governance framework. This suggests that the EU's fiscal governance framework has contributed to more prudent fiscal policies in individual Member States over the last two decades, although causality is difficult to establish. Still, public debt ratios remain high and fiscal buffers remain small in several Member States.

… respect of EU fiscal rules seems to mitigate procyclical fiscal policy …

In the EU on average, we find evidence of a procyclical fiscal effort since 2000, implying that discretionary fiscal policy tightens in bad times and loosens in good times. The cost of such policy can be high, as discretionary fiscal policy measures counteract the functioning of automatic stabilisers. The empirical findings show that discretionary fiscal policy tends to be most procyclical in good times. In addition, the respect of fiscal rules seems to have mitigated the procyclicality of fiscal policy in the EU. First, Member States that met the requirements of the preventive arm of the SGP benefit from reduced procyclicality of the fiscal effort. Second, avoiding high headline deficits and debt levels appears to reduce the procyclicality.

… and stronger national ownership tends to foster sound fiscal positions.

Several legal requirements put forward by the EU have strengthened the national ownership of the EU fiscal framework through a broad-based and robust improvement in national fiscal frameworks in the EU. The number of national fiscal rules has greatly increased in recent years in most Member States. These rules tend to be stronger in terms of monitoring and

enforcement mechanisms than in the past. The number of national independent fiscal institutions has also risen significantly in recent years and their mandates often go beyond the minimum requirements set at the EU level. Finally, all EU Member States now have in place a medium-term budgetary framework (MTBF) that is connected to the annual budget process. Findings from panel regressions show a positive and statistically significant impact of both national fiscal rules and medium-term budgetary frameworks on the cyclically-adjusted primary balance. This indicates that the stronger national fiscal frameworks promote sounder fiscal policies.

Third, the report presents the first overview of a selection of public financial and non-financial assets in all Member States:

Part V presents the first overview of a selection of financial and non-financial assets owned by the public sector in all Member States. As efforts to provide a more comprehensive and complete picture on these assets are still ongoing, this part only reviews the relevance across Member States. The project was launched by the Commission following an initiative of the European Parliament and carried out by KPMG Advisory and Bocconi University and overseen by DG ECFIN. The asset side of a public balance sheet contributes to expanding our understanding of a government's financial health and long-term fiscal sustainability. As a stock variable, public assets can indeed be a good predictor for changes in flows, like non-tax revenues or for changes in the stock-and-flow adjustments, and thereby help identify some sources of fiscal risks. The findings reported in this part are based on firm-level data (for financial assets), and on Eurostat and, at times, estimated data (for non-financial assets).

Public financial assets can play an important role in the economy …

EU governments own financial assets worth an estimated 40% of EU GDP based on 2015 data. A large number of those public assets are found in fully public and unlisted companies that are involved in the provision of services and public utilities, as well as in the financial sector. In many cases, the government has total ownership of the company. Companies wholly or partly owned by the government contribute to the economy, through revenue, value added and employment.

… while public non-financial assets include roads, real estate and natural resources; …

The public non-financial assets examined in this study amount to an estimated 71% of EU GDP in 2015 in the EU. When data from official sources are missing, they have been estimated by applying specific estimation and valuation techniques to each cluster of assets. Roads, real estate and natural resources (other than mineral and energy reserves) are estimated to be the largest components of non-financial assets for most countries (and on average 24%, 17% and 20% of GDP, respectively).

… more transparency in the reporting of public assets is desirable.

The results obtained in this study should be interpreted with caution. The analysis reveals some important information gaps, pointing to the need for further research. Data on public financial assets are not fully comparable across countries, due mostly to different accounting systems. More importantly, they do not match national accounts data. Some data on public non-financial assets are not available and, for the purpose of this analysis, they have been estimated. Developing comparable public asset databases in Member States could contribute to better public financial management.

Part I

Public finances in EMU

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KEY FINDINGS

This part provides an overview of the economic and fiscal environment and presents the implementation of fiscal surveillance in 2018.

The EU economy is entering a period of less dynamic growth.

- According to the Commission 2018 autumn economic forecast, real growth in the euro area is forecast to ease from 2.4% in 2017 to below 2% in 2020, mainly due to less dynamic external demand.

- The key drivers of growth are set to become increasingly domestic: stronger wage growth, growing private consumption partly due to fiscal measures in some Member States and higher public investment in 2019.

- The balance of risks to the growth outlook is tilted to the downside as uncertainty from both domestic and external sources has risen significantly.

While fiscal positions are improving, fiscal buffers are limited and public debt ratios remain high in several Member States.

- The aggregate headline deficit is expected to decline further in the EU in 2018, thanks to positive cyclical conditions and lower interest expenditure rather than discretionary fiscal measures. However, in 2019 the aggregate budget deficit is projected to increase for the first time since 2009.

- The euro-area fiscal stance has been broadly neutral since 2015, but is expected to turn slightly expansionary in 2019. If each Member State adopted an appropriate stance based on the fiscal space they have available, the overall stance of the euro area would be broadly neutral to mildly restrictive in 2019.

- Public debt-to-GDP ratios should continue to decline benefitting from economic growth and historically low interest rates, but they remain close to historical peaks in several Member States.

The budgetary position and plans of some Member States warranted procedural steps under the SGP.

- In June 2018, the Council abrogated the excessive deficit procedure for France. Spain is thus the only remaining Member State currently in the corrective arm, with a deadline for correcting its excessive deficit in 2018.

- Significant deviation procedures under the preventive arm of the SGP were launched for Hungary and Romania in May 2018. The two Member States then received Council recommendations in December 2018, after the Council concluded that they had not taken effective action.

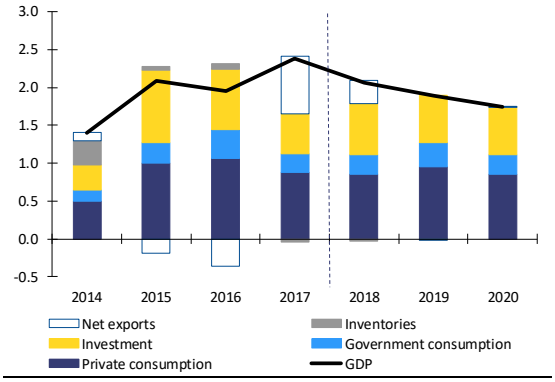
- In November 2018, the revised Draft Budgetary Plan of Italy was found to be in particularly serious non-compliance with the Council's recommendations. On that basis, the Commission re-assessed Italy's prima facie non-compliance with the debt criterion and concluded that, after consideration of all relevant factors, Italy did not comply with the debt criterion and a debt-based EDP was thus warranted. Following the dialogue between the Commission and the Italian authorities, the final 2019 budget law adopted by Parliament included additional measures, which allowed the Commission not to recommend the opening of a debt-based EDP at this stage.

1. ECONOMIC AND FISCAL ENVIRONMENT

1.1. ECONOMIC ACTIVITY

The EU economy is entering a period of less dynamic growth. In 2017, real GDP growth reached a 10-year high of 2.4% on average in the euro area and the European Union (EU), well above potential growth. All EU economies enjoyed a robust economic expansion. In 2018, the Commission 2018 autumn forecast expects real GDP to grow at a slower pace than in the previous year (2.1% on average in both the EU and the euro area). Economic activity in the EU and euro area should moderate further and grow by below 2% in 2019 and 2020.

Graph I.1.1: **Real GDP growth and its components, euro area**

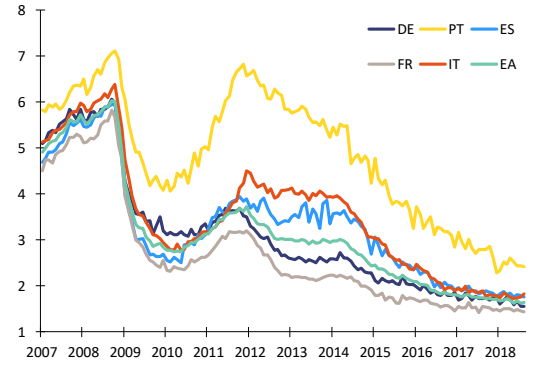


Source: Commission 2018 autumn forecast.

The drivers of growth are set to become increasingly domestic. In 2018, growth is mainly driven by domestic demand (Graph I.1.1). Private consumption should benefit from robust employment growth and higher wages as well as fiscal measures in some Member States. Investment, supported by financing conditions and high rates of capacity utilisation, is expected to provide a sizeable contribution to growth. By contrast, external demand slowed down significantly due to the weakening global economic activity and growing trade tensions. Looking further ahead, domestic demand should continue increasing at a solid pace in 2019 and 2020 thanks to the supportive policy mix in the euro area. At the same time, the expected slowdown in the external environment should lead to a lower contribution to growth from net exports.

The monetary policy of the ECB is expected to remain supportive of growth. The very accommodative monetary policy of the ECB has helped the recovery in lending volumes in the euro area (Graphs I.1.2 and I.1.3) and thus supported investment in recent years. The anticipated gradual monetary policy normalisation together with a positive output gap should put some upward pressure on nominal interest rates. Nonetheless, financing conditions in the euro area are expected to remain loose by historical standards. In particular, the high stock of assets purchased under the Expanded Asset Purchase Programme (EAPP) in the Eurosystem's balance sheet, in combination with the continued reinvestment of maturing securities, should ensure that nominal long-term rates stay overall low. As a result, bank lending is projected to rise in 2019 and 2020.

Graph I.1.2: **Interest rates on new loans to NFCs, selected Member States**



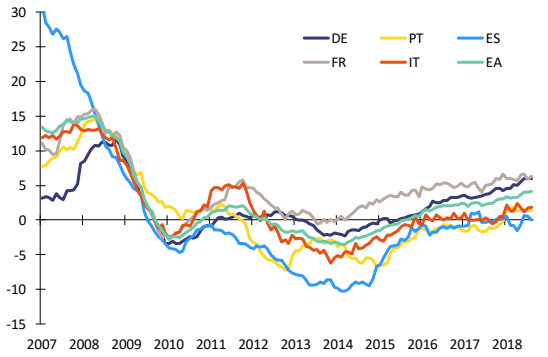
Source: European Central Bank.

Investment continues to benefit from the support provided by the Investment Plan for Europe ("Juncker Plan"). As of October 2018, operations approved under the Investment Plan for Europe (EUR 67.3 bn) were expected to trigger EUR 344 bn in investments, with around 793,000 small and medium-sized businesses benefitting from improved access to finance.

Unemployment is set to fall further, but at a slower pace than in the past. The increase in employment is expected to remain rather strong in 2018, before decelerating in 2019-2020 due to the slowdown in economic activity and the increase in labour shortages. In 2018, the unemployment rate is projected to fall to 6.9% in the EU and 8.4% in the euro area. A further decline in the

unemployment rate, although at a slower pace, is expected in the coming years reaching 7.5% in the euro area and 6.3% in the EU in 2020. Tighter labour market conditions should contribute to some acceleration in wages per employee (2.5% on average in the euro area in 2018-2020 from 1.6% in 2017), which would outpace inflation.

Graph I.1.3: **Growth of credit to NFCs, selected Member States (y-o-y % change)**



Source: European Central Bank.

Euro area inflation is projected to stay below 2%. In 2018, euro area headline inflation is expected to average 1.8% (from 1.5% in 2017), largely driven by higher energy and food prices. However, core inflation (excluding energy and unprocessed food) is projected to be significantly lower (1.2% from 1.1% in 2017). The Commission 2018 autumn forecast projects stable headline inflation in 2019 and some deceleration in 2020 (to 1.6%) mainly due to the energy price assumptions. Core inflation should instead gradually pick up and reach 1.5% in 2019 and 1.7% in 2020.

The large current account surplus of the euro area is forecast to decline only marginally. The current account surplus of the euro area stabilised at 3.2% of GDP in 2017 based on balance of payments data. It is projected to decline only marginally in 2018 on the back of worsening terms of trade mainly due to higher oil prices. A further small decline in the euro area current account surplus to 2.9% in 2020 is expected due to imports increasing more than exports.

The balance of risks to the growth outlook is tilted to the downside. Increasing uncertainties could weigh more heavily on economic growth. Uncertainties have increased since the start of the year and stem from both domestic and external sources. In terms of domestic factors, overly expansionary fiscal policies insufficiently addressing potential growth objectives could create doubts about fiscal sustainability in high debt countries. Such a risk reappraisal could cause sovereign-bank doom loops, raise financial stability concerns and hurt the real economy. As regards external factors, an overheating in the US fuelled by a pro-cyclical fiscal stance could result in a faster-than-assumed monetary tightening by the Fed. This development could alter the risk attitude of investors, resulting in negative spillovers to emerging and advanced economies. The deterioration of the current account in an overheating US economy could also lead to a further escalation of trade disputes. This could disrupt cross-border supply chains and negatively affect global trade and activity. A lower-than-forecast economic growth and possibly higher interest rates could also put pressure on public finances in some Member States.

1.2. GOVERNMENT BUDGET BALANCES

The aggregate budget deficit is about to fall below 1% of GDP in 2018 and then to broadly stabilise over the forecast horizon. According to the Commission 2018 autumn forecast, the aggregate government budget deficit is projected to decline in 2018 to 0.7% of GDP in the EU and 0.6% of GDP in the euro area (Table I.1.1). The forecast for 2019, which for euro-area Member States takes into account the measures announced in the Draft Budgetary Plans, points for the first time since 2009 to an increase of the aggregate budget deficit (to 0.8% of GDP in both the EU and the euro area). In 2020, the aggregate budget deficit should improve again to 0.7% of GDP based on a no-policy-change assumption.

The budgetary outlook shows a high degree of heterogeneity across Member States. Around half of Member States are expected to have a budget surplus over the 2018-2020 forecast period (Table I.1.1). At the same time, four EU Member States are set to continue displaying public deficits exceeding 2% of GDP based on a no-policy-change assumption. Among them, Romania is set to post a deficit above 3% in 2018 and 2019 and above 4% in 2020. Italy is expected to run a deficit close to 3% of GDP in 2019 and slightly above 3%

Table I.1.1: **Budget balances in EU Member States (% of GDP)**

	Budget balance					Structural balance					Structural primary balance				
	2016	2017	*2018*	*2019*	*2020*	2016	2017	*2018*	*2019*	*2020*	2016	2017	*2018*	*2019*	*2020*
BE	-2.4	-0.9	*-1.0*	*-1.1*	*-1.3*	-2.3	-1.4	*-1.3*	*-1.3*	*-1.7*	0.6	1.1	*1.0*	*0.9*	*0.4*
DE	0.9	1.0	*1.6*	*1.2*	*1.1*	0.7	0.8	*1.4*	*1.0*	*1.1*	1.9	1.8	*2.4*	*1.8*	*1.9*
EE	-0.3	-0.4	*0.5*	*0.5*	*0.2*	-0.7	-1.6	*-0.8*	*-0.7*	*-0.9*	-0.7	-1.5	*-0.8*	*-0.6*	*-0.8*
IE	-0.5	-0.2	*-0.1*	*-0.1*	*0.2*	-1.0	-0.2	*-0.2*	*-0.5*	*-0.3*	1.2	1.7	*1.4*	*0.9*	*1.0*
EL	0.5	0.8	*0.6*	*0.6*	*0.6*	5.1	4.6	*4.0*	*2.3*	*1.5*	8.3	7.7	*7.2*	*5.8*	*4.9*
ES	-4.5	-3.1	*-2.7*	*-2.1*	*-1.9*	-3.3	-2.9	*-3.1*	*-3.1*	*-3.1*	-0.5	-0.3	*-0.7*	*-0.8*	*-1.0*
FR	-3.5	-2.7	*-2.6*	*-2.8*	*-1.7*	-2.7	-2.4	*-2.5*	*-2.3*	*-2.2*	-0.8	-0.6	*-0.6*	*-0.4*	*-0.4*
IT	-2.5	-2.4	*-1.9*	*-2.9*	*-3.1*	-1.5	-1.8	*-1.8*	*-3.0*	*-3.5*	2.4	2.0	*1.8*	*0.9*	*0.4*
CY	0.3	1.8	*2.8*	*3.0*	*2.9*	1.3	1.5	*1.7*	*1.2*	*0.7*	4.1	4.1	*4.4*	*3.6*	*2.9*
LV	0.1	-0.6	*-0.8*	*-1.0*	*-0.7*	0.0	-1.2	*-1.8*	*-1.7*	*-1.2*	1.0	-0.3	*-1.0*	*-1.0*	*-0.5*
LT	0.3	0.5	*0.6*	*0.4*	*0.1*	-0.4	-0.7	*-0.6*	*-0.5*	*-0.4*	0.9	0.5	*0.4*	*0.4*	*0.3*
LU	1.6	1.4	*1.3*	*1.2*	*0.9*	1.4	1.6	*1.3*	*1.1*	*0.8*	1.8	1.9	*1.7*	*1.4*	*1.1*
MT	0.9	3.5	*1.3*	*1.2*	*0.7*	0.3	3.1	*0.9*	*0.9*	*0.9*	2.4	4.9	*2.5*	*2.4*	*2.2*
NL	0.0	1.2	*1.1*	*1.1*	*1.0*	0.5	0.7	*0.3*	*-0.3*	*-0.1*	1.6	1.7	*1.1*	*0.5*	*0.6*
AT	-1.6	-0.8	*-0.3*	*0.0*	*0.1*	-1.1	-0.8	*-0.8*	*-0.4*	*-0.2*	1.0	1.0	*0.8*	*1.0*	*1.3*
PT	-2.0	-3.0	*-0.7*	*-0.6*	*-0.2*	-2.1	-1.3	*-0.9*	*-0.9*	*-1.0*	2.1	2.5	*2.5*	*2.4*	*2.3*
SI	-1.9	0.1	*0.5*	*0.4*	*0.2*	-1.0	-0.4	*-0.8*	*-1.0*	*-1.0*	2.0	2.1	*1.2*	*0.7*	*0.6*
SK	-2.2	-0.8	*-0.6*	*-0.3*	*-0.1*	-2.1	-0.9	*-0.8*	*-0.8*	*-0.6*	-0.4	0.5	*0.4*	*0.3*	*0.5*
FI	-1.7	-0.7	*-0.8*	*-0.2*	*-0.1*	-0.5	-0.2	*-0.8*	*-0.6*	*-0.7*	0.5	0.8	*0.0*	*0.2*	*0.2*
EA19	-1.6	-1.0	*-0.6*	*-0.8*	*-0.7*	-1.0	-0.8	*-0.7*	*-1.0*	*-1.1*	1.1	1.1	*1.1*	*0.8*	*0.7*
BG	0.2	1.1	*0.8*	*0.6*	*0.6*	0.3	1.1	*0.7*	*0.4*	*0.3*	1.2	1.9	*1.4*	*1.1*	*0.9*
CZ	0.7	1.5	*1.4*	*0.8*	*0.7*	0.9	1.1	*0.9*	*0.2*	*0.2*	1.9	1.9	*1.7*	*1.0*	*1.0*
DK	-0.4	1.1	*0.2*	*-0.1*	*0.6*	0.1	1.2	*0.5*	*0.9*	*0.8*	1.5	2.3	*1.6*	*1.8*	*1.7*
HR	-0.9	0.9	*0.2*	*0.4*	*0.1*	-0.7	0.7	*-0.5*	*-0.7*	*-1.1*	2.3	3.3	*1.9*	*1.6*	*1.0*
HU	-1.6	-2.2	*-2.4*	*-1.9*	*-1.8*	-1.8	-3.4	*-3.8*	*-3.3*	*-3.0*	1.4	-0.7	*-1.3*	*-0.9*	*-0.6*
PL	-2.2	-1.4	*-0.9*	*-0.9*	*-1.0*	-1.9	-1.9	*-2.0*	*-2.0*	*-1.8*	-0.2	-0.3	*-0.5*	*-0.5*	*-0.4*
RO	-2.9	-2.9	*-3.3*	*-3.4*	*-4.7*	-2.2	-3.4	*-3.3*	*-3.4*	*-4.6*	-0.7	-2.0	*-1.9*	*-2.0*	*-3.1*
SE	1.1	1.6	*1.1*	*0.9*	*0.8*	0.8	1.4	*0.9*	*0.9*	*1.0*	1.2	1.7	*1.2*	*1.2*	*1.3*
UK	-2.9	-1.8	*-1.3*	*-1.0*	*-1.0*	-3.4	-2.3	*-1.8*	*-1.3*	*-1.1*	-0.9	0.4	*0.7*	*1.1*	*1.2*
EU28	-1.7	-1.0	*-0.7*	*-0.8*	*-0.7*	-1.3	-1.0	*-0.9*	*-1.0*	*-1.1*	0.8	1.0	*1.0*	*0.8*	*0.7*

Note: The structural budget balance is calculated on the basis of the commonly agreed production function method (see European Commission, 2004). Forecast values are shown in italics.
Source: Commission 2018 autumn forecast.

in 2020. A deficit above 2% of GDP is expected in Spain and France in 2018 and 2019.

Table I.1.2: **Breakdown of the general government budget balance, euro area (% of GDP)**

	2015	2016	2017	*2018*	*2019*	*2020*
Total revenue (1)	46.2	46.0	46.1	*46.0*	*45.7*	*45.5*
Total expenditure (2)	48.3	47.5	47.0	*46.7*	*46.5*	*46.1*
Actual balance (3) = (1) - (2)	-2.0	-1.6	-1.0	*-0.6*	*-0.8*	*-0.7*
Interest (4)	2.3	2.1	2.0	*1.9*	*1.8*	*1.8*
Primary balance (5) = (3) + (4)	0.3	0.6	1.0	*1.2*	*1.0*	*1.1*
One-offs (6)	-0.2	0.1	-0.1	*-0.1*	*-0.2*	*0.0*
Cyclically adjusted balance (7)	-1.0	-1.0	-0.9	*-0.8*	*-1.2*	*-1.1*
Cyclically adj. prim. balance = (7) + (4)	1.3	1.2	1.1	*1.0*	*0.6*	*0.7*
Structural budget balance = (7) - (6)	-0.9	-1.0	-0.8	*-0.7*	*-1.0*	*-1.1*
Structural primary balance = (7) - (6) + (4)	1.5	1.1	1.1	*1.1*	*0.8*	*0.7*
Change in actual balance:		0.5	0.6	*0.3*	*-0.2*	*0.2*
- Cycle		0.4	0.5	*0.3*	*0.2*	*0.1*
- Interest (reverse sign)		0.2	0.2	*0.1*	*0.0*	*0.0*
- One-offs		0.2	-0.1	*0.0*	*-0.1*	*0.2*
- Structural primary balance		-0.4	0.0	*0.0*	*-0.3*	*-0.1*
Change in cycl. adj. primary balance		-0.1	-0.1	*-0.1*	*-0.4*	*0.1*
Change in structural budget balance		-0.2	0.2	*0.1*	*-0.3*	*-0.1*

Note: Forecast values are shown in italics.
Source: Commission's autumn 2018 forecast.

Improved cyclical conditions and lower interest expenditure support public finances. The change in the cyclical component is expected to remain the key driver of the reduced budget deficit of the euro area over the forecast horizon (Table I.1.2). In 2018, a positive contribution should also come from falling interest expenditure. At the same time, the discretionary effort, as measured by the change in the structural primary balance, is projected to have an adverse impact on the budget in 2019 and 2020.

1.3. FISCAL STANCE OF THE EURO AREA

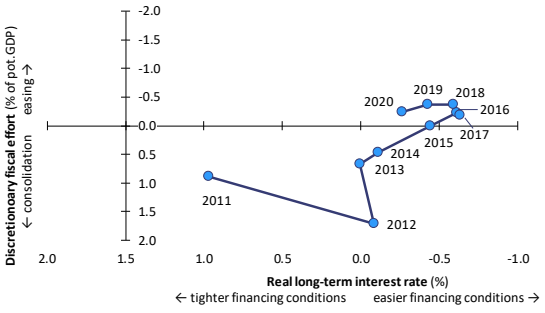
The fiscal stance of the euro area has been broadly neutral since 2015, but is expected to turn slightly expansionary in 2019 when cyclical conditions are projected to remain favourable. ([1]) The fiscal stance in the euro area, as measured by the change in the structural balance, has been broadly neutral since 2015. In 2019, the fiscal stance is expected to turn slightly expansionary.

A differentiated approach to national fiscal policies in line with the country-specific and

([1]) Usually, the fiscal stance refers to the orientation of fiscal policy, which can be qualified as expansionary, restrictive or neutral. In this Section, a neutral stance is one where government discretionary decisions, essentially the growth of (primary) spending and the new tax measures, neither support nor drag on the private economy compared with a steady state path.

euro area recommendations from 2018 is thus needed in order to balance the objectives of stabilising the economy and ensuring the long-term sustainability of public finances. National fiscal policy should ensure the sustainability of public finances by reducing debt ratios where they are high and build up fiscal buffers. Increasing public investment and other growth-enhancing spending should be a priority for countries with fiscal space, also taking into account spillovers across Member States. Overall, such a differentiation in Member States' fiscal stance according to their fiscal space would be consistent with delivering a broadly neutral to mildly restrictive fiscal stance for the euro area as a whole in 2019, contributing to a balanced policy mix in the euro area. Member States should also improve the quality and composition of public finances, also by making use of spending reviews, good public procurement practises, and adopting growth-friendly, efficient, simpler and fair tax structures.

Graph I.1.4: **Real long-term interest rate and discretionary fiscal effort, euro area**



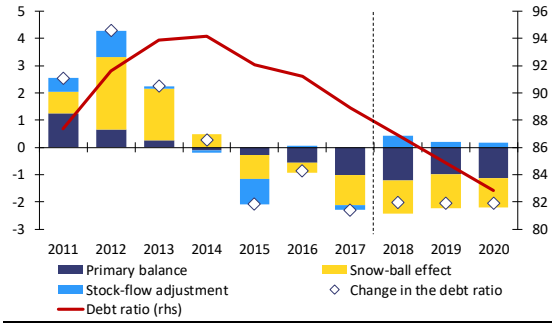
Note: Horizontal axis centered at +1.5, which is broadly in line with potential growth over the forecast horizon.
Source: Commission services.

The policy mix remains supportive for growth. The policy mix in the euro area reflects the interplay between financing conditions and fiscal policy (Graph I.1.4). For 2018, average real long-term rates (derived from the 10-year swap rate deflated by inflation expectations) are expected to be only slightly higher than in the previous year. They should increase further in 2019 and 2020 in the context of monetary policy normalisation, but would stay in negative territory. Thus, financing conditions should remain overall very supportive. At the same time, the fiscal policy stance is also expected to remain overall slightly supportive for growth in the euro area.

1.4. GOVERNMENT DEBT

General government debt ratios are decreasing in the EU and euro area on average, but remain high. The aggregate general government debt-to-GDP ratio of the euro area has been on a declining path since 2014 (Table I.1.3), when it reached a peak of 94.2% (88.1% in the EU). In 2017, the debt ratio fell to 88.9% (83.2% in the EU) and it is projected to fall further over the forecast period and reach 82.8% in 2020 (77.5% in the EU), under a no-policy-change assumption.

Graph I.1.5: **Key drivers of government debt developments, euro area (% of GDP)**



Source: Commission 2018 autumn forecast.

Robust economic growth and historically low interest rates support the decline in public debt ratios. The deleveraging of the government sector is supported by nominal GDP growth outpacing the low interest rates paid on debt, implying an adverse snowball effect. ([2]) Over the forecast period, the positive cyclical conditions should also help to maintain a primary surplus of around 1.1% of GDP on average for both the euro area and EU. Stock-flow adjustments are expected to provide a small debt-increasing contribution (Graph I.1.5).

Public debt ratios should decline further, but remain close to historical peaks in several Member States. Over 2018-2020, the debt-to-GDP ratio is projected to increase only in Romania, due to a large primary deficit. The debt

([2]) The snowball effect is the impact on the debt-to-GDP ratio provided by the difference between nominal growth and the implicit interest rates paid on debt. Specifically, in the euro area aggregate, nominal GDP growth is projected to average 3.6% over 2018-2020 and thus outpace the average interest rate paid on debt, which is set at 2.2%. As a result, the snowball effect is expected to help reduce the debt ratio in the euro area aggregate by around 1.2 pps. of GDP per year on average over the forecast period.

Table I.1.3: **Composition of changes in the government debt ratio in Member States (% of GDP)**

	Government debt ratio							Change in debt ratio	Change in the debt ratio in 2018-20 due to:		
	2014	2015	2016	2017	*2018*	*2019*	*2020*	2018-20	Primary balance	Snowball effect	Stock-flow adjustment
BE	107.6	106.5	106.1	103.4	*101.4*	*99.8*	*98.7*	-4.7	-3.3	-3.5	2.1
DE	74.5	70.8	67.9	63.9	*60.1*	*56.7*	*53.7*	-10.2	-6.4	-3.7	0.0
EE	10.5	9.9	9.2	8.7	*8.0*	*7.6*	*7.5*	-1.3	-1.3	-1.4	1.4
IE	104.1	76.8	73.4	68.4	*63.9*	*61.1*	*56.0*	-12.4	-4.4	-8.9	0.9
EL	178.9	175.9	178.5	176.1	*182.5*	*174.9*	*167.4*	-8.7	-12.0	-5.6	8.9
ES	100.4	99.3	99.0	98.1	*96.9*	*96.2*	*95.4*	-2.7	-0.1	-3.9	1.3
FR	94.9	95.6	98.2	98.5	*98.7*	*98.5*	*97.2*	-1.3	1.6	-2.9	0.1
IT	131.8	131.6	131.4	131.2	*131.1*	*131.0*	*131.1*	-0.1	-3.5	1.6	1.8
CY	108.0	108.0	105.5	96.1	*105.0*	*98.4*	*91.0*	-5.1	-16.1	-7.4	18.5
LV	40.9	36.8	40.3	40.0	*37.1*	*35.5*	*35.7*	-4.3	0.3	-4.6	0.0
LT	40.5	42.6	39.9	39.4	*34.8*	*37.9*	*37.6*	-1.8	-3.6	-4.1	5.9
LU	22.7	22.2	20.7	23.0	*21.4*	*20.8*	*20.6*	-2.4	-4.4	-2.0	4.1
MT	63.7	58.6	56.3	50.9	*47.9*	*44.8*	*42.1*	-8.8	-7.5	-5.2	3.9
NL	67.9	64.6	61.9	57.0	*53.2*	*49.6*	*46.9*	-10.1	-5.4	-4.7	0.0
AT	84.0	84.8	83.0	78.3	*74.5*	*71.0*	*67.8*	-10.5	-4.3	-4.0	-2.1
PT	130.6	128.8	129.2	124.8	*121.5*	*119.2*	*116.8*	-8.0	-8.4	-2.1	2.5
SI	80.4	82.6	78.7	74.1	*70.2*	*66.3*	*62.6*	-11.5	-6.3	-6.9	1.7
SK	53.5	52.2	51.8	50.9	*48.8*	*46.4*	*44.2*	-6.7	-2.5	-5.5	1.2
FI	60.2	63.6	63.0	61.3	*59.8*	*58.5*	*57.5*	-3.8	-1.5	-4.1	1.8
EA19	94.2	92.1	91.2	88.9	*86.9*	*84.9*	*82.8*	-6.1	-3.4	-3.5	0.8
BG	27.1	26.2	29.6	25.6	*23.3*	*21.3*	*19.5*	-6.1	-4.0	-2.1	0.0
CZ	42.2	40.0	36.8	34.7	*33.2*	*32.1*	*31.2*	-3.5	-5.1	-2.4	4.0
DK	44.3	39.9	37.9	36.1	*33.3*	*32.2*	*30.5*	-5.5	-3.5	-0.2	-1.8
HR	84.0	83.7	80.2	77.5	*73.5*	*70.1*	*68.2*	-9.3	-7.5	-2.9	1.2
HU	76.6	76.6	75.9	73.3	*72.9*	*70.3*	*68.6*	-4.6	-1.2	-6.6	3.2
PL	50.4	51.3	54.2	50.6	*49.2*	*48.3*	*47.4*	-3.1	-1.6	-4.1	2.5
RO	39.2	37.8	37.3	35.1	*35.1*	*35.9*	*38.2*	3.1	7.0	-3.9	0.0
SE	45.5	44.2	42.4	40.8	*37.8*	*35.5*	*33.5*	-7.4	-3.7	-3.6	0.0
UK	87.0	87.9	87.9	87.4	*86.0*	*84.5*	*82.6*	-4.7	-3.9	-0.5	-0.3
EU28	88.1	86.0	84.9	83.2	*81.4*	*79.5*	*77.5*	-5.6	-3.3	-3.0	0.6

Note: Differences between the sum and the total of individual items are due to rounding. Forecast values are shown in italics.
Source: Commission 2018 autumn forecast.

ratio is forecast to stabilise in Italy, the only country where the snowball effect is projected to provide a debt-increasing contribution. In 2020, the debt-to-GDP ratio is expected to remain above 100% in three Member States (Greece, Italy and Portugal), and above 90% in four others (Belgium, Spain, France and Cyprus).

It is key to rebuild fiscal buffer in high debt Member States now. Based on the Commission 2018 autumn forecast, there is no clear-cut relation between the expected fiscal effort and the level of debt-to-GDP ratios across Member States. In fact, the expected fiscal adjustment is relatively limited or even negative for some highly indebted Member States. More specifically, five euro-area Member States with high debt-to-GDP ratios (Belgium, Spain, France, Italy and Portugal) are forecast to have a sizeable structural deficit in 2019 and thus pending adjustment needs. Looking at the five largest euro area Member States, France and Spain are set to keep a broadly neutral fiscal, while Germany and the Netherlands are expected to use part of their fiscal space to support potential growth. A loose fiscal stance is projected in Italy.

1.5. COMPOSITION OF PUBLIC FINANCES

Over 2018-2020, the revenue and expenditure ratios are both set to decline at aggregate level in the EU and the euro area (Table I.1.4). In particular, the expenditure ratio of the euro area aggregate is projected to fall by 0.9 pp. of GDP (from 47.0% in 2017 to 46.1% in 2020). Part of the decline is explained by lower interest expenditure, which is forecast to fall from 2.0% of GDP in 2017 to 1.8% in 2020. As labour markets are set to improve, lower unemployment benefits will also contribute to the reduction in the expenditure ratio over the forecast period. The remainder of the fall in the expenditure ratio reflects the denominator impact from actual GDP growth above potential growth, thus entailing a dampening impact on the

Table I.1.4: **Government revenue and expenditure (% of GDP)**

	Revenue							Expenditure						
	2014	2015	2016	2017	*2018*	*2019*	*2020*	2014	2015	2016	2017	*2018*	*2019*	*2020*
BE	52.2	51.3	50.6	51.3	*51.0*	*50.7*	*50.6*	55.3	53.7	53.0	52.2	*52.0*	*51.8*	*52.0*
DE	44.5	44.5	44.8	45.0	*45.3*	*45.1*	*45.0*	44.0	43.7	43.9	43.9	*43.8*	*43.9*	*44.0*
EE	38.5	39.7	39.1	38.9	*39.9*	*39.8*	*39.6*	37.8	39.6	39.5	39.3	*39.4*	*39.4*	*39.4*
IE	33.8	27.0	27.0	26.0	*25.0*	*24.6*	*24.2*	37.4	28.9	27.5	26.3	*25.1*	*24.7*	*24.0*
EL	46.6	47.9	49.5	48.1	*48.3*	*46.8*	*46.0*	50.2	53.5	48.9	47.3	*47.6*	*46.2*	*45.3*
ES	38.9	38.5	37.7	37.9	*38.4*	*38.8*	*38.8*	44.8	43.7	42.2	41.0	*41.1*	*40.9*	*40.8*
FR	53.3	53.2	53.2	53.8	*53.6*	*52.7*	*52.4*	57.2	56.8	56.7	56.5	*56.2*	*55.4*	*54.1*
IT	47.9	47.7	46.5	46.4	*46.2*	*45.9*	*45.5*	50.9	50.3	49.1	48.7	*48.1*	*48.8*	*48.6*
CY	39.8	39.3	38.3	39.3	*40.0*	*40.1*	*39.7*	48.8	40.6	38.0	37.5	*37.2*	*37.0*	*36.8*
LV	36.6	36.9	37.0	37.2	*36.8*	*36.4*	*36.4*	38.1	38.2	37.0	37.8	*37.7*	*37.3*	*37.1*
LT	34.0	34.6	34.4	33.6	*34.9*	*35.3*	*35.1*	34.6	34.9	34.1	33.1	*34.3*	*34.9*	*35.0*
LU	43.3	43.3	43.6	44.5	*44.8*	*45.0*	*45.2*	42.0	42.0	41.9	43.1	*43.5*	*43.8*	*44.4*
MT	39.5	39.1	38.0	39.7	*39.0*	*38.6*	*38.6*	41.3	40.1	37.1	36.2	*37.7*	*37.5*	*37.9*
NL	43.6	42.6	43.6	43.7	*43.4*	*43.4*	*43.3*	45.7	44.6	43.6	42.5	*42.4*	*42.3*	*42.3*
AT	49.7	50.1	48.7	48.4	*48.3*	*48.0*	*47.8*	52.4	51.1	50.3	49.2	*48.7*	*48.0*	*47.6*
PT	44.6	43.8	42.8	42.7	*43.3*	*43.3*	*43.4*	51.8	48.2	44.8	45.7	*44.0*	*43.9*	*43.7*
SI	44.4	44.9	43.4	43.2	*42.7*	*42.2*	*41.3*	49.9	47.7	45.3	43.2	*42.2*	*41.8*	*41.1*
SK	39.3	42.5	39.2	39.4	*39.3*	*38.9*	*38.6*	42.0	45.1	41.5	40.2	*39.9*	*39.3*	*38.7*
FI	54.9	54.4	54.2	53.3	*52.2*	*51.9*	*51.3*	58.1	57.1	55.9	54.0	*52.9*	*52.1*	*51.4*
EA19	46.7	46.2	46.0	46.1	*46.0*	*45.7*	*45.5*	49.1	48.3	47.5	47.0	*46.7*	*46.5*	*46.1*
BG	37.7	38.8	35.3	36.2	*37.0*	*38.3*	*38.2*	43.1	40.5	35.1	35.1	*36.1*	*37.7*	*37.6*
CZ	40.3	41.1	40.2	40.5	*41.8*	*41.5*	*41.3*	42.4	41.7	39.5	39.0	*40.4*	*40.8*	*40.7*
DK	56.4	53.3	53.2	53.0	*52.1*	*52.0*	*51.8*	55.2	54.8	53.6	51.9	*51.9*	*52.1*	*51.2*
HR	42.9	44.8	46.0	45.8	*45.1*	*44.4*	*43.9*	48.1	48.3	46.9	45.0	*44.9*	*44.1*	*43.8*
HU	46.9	48.2	45.1	44.7	*44.9*	*44.7*	*44.5*	49.5	50.1	46.8	46.9	*47.3*	*46.6*	*46.3*
PL	38.7	39.0	38.9	39.7	*40.7*	*41.0*	*41.2*	42.4	41.7	41.1	41.1	*41.6*	*41.9*	*42.2*
RO	34.2	35.5	31.9	30.7	*31.8*	*31.8*	*31.7*	35.4	36.2	34.9	33.6	*35.1*	*35.1*	*36.3*
SE	49.5	49.8	50.8	50.9	*50.2*	*49.9*	*49.6*	51.1	49.6	49.7	49.3	*49.1*	*48.9*	*48.8*
UK	37.6	38.0	38.5	39.1	*39.2*	*39.3*	*39.3*	43.0	42.2	41.4	40.9	*40.5*	*40.4*	*40.3*
EU28	45.0	44.6	44.6	44.8	*44.8*	*44.6*	*44.4*	47.9	46.9	46.3	45.8	*45.5*	*45.4*	*45.1*

Note: The structural budget balance is calculated on the basis of the commonly agreed production function method (Havik et al., 2014).
Source: Commission 2018 autumn forecast.

expenditure-to-GDP ratio. ([3]) Looking at the revenue ratio of the euro area aggregate, it is projected to decline by 0.6 pp. of GDP over the forecast period (from 46.1% in 2017 to 45.5% in 2020), mainly reflecting the projected fall in social contributions. The reduction in the revenue-to-GDP ratio is largely explained by the impact of governments' discretionary measures, while underlying revenue developments appears to be in line with the projected increase in nominal GDP. ([4])

The euro area aggregate reflects differentiated developments in expenditure and revenue ratios across Member States. More specifically, over 2018-2020 the expenditure ratio is projected to decline in twelve euro area Member States, to increase in three (Lithuania, Luxembourg and Malta) and to stay broadly stable in other three (Germany, Estonia and the Netherlands). In Italy, the expenditure ratio is expected to decline in 2018, but to increase again in 2019 due to the expansionary budget. Regarding the revenue ratio, in 2018-2020 it is projected to decline in the all but six euro-area Member States (DE, EE, ES, CY, LT, LU and PT).

The aggregate public investment-to-GDP ratio is projected to increase slightly. In the euro area, public investment should increase from 2.6% of GDP in 2017 to 2.8% in 2020, but remain below its pre-crisis average (3.2% of GDP over 2000-2007). By 2020, the fall in public investment relative to the pre-crisis period would remain sizeable in Spain and Portugal (about -2 pps. of GDP), Ireland and Malta (about -1.5 pps.), Greece and Italy (about -1 pp.). Public investment should benefit from the implementation of the 2014-2020 programming period of EU funding, as well as from the Investment Plan for Europe. Positive cyclical developments are set to reduce the weight of social transfers as a share of total general government expenditure in the euro area aggregate

([3]) By comparison, when computed in terms of potential GDP, the primary expenditure ratio of the euro area is set to remain stable over 2017-2019 and to decline slightly in 2020.
([4]) For further details on expenditure and revenues elasticities see Mourre et al. (2014).

by 2020, despite additional discretionary spending in some Member States. The weight of the wage bill on public expenditure is set to broadly stabilise.

The revenue ratio is expected to decline also in structural terms, while the projected fall in structural expenditure is small. Between 2017 and 2020, the projected decline in the structural revenue ratio of the euro area aggregate is 0.5 pp. of GDP, broadly in line with the 0.6 pp. decline in headline terms. This decline in the revenue ratio is largely explained by discretionary measures. In the same forecast period, the fall in the structural expenditure ratio would instead be more limited than the headline figure (-0.2 pp. of GDP vs. -0.9 pp.). It mainly reflects the impact of economic growth above potential growth on the headline figure, due to the denominator effect and lower cyclical unemployment benefits (see Box I.1.1 for an overview of national reporting on tax expenditures).

Box I.1.1: National reporting on tax expenditures and characteristics of regular reporting practices

Tax expenditures are reductions in government revenue through preferential tax treatment of specific groups of tax payers or specific economic activities. Member States make ample use of tax expenditures with a wide variety of aims including employment creation, innovation, education, entrepreneurship, home ownership and income distribution. While tax expenditures may be motivated by relevant economic or social goals, they are not necessarily the most cost-efficient instrument and may in some cases lead to severe economic impact and distortions. ([1])

The Commission and other international organisations ([2]) regularly emphasise the need to report on and review tax expenditures as part of national budget management given their implication on fiscal consolidation as well. In this line, governments should describe clearly the use of tax expenditures in their tax systems, and provide an explanation of the main policies in place. Doing so should include defining the benchmark situation (from which the tax expenditure is a deviation), the estimated cost of the measure in lost revenue and its coverage. In addition to reporting tax expenditures in the budget, governments should also carry out regular evaluations of the tax expenditures they apply. The evaluations may be conducted by independent bodies or commissions, if it is thought more appropriate, and should assess the efficiency and cost effectiveness of current tax expenditures. Member States may choose to carry out more extensive evaluations on a less frequent basis (i.e. less than once a year).

In this context, under the Directive 2011/85/EU, which lays down requirements for budgetary frameworks, Member States have been required since 1 January 2014 to publish detailed information on the effect of tax expenditures on revenue (Article 14(2)). However, the Directive does not specify a standardised procedure for evaluating tax expenditures.

The analysis presented in Table 1 provides an updated overview of the current reporting on tax expenditures in Member States. Table 1 shows in which Member States reporting on tax expenditures is conducted regularly, and gives further detail on the coverage of national reporting: the time period reported on and the categorisation of tax expenditures used. The information provided shows that currently 24 Member States regularly report on tax expenditures. Reporting practices, however, vary widely across countries, and therefore the reports produced also vary, in terms of their presentation, depth and coverage. Differences in reporting are moreover found in terms of the levels of government covered. While tax expenditures administered by central government are always covered, those related to local taxes and social security funds appear to be generally less well documented mainly due to the heterogeneity of the taxes applied (European Commission, 2015). Member States' reporting practices do, however, share some general common features:

a) Reporting is typically carried out on an annual basis, by the Ministry of Finance, the Ministry for the Economy or the tax authorities, or by services reporting to one of them. b) tax expenditures are most often identified in reference to their tax category or tax base c) expenditures are often grouped according to the type of tax measure (e.g. allowances, rate relief or exemptions), the purpose (e.g. supporting low-income earners or reducing the tax on certain types of housing) or the sector (e.g. households, businesses or agriculture).

However, the period covered and the categorisation ([3]) of tax expenditures used varies greatly. Similarly,

([1]) Kalyva et al. (2014).
([2]) See, e.g., IMF (2011), OECD (2010) and European Commission (2015). For a more detailed discussion, see Bauger (2014).
([3]) ESA 2010 introduces explicit new rules on how tax credits are to be recorded in national accounts. It is a significant change from the method previously used under ESA 95. Tax credits that constitute non-contingent government liabilities are now treated as expenditure instead of as a reduction in tax revenue, and are recorded at the moment when a government recognises the obligation to pay. The new system of recording on a gross (rather than a net) basis leads to an increase in total revenue and in total expenditure, compared to the approach used in the past.

(Continued on the next page)

Box (continued)

some countries' reporting is backward-looking and others' forward-looking. d) the reports generally use the "revenue forgone" method for calculating tax expenditures, but there are significant differences in methodology (e.g. whether revenue is estimated on a cash or accruals basis). e) some Member States link tax expenditures to the expenditure side of the budget and the relevant reports are discussed in the Parliament (e.g. BE, DK, DE, GR, ES, FR, AT, PT and FI).

Table 1: **National reporting on tax expenditures and characteristics of regular reporting practices**

Country	National reporting		Time coverage**	Categorisation
	regular*	non-regular (latest)		
BE	X		t-7, t-6, t-5, t-4, t-3, t-2	tax base, purpose
BG	X	2012	t-2	tax base, purpose/sector
CY	X		t	tax base
CZ		2015	t-6, t-5	tax base, purpose
DK	X	2018	t-1	tax base, purpose
DE	X	2009	t-2, t-1, t, t+1	tax base, type of tax measure, purpose, sector
EE	X		t, t+1	tax base, purpose
IE	X	2010	t-1, t	tax base, type of tax measure
EL	X		t-2	tax base, purpose, sector
ES	X		t, t+1	tax base, type of tax measure, expenditure category
FR	X	2011	t-1, t, t+1	tax base, type of tax measure, expenditure category
IT	X	2010/11	t+1, t+2, t+3	type of tax measure, purpose, sector
NL	X		t-5, t-4, t-3, t-2, t-1, t	tax base, type of tax measure, purpose
AT	X		t-2, t-1, t, t+1	tax base, sector
PT	X		t+1	tax base, purpose
SK	X		t-2, t-1, t, t+1, t+2, t+3	tax base
FI	X	2016	t-1, t, t+1	tax base, purpose
LV	X		t-3, t-2, t-1	tax base, purpose
LU	X		t	type of tax measure
LT	X		t+1	tax base
RO	X		t-1, t, t+1, t+2	tax base
HU	X		t+1	tax base
PL	X		t-3	tax base, purpose
SE	X		t-1, t, t+1, t+2	tax base, type of tax measure, purpose/sector
UK	X		t-4, t-3, t-2, t-1, t	tax base, type of tax measure

Notes: The information reported here refers to the most recent editions of the national tax expenditure reports. * Regular reporting generally refers to an annual frequency, with the exceptions of Germany (where the update happens every two years) and Denmark (where not all tax expenditures are updated annually, but only the new ones and the changes to the existing ones). ** Year t denotes the year of publication.
Source: Commission services based on national sources.

Finally, some Member States have also recently produced one-off tax expenditure reviews or inventories. Those reports are generally more extensive, produced in some cases by independent experts (e.g. in Denmark, Ireland Finland, and UK) and may include reviews of or opinions on specific tax expenditure items.

Overall, information on the tax expenditures in force or planned in Member States is still often incomplete, and the data provided are not fully comparable across countries and over time. This makes it more difficult to identify possible improvements to fiscal and tax arrangements, and can thus make fiscal policymaking less effective and efficient. This can, in turn, affect the strength of countries' national budgetary frameworks as – more or less hidden– losses of revenue may weaken the positive effect to be gained from new measures increasing transparency on the expenditure side. National provisions adopted to transpose Directive 2011/85/EU and the changes that entered into force under the current European System of Accounts (ESA 2010) have already improved budgetary transparency, which is expected to strengthen further by the rigorous implementation of those measures.

2. IMPLEMENTATION OF FISCAL SURVEILLANCE IN 2018

The EU fiscal framework, as laid down by the Stability and Growth Pact (SGP), aims at ensuring budgetary discipline through two main requirements. First, Member States are required to keep their general government deficit and debt positions below the reference values of 3% and 60% of GDP respectively, and to prompt their correction if those two criteria are temporarily not fulfilled. ([5])([6]) Second, they are required by the preventive arm of the SGP to achieve and maintain their medium-term budgetary objective (MTO), which corresponds to a cyclically-adjusted target for the budget balance, net of one-offs and certain temporary measures. ([7]) Country-specific MTOs 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 2018. It first presents the key developments and procedural steps taken in the excessive deficit procedure of the corrective arm of the SGP (Section I.2.1.) and in the significant deviation procedure of the preventive arm (Section I.2.2.). It then provides and overview of the 2018 country-specific recommendations in the area of fiscal policy (Section I.2.3.), before presenting the Commission's assessment of the euro-area Member States' Draft Budgetary Plans for 2019 (Section I.2.4.).

2.1. EXCESSIVE DEFICIT PROCEDURE

This Section focuses on the implementation of the excessive deficit procedure (EDP) in 2018. The EDP ensures that Member States correct their excessive deficit and debt positions, measured against the reference values of 3% and 60% of GDP, thus operationalising the requirements set in the Treaty. The country-specific developments are summarised in Tables I.A.1, I.A.2 and I.A.3 in the Annex. ([8])

2.1.1. Euro-area Member States

In 2018, the Commission adopted reports in accordance with Article 126(3) TFEU for Belgium and Italy.

In the case of Italy, the Commission report of May 2018 concluded that the debt criterion should be considered as complied with. According to notified data of the Commission 2018 spring forecast, Italy's gross government debt stood at 131.8% of GDP in 2017, well above the 60% Treaty reference value, and Italy did not comply with the debt reduction benchmark in either 2016 or 2017. Moreover, Italy's debt-to-GDP ratio was projected to remain above the debt reduction benchmark in both 2018 and 2019. After examining all relevant factors, namely (i) the improving macroeconomic conditions, no longer explaining Italy's large gaps with the debt reduction benchmark; (ii) the ex-post compliance with the required adjustment towards the MTO in

([5]) Article 126 TFEU lays down 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, which represents the corrective arm of the SGP.

([6]) In particular, a Member State is not compliant with the debt criterion if its general government gross debt is greater than 60% of GDP, and it is not sufficiently diminishing and approaching 60% of GDP at a satisfactory pace. The concept of "sufficiently diminishing" and "satisfactory pace" is crucial in the assessment of compliance with the debt criterion for Member States whose general government gross debt is greater than 60% of GDP. Those requirements are specified in Regulation 1467/97 as being fulfilled 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, the opening an EDP on that basis is not automatic, as the Commission has to take into account a long list of relevant factors detailed in Article 2(3) in Regulation (EC) No 1467/97.

([7]) The preventive arm of the SGP is contained 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. Together with the procedure for the avoidance of excessive government deficit laid down in Article 126 TFEU, further specified in Regulation (EC) 1467/97, in Regulation (EU) No 1175/2011, Council Regulation (EU) No 1177/2011 and Regulation (EU) No 1173/2011 on the effective enforcement of budgetary surveillance in the euro area, form the SGP.

([8]) All the country-specific developments regarding the excessive deficit procedure can be followed up at European Commission's website.

2017; and (iii) some progress in adopting and implementing growth-enhancing structural reforms, the Commission report of 23 May 2018 concluded that the debt criterion as defined in the Treaty should be considered as currently complied with. However, the Commission noted that the structural effort in 2018 appeared inadequate to ensure compliance with the required adjustment path towards the MTO in 2018 and that it would reassess compliance on the basis of ex-post data for 2018 to be notified in spring 2019.

As Italy's fiscal plans for 2019 represented a material change in the relevant factors analysed in the report of May 2018, the Commission issued a new report in November 2018, concluding that the debt criterion should be considered as not complied with, and that a debt-based EDP was thus warranted. The Commission considered that Italy's fiscal plans for 2019 (Section I.2.4.) represented a material change in the relevant factors analysed by the Commission in May 2018. In particular, in its 2019 revised Draft Budgetary Plan (DBP) Italy plans a large deterioration of the structural balance for 2019, in the order of 0.9% of GDP, while the Council had recommended an improvement by at least 0.6% of GDP. ([9]) On 21 November 2018, the Commission adopted its opinion on Italy's revised DBP confirming the risk of significant deviation from the adjustment path towards the MTO recommended by the Council for 2018 and the particularly serious non-compliance with the fiscal recommendation for 2019 based on both the government plans and the Commission 2018 autumn forecast. In light of this conclusion, the Commission considered that a new assessment of Italy's prima facie lack of compliance with the debt criterion in 2017 was justified. Consequently, the Commission issued a report in accordance with Article 126(3) TFEU on 21 November 2018, which took into account all relevant factors and notably (i) the fact that macroeconomic conditions, despite recently intensified downside risks, cannot explain Italy's large gaps to compliance with the debt reduction benchmark, given nominal GDP growth above 2% since 2016; (ii) the fact that the government plans imply a backtracking on past growth-enhancing structural reforms, in particular the past pension reforms; and above all (iii) the identified risk of significant deviation from the recommended adjustment path towards the MTO in 2018 and the particularly serious non-compliance for 2019 with the Council recommendation. Overall, the Commission concluded that the debt criterion should be considered as not complied with, and that a debt-based EDP was thus warranted. The Commission's assessment was confirmed by Economic and Financial Committee on 29 November 2018. The Eurogroup on 3 December 2018 also supported the assessment and called on Italy to take the necessary measures to ensure compliance with the SGP. Following the dialogue between the Commission and the Italian authorities, the final 2019 budget law adopted by Parliament included additional measures, which allowed the Commission not to recommend the opening of a debt-based EDP at this stage. The Commission noted in its letter of 19 December 2018 that it would continue to monitor budgetary developments in Italy, and in particular the execution of the 2019 budget, in the context of the European Semester.

In the case of Belgium, the Commission report of May 2018 concluded that the current analysis was not fully conclusive as to whether the debt criterion was or was not complied with. According to notified data for 2017 and the Commission 2018 spring forecast, gross government debt stood at 103.1% of GDP in 2017, well above the 60% of GDP Treaty reference value and Belgium did not comply with the debt reduction benchmark in 2017. Moreover, Belgium was not projected to comply with the debt reduction benchmark in 2018 and 2019 according to the Commission 2018 spring forecast. The Commission examined all relevant factors, namely (i) the previously unfavourable but improving macroeconomic conditions, which makes them less of a factor to explain non-compliance with the debt reduction benchmark; (ii) the fact that there was not sufficiently robust evidence to conclude on the existence of a significant deviation in Belgium in 2017 and over 2016 and 2017 together; and (iii) the implementation of growth-enhancing structural reforms in recent years, several of which were

([9]) The figures of the structural balance reported in this chapter refer to the cyclically-adjusted budget balance net of one-off and temporary measures, recalculated by the Commission using the commonly agreed methodology. Italy submitted its 2019 Draft Budgetary Plan on 16 October 2018, and – following a negative Commission opinion – submitted a revised Draft Budgetary Plan on 13 November 2018, which confirmed the existence of a particularly serious non-compliance.

considered substantial and projected to help improve debt sustainability. Overall, as there was not sufficiently robust evidence to conclude on the existence of a significant deviation over 2016 and 2017 together given the high uncertainty as to the evolution of corporate income tax revenues stemming from a permanent change in the timing of recurrent revenue, the analysis in the report was not fully conclusive regarding (non-) compliance with the debt criterion. However, the report noted that the structural effort in 2018 appeared inadequate to ensure compliance with the required adjustment path towards the MTO in 2018 and that the Commission would reassess compliance on the basis of the ex-post data for 2018 to be notified in spring 2019.

As the EDP for France was abrogated in June 2018, Spain remains the only euro-area Member State in EDP. The EDP for France was abrogated on 22 June 2018 as the deficit had been brought below 3% of GDP in 2017 and it was projected to stay below 3% in 2018 and 2019. ([10]) The only euro-area Member State remaining in EDP is Spain, which was given a deadline to correct its excessive deficit by 2018. A decision on the abrogation of the EDP would be taken in spring 2019, based on 2018 outturn data. According to the Commission 2018 autumn forecast, the headline deficits in all euro-area Member States are projected to be below the 3% of GDP Treaty reference value in 2018.

2.1.2. Non-euro-area Member States

No EDPs were opened for non-euro area Member States in 2018. Government deficits in non-euro area Member States of the EU stayed below 3% of GDP in 2017. According to the Commission 2018 autumn forecast, public deficits are expected to remain below 3% of GDP in 2018 in all non-euro Member States with the exception of Romania, where the general government deficit is projected to reach 3.3% of GDP in (Section I.2.2.).

2.2. SIGNIFICANT DEVIATION PROCEDURE

In 2018, significant deviation procedures (SDPs) were launched for Hungary and Romania based on the observed deviation in 2017 (see Table I.A.4. in the Annex**)**. In general, a SDP is launched if a Member States has deviated significantly from its MTO or the adjustment path towards it. If such a deviation is observed based on outturn data, the Commission must issue a warning and, within one month, the Council must address a recommendation towards the Member State to take measures to address the deviation. In 2018, such a procedure was launched for Romania and Hungary. With regard to Romania, the Council also concluded that the Member State did not take effective action to correct the observed significant deviation in 2016, which had triggered the first application of the SDP since its introduction into the EU economic governance framework.

In the case of Hungary, the Council adopted a recommendation in June 2018 with a view to correcting the significant observed deviation from the adjustment path towards the MTO. ([11]) Based on the Commission 2018 spring forecast and the 2017 outturn data, Hungary was found to have deviated significantly from the required adjustment path toward the MTO in 2017. As a consequence, the Council, following a recommendation by the Commission, adopted a recommendation on 22 June 2018 with a view to correcting the significant deviation. Hungary was recommended to take the necessary measures to ensure that the nominal growth rate of net primary government expenditure does not exceed 2.8% in 2018, corresponding to an annual structural adjustment of 1% of GDP, and to use any windfall gains for deficit reduction, while budgetary consolidation measures should secure a lasting improvement in the general government structural balance in a growth-friendly manner. On 18 and 19 September 2018, the Commission undertook an enhanced surveillance mission under Article 11(2) of Regulation (EC) No 1466/97. On 15 October 2018, in line with the deadline established by the Council, the Hungarian authorities submitted a report on action taken in response to the Council recommendation of 22 June 2018. Both the report on action taken and the findings in the mission report confirmed that the Hungarian authorities did not plan to act upon the Council recommendation.

In December 2018, the Council adopted a decision establishing that Hungary had not

([10]) OJ L 164, 29.6.2018, p. 44–45.

([11]) OJ C 223, 27.6.2018, p. 1–2.

taken effective action and a revised recommendation. Based on the Commission 2018 autumn forecast, Hungary is projected to deviate from the recommended adjustment for 2018 by a wide margin. Consequently, following a Commission recommendation, the Council adopted a decision on 4 December 2018 establishing that no effective action had been taken. In addition, it adopted a revised recommendation, which called on Hungary to take the necessary measures to ensure that the nominal growth rate of net primary government expenditure does not exceed 3.3% in 2019, corresponding to an annual structural adjustment of 1.0% of GDP. As recommended in June 2018, Hungary should also use any windfall gains for deficit reduction, and budgetary consolidation measures should secure a lasting improvement in the general government structural balance in a growth-friendly manner. Finally, Hungary should report to the Council by 15 April 2019 on action taken in response to the recommendation.

In the case of Romania, the Council adopted a decision in June 2018, establishing that no effective action had been taken in response to the Council recommendation from December 2017. ([12]) After Romania had failed to deliver effective action in response to the Council recommendation from 16 June 2017, ([13]) the Council adopted a revised recommendation on 5 December 2017, which called on Romania to take the necessary measures to ensure that the nominal growth rate of net primary government expenditure does not exceed 3.3% in 2018, corresponding to an annual structural adjustment of at least 0.8% of GDP in 2018. The Council also recommended to use any windfall gains for deficit reduction, while budgetary consolidation measures should secure a lasting improvement in the general government structural balance in a growth-friendly manner. ([14]) Romania was asked to report to the Council by 15 April 2018 on action taken. On 10 and 11 April 2018, the Commission undertook an enhanced surveillance mission in Romania. The mission report concluded that the Romanian authorities did not intend to act upon the Council recommendation. On 20 April 2018, after the deadline established by the Council, the Romanian authorities submitted a report on action taken, in which the authorities reiterated that their target for 2018 remained the headline deficit of just below 3% of GDP. However, the fiscal impact of the reported measures fell significantly short what was required. As the overall assessment based on the Commission 2018 spring forecast confirmed a deviation from the recommended adjustment by a wide margin, the Council adopted a decision on 22 June 2018 that Romania had not taken effective action in response to the Council recommendation of 5 December 2017.

Following a recommendation by the Commission, the Council adopted a new recommendation for Romania in June 2018 with a view to correcting the significant observed deviation in 2017. ([15]) In 2017, based on the Commission 2018 spring forecast and the 2017 outturn data, Romania was found to have deviated significantly from the required adjustment path towards the MTO. Furthermore, the general government deficit was projected to reach 3.4% of GDP in 2018 and 3.8% of GDP in 2019, above the 3%-of-GDP Treaty reference value. The Council concluded that the failure to act upon earlier recommendations and the risk of exceeding the 3%-of-GDP Treaty reference value called for urgent action to put Romania's fiscal policy back on a prudent path. Therefore, Romania was recommended by the Council on 22 June 2018 to ensure that the nominal growth rate of net primary government expenditure does not exceed 3.3% in 2018 and 5.1% in 2019, corresponding to an annual structural adjustment of 0.8% of GDP in each year. In addition, Romania was recommended to use any windfall gains for deficit reduction; budgetary consolidation measures should secure a lasting improvement in the general government structural balance in a growth-friendly manner. Finally, Romania should report to the Council by 15 October 2018 on action taken. On 27 and 28 September 2018, the Commission undertook an enhanced surveillance mission in Romania. The mission report found that the authorities did not intend to act upon the recommendation. On 16 October 2018, the Romanian authorities submitted a report on action taken. Overall, the fiscal impact of the reported measures fell short of the requirements.

([12]) OJ L 164, 29.6.2018, p. 42–43.
([13]) OJ C 216, 6.7.2017, p. 1–2.
([14]) OJ C 439, 20.12.2017, p. 1.
([15]) OJ C 223, 27.6.2018, p. 3–4.

In December 2018, the Council adopted a decision establishing that no effective action had been taken and a revised recommendation regarding Romania. Based on the Commission 2018 autumn forecast, the projected fiscal effort falls short of the requirements in both 2018 and 2019. Moreover, the Commission projects a general government deficit of 3.3% in 2018 and 3.4% in 2019, which is above the 3%-of-GDP Treaty reference value. Consequently, following a Commission recommendation, on 4 December 2018 the Council adopted a decision establishing that no effective action had been taken and a revised recommendation regarding Romania. The latter calls on Romania to take the necessary measures to ensure that the nominal growth rate of net primary government expenditure does not exceed 4.5% in 2019, corresponding to an annual structural adjustment of 1.0% of GDP, i.e. higher than the previously recommended adjustment, thereby putting the country on an appropriate adjustment path toward the MTO. As recommended in June 2018, Romania should use any windfall gains for deficit reduction and budgetary consolidation measures should secure a lasting improvement in the general government structural balance in a growth-friendly manner. Finally, Romania should report to the Council by 15 April 2019 on action taken in response to the recommendation.

2.3. FISCAL COUNTRY-SPECIFIC RECOMMENDATIONS

According to the 2018 Stability and Convergence Programmes (SCPs) submitted in April 2018, all Member States planned to move closer to or remain at their MTOs by 2021. Of the 13 Member States that had reached their MTO in 2017 based on the Commission 2018 spring forecast, all would remain at or above their MTO, with eight of them planning a fiscal expansion over the programme horizon until 2021. The Member States not yet at their MTO planned some structural adjustment towards their MTO over the horizon. Overall, the planned adjustment effort was back-loaded, with several Member States planning a structural deterioration or a very limited improvement in 2018, followed by a fiscal tightening of around 0.3 pp. per year over the period 2019-2021. By 2021, 18 Member States planned to have reached their MTO, while another four would be in its vicinity (within a distance of 0.25% of GDP).

Based on the Member States' plans, the aggregate headline deficit would turn into a small surplus by the end of the programme horizon. At EU level, the headline balance would improve from -1.0% of GDP in 2017 to +0.2% of GDP in 2021, while for the euro area the balance would improve from -0.9% of GDP to +0.5% of GDP by the same time. The (recalculated) aggregate structural balance is expected to worsen by 0.1% of GDP in the EU and by 0.2% in the euro area in 2018. In 2019, the programmes point to an aggregate improvement of 0.3% of GDP, followed by a planned adjustment of 0.4% in 2020 and 0.3% in 2021. As a result, the structural balance would still show a small deficit in 2021 in the EU, while reaching a slight surplus of 0.1% of GDP for the euro area.

Based on the Commission forecast, risks to the Member States' plans are expected to increase in 2019. While risks to the budgetary projections for 2018 seemed limited, the Member States plans for 2019 were significantly more favourable than the Commission forecast. The latter projected an aggregate headline deficit of 0.8% of GDP in the EU (0.6% of GDP in the euro area), 0.2 pp. (0.3 pp.) higher than the Member States' plans. The difference is mostly explained by the assessment of the future budgetary measures ('policy gap').

In July 2018, based on the information provided in the 2018 SCPs (and in the National Reform Programmes), the Council adopted country-specific recommendations (CSRs) as part of the 2018 European Semester.

The Council first adopted on 23 March 2018 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 CSRs. On 13 July 2018, the Council then adopted CSRs to 27 of the 28 Member States. Greece did not submit a Stability Programme and did not receive CSRs, as the surveillance took place in the context of its macroeconomic adjustment programme. ([16])

([16]) According to Article 12 of Regulation (EU) No 472/2013, where a Member State is subject to a macroeconomic

In the area of fiscal policy, the Council recommended Member States to comply with the requirements of the SGP. In particular, Member States in the preventive arm were recommended to achieve their MTO in 2019, taking into account flexibility for unusual events or structural reforms where applicable, or to ensure sufficient progress towards their MTO, with the recommendations providing guidance in terms of the maximum allowed nominal growth rate of net primary government expenditure and the corresponding adjustment in the structural balance. For Member States in EDP (Spain) or SDP (Hungary and Romania), the recommendations called for compliance with the respective Council decisions under these procedures. For those decisions that did not include a fiscal recommendation for 2019, the CSRs provided numerical guidance to ensure sufficient progress towards the MTO in 2019. 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 recommended some Member States also to improve the efficiency and composition of public spending, and to improve tax collection, as well as to broaden the tax base towards more growth-friendly taxes. All CSRs in the fiscal area are reported in Table I.A.5.

2.4. DRAFT BUDGETARY PLANS

In October 2018, all euro-area Member States submitted their Draft Budgetary Plans for the budgetary year 2019 in due time, which were then assessed by the Commission. ([17]) That monitoring procedure was introduced by the Two-Pack with the aim of enhancing the surveillance and coordination of budgetary and economic policies within the euro area. In line with the provisions of the Two-Pack Code of Conduct, the outgoing governments of Latvia and Luxembourg submitted no-policy-change DBPs due to the holding of national elections in October 2018. The government of Slovenia, which took office on 13 September 2018, submitted a DBP without new policy measures for 2019, due to a delay in the budgetary process. Spain submitted its DBP without the concurrent submission of the draft budget act to the national parliament, even though that step is required by Article 4 of Regulation (EU) No. 473/2013. As the DBP did not give a complete picture of the planned measures, the Commission sent a letter to the Spanish authorities on 19 October 2018 inviting them to provide the missing data and additional information. The reply and the additional information was taken into account in the assessment of budgetary developments and risks. Following the completion on 20 August 2018 of the stability support programme by the European Stability Mechanism (ESM), Greece submitted for the first time a Draft Budgetary Plan.

The macroeconomic scenario underlying the DBPs suggests a mild slowdown in economic growth in the euro area. According to the DBPs, aggregate real GDP in the euro area is expected to grow by 2.1% in 2018 and 2.0% in 2019. The Commission 2018 autumn forecast expects a slightly more pronounced decline in GDP growth from 2.1% in 2018 to 1.9% in 2019. Despite the expected mild slowdown in economic growth, the aggregate euro area output gap is forecast to turn positive in 2018 and to widen in 2019, based on both the Commission forecast and the (recalculated) DBPs. Headline inflation is expected to move closer to the ECB's definition of price stability in 2018 and to remain broadly unchanged in 2019. The Commission expects headline inflation to reach 1.8% in 2018. In their DBPs, most Member States have increased their 2018 forecasts for headline inflation, giving rise to an aggregate euro area forecast of 1.7% (an increase of 0.3 pp. compared to the Stability Programmes). Both the DBPs and the Commission expect headline inflation to remain around the same level in 2019.

adjustment programme, it shall be 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.

([17]) Following a Commission decision on 11 July 2018 and the successful conclusion of the ESM stability support programme on 20 August 2018, Greece has been fully integrated into the European Semester framework and thus submitted in October 2018 for the first time a Draft Budgetary Plan.

The aggregate euro area headline deficit is expected to continue its recent declining trend in 2018 but to increase in 2019. The euro area headline deficit is expected to fall to 0.6% of GDP in 2018, according to both the Commission 2018 autumn forecast and the DBPs. For 2019, both the Commission forecast and the DBPs expect the deficit to widen to 0.8% of GDP, which would represent the first increase in the aggregate euro area headline deficit since 2009. The implementation of the DBPs would result in an expansionary fiscal stance for the euro area in 2019, as the structural balance is set to decline by 0.3pp. of potential GDP, compared to the envisaged improvement by 0.3pp. of potential GDP in the 2018 Stability Programmes. The deterioration is in particular driven by the fiscal expansion in Italy, while expansionary fiscal policies are also expected in Member States with fiscal space, notably Germany and the Netherlands. The euro area general government debt-to-GDP ratio, which has been on a declining path since 2014, is expected to fall to 84.9% in 2019 based on the Commission 2018 autumn forecast. The DBPs plan a similar reduction in the euro area aggregate debt-to-GDP ratio to 85.1% in 2019.

For some Member States (CY, HR, LU, SI and ES), the Commission's plausibility screening tool indicated that the estimated output gaps for 2018 based on the commonly-agreed methodology may be subject to a high degree of uncertainty. As Cyprus, Croatia and Luxembourg were expected to remain above their MTO, no further assessment has been carried out. For Slovenia and Spain, an assessment of the uncertainty surrounding the output gap estimates was already carried out in spring 2018, which indicated that the output gap estimate for 2019 based on the common methodology was subject to a high degree of uncertainty. On that basis, the required adjustment for those Member States for 2019 had already been reduced from 1% to 0.65% in the context of the Council recommendations of 13 July 2018. The autumn assessments confirmed the high degree of uncertainty in both cases.

The DBP of Italy was found to be in particularly serious non-compliance with the requirements of the SGP. The DBP submitted by Italy on 16 October 2018 planned an obvious significant deviation of the Council recommendations addressed to Italy under the SGP, which was considered a source of serious concerns. The Commission raised those concerns in a letter to the Italian government on 18 October 2018. First, the Commission noted that both the fact that the DBP planned a fiscal expansion of close to 1% of GDP, while the Council had recommended a fiscal adjustment of 0.6% of GDP, and the size of the deviation (a gap of around 1.5% of GDP) was unprecedented in the history of the SGP. Second, the Commission emphasised that while Italy's government debt stands around 130% of GDP, the DBP would not ensure compliance with the debt reduction benchmark. In that regard, the Commission referred to past reports under Article 126(3) TFEU, which considered broad compliance with the preventive arm of the SGP as a key relevant factor, and noted that the conclusions of the report from 23 May 2018 might have to be reviewed if such broad compliance can no longer be established. ([18]) The Commission also noted that those factors seem to point to a particularly serious non-compliance with the budgetary policy obligations as laid down in the SGP. Therefore, the Commission invited the Italian government to present its views on the matter by 22 October 2018, to be taken into account before coming to a final assessment of the DBP. In its letter of 22 October 2018, the Italian government recognised that the DBP did not fulfil the rules of the SGP as regards the structural adjustment debt reduction, provided further explanation on the budgetary plans, and addressed the non-endorsement of the macroeconomic forecast by the Parliamentary Budget Office.

In October 2018, the Commission adopted an opinion on Italy's DBP, concluding that the Commission had identified a particularly serious non-compliance with the Council recommendation from July 2018. ([19]) In accordance with Regulation (EU) No 473/2013, the Commission requested Italy to submit a revised DBP as soon as possible, and within three weeks at the latest. Italy submitted a revised DBP on

([18]) In its letter, the Commission also noted that the macroeconomic forecast underlying the budgetary plans had not been endorsed by an independent body, which appears not to respect the explicit provision of Regulation (EU) No 473/2013.

([19]) Council recommendation of 13 July 2018 on the 2018 National Reform Programme of Italy and delivering a Council opinion on the 2018 Stability Programme of Italy, OJ C 320, 10.09.2018, p. 48.

13 November 2018. Based on an assessment of the government plans in the revised 2019 DBP and on the Commission 2018 autumn forecast, the Commission confirmed the existence of a particularly serious non-compliance. Furthermore, the Commission noted that Italy's particularly serious non-compliance represents a material change in the relevant factors analysed by the Commission it its report of 23 May 2018 under Article 126(3) TFEU, which called for revisiting the Commission's assessment (Sub-section I.2.1.1).

While no other case of particularly serious non-compliance has been established, some DBPs also gave rise to concerns. In particular, the Commission sent letters to Belgium, France, Portugal, Slovenia and Spain on 19 October 2018 asking for further information and highlighted a number of preliminary observations related to their DBPs. The Member States concerned replied by 22 October 2018. The information contained in their letters was taken into account in the Commission's assessment of budgetary developments and risks. Overall, the assessments of the DBPs flagged different degrees of risk and requested, where needed, appropriate action by the Member States in order to ensure compliance with the SGP.

In order to facilitate comparison, the assessment of the plans that were not found to be in particularly serious non-compliance 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 2019 are made against the requirements of the preventive arm and based on the Commission 2018 autumn forecast. The opinions of the Commission are presented in Table I.A.6.

Ten DBPs were found to be "compliant" with the requirements under the SGP. They were submitted by the following Member States under the preventive arm: Germany, Ireland, Greece, Cyprus, Lithuania, Luxembourg, Malta, the Netherlands, Austria, and Finland. For Austria and Finland, that finding is dependent on the projected achievement of the MTO, taking into account any allowance where relevant. If such a projection is not confirmed 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.

The DBPs of three Member States were found to be "broadly compliant" with the requirements under the SGP. They were Estonia, Latvia, and Slovakia. ([20]) For those Member States, the implementation of the plans might result in some deviation from their MTO, taking into account any allowances where relevant. If the structural balance is no longer projected to be close to the MTO 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 DBPs of five Member States were found to be "at risk of non-compliance" with the requirements under the SGP. Four of them are Member States currently under the preventive arm, namely Belgium, France, Portugal, and Slovenia. The DBP of Spain, which is currently under the corrective arm but could become subject to the preventive arm from 2019 onwards if it were to achieve a timely and sustainable correction of the excessive deficit, was also assessed against the preventive arm requirements for 2019. For all five Member States, the DBPs might result in a significant deviation from the adjustment paths towards their respective MTO. For Belgium, France, Portugal, and Spain, non-compliance with the (transitional) debt reduction benchmark is projected, and those Member States were invited to use windfall gains to accelerate the reduction of the government debt-to-GDP ratio.

([20]) For Slovakia, that assessment is based on the additional information about a planned reduction in government expenditure equivalent to 0.1% of GDP in 2019, which was publicly announced by the Slovak authorities and agreed by Slovakia's budgetary and financial committee on 20 November 2018.

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Table I.A.1: **Overview of EDP steps: Euro-area Member States**

Steps in EDP procedure	Treaty Art.	Member State																
		IE	FR	ES	LV	MT	LT	BE	DE	IT	NL	AT	PT	SI	SK	CY	FI	MT
Starting phase																		
Commission adopts EDP-report = start of the procedure	126(3)	18.02.2009	18.02.2009	18.02.2009	18.02.2009	13.05.2009	13.05.2009	07.10.2009	07.10.2009	07.10.2009	07.10.2009	07.10.2009	07.10.2009	07.10.2009	07.10.2009	12.05.2010	12.05.2010	21.05.2013
Economic and Financial Committee adopts opinion	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	27.05.2010	27.05.2010	21.06.2013
Commission adopts:																		
opinion on existence of excessive deficit	126(5)																	
recommendation for Council decision on existence of excessive deficit	126(6)	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	15.06.2010	15.06.2010	29.05.2013
recommendation for Council recommendation to end this situation	126(7)																	
Council adopts:																		
decision on existence of excessive deficit	126(6)																	
recommendation to end this situation	126(7)	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	13.07.2010	13.07.2010	21.06.2013
deadline for correction of excessive deficit		***2013***	***2012***	***2012***	***2012***	***2010***	***2011***	***2012***	***2013***	***2012***	***2013***	***2013***	***2013***	***2013***	***2013***	***2012***	***2011***	***2014***
Follow-up																		
Commission adopts communication on action taken					27.01.2010			15.06.2010	15.06.2010	15.06.2010	15.06.2010	15.06.2010	15.06.2010	15.06.2010	15.06.2010	27.01.2011	27.01.2011	15.11.2013
Commission adopts recommendation for NEW Council recommendation to end situation of excessive deficit	126(7)	11.11.2009	11.11.2009	11.11.2009		27.01.2010	27.01.2010				29.05.2013		27.09.2012					
Council adopts recommendation for NEW Council recommendation to end situation of excessive deficit	126(7)	02.12.2009	02.12.2009	02.12.2009		16.02.2010	16.02.2010				21.06.2013		09.10.2012					
new deadline for correction of excessive deficit		***2014***	***2013***	***2013***		***2011***	***2012***				***2014***		***2014***					
Commission adopts communication on action taken		15.06.2010	15.06.2010	15.06.2010		06.01.2011	21.09.2010	11.01.2012			15.11.2013					11.01.2012		
Commission adopts recommendation for Council decision establishing inadequate action	126(8)							29.05.2013										
Council adopts decision establishing inadequate action	126(8)							21.06.2013										
Commission adopts recommendation for a Council decision to give notice	126(9)							29.05.2013										
Council adopts decision to give notice	126(9)							21.06.2013										
Commission adopts recommendation for NEW Council recommendation to end situation of excessive deficit	126(7)	03.12.2010	29.05.2013	06.07.2012									29.05.2013	29.05.2013		07.05.2013		
Council adopts recommendation for NEW Council recommendation to end situation of excessive deficit	126(7)	07.12.2010	21.06.2013	10.07.2012									21.06.2013	21.06.2013		16.05.2013		
new deadline for correction of excessive deficit		***2015***	***2015***	***2014***				***2013***					***2015***	***2015***		***2016***		
Commission adopts communication on action taken		24.08.2011	15.11.2013	14.11.2012				15.11.2013						15.11.2013		06.09.2013*		
Commission adopts recommendation for NEW Council recommendation to end situation of excessive deficit	126(7)		27.02.2015	29.05.2013														
Council adopts recommendation for NEW Council recommendation to end situation of excessive deficit	126(7)		10.03.2015	21.06.2013														
new deadline for correction of excessive deficit			***2017***	***2016***														
Commission adopts communication on action taken			01.07.2015	15.11.2013														
Commission adopts recommendation for Council decision establishing inadequate action	126(8)			07.07.2016									07.07.2016					
Council adopts decision establishing inadequate action	126(8)			12.07.2016									12.07.2016					
Commission adopts recommendation for Council implementing decision imposing a fine for failure to take effective action	126(8)			27.07.2016									27.07.2016					
Commission adopts recommendation for Council decision to give notice	126(9)			27.07.2016									27.07.2016					
Council adopts decision to give notice	126(9)			08.08.2016									08.08.2016					
new deadline for correction of excessive deficit				***2018***									***2016***					
Council adopts implementing decision on imposing a fine for failure to take effective action	126(8)			08.08.2016									08.08.2016					
Commission adopts communication on action taken				16.11.2016									16.11.2016					
Commission adopts proposal for Council opinion on Economic Partnership Programme													16.11.2016					
Abrogation																		
Commission adopts recommendation for Council decision abrogating existence of excessive deficit	126(12)	18.05.2016	23.05.2018		29.05.2013	14.11.2012	29.05.2013	02.06.2014	30.05.2012	29.05.2013	02.06.2014	02.06.2014	22.05.2017	18.05.2016	02.06.2014	18.05.2016	29.06.2011	12.05.2015
Council adopts decision abrogating existence of excessive deficit	126(12)	17.06.2016	22.06.2018		21.06.2013	04.12.2012	21.06.2013	20.06.2014	22.06.2012	21.06.2013	20.06.2014	20.06.2014	16.06.2017	17.06.2016	20.06.2014	17.06.2016	12.07.2011	19.06.2015

Notes: * 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 surve

Source: Commission services.

Table I.A.2: **Overview of EDP steps: non-euro-area Member States**

Steps in EDP procedure	Treaty Art.	Member State							
		HU	UK	PL	RO	CZ	BG	DK	HR
Starting phase									
Commission adopts EDP-report = start of the procedure	126(3)	12.05.2004	11.06.2008	13.05.2009	13.05.2009	07.10.2009	12.05.2010	12.05.2010	15.11.2013
Economic and Financial Committee adopts opinion	126(4)	24.05.2004	25.06.2008	29.05.2009	29.05.2009	27.10.2009	27.05.2010	27.05.2010	29.11.2013
Commission adopts:									
opinion on existence of excessive deficit	126(5)								
recommendation for Council decision on existence of excessive deficit	126(6)	24.06.2004	02.07.2008	24.06.2009	24.06.2009	11.11.2009	06.07.2010	15.06.2010	10.12.2013
recommendation for Council recommendation to end this situation	126(7)								
Council adopts:									
decision on existence of excessive deficit	126(6)								
recommendation to end this situation	126(7)	05.07.2004	08.07.2008	07.07.2009	07.07.2009	02.12.2009	13.07.2010	13.07.2010	21.01.2014
Deadline for correction of excessive deficit		***2008***	***fin. year 2009/10***	***2012***	***2011***	***2013***	***2011***	***2013***	***2016***
Follow-up									
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	24.03.2009		08.02.2010				
Council adopts NEW recommendation to end excessive deficit situation	126(7)	08.03.2005	27.04.2009		16.02.2010				
New deadline for correction of excessive deficit		***2008***	***fin. year 2013/14***		***2012***				
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							
Commission adopts recommendation for NEW Council recommendation to end excessive deficit situation	126(7)	26.09.2006	11.11.2009						
Council adopts NEW recommendation to end excessive deficit situation	126(7)	10.10.2006	02.12.2009						
New deadline for correction of excessive deficit		***2009***	***fin. year 2014/15***						
Commission adopts communication on action taken		13.06.2007	06.07.2010						
Commission adopts recommendations for Council decision establishing inadequate action	126(8)		12.05.2015						
Council adopts decision establishing inadequate action	126(8)		19.06.2015						
Commission adopts recommendation for NEW Council recommendation to end excessive deficit situation	126(7)	24.06.2009	12.05.2015	29.05.2013					
Council adopts NEW recommendation to end excessive deficit situation	126(7)	07.07.2009	19.06.2015	21.06.2013					
New deadline for correction of excessive deficit		***2011***	***fin. year 2016/17***	***2014***					
Commission adopts communication on action taken		27.01.2010	16.11.2015						
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					
New deadline for correction of excessive deficit		***2012***		***2015***					
Commission adopts communication on action taken		30.05.2012		02.06.2014					
Abrogation									
Commission adopts recommendation for Council decision abrogating existence of excessive deficit	126(12)	29.05.2013	22.11.2017	12.05.2015	29.05.2013	02.06.2014	30.05.2012	02.06.2014	22.05.2017
Council adopts decision abrogating existence of excessive deficit	126(12)	21.06.2013	04.12.2017	19.06.2015	21.06.2013	20.06.2014	22.06.2012	20.06.2014	16.06.2017

Source: Commission services.

Table I.A.3: **Overview of EDP steps: Greece**

Steps in EDP procedure	Treaty Art.	Greece
Starting phase		
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)	
Deadline for correction of excessive deficit		***2010***
Follow-up		
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
Commission adopts Council recommendation for decision to give notice	126(9)	03.02.2010
Council decision to give notice	126(9)	16.02.2010
New deadline for correction of the excessive deficit		***2012***
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
New deadline for correction of the excessive deficit		***2014***
Follow-up - 1st review		
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
Follow-up - 2nd review		
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
Follow-up - 3rd review		
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
Follow-up - 4th review		
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
Follow-up - 5th review		
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
Follow-up - Second Adjustment Programme		
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
Follow-up - Second Adjustment Programme		
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
New deadline for correction of the excessive deficit		***2016***
Follow-up - Third Adjustment Programme		
Council adopts decision to give notice	126(9)	20.08.2015
Abrogation		
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

Source: Commission services.

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

Steps in SDP procedure	Treaty Art.	Romania	Romania (cont.)	Hungary
Starting phase				
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	23.05.2018
recommendation for Council recommendation with a view to correcting the significant observed deviation	121(4)	22.05.2017	23.05.2018	23.05.2018
Council adopts recommendation with a view to correcting the significant observed deviation	121(4)	16.06.2017	22.06.2018	22.06.2018
Deadline for report on action taken		***15.10.2017***	***15.10.2018***	***15.10.2018***
Follow-up				
Commission adopts:				
recommendation for Council decision on no effective action	121(4)	22.11.2017	21.11.2018	21.11.2018
recommendation for Council recommendation with a view to correcting the significant observed deviation	121(4)	22.11.2017	21.11.2018	21.11.2018
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
New deadline for report on action taken		***15.04.2018***	***15.04.2019***	***15.04.2019***
Commission adopts:				
recommendation for Council decision on no effective action	121(4)	23.05.2018		
Council adopts:				
decision on no effective action	121(4)	22.06.2018		

Source: Commission services.

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

	Applicable provisions of the SGP (Spring 2018)	Other relevant information	CSR on SGP	CSR on fiscal framework	CSR on efficiency	CSR on taxation	CSR on pensions and health-care
BE	• Preventive arm • Debt benchmark	• MTO: 0% • Debt > 60%	Ensure that the nominal growth rate of net primary government expenditure does not exceed 1.8 % in 2019, corresponding to an annual structural adjustment of 0.6 % of GDP. Use windfall gains to accelerate the reduction of the general government debt ratio.	Pursue the full implementation of the 2013 Cooperation Agreement to coordinate fiscal policies of all government levels.	Improve the efficiency and composition of public spending at all levels of government to create room for public investment, in particular by carrying out spending reviews.		Pursue the envisaged pension reforms and contain the projected increase in long-term care expenditure.
BG	Preventive arm	MTO: -1%			Upgrade the State owned enterprise corporate governance framework in line with international good practices.	Improve tax collection and the efficiency of public spending, including by stepping up enforcement of measures to reduce the extent of the informal economy.	In line with the National Health Strategy and its action plan, improve access to health services, including by reducing out-of-pocket payments and addressing shortages of health professionals. Introduce a regular and transparent revision scheme for the minimum income and improve its coverage and adequacy.
CZ	Preventive arm	MTO: -1%			Address weaknesses in public procurement practices, in particular by enabling more quality-based competition and by implementing anti-corruption measures.		Improve the long-term fiscal sustainability, in particular of the pension system.
DK	Preventive arm	MTO: -0.5%					
DE	• Preventive arm • Debt benchmark	• MTO: -0.5% • Debt > 60% and <60% as of 2019	While respecting the medium-term objective, use fiscal and structural policies to achieve a sustained upward trend in public and private investment, and in particular on education, research and innovation at all levels of government, in particular at regional and municipal levels.			Improve the efficiency and investment-friendliness of the tax system.	
EE	Preventive arm	MTO: -0.5%	Ensure that the nominal growth rate of net primary government expenditure does not exceed 4.1 % in 2019, corresponding to an annual structural adjustment of 0.6 % of GDP.				
IE	• Preventive arm • Transition period debt rule	• MTO: -0.5% • Debt > 60%	Achieve the medium-term budgetary objective in 2019. Use windfall gains to accelerate the reduction of the general government debt ratio.			Limit the scope and the number of tax expenditures, and broaden the tax base	Address the expected increase in age related expenditure by increasing the cost effectiveness of the healthcare system and by pursuing the envisaged pension reforms.
EL			To avoid duplication with measures set out in the Economic Adjustment Programme, there are no additional recommendations for Greece.				
ES	Corrective arm	EDP deadline: 2018	Ensure compliance with Council Decision (EU) 2017/984 giving notice under the excessive deficit procedure, including through measures to enforce the fiscal and public procurement frameworks at all levels of government. Thereafter, ensure that the nominal growth rate of net primary government expenditure does not exceed 0.6 % in 2019, corresponding to an annual structural adjustment of 0.65 % of GDP. Use windfall gains to accelerate the reduction of the general government debt ratio.				
FR	• Preventive arm • Transition period debt rule	• MTO: -0.4% • Debt > 60%	Ensure that the nominal growth rate of net primary government expenditure does not exceed 1.4 % in 2019, corresponding to an annual structural adjustment of 0.6 % of GDP. Use windfall gains to accelerate the reduction of the general government debt ratio.		Implement expenditure savings in 2018 and fully specify the objectives and new measures needed in the context of Public Action 2022, for them to translate into concrete expenditure savings and efficiency gains measures in the 2019 budget.	Simplify the tax system, by limiting the use of tax expenditures, removing inefficient taxes and reducing taxes on production levied on companies.	Progressively unify the rules of the different pension regimes to enhance their fairness and sustainability
HR	• Preventive arm • Debt benchmark	• MTO:-1.75% • Debt>60%		Strengthen the fiscal framework, including by strengthening the mandate and independence of the Fiscal Policy Commission	Improve corporate governance in state-owned enterprises and intensify the sale of state-owned enterprises and non-productive assets.	Introduce a recurrent property tax	Discourage early retirement, accelerate the transition to a higher statutory retirement age and align pension provisions for specific categories with the rules of the general scheme.
IT	• Preventive arm • Debt benchmark	• MTO: 0% • Debt >60%	Ensure that the nominal growth rate of net primary government expenditure does not exceed 0.1 % in 2019, corresponding to an annual structural adjustment of 0.6 % of GDP. Use windfall gains to accelerate the reduction of the general government debt ratio.		Ensure enforcement of the new framework for publicly-owned enterprises and increase the efficiency and quality of local public services	Shift taxation away from labour, including by reducing tax expenditure and reforming the outdated cadastral values	Reduce the share of old-age pensions in public spending to create space for other social spending.
CY	• Preventive arm • Transition period debt rule	• MTO: 0% • Debt >60%			Adopt key legislative reforms to improve efficiency in the public sector, in particular as regards the functioning of the public administration and the governance of state-owned entities and local governments.		Take measures to ensure that the National Health System becomes fully functional in 2020, as planned.

(Continued on the next page)

Table (continued)

LV	Preventive arm	MTO: -1%	Achieve the medium-term budgetary objective in 2019, taking into account the allowances linked to the implementation of the structural reforms for which a temporary deviation is granted		Strengthen the efficiency of the public sector, in particular with regard to local authorities and state-owned enterprises. Strengthen the accountability of public administration by protecting whistle-blowers, preventing conflicts of interest and following-up on the results of the ongoing assessment of past insolvency proceedings.	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.	Ensure the long-term sustainability of the pension system while addressing the adequacy of pensions Improve the performance of the healthcare system by a further shift from hospital to outpatient care, strengthening disease prevention measures, including at local level, and increasing the quality and affordability of care.
LU	Preventive arm	MTO: -0.5%					
HU	• Preventive arm • Debt benchmark	• MTO: -1.5% • Debt > 60%	In 2018, ensure compliance with the Council recommendation of June 22 2018 with a view to correcting the significant deviation from the adjustment path toward the medium-term budgetary objective. In 2019, ensure that the nominal growth rate of net primary government expenditure does not exceed 3.9 %, corresponding to an annual structural adjustment of 0.75 % of GDP.			Continue simplifying the tax system, in particular by reducing sector-specific taxes	
MT	Preventive arm	MTO: 0%					Ensure the sustainability of the health care and the pension systems, including by increasing the statutory retirement age and by restricting early retirement
NL	Preventive arm	MTO:-0.5%	While respecting the medium-term objective, use fiscal and structural policies to raise public and private investment in research, development and innovation.				Ensure that the second pillar of the pension system is more transparent, inter-generationally fairer and more resilient to shocks.
AT	• Preventive arm • Debt benchmark	• MTO:-0.5% • Debt>60%	Achieve the medium-term budgetary objective in 2019, taking into account the allowance linked to unusual events for which a temporary deviation is granted.		Make public services more efficient, including through aligning financing and spending responsibilities.	Reduce the tax wedge, especially for low-income earners, by shifting the tax burden to sources of revenue less detrimental to growth.	Ensure the sustainability of the health and long-term care and the pension systems, including by increasing the statutory retirement age and by restricting early retirement.
PL	Preventive arm	MTO:-1%	Ensure that the nominal growth rate of net primary government expenditure does not exceed 4.2 % in 2019, corresponding to an annual structural adjustment of 0.6 % of GDP.		Take steps to improve the efficiency of public spending, including by improving the budgetary process.		Ensure the sustainability and adequacy 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	• MTO: 0.25% • Debt >60%	Ensure that the nominal growth rate of net primary government expenditure does not exceed 0.7 % in 2019, corresponding to an annual structural adjustment of 0.6 % of GDP. Use windfall gains to accelerate the reduction of the general government debt ratio.		Strengthen expenditure control, cost effectiveness and adequate budgeting, in particular in the health sector with a focus on the reduction of arrears in hospitals		
RO	Preventive arm	MTO:-1%	Ensure compliance with the Council recommendation of June 18 2018 with a view to correcting the significant deviation from the adjustment path toward the medium-term budgetary objective.	Ensure the full application of the fiscal framework.	Improve the transparency and efficiency of public procurement. Strengthen the corporate governance of state-owned enterprises.	Strengthen tax compliance and collection.	Improve access to healthcare, including through the shift to outpatient care.
SI	• Preventive arm • Transition period of the debt rule	• MTO: 0.25% • Debt >60%	Ensure that the nominal growth rate of net primary government expenditure does not exceed 3.1 % in 2019, corresponding to an annual structural adjustment of 0.65 % of GDP.		Enhance competition, professionalisation and independent oversight in public procurement. Carry out the privatisations in line with to the existing plans.		Ensure the long-term sustainability and adequacy of the pension system, including by increasing the statutory retirement age and by restricting early retirement. Adopt and implement the healthcare and health insurance act and the planned reform of long-term care.
SK	Preventive arm	MTO:-0.5%	Ensure that the nominal growth rate of net primary government expenditure does not exceed 4.1 % in 2019, corresponding to an annual structural adjustment of 0.5 % of GDP.		Increase the use of quality-related and lifecycle cost criteria in public procurement operations.		Implement measures to increase the cost effectiveness of the healthcare system and develop a more effective healthcare workforce strategy.
FI	• Preventive arm • Debt benchmark	MTO:-0.5%	Achieve the medium-term budgetary objective in 2019, taking into account the allowances linked to the implementation of the structural reforms for which a temporary deviation is granted.		Ensure the adoption and implementation of the administrative reform to improve cost-effectiveness and equal access to social and healthcare services.		
SE	Preventive arm	MTO:-1%					
UK	• Preventive arm • Transition period of the debt rule	• MTO:-0.8% • Debt >60%	Ensure that the nominal growth rate of net primary government expenditure does not exceed 1.6 % in 2019-2020, corresponding to an annual structural adjustment of 0.6 % of GDP.				

Note: Situation in spring as far as fiscal surveillance is concerned for 2018.
Source: Commission services.

Table I.A.6: **Overview of individual Commission opinions on the Draft Budgetary Plans**

Country	Overall compliance of the DBP with the SGP		Progress with implementing the fiscal-structural part of the 2018 country-specific recommendations
	Overall conclusion of compliance based on the Commission 2018 autumn forecast	Compliance with the preventive/corrective arm requirements in 2018 and 2019	
IT[1]	Particularly serious non-compliance	2018: risk of a significant deviation from the adjustment path towards the MTO, prima facie non-compliance with the debt reduction benchmark; 2019: risk of a significant deviation from the adjustment path towards the MTO, prima facie non-compliance with the debt reduction benchmark.	No progress
BE[2]	Risk of non-compliance	2018: risk of a significant deviation from the adjustment path towards the MTO, prima facie non-compliance with the debt reduction benchmark; 2019: risk of a significant deviation from the adjustment path towards the MTO, prima facie non-compliance with the debt reduction benchmark.	Limited progress
FR	Risk of non-compliance	2018: risk of some deviation from the adjustment path towards the MTO, prima facie non-compliance with the transitional debt reduction benchmark; 2019: risk of a significant deviation from the adjustment path towards the MTO based on 2018 and 2019 taken together, prima facie non-compliance with the transitional debt reduction benchmark.	Limited progress
PT	Risk of non-compliance	2018: risk of a significant deviation from the adjustment path towards the MTO, compliance with the transitional debt reduction benchmark; 2019: risk of a significant deviation from the adjustment path towards the MTO, non-compliance with the transitional debt reduction benchmark.	Limited progress
SI[3]	Risk of non-compliance	2018: risk of a significant deviation from the adjustment path towards the MTO, compliance with the transitional debt reduction benchmark; 2019: risk of a significant deviation from the adjustment path towards the MTO, compliance with the debt reduction benchmark.	Limited progress
ES[4]	Risk of non-compliance	2018: headline deficit projected below 3%, headline target not met, fiscal effort not delivered; 2019: risk of a significant deviation from the adjustment path towards the MTO, prima facie non-compliance with the transitional debt reduction benchmark.	Limited progress

(1) The Commission issued a report on 23 May 2018 in accordance with Article 126(3) TFEU in which it concluded that the debt criterion should be considered as currently complied with. Italy's particularly serious non-compliance identified by the Commission with the recommendation addressed to it by the Council on 13 July 2018 represents a material change in the relevant factors analysed by the Commission on 23 May 2018. The Commission revised its assessment on 21 November 2018 and concluded that the opening of a debt-based EDP is warranted. Following the dialogue between the Commission and the Italian authorities, the final 2019 budget law adopted by Parliament included additional measures, which allowed the Commission not to recommend the opening of a debt-based EDP at this stage.

(2) The Commission issued a report on 23 May 2018 in accordance with Article 126(3) TFEU in which it concluded that the analysis is not fully conclusive as to whether the debt criterion is or is not complied with.

(3) Draft Budgetary Plan submitted on a no-policy-change basis.

(4) Spain is currently under the corrective arm of the Stability and Growth Pact, but could move to the preventive arm as from 2019 if the excessive deficit is corrected in a timely and sustainable manner. Spain's Draft Budgetary Plan was submitted without the concurrent submission of a draft budget act to the national parliament.

(Continued on the next page)

Table (continued)

EE	Broadly compliant	2018: compliant with the adjustment path towards the MTO; 2019: close to the MTO while risk of significant deviation from the expenditure benchmark requirement.	n.r.
LV[3]	Broadly compliant	2018: close to the MTO while risk of significant deviation from the expenditure benchmark requirement; 2019: close to the MTO while risk of significant deviation from the expenditure benchmark requirement	Limited progress
SK	Broadly compliant	2018: risk of a significant deviation from the adjustment path towards the MTO; 2019: close to the MTO while risk of significant deviation from the expenditure benchmark requirement.	Some progress
DE	Compliant	2018: MTO respected, compliance with the debt reduction benchmark; 2019: MTO respected.	Some progress
IE	Compliant	2018: MTO respected while risk of significant deviation from the expenditure benchmark requirement based on 2017 and 2018 taken together, compliance with the transitional debt rule; 2019: MTO respected, compliance with the debt reduction benchmark.	Some progress
EL[1]	Compliant	2018: compliance with the transitional debt reduction benchmark; 2019: compliance with the transitional debt reduction benchmark.	n.r.
CY	Compliant	2018: MTO respected, compliance with the transitional debt reduction benchmark; 2019: MTO respected, compliance with the debt reduction benchmark.	No progress
LT	Compliant	2018: MTO respected; 2019: MTO respected.	Some progress
LU[3]	Compliant	2018: MTO respected; 2019: MTO respected.	Limited progress
MT	Compliant	2018: MTO respected; 2019: MTO respected.	No progress
NL	Compliant	2018: MTO respected; 2019: MTO respected.	Substantial progress
AT	Compliant	2018: MTO respected taking into account the allowances for which a temporary deviation is granted, while risk of significant deviation from the expenditure benchmark requirement, compliance with the debt reduction benchmark; 2019: MTO respected while risk of significant deviation from the expenditure benchmark requirement based on 2018 and 2019 taken together, compliance with the debt reduction benchmark.	Limited progress
FI	Compliant	2018: MTO respected taking into account the allowances for which a temporary deviation is granted; 2019: MTO respected taking into account the allowances for which a temporary deviation is granted, while risk of significant deviation from the expenditure benchmark requirement based on 2018 and 2019 taken together.	Limited progress

([1]) 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 is 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 have not yet established a medium-term budgetary objective. Greece is expected to nominate its medium-term objective in its 2019 Stability Programme.

Source: Commission services.

Part II

Recent developments in the fiscal surveillance framework

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KEY FINDINGS

This part provides an overview of recent developments in the fiscal surveillance framework.

We show the new estimates of the so-called semi-elasticities used in fiscal surveillance.

- The elasticities provide an important input to fiscal surveillance, since they are needed to calculate the cyclical adjustment of the budget balance and the minimum medium-term budgetary objectives (MTO).

- The revised semi-elasticities will be used in fiscal surveillance as of spring 2019. Overall, the impact of this update is small.

We clarify how to identify and deal with revenue windfalls in the preventive arm of the Stability and Growth Pact (SGP).

- Revenue windfalls are typically not an appropriate financing source for spending increases. The preventive arm of the SGP provides that significant revenue windfalls should be taken into account in fiscal surveillance for Member States overachieving their MTO.

- This Chapter presents the Commission's case-by-case approach to identify "significant revenue windfalls" in fiscal surveillance.

We present the main findings of the Commission's review of the flexibility under the SGP.

- The design of the SGP strikes a good balance between the possibility of flexibility and the need to ensure fiscal sustainability.

- The design of the matrix of requirements ensures a modulation of the required fiscal adjustment over the economic cycle. The eligibility criteria effectively limit access to the structural reform and investment clauses, but do not discourage Member States from implementing structural reforms and promoting public investment.

We present the Commission's proposal for a European Investment Stabilisation Function (EISF).

- In the event of a large asymmetric shock, the EISF would provide back-to-back loans guaranteed by the EU budget to Member States complying with eligibility criteria based on sound financial and macroeconomic policies.

- Simulations of the proposal using data from the last few decades show that the proposed mechanism would have benefitted to all Member States at different points in time.

1. INTRODUCTION

This part provides an overview of the recent developments of the fiscal surveillance framework.

Chapter II.2. shows the update of the semi-elasticities used in fiscal surveillance. The fiscal semi-elasticities are instrumental to the implementation of the Stability and Growth Pact (SGP). They are needed to compute the structural and cyclically adjusted balances, but also to appoint the medium-term budgetary objectives (MTO). They are updated regularly following a calendar and a methodology agreed with Member States. This Chapter presents the latest update, which the Economic Policy Committee (EPC) endorsed in autumn 2018. It will be used as spring 2019 in fiscal surveillance.

Chapter II.3. clarifies how to identify and deal with revenue windfalls in fiscal surveillance in the preventive arm of the SGP. The reform of the six-pack introduced a reference in Regulation (EC) No 1466/97 – the preventive arm regulation of the SGP – to the role that significant revenue windfalls could have for Member States' overachieving their MTO. This Chapter describes the Commission's case-by-case approach on how to identify significant revenue windfalls, which it presented to the Alternates of the Economic and Financial Committee (EFC-A) in October 2018.

Chapter II.4. summarises the main findings of the Commission's review of the flexibility under the SGP. In 2016, the ECOFIN Council endorsed new guidance on the use of flexibility in the SGP. The main objective was to use the flexibility within the SGP when applying the rules without modifying the existing legislation. The Council requested the Commission to review the new approach. This Chapter presents the main findings of the Commission review, which was published in May 2018.

Finally, Chapter II.5. presents the Commission proposal for a European Investment Stabilisation Function (EISF). This proposal was adopted in May 2018 to steer the discussion on a common fiscal capacity. This Chapter describes the proposal, its main properties and some insights from a counterfactual simulation of its functioning. The Chapter does not cover other ideas for a common fiscal capacity and the progress made since then in the dialogue with the Member States.

2. UPDATE OF THE SEMI-ELASTICITIES USED IN THE CONTEXT OF FISCAL SURVEILLANCE

2.1. INTRODUCTION

Fiscal elasticities measure the sensitivity of public spending and revenue to the economic cycle. For instance, the revenue semi-elasticity measures by how many percentage points the revenue to GDP ratio changes with a 1% increase in GDP. Combining the revenue and expenditure semi-elasticities one gets the budget balance semi-elasticity, which measures by how many GDP percentage points the public surplus/deficit changes with a 1% increase in GDP.

Fiscal elasticities are instrumental to the implementation of the Stability and Growth Pact (SGP). ([21]) In particular, the semi-elasticity of the governments' budget balance is required for the estimation of the cyclically-adjusted budget balance (CAB). The CAB corrects the budget balance for fluctuations caused by the business cycle, which are largely outside the control of the Member States' governments.

The revision of the semi-elasticities follows an institutional cycle involving the Member States (Table II.2.1). First, every nine years (i.e. three MTO cycles), the *individual output elasticities* of the revenue and expenditure components of the government budget balance are re-estimated. The next update of this type will be completed by end-2024. The revised estimates will be used in fiscal surveillance as of spring 2025, thus determining the fiscal requirements for 2026, 2027 and 2028. Second, the *weights* used to combine these elasticities into an aggregate semi-elasticity of the government balance to output are updated every six years (i.e. two MTO cycles). The present update is of this type and has been endorsed by the Member States (in the context of the Economic Policy Committee). It will be used in the calculation the structural and cyclically adjusted balance as of 2019 and in setting the next MTO in spring 2019. For sake of consistency, the new elasticity will also be used as of spring 2019 to compute the structural balance. The next update of this type will coincide with the revisions of the individual revenue and spending elasticities and should be completed by end-2024. These updates are conducted in cooperation with Member States and overseen by the members of the Output Gap Working Group (OGWG).

([21]) Larch and Turrini (2010).

Table II.2.1: **Timeline of the revisions of the semi-elasticities**

	2013 MTO cycle (2014-16)	2016 MTO cycle (2017-19)	2019 MTO cycle (2020-22)	2022 MTO cycle (2023-25)	2025 MTO cycle (2026-28)
	Update:	Update:	Update:	No update	Update:
New weights	✓		✓		✓
New individual elasticities		✓			✓

Note: The MTO cycle is identified by the year t, when the Member State appoints their new MTO, which is applied to determine the fiscal requirements applying the three following year (t+1, t+2 and t+3). These three years of application are shown in bracket.
Source: Commission services.

This Chapter presents the findings of the present update of the semi-elasticities of the budget balances of Member States, focusing on the weights used in the calculation. ([22]) The fiscal semi-elasticities are computed from the individual elasticities and weights of revenue and expenditure categories that together compose the government budget balance. The present revision focuses exclusively on the weights of revenue and expenditure categories, which are now taken as averages over the period 2008-2017 (compared to 2002-2011 previously). ([23]) Another potentially sizeable source of revision is the implementation of ESA 2010, which took place since the last update of the weights. The update will not affect individual elasticities, which are unchanged with respect to their last update in 2015. ([24])

Overall, the present revision has a limited impact on the estimated semi-elasticities. In the EU28, the average semi-elasticity of the budget balance remains unchanged at 0.50. Comparing the new estimates with the previous values, ([25]) the semi-elasticities are revised downward for 18 Member States and, in the great majority of cases, the change is lower than 0.04 in absolute terms.

([22]) Mourre et al. (2019).
([23]) Mourre et al. (2013) for the previous update of this kind.
([24]) Mourre et al. (2014), European Commission (2014) and Price et al. (2014).
([25]) Mourre et al. (2014).

The remainder of this Chapter is structured as follows. Section II.2.2. recalls the methodology applied to compute the updated semi-elasticities and details the treatment of the data. Section II.2.3. presents the results of this update and shows that the effect on fiscal surveillance will be minor. Section II.2.4. concludes.

2.2. APPROACH AND DATA

2.2.1. Recalling the standard methodology ([26])

The cyclical correction of the aggregate headline balance is built on the cyclical correction of its individual revenue and expenditure components. Four revenue categories (personal income taxes, corporate income taxes, indirect taxes, social security contributions, denoted $R_{1<i<4}$) and one spending category (unemployment-related expenditures, denoted G_u) are found to be sensitive to the economic cycle. Non-tax revenues (sales and capital transfers other than capital taxes) and other expenditures are assumed to be non-cyclical. For each Member State, the elasticities of total revenues (η_R) and total expenditures (η_G) are calculated as a weighted average of the elasticities of their components ($\eta_{R,i}$ and $\eta_{G,u}$). These aggregate elasticities can then be converted into the semi-elasticities ε_R and ε_G as follows:

$$\varepsilon = \varepsilon_R - \varepsilon_G = (\eta_R - 1)\frac{R}{Y} - (\eta_G - 1)\frac{G}{Y}$$

$$\text{with } \eta_R = \sum_{i=1}^{4} \eta_{R,i}\frac{R_i}{R} \text{ and } \eta_G = \eta_{G,u}\frac{G_u}{G} \qquad (2.1)$$

with Y being nominal GDP.

In line with the mandate agreed with the Member States, the present update only affects the weights used to aggregate the elasticities of the revenue and expenditure components into the headline budget balance semi-elasticity. The following weighting parameters are updated in order to derive the new budgetary semi-elasticities:

- The revenue and expenditure structure:
  - the share of the five individual revenue categories in % of total general government revenues (R_i/R),
  - the share of the unemployment-related expenditure in % of total general government expenditures (G_U/G).
- The aggregate revenue and expenditure ratios:
  - the weight of total general government revenues in % of GDP (R/Y),
  - the weight of total general government expenditures in % of GDP (G/Y).

2.2.2. Sources and data

We update the weights using macroeconomic and fiscal data from the Commission 2018 spring forecast (Table II.2.2). Fiscal data are those notified by Member States, as part of their excessive deficit procedure notification (EDP). While the calculations presented here are based on nominal data in national currency, we cross checked them with calculations based on data in percentage of GDP and in euro.

Two adjustments are necessary to compute the weights of the revenue categories. First, the sum of current taxes on income and wealth paid by corporations, households and NPISH ([27]) is not equal to total current taxes on income and wealth collected by the government (because of direct taxes received from or paid to the rest of the world). We redistribute the missing direct taxes in proportion to payments by corporations and households to ensure that the PIT and CIT amounts add up to the direct taxes received by the government. Second, capital taxes, which represent a relatively small amount, are used to compute total tax revenue and receive the average weighted elasticities of the four other tax categories. The individual elasticities calculated by the OECD do not specify the elasticity of capital taxes (included in capital transfers received by the government). As the elasticity of capital taxes is unlikely to be 0, the revenue generated by them is spread across personal income tax, corporate income tax, social security contributions, indirect taxes in proportion to their size.

([26]) See Box II.2.1 for details about the mathematical derivations.

([27]) Non-profit institutions serving households.

Table II.2.2: **List of variables**

Description	ESA (Eurostat) code
GDP at current prices	B1g
General government revenue	
Total revenue; general government - ESA 2010	TR of S13
Current taxes on income and wealth (direct taxes); general government - ESA 2010	D5r (r for received) by S13
Current taxes on income and wealth; households and NPISH	D5 paid by S14 and S15
Current taxes on income and wealth; corporations	D5 paid by S11 and S12
Taxes linked to imports and production (indirect taxes); general government - ESA 2010	D2r S13
Net social contributions received; general government - ESA 2010	D61r S13
Capital transfers received; general government - ESA 2010	D9r S13
Capital taxes; general government - ESA 2010	D91r S13
Other current revenue including sales; general government - ESA 2010	P11+P12+P131+D39+D4+D7 of S13
General government expenditure	
General government; total expenditure	COFOG 01 to 10
General government; social protection; unemployment; total expenditure	COFOG 10.5
Total expenditure; general government - ESA 2010	TE

Source: Commission services.

On the expenditure side, the share of unemployment related expenditures is taken from the functions of government (COFOG) classification of expenditures. ([28]) Total government expenditures in COFOG are almost always equal to the baseline ESA estimates for total expenditures. However, to avoid small inconsistencies between the classifications, the ratio of unemployment-related expenditures to the total in the COFOG classification is applied to the ESA total in order to compute the government's unemployment-related expenditures. ([29])

While data availability has improved since the last revision of the weights, some country-specific adjustments were needed to fill gaps in the data. The previous update encountered many data gaps, which were filled using other data sources or assumptions, especially for non-OECD EU countries. They are very limited now. To estimate the missing data points of several variables for the time period under consideration (all 2017 data points for total government expenditure according to COFOG; several data points for CIT, PIT, unemployment-related expenditures in the early 2000s), we apply a constant ratio to a total (e.g. total revenues, total expenditures) with respect to the previous or following year's value. To estimate the missing PIT and CIT series for Malta, we take their average annual weights in total income tax from the other 9 Member States that acceded to the EU in 2004.

The semi-elasticities of revenue and expenditure are rounded to the third decimal with the semi-elasticity of the budget balance being the difference of those two rounded estimates. This allows for the exact replication of the Commission's calculation of the CAB based on the last column in Table II.2.5 (without replicating our update of the semi-elasticities). This simplification does not come at the expense of precision, since the estimates of the "true" semi-elasticities, like all unobservable variables, are surrounded with some uncertainty.

2.3. RESULTS

2.3.1. The updated value of the fiscal semi-elasticities

Economic fluctuations affect revenue and expenditure categories in different ways. The individual elasticities of individual revenue and expenditure categories to output are presented in

([28]) COFOG classification is tailored to the description of government spending and identifies the main broad objectives of public intervention.

([29]) To ensure the consistency of unemployment-related expenditures across Member States and respond to an issue raised by Denmark during past updates (including the 2013 one), we use the OECD database on Labour Market Programmes ("Public expenditure and participant stocks on LMP") and use the variable "Full unemployment benefits" instead of Ameco's COFOG variable. This is because the elasticity of unemployment-related expenditures was estimated based on the OECD data and those present a large discrepancy with the COFOG data for Denmark.

Table II.2.3. Depending on the tax base or the tax design, revenues can increase more or less than proportionally to output. The elasticities of cyclical revenues are: greater than 1 for personal income tax and corporate tax; less than 1 for social security contributions (except for Estonia, Ireland and Lithuania); and, by assumption, equal to 1 for indirect taxes (except for Italy) and to 0 for non-tax revenues. ([30]) The elasticity of unemployment related expenditures is (very) negative, as benefits increase sizeably in economic downturns, but its weight in total expenditures is no larger than 6%. Other expenditures are assumed to be acyclical and have an elasticity of 0. ([31])

The average semi-elasticity of the budget balance is equal to 0.5 and ranges from around 0.3 (Bulgaria) to 0.6% (France) (Table II.2.5). Due to disparities between Member States, the cyclical component of the budget balance corresponding to a one-percent output gap would be around 0.6% of (potential) GDP in France compared to around 0.3% of (potential) GDP in Bulgaria. Overall, the semi-elasticities of the budget balance are smaller in Central and Eastern European Countries (see also Graph II.2.1).

On the revenue side, the semi-elasticities are close to zero. This stems from the fact that revenue is almost as cyclical as GDP and, therefore, the revenue-to-GDP ratio remains broadly stable throughout the business cycle. The semi-elasticity of revenue ranges from -0.08 (Bulgaria) to 0.09 (United-Kingdom). It is positive for Estonia, Ireland, Spain, Italy, Cyprus, Malta, Netherlands, Poland and the United-Kingdom, which indicates that the tax system in those countries is overall (slightly) progressive, i.e. the revenue to GDP ratio increases (slightly) following an increase in GDP. In France, the tax system is almost neutral while, in the remaining Member States the tax system is (slightly) regressive.

The expenditure semi-elasticity is on average equal to -0.50, ranging from -0.37 (Romania) to -0.64 (Finland). Expenditure semi-elasticities contribute to a larger extent than revenue semi-elasticities to disparities between Member States. Their values broadly correspond to the share of total expenditures to GDP as, for the most part, expenditures are assumed to be a-cyclical. ([32]) This explains why Central and Eastern European Countries, which have on average lower expenditure-to-GDP ratios, have lower semi-elasticities of both expenditures and the budget balance.

2.3.2. By how much were the semi-elasticities revised?

The updated semi-elasticities of the budget balance are fairly close to the 2014 estimates (Table II.2.6 and Graph II.2.1). Overall, the revisions to the total semi-elasticities are negative in 18 cases out of 28. On average, they are equal to -0.01 and the standard deviation of the revisions is equal to 0.03, which remains small compared to the average semi-elasticity (0.50). The semi-elasticities changed by 0.04 in absolute terms in Estonia, Greece, Czech Republic, Hungary, Netherlands, Sweden and United-Kingdom, by 0.05 in Germany and 0.06 in Spain. For the other Member States, the revisions are lower.

On the expenditure side, there are downward revisions in 15 cases out of 28. These downward revisions are associated with increases in the shares of public expenditures to GDP, primarily due to the fact that the sample period is centred around the years of the financial crisis. The new national accounts system (ESA 2010) generally has a positive contribution to the revision of the expenditure semi-elasticities. On the budget balance semi-elasticities, the contributions from the expenditure side will, therefore, be reversed, i.e. downward for the ESA revision and upward for the new time window.

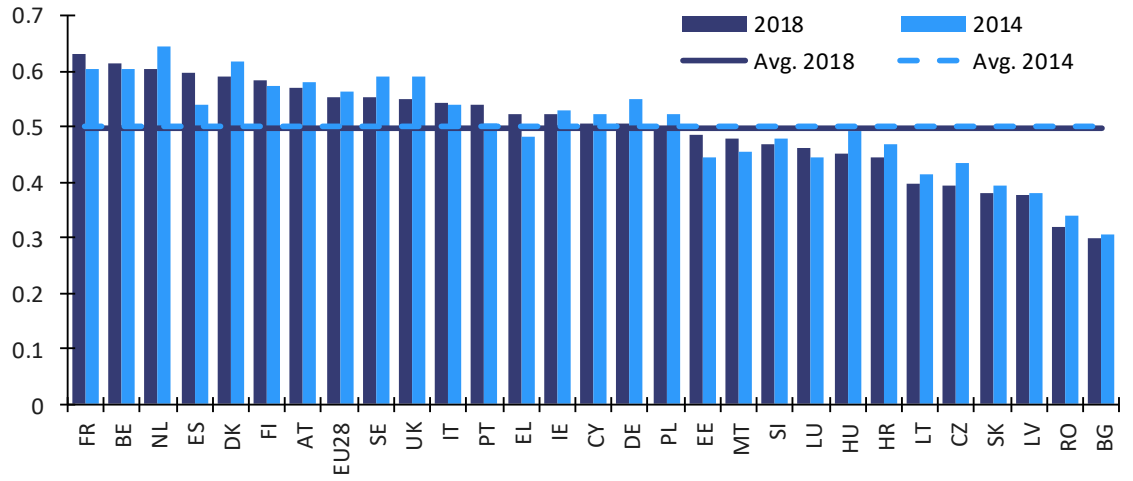
On the revenue side, all but five revisions are downward. These revisions are slightly smaller than those on the expenditure side. They are linked to the shift in time period and the new national accounts system (ESA 2010), contributing both negatively in the majority of cases.

([30]) The elasticity of non-tax revenue is set at 0. Attempts in the past to identify a cyclical pattern proved to be inconclusive (Price, et al. 2014).

([31]) In this respect, it should be recalled that attempts to identify the cyclicality of other expenditures, such as income-based transfers, were inconclusive.

([32]) We recall here that $\varepsilon = \varepsilon_R - \varepsilon_G$ and $\varepsilon_G = \left(\eta_{G,u}\frac{G_u}{G} - 1\right)\frac{G}{Y}$

Graph II.2.1: **Revised budget balance semi-elasticities**



Note: EU28 estimates correspond to the case of the EU treated as a single entity. It differs from the EU average, which is the simple average across Member States.
Source: Commission 2018 spring forecast and 2014 spring forecast, Mourre et al. (2014) and Commission services.

The shift of the time window for the weights and the data update equally contributed to the – fairly moderate – revisions. The minor data updates correspond to the changeover to ESA 2010 and the availability of new data for some Member States, instead of the reliance to sensible assumption (which has been proven reasonable in retrospect).

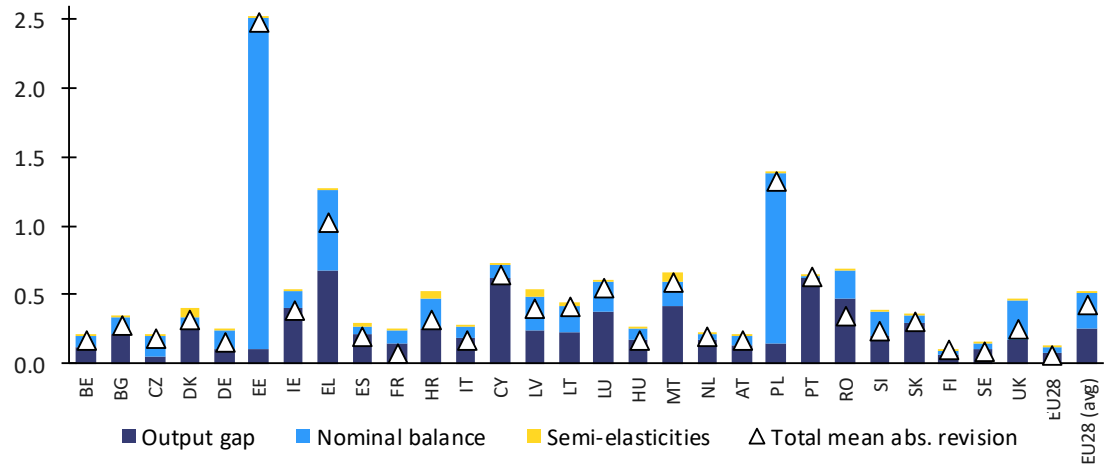
Incidentally, smoothing out the effect of the financial crisis and its aftermath would only marginally lower the revised semi-elasticities. We do so in two ways. First, we exclude capital transfers from total expenditure in order to remove one-off capital transfers (bank recapitalisations) that might have occurred during the financial crisis. Excluding capital transfers from public expenditures would automatically decrease the semi-elasticities compared to the proposed update. The effect on the semi-elasticity is on average a difference of only -0.01 and ranges between 0 and -0.03. Second, we calculate the semi-elasticities using the full 2002-17 time window in order to lower the weight of the crisis in our sample. This gives rise to negative revisions for most Member States, which are also -0.01 on average and range from 0.02 to -0.04. The decrease in the semi-elasticities would be the largest for the three countries where the weights are the most time varying (-0.04 for Estonia and Spain, -0.03 for Ireland). In the case of Estonia or Spain, this would mitigate the upward revision of the semi-elasticity. For Ireland, it would mean a larger downward revision of the semi-elasticity.

2.3.3. Impact on the cyclically-adjusted budget balance

The revision of the fiscal elasticities has only a minor impact on Member States' cyclically-adjusted balances (Graph II.2.2). The large annual revisions of Estonia, Poland and (to some extent) Greece are outliers caused by large revisions in the headline balance. Apart from these cases, the CAB revisions are caused primarily by output gap revisions, with semi-elasticity revisions having a marginal effect. ([33]) In particular, for Spain and Germany, the two Member States with the largest revisions of their semi-elasticities, the effect on the CAB revision remains small. For other Member States (Malta, Latvia, Croatia, Denmark) the effect of the semi-elasticity revision can be more pronounced, even though the revision of the semi-elasticities itself is not large, as it is amplified by the magnitude of the Member States' output gaps.

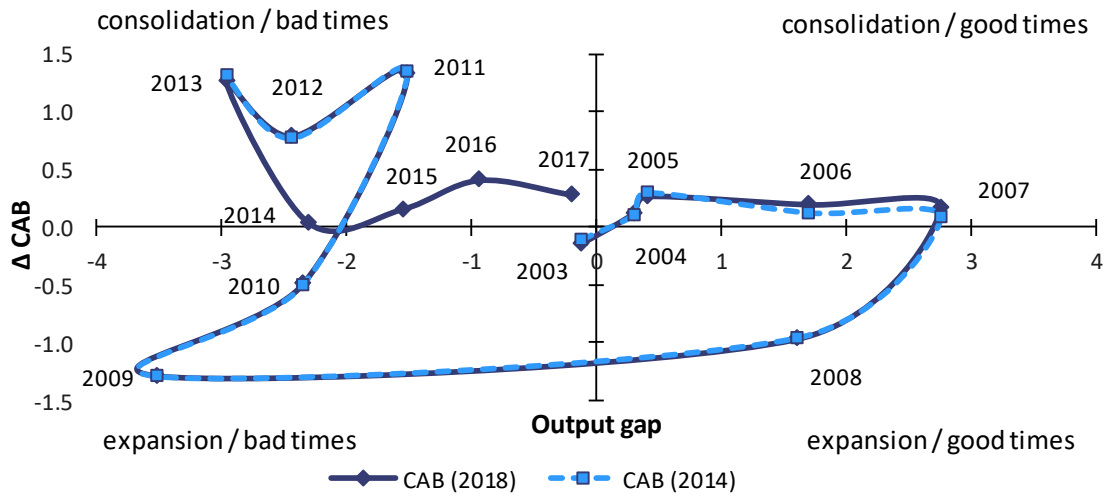
([33]) Mean absolute contributions to the revision do not add up to the mean absolute revision as the different sources of revisions do not cancel each other out in absolute terms.

Graph II.2.2: **Absolute mean contribution to cyclically-adjusted balance revision across Member States (2002-13)**



Note: EU28 calculations are based on elasticities and weights of the EU28 while the EU28 (avg.) is the arithmetic average of the 28 countries.
Source: Commission 2018 spring forecast and 2014 spring forecast, Mourre et al. (2014) and Commission services.

Graph II.2.3: **Fiscal stance over the business cycle in the EU**



Source: Commission 2018 spring forecast and 2014 spring forecast, Mourre et al. (2014) and Commission services.

For the EU28, our assessment of the fiscal stance between 2003 and 2013 is unchanged (Graph II.2.3). Changes in the cyclically adjusted balance are a key measure of the fiscal effort analysed in perspective of the position in the economic cycle (output gap). For the EU as a whole, the CAB is equal to the aggregation of the 28 CAB of the Member States. The revisions of the semi-elasticities do not generate sizeable revisions, the more sizeable revisions of the nominal balances and (most importantly) output gaps broadly cancel out across Member States. In all, over the period common with the previous update (2003-2013), the revisions of the aggregate CAB are minor.

2.4. CONCLUSIONS

Fiscal elasticities are crucial for the implementation of fiscal surveillance. Budget balance semi-elasticities measure by how many GDP percentage points the public surplus/deficit changes with a 1 percent increase in GDP. They provide an important input to the fiscal surveillance process, since they are needed to compute the minimum medium-term budgetary objective and the cyclical adjustment of the budget balance.

This Chapter presents the findings of the periodic update of the fiscal elasticities, which will be used in fiscal surveillance over the next six years. The update of the semi-elasticities will be used for calculating the structural balance as of 2019, setting the MTO in 2019 and the fiscal requirements in 2020-2022. In line with the institutional calendar, the update consists in applying new weights in the aggregation of individual expenditure and revenue components' elasticities. The next revision will be conducted in 2024 and will require an update of both the weights and the underlying individual elasticities.

Overall, the revisions of the semi-elasticities are small. The revisions of the semi-elasticities are small despite the change in the system of national accounts (ESA 2010). The revisions are negligible on average across Member States and do not change our assessment of recent fiscal developments in the EU as a whole.

Table II.2.3: **Elasticities of individual revenue and expenditure categories**

Country	Revenue					Expenditure	
	Income tax	Corporate tax	Social security contributions	Indirect tax	Non-tax revenue	Unemp.-related expenditure	Other expenditure
	(A)	*(B)*	*(C)*	*(D)*	*(E)*	*(F)*	*(G)*
BE	1.31	2.48	0.71	1.00	0.00	-3.70	0.00
BG	1.15	2.13	0.61	1.00	0.00	-3.91	0.00
CZ	1.65	1.78	0.86	1.00	0.00	-2.45	0.00
DK	1.00	3.15	0.41	1.00	0.00	-4.97	0.00
DE	1.87	1.91	0.60	1.00	0.00	-3.30	0.00
EE	1.58	1.78	1.40	1.00	0.00	-5.18	0.00
IE	1.58	1.25	1.04	1.00	0.00	-5.45	0.00
EL	2.22	1.90	0.58	1.00	0.00	-3.15	0.00
ES	1.84	1.56	0.72	1.00	0.00	-5.83	0.00
FR	1.86	2.76	0.63	1.00	0.00	-3.23	0.00
HR	1.71	2.29	0.70	1.00	0.00	-2.39	0.00
IT	1.46	3.07	0.58	1.10	0.00	-2.29	0.00
CY	2.28	2.26	0.91	1.00	0.00	-3.08	0.00
LV	1.50	1.99	0.81	1.00	0.00	-3.94	0.00
LT	1.79	1.67	1.04	1.00	0.00	-5.60	0.00
LU	1.34	2.36	0.39	1.00	0.00	-3.06	0.00
HU	1.73	2.21	0.76	1.00	0.00	-1.25	0.00
MT	2.07	2.11	0.71	1.00	0.00	-1.96	0.00
NL	2.37	3.13	0.62	1.00	0.00	-5.76	0.00
AT	1.66	2.74	0.65	1.00	0.00	-4.71	0.00
PL	1.88	2.92	0.97	1.00	0.00	-6.18	0.00
PT	1.97	1.33	0.79	1.00	0.00	-6.04	0.00
RO	1.29	2.02	0.62	1.00	0.00	-3.91	0.00
SI	1.63	3.76	0.66	1.00	0.00	-2.81	0.00
SK	1.93	1.58	0.89	1.00	0.00	-2.98	0.00
FI	1.41	2.03	0.77	1.00	0.00	-3.66	0.00
SE	1.32	1.56	0.71	1.00	0.00	-4.42	0.00
UK	1.68	3.92	0.60	1.00	0.00	-4.21	0.00
EU28	1.68	2.27	0.74	1.00	0.00	-3.91	0.00

Source: Price et al. (2014), Mourre et al. (2014).

Table II.2.4: **Shares of revenue categories (% of total revenues) and expenditure categories (% of total expenditure)**

Country	Revenue					Expenditure	
	Income tax	Corporate tax	Social security contrib.	Indirect tax	Non-tax revenue	Unemp.-related expenditure	Other expenditure
	(H)	*(I)*	*(J)*	*(K)*	*(L)*	*(M)*	*(N)*
BE	25.95	6.42	32.72	25.82	9.10	4.15	95.85
BG	8.70	6.18	21.04	42.32	21.76	0.24	99.76
CZ	9.93	8.18	36.62	29.45	15.82	0.65	99.35
DK	50.28	4.82	2.14	30.32	12.44	2.07	97.93
DE	21.33	5.53	37.49	24.50	11.15	4.55	95.45
EE	14.28	3.95	29.77	34.94	17.06	2.91	97.09
IE	29.13	8.48	17.02	32.26	13.11	4.52	95.48
EL	13.11	7.95	29.91	32.00	17.02	1.38	98.62
ES	21.10	5.97	34.23	28.90	9.80	5.69	94.31
FR	18.73	4.87	35.98	29.93	10.48	3.34	96.66
HR	11.09	4.12	27.30	42.58	14.91	1.05	98.95
IT	26.21	5.08	28.54	31.14	9.04	2.00	98.00
CY	9.58	16.65	21.01	38.36	14.40	1.94	98.06
LV	17.07	4.68	24.29	35.04	18.92	1.38	98.62
LT	11.80	4.36	34.27	33.59	15.99	1.47	98.53
LU	19.46	13.43	28.14	28.44	10.53	3.59	96.41
HU	12.81	3.85	28.44	38.67	16.23	1.07	98.93
MT	22.44	11.24	17.41	33.80	15.11	1.13	98.87
NL	19.84	5.82	33.80	25.97	14.57	3.56	96.44
AT	22.56	4.49	30.62	29.25	13.07	2.64	97.36
PL	12.35	5.82	33.19	34.31	14.33	1.58	98.42
PT	15.60	7.43	27.59	32.70	16.68	2.45	97.55
RO	10.85	7.90	27.56	36.50	17.20	0.49	99.51
SI	13.81	3.75	33.92	32.84	15.68	1.39	98.61
SK	9.09	8.06	34.89	27.68	20.28	0.52	99.48
FI	25.35	5.03	23.43	25.84	20.35	4.22	95.78
SE	30.44	5.48	6.59	43.83	13.65	2.69	97.31
UK	30.29	7.44	20.19	32.44	9.65	0.62	99.38
EU28	23.00	5.79	30.07	29.72	11.42	3.06	96.94
EU28 (avg.)	19.18	6.65	27.18	32.52	14.47	2.29	97.71

Note: EU28 calculations are based on elasticities and weights of the EU28, while EU28 (avg.) is the arithmetic average of the 28 Member States.
Source: Commission services.

Table II.2.5: **Decomposition of fiscal semi-elasticities**

Country	Elasticities				Weights (% of GDP) of		Semi-elasticity		
	Revenues	Expen-diture	Revenue-to-GDP ratio	Expenditure-to-GDP ratio	Total revenue	Total expenditure	Revenue	Expen-diture	Budget balance
	(a)	*(b)*	*(c) = a - 1*	*(d) = b - 1*	*(e)*	*(f)*	*(g) = c * e*	*(h) = d * f*	*(i) = g - h*
BE	0.99	-0.15	-0.01	-1.15	50.74	53.84	-0.006	-0.621	0.615
BG	0.78	-0.01	-0.22	-1.01	35.73	37.14	-0.077	-0.375	0.298
CZ	0.92	-0.02	-0.08	-1.02	40.09	42.08	-0.033	-0.428	0.395
DK	0.97	-0.10	-0.03	-1.10	54.04	54.93	-0.017	-0.606	0.589
DE	0.97	-0.15	-0.03	-1.15	44.26	44.77	-0.011	-0.515	0.504
EE	1.06	-0.15	0.06	-1.15	39.72	40.10	0.025	-0.461	0.486
IE	1.06	-0.25	0.06	-1.25	31.60	40.21	0.021	-0.501	0.522
EL	0.93	-0.04	-0.07	-1.04	45.45	53.11	-0.030	-0.554	0.524
ES	1.02	-0.33	0.02	-1.33	37.32	44.39	0.006	-0.591	0.597
FR	1.01	-0.11	0.01	-1.11	51.99	56.50	0.004	-0.626	0.630
HR	0.90	-0.03	-0.10	-1.03	43.09	47.31	-0.042	-0.485	0.443
IT	1.05	-0.05	0.05	-1.05	46.76	49.96	0.022	-0.522	0.544
CY	1.17	-0.06	0.17	-1.06	38.10	41.48	0.064	-0.440	0.504
LV	0.90	-0.05	-0.10	-1.05	36.30	39.50	-0.038	-0.416	0.378
LT	0.98	-0.08	-0.02	-1.08	34.25	37.63	-0.008	-0.407	0.399
LU	0.97	-0.11	-0.03	-1.11	43.67	42.71	-0.012	-0.474	0.462
HU	0.91	-0.01	-0.09	-1.01	45.67	48.79	-0.041	-0.494	0.453
MT	1.16	-0.02	0.16	-1.02	39.05	40.66	0.063	-0.416	0.479
NL	1.12	-0.21	0.12	-1.21	43.37	45.73	0.054	-0.551	0.605
AT	0.99	-0.12	-0.01	-1.12	48.96	51.37	-0.006	-0.577	0.571
PL	1.07	-0.10	0.07	-1.10	38.95	43.07	0.026	-0.473	0.499
PT	0.95	-0.15	-0.05	-1.15	42.75	48.66	-0.021	-0.559	0.538
RO	0.83	-0.02	-0.17	-1.02	32.73	36.80	-0.054	-0.375	0.321
SI	0.92	-0.04	-0.08	-1.04	43.68	48.53	-0.036	-0.504	0.468
SK	0.89	-0.02	-0.11	-1.02	37.75	41.52	-0.041	-0.422	0.381
FI	0.90	-0.15	-0.10	-1.15	53.57	55.08	-0.054	-0.636	0.582
SE	0.97	-0.12	-0.03	-1.12	50.62	50.66	-0.014	-0.567	0.553
UK	1.24	-0.03	0.24	-1.03	38.41	44.44	0.094	-0.456	0.550
EU28	1.04	-0.12	0.04	-1.12	44.40	47.94	0.017	-0.537	0.554
EU28 (avg.)	0.99	-0.10	-0.01	-1.10	42.45	45.75	-0.006	-0.502	0.496

Note: This table shows how the semi-elasticities are derived from the individual elasticities and weights (Table II.2.3 and Table II.2.4). The parameters (a) and (b) are derived from Table II.2.2 and Table II.2.3; (a) = (A * H + B * I + C * J + D * K + E * L) / 100; (b) = (F * M)/ 100. The calculations here are made using the exact value of weights coming from Table 2 (where figures are only shown down to the third decimal, but are not rounded). The final value of the semi-elasticities (column g, h and i) are rounded to the third decimal and then used to compute the cyclically-adjusted budget balance.
Source: Commission services.

Table II.2.6: **Comparison of fiscal semi-elasticities 2014 and 2018**

Country	Revenue		Expenditure		Budget balance	
	2014	2018	2014	2018	2014	2018
BE	0.015	-0.006	-0.591	-0.621	0.605	0.615
BG	-0.084	-0.077	-0.391	-0.375	0.308	0.298
CZ	-0.012	-0.033	-0.446	-0.428	0.433	0.395
DK	-0.001	-0.017	-0.620	-0.606	0.619	0.589
DE	-0.009	-0.011	-0.560	-0.515	0.551	0.504
EE	0.037	0.025	-0.406	-0.461	0.443	0.486
IE	0.019	0.021	-0.508	-0.501	0.528	0.522
EL	-0.023	-0.030	-0.506	-0.554	0.483	0.524
ES	0.011	0.006	-0.528	-0.591	0.539	0.597
FR	0.002	0.004	-0.601	-0.626	0.603	0.630
HR	-0.011	-0.042	-0.479	-0.485	0.467	0.443
IT	0.038	0.022	-0.501	-0.522	0.539	0.544
CY	0.071	0.064	-0.452	-0.440	0.523	0.504
LV	-0.028	-0.038	-0.408	-0.416	0.380	0.378
LT	0.022	-0.008	-0.391	-0.407	0.413	0.399
LU	0.003	-0.012	-0.442	-0.474	0.445	0.462
HU	-0.019	-0.041	-0.511	-0.494	0.492	0.453
MT	0.007	0.063	-0.449	-0.416	0.456	0.479
NL	0.066	0.054	-0.579	-0.551	0.646	0.605
AT	0.012	-0.006	-0.569	-0.577	0.580	0.571
PL	0.027	0.026	-0.494	-0.473	0.521	0.499
PT	-0.019	-0.021	-0.525	-0.559	0.506	0.538
RO	-0.045	-0.054	-0.384	-0.375	0.339	0.321
SI	-0.006	-0.036	-0.483	-0.504	0.477	0.468
SK	-0.005	-0.041	-0.398	-0.422	0.393	0.381
FI	-0.030	-0.054	-0.604	-0.636	0.574	0.582
SE	-0.020	-0.014	-0.609	-0.567	0.590	0.553
UK	0.120	0.094	-0.471	-0.456	0.591	0.550
EU28	0.024	0.017	-0.539	-0.537	0.563	0.554
EU28 (avg.)	0.005	-0.006	-0.497	-0.502	0.502	0.496

Note: EU28 calculations are based on elasticities and weights of the EU28 while the EU28 (avg.) is the arithmetic average of the 28 Member States. The 2014 columns refer to Mourre et al. (2014) estimates, while the 2018 columns refer to the re-estimations presented in this paper.
Source: Commission 2018 spring forecast, Mourre et al. (2014) and Commission services.

Box II.2.1: Semi-elasticities and the cyclically-adjusted balance, a mathematical summary

In what follows, *R*, *G*, *B*, *Y*, *OG* and *CAB* refer to public revenue, public expenditure, government headline balance, GDP, output gap and the cyclically-adjusted balance, respectively.

The subscript t refers to the time period t, the superscript p refers to the level of a variable if the economy was at its potential. Revenue categories are indexed with the subscript i ($R_{1<i<4}$). Only one spending category is isolated: unemployment related expenditure (G_u). Elasticities to output are denoted η while semi-elasticities to output are denoted ε.

From the headline balance to the cyclically-adjusted balance

The cyclically-adjusted budget balance is computed as the difference between the actual balance-to-GDP ratio and an estimated cyclical component.

$$CAB_t = \frac{(R_t - G_t)}{Y_t} - \varepsilon\, OG_t \tag{2.2}$$

This formula can be derived from the definition of the *CAB*:

$$CAB_t = \frac{B_t^p}{Y_t^p} = \frac{\left(R_t^p - G_t^p\right)}{Y_t^p} = \frac{R_t}{Y_t^p}\frac{R_t^p}{R_t} - \frac{G_t}{Y_t^p}\frac{G_t^p}{G_t} \tag{2.3}$$

The revenue and expenditure elasticities allow us to link the deviation of R and G from potential to the deviation of output from its potential: ([1])

$$\frac{R_t^p}{R_t} = \left(\frac{Y_t^p}{Y_t}\right)^{\eta_{R,t}} \; and \; \frac{G_t^p}{G_t} = \left(\frac{Y_t^p}{Y_t}\right)^{\eta_{G,t}} \tag{2.4}$$

Replacing equation (2.4) in equation (2.3) yields:

$$\begin{aligned} CAB_t &= \frac{R_t}{Y_t^p}\left(\frac{Y_t^p}{Y_t}\right)^{\eta_R,t} - \frac{G_t}{Y_t^p}\left(\frac{Y_t^p}{Y_t}\right)^{\eta_{G,t}} = \frac{R_t}{Y_t}\left(\frac{Y_t^p}{Y_t}\right)^{\eta_{R,t}-1} - \frac{G_t}{Y_t}\left(\frac{Y_t^p}{Y_t}\right)^{\eta_{G,t}-1} \\ CAB_t &= \frac{R_t}{Y_t}(1+OG_t)^{1-\eta_{R,t}} - \frac{G_t}{Y_t}(1+OG_t)^{1-\eta_{G,t}} \end{aligned} \tag{2.5}$$

It is then possible to approximate equation (2.5) with a first order development around OG=0:

$$\begin{aligned} CAB_t = \frac{R_t}{Y_t} - \frac{G_t}{Y_t} + \left[\left(1-\eta_{R,t}\right)\frac{R_t}{Y_t} - \left(1-\eta_{G,t}\right)\frac{G_t}{Y_t}\right]OG_t \; &= \frac{R_t - G_t}{Y_t} - \left(\varepsilon_{R,t} - \varepsilon_{G,t}\right)OG_t \\ &= \frac{B_t}{Y_t} - \varepsilon_t * OG_t \end{aligned} \tag{2.6}$$

This equation takes the same form as equation (2.2), with semi-elasticities of revenue and expenditure ($\varepsilon_R, \varepsilon_G$) that are not *a priori* constant, both because of the time varying shares of revenue and expenditure to GDP and the underlying elasticities. For practical reasons, semi-elasticities are computed based on constant weights and elasticities, which constitutes an additional simplification. Under this assumption, Equation (2.4) is no longer

([1]) This formula is the result of a first order Taylor development of R and G (in logs) around their potentials. Note that elasticities are not assumed to be constant in time since we only compare two states of the economy within the same period.

(Continued on the next page)

Box (continued)

In all, one can therefore see equation (2.2) as the results of one assumption (constant elasticities of the revenue and expenditure components), two first order approximations (see equations (2.4) and (2.6)) and a simplification (constant weights of total revenue and expenditure in GDP and of their components).

From elasticity to semi-elasticity

The budgetary semi-elasticity (ε) measures the sensitivity of an economic variable as a share of GDP (e.g. revenue) to the economic cycle. It measures by how many percentage points the revenue to GDP ratio changes for a 1% increase in GDP.

$$\varepsilon_R = \frac{d\left(\frac{R}{Y}\right)}{\frac{dY}{Y}} \tag{2.7}$$

By comparison to the semi-elasticity, the elasticity captures the relative variation of one variable to the relative variation of another variable, i.e. measures by how many percent revenues changes for a 1% increase in GDP:

$$\eta_R = \frac{dR/R}{dY/Y} \tag{2.8}$$

The same definition and relation between the elasticity and semi-elasticity apply to the expenditure side of the headline budget balance and to the subcomponents.

There is a direct link between the elasticities and semi-elasticities of revenues and expenditure to GDP:

$$\varepsilon_R = \frac{d\left(\frac{R}{Y}\right)}{\frac{dY}{Y}} = \frac{\frac{dR}{Y} - \frac{dY}{Y^2}R}{\frac{dY}{Y}} = \frac{\frac{R}{Y}\left(\frac{dR}{R} - \frac{dY}{Y}\right)}{\frac{dY}{Y}} = \frac{R}{Y}(\eta_R - 1) \Rightarrow \eta = \varepsilon_R \frac{Y}{R} + 1 \tag{2.9}$$

The term 1 between the two concepts corresponds to the elasticity of the denominator (GDP) of the revenue-to-GDP ratio to itself. The fraction $\frac{R}{Y}$ corrects for the different reference (changes in the revenue-to-GDP ratio for the semi elasticity, changes in revenue as a fraction of total revenue for the elasticity).

Aggregation of elasticities

The aggregate elasticities are the weighted average of their components' elasticities. Taking the revenue elasticities as an example, one can write:

$$\eta_R = \frac{dR/R}{dY/Y} = \frac{\sum_{i=1}^{n} dR_i}{\frac{R}{dY/Y}} = \sum_{i=1}^{n} \frac{\frac{dR_i}{R_i}}{dY/Y} \frac{R_i}{R} = \sum_{i=1}^{n} \eta_{R,i} \frac{R_i}{R} \tag{2.10}$$

Five individual revenue categories η_{Ri} (personal income taxes, corporate income taxes, indirect taxes, social security contributions, non-tax revenue) and one spending category η_{GU} (unemployment-related expenditure) are found to be sensitive to the economic cycle (their elasticity is not zero). One can therefore write the aggregate revenue and expenditure elasticities as:

$$\eta_R = \sum_{i=1}^{5} \eta_{R,i} \frac{R_i}{R} \; and \; \eta_G = \eta_{G,u} \frac{G_u}{G} \tag{2.11}$$

3. ROLE OF REVENUE WINDFALLS IN FISCAL SURVEILLANCE

This Chapter presents the role of revenue windfalls in fiscal surveillance under the preventive arm of the SGP. The reform of the six-pack introduced a reference in Regulation (EC) No 1466/97, the preventive arm regulation of the SGP, to the role that significant revenue windfalls could have for Member States' overachieving their medium-term objective (MTO). In October 2018, the Commission presented its case-by-case approach on how to identify significant revenue windfalls in the forthcoming fiscal surveillance rounds to the Alternates of the Economic and Financial Committee.

What are revenue windfalls?

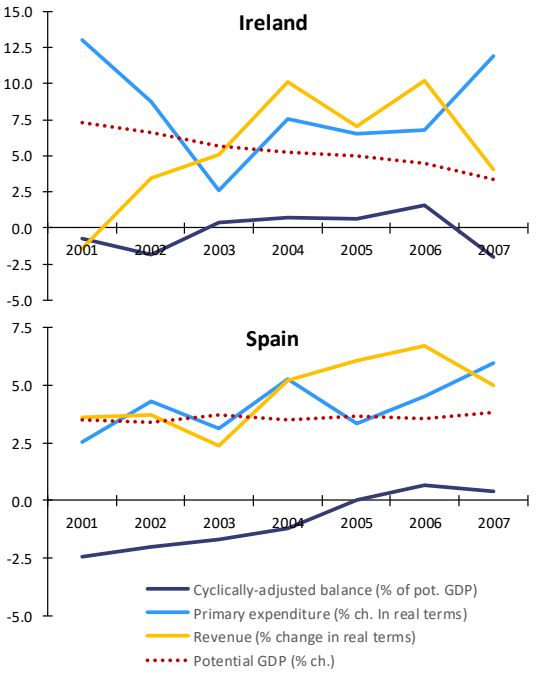
Revenue windfalls are revenue increases that exceed the revenue growth that could be expected based on cyclical conditions or discretionary fiscal policy measures taken. They stem for example from developments in asset markets, wage developments that are decoupled from GDP growth, leads and lags in tax collection, consumption shifting or fluctuations of commodity prices. To the extent that revenue windfalls do not constitute a permanent increase in government revenue, they are not an appropriate financing source for spending increases. Because of their relevance in fiscal surveillance, this Chapter will primarily look at the possibility of revenue windfalls.

How do revenue windfalls affect the key fiscal surveillance indicators?

The structural balance can be distorted by revenue windfalls. Because revenue windfalls are not directly linked to cyclical developments, they are not filtered out in the cyclical adjustment of the budget balance and thus improve the structural balance. Therefore, structural balance developments might not reveal unsustainable expenditure developments when they are offset by revenue windfalls. The structural balance might thus give a too rosy picture of the underlying budgetary position. This was for instance the case in Ireland and Spain in the pre-crisis period, where sizeable expenditure increases were offset by revenue windfalls stemming from asset bubbles, which turned out unsustainable once the bubbles burst (Graph II.3.1).

Unlike the structural balance, the expenditure benchmark is not distorted by revenue windfalls, as it assesses only expenditure developments net of the impact of discretionary revenue measures. Therefore, the expenditure benchmark might provide a better indication of the underlying fiscal position (Graph II.3.1).

Graph II.3.1: **Developments of key fiscal surveillance indicators in Ireland and Spain before the Great Recession**



Note: The graph is based on current estimates of potential GDP. In real time, potential growth estimates where higher and therefore also the estimated cyclically-adjusted balance.
Source: Commission 2018 autumn forecast.

How sizeable are revenue windfalls?

It is challenging to measure revenue windfalls or shortfalls. In the following, they are approximated as the difference between the actual growth of revenues and the revenue growth expected according to nominal GDP growth with an elasticity of 1, corrected for the impact of discretionary revenue measures. ([34])

([34]) Such an approximation is only the starting point of a more disaggregated analysis, for example based on individual tax elasticities (which requires data on discretionary revenue measures by item) and corrected for "fiscal drag". See for example Morris et al. (2009).

While the overall pattern of revenue windfalls and shortfalls seems rather erratic in recent years, shortfalls have been more frequent than windfalls (Table II.3.1). A possible explanation for the shortfalls in some Member States is the relatively low wage growth since the crisis. The growth of the tax base was therefore lower than nominal GDP growth. In addition, the period considered is a phase of economic recovery and some revenues (for example personal income taxation and corporative income taxation) might react with a lag to this growth acceleration depending on the economic cycle, growth drivers (e.g. external vs. domestic demand) and specific features of the tax system.

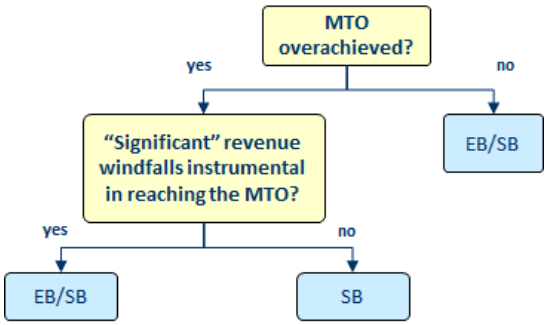
Looking at cumulated figures indicates somewhat more cases of sizeable revenue windfalls. For the majority of countries, revenue windfalls and shortfalls cancel out over the medium term, which underlines the residual character of the measure. The occurrence of systematic revenue windfalls is therefore assessed from a multi-annual perspective, i.e. cumulated over several years. Based on such a multi-annual horizon, as illustrated in Table II.3.1, the three Baltic countries benefitted from sizeable revenue windfalls between 2014 and 2016, reflecting strong wage growth and thus dynamic tax revenues, which were to some extent followed by shortfalls in subsequent years.

Revenue windfalls are difficult to forecast or to identify in real time. Often they come as a surprise and emerge only in ex-post estimates. Indeed, there seem to be only few cases where forecast revenue growth in 2019 or 2020 exceeds economic growth. This reflects the fact that revenue projections are based on a no-policy-change assumption usually based on standard elasticities for the increase in tax revenues based on the corresponding increase in the different tax bases (and generally elasticity close to 1 for the increase in overall revenues relative to nominal GDP growth).

How are revenue windfalls treated in the EU's fiscal surveillance framework?

Regulation (EC) No 1466/97 refers to the possibility of significant revenue windfalls for Member States who over-achieved the MTO (Graph II.3.2). In line with Regulation (EC) No 1466/97, for Member States that are found to have exceeded their MTO on the basis of the structural balance pillar, a deviation from the expenditure benchmark is in general left out of consideration when assessing compliance with the preventive arm requirements. However, the six-pack also introduced an explicit reference to the possibility of windfalls. More specifically, Art 6(3) provides that "[t]he deviation of expenditure developments shall not be considered significant if the Member State concerned has overachieved the medium-term budgetary objective, taking into account the possibility of significant revenue windfalls and the budgetary plans laid out in the [stability/ convergence] programme do not jeopardise that objective over the programme period". ([35]) The Code of Conduct of the SGP ([36]) specifies that "for a Member State that has overachieved the MTO, the occurrence of [a deviation of the expenditure benchmark] is not considered in the assessment of the existence of a significant deviation, unless significant revenue windfalls are assessed to jeopardise the MTO over the programme period." ([37]) The latter is a different concept of

Graph II.3.2: **Assessment of compliance with the preventive arm of the SGP: Which fiscal surveillance indicators to use in case of revenue windfalls?**



Note: The figure visualises the key elements of Article 6(3) of Reg. 1466/97 and the Code of Conduct of the SGP. "EB" refers to expenditure benchmark, "SB" to structural balance.
Source: Commission services.

([35]) Article 6(3) (for stability programmes) and Article 10(3) (for convergence programmes) of Regulation (EC) No 1466/97.
([36]) In the 2017 update of the Code of Conduct of the Stability and Growth Pact that condition is rephrased as "a Member State that has overachieved the MTO could temporarily let annual expenditure growth exceed a reference medium-term rate of potential GDP growth as long as, taking into account the possibility of significant revenue windfalls, the MTO is respected throughout the programme period." (Economic and Financial Committee, 2017).
([37]) In its opinion of 29 November 2016 on "Improving the predictability and transparency of the SGP: a stronger

Table II.3.1: **Estimated revenue windfalls and shortfalls (% of GDP)**

	2013	2014	2015	2016	2017	*2018*	*2019*	*2020*	cumul 13-16	cumul 14-17	*cumul 15-18*	*cumul 16-19*	*cumul 17-20*
BE	0.4	-0.4	-0.6	-0.6	0.1	*-0.2*	*0.0*	*0.1*	-1.1	-1.4	*-1.2*	*-0.6*	*0.1*
DE	0.6	0.1	-0.1	0.4	0.3	*0.4*	*-0.1*	*0.1*	1.0	0.7	*1.1*	*1.0*	*0.7*
EE	-0.1	1.0	1.1	-0.2	-0.3	*0.3*	*-0.3*	*-0.0*	1.8	1.5	*0.9*	*-0.5*	*-0.3*
IE (*)	-0.4	-1.0	-6.3	-0.1	-0.5	*-1.1*	*-0.4*	*-0.4*	-7.8	-8.0	*-8.0*	*-2.1*	*-2.5*
EL	0.0	-2.3	1.4	0.1	-1.6	*0.3*	*-1.5*	*-0.6*	-0.7	-2.4	*0.2*	*-2.7*	*-3.5*
ES	-0.7	0.2	0.2	-0.6	0.2	*0.4*	*0.2*	*0.0*	-0.9	-0.0	*0.2*	*0.2*	*0.8*
FR	-0.3	-0.2	-0.2	0.1	0.2	*0.1*	*0.0*	*-0.0*	-0.6	-0.1	*0.1*	*0.4*	*0.2*
IT	-0.2	-0.6	-0.5	-0.7	-0.3	*0.1*	*-0.1*	*-0.2*	-2.1	-2.2	*-1.5*	*-1.1*	*-0.6*
CY	-1.3	1.4	-0.4	-0.4	1.2	*0.5*	*-0.2*	*-0.3*	-0.7	1.8	*0.9*	*1.1*	*1.3*
LV	0.1	0.2	0.2	0.8	-0.2	*-0.4*	*-0.0*	*0.1*	1.3	1.0	*0.4*	*0.2*	*-0.5*
LT	-0.1	0.6	1.3	0.7	-1.3	*0.7*	*0.4*	*-0.3*	2.5	1.4	*1.4*	*0.5*	*-0.5*
LU	-0.1	-1.0	0.2	0.1	2.3	*0.7*	*0.5*	*0.2*	-0.8	1.6	*3.2*	*3.5*	*3.6*
MT	0.7	-1.1	-1.5	0.1	0.7	*-0.2*	*0.2*	*-0.1*	-1.8	-1.8	*-0.9*	*0.7*	*0.6*
NL	-0.6	-0.6	-0.9	1.2	-0.3	*-0.2*	*-0.5*	*0.6*	-1.0	-0.6	*-0.2*	*0.2*	*-0.4*
AT	0.4	-0.2	0.1	-0.1	-0.1	*0.1*	*-0.0*	*-0.1*	0.1	-0.3	*0.0*	*-0.1*	*-0.1*
PT	-0.5	-0.1	-0.9	-1.1	0.4	*0.4*	*0.4*	*-0.0*	-2.5	-1.6	*-1.2*	*0.1*	*1.2*
SI	-1.4	-1.6	-0.1	0.2	-0.4	*-0.7*	*-0.7*	*-1.2*	-2.9	-1.9	*-1.0*	*-1.6*	*-2.9*
SK	0.9	0.3	0.9	-0.4	0.3	*-0.3*	*-0.5*	*-0.4*	1.7	1.1	*0.5*	*-0.9*	*-0.8*
FI	-0.1	-0.4	-0.8	-0.5	-0.3	*-0.8*	*-0.2*	*-0.5*	-1.9	-2.1	*-2.4*	*-1.8*	*-1.8*
EA19	-0.0	-0.2	-0.4	0.0	0.0	*0.2*	*-0.1*	*-0.0*	-0.6	-0.6	*-0.2*	*0.1*	*0.1*
BG	2.0	0.5	-0.8	0.0	0.3	*0.1*	*-0.1*	*-0.1*	1.7	-0.0	*-0.4*	*0.3*	*0.2*
CZ	0.4	-1.1	-0.4	0.4	-0.1	*0.9*	*-0.3*	*-0.2*	-0.6	-1.1	*0.9*	*1.0*	*0.4*
DK	-2.1	1.1	-1.5	1.5	-0.2	*-0.9*	*-0.0*	*-0.2*	-0.9	1.0	*-1.1*	*0.4*	*-1.3*
HR	-0.9	-0.8	1.7	0.8	0.3	*-1.2*	*-0.2*	*-0.2*	0.7	1.9	*1.5*	*-0.4*	*-1.4*
HU	-1.5	-1.0	0.3	1.0	0.6	*-0.4*	*-0.2*	*-0.0*	-1.2	0.9	*1.5*	*1.0*	*-0.0*
PL	-0.5	-0.4	-0.1	0.0	0.1	*0.5*	*0.0*	*0.2*	-1.0	-0.4	*0.5*	*0.6*	*0.8*
RO	-0.2	0.4	1.5	0.1	-0.2	*0.4*	*-0.0*	*0.0*	1.7	1.7	*1.7*	*0.2*	*0.1*
SE	0.3	-0.6	-0.1	-0.5	-0.2	*-0.6*	*-0.3*	*-0.2*	-0.8	-1.4	*-1.4*	*-1.6*	*-1.3*
UK	0.8	-0.9	0.2	0.1	0.8	*-0.0*	*-0.3*	*0.1*	0.2	0.2	*1.0*	*0.5*	*0.5*

Note: Revenue windfalls/shortfalls are estimated here as the difference between the actual growth of revenues and the revenue growth expected according to nominal GDP growth with an elasticity of 1, corrected for discretionary revenue measures and fluctuations in EU funds (which are matched by corresponding EU funded expenditure). Positive values (in black) point to revenue windfalls, while negative values point to revenue shortfalls. (f)=forecast years. (*) The 2015 estimate for Ireland is distorted by a level shift in GDP following operations of some multinationals.
Source: Commission 2018 autumn forecast.

"significance" than the one used to define a "significant" deviation from the MTO or the adjustment path towards it.

How are "significant" revenue windfalls identified in practice?

Regulation (EC) No 1466/97 does not lay down a specific threshold to consider revenue windfalls significant. For surveillance purposes, only cases where revenue windfalls explain the entire overachievement of the MTO, such that a reversal of these windfalls in the coming years would indeed put at risk the MTO achievement, should be identified.

Given the high volatility of windfalls on an annual basis and the difficulty to identify windfalls in real time, a mechanical approach to identify significant revenue windfalls is not warranted. Instead, the Commission applies economic judgement in the assessment of windfalls, on a case-by-case. Such an assessment is not only based on the windfalls within a single year, but covers a multi-annual time horizon. Indeed, the aim is to identify cases where expenditure increases are financed by an accumulation of windfalls over several years.

focus on the expenditure benchmark in the preventive arm", the Economic and Financial Committee formulated the condition to assess the expenditure benchmark slightly differently, stating: "In assessing compliance with the requirements and in line with Council Regulation (EC) No 1466/97, a deviation from the expenditure benchmark is in general left out of consideration if the Member State is found to have exceeded its MTO on the basis of the structural balance pillar. However, in line with Council Regulation (EC) No 1466/97, an assessment of compliance with the expenditure benchmark is performed in the specific situation where the Member State is found to have exceeded the MTO solely thanks to significant revenue windfalls."

In practice, the nature of such windfalls and their significance are assessed based on country-specific elements from a medium-term perspective.

- In particular, it is necessary to assess the potential drivers of long-lasting patterns of revenue windfalls. The identification of macro-economic imbalances (for example as part of the in-depth reviews under the macroeconomic imbalances procedure) might give a useful identification. Such imbalances with an impact on revenue developments could for instance include the existence of bubbles in asset markets (e.g. housing market, financial markets) and/or wage developments that are not consistent with the competitiveness position.
- In addition, the design of the tax system might explain revenue developments that diverge from GDP developments.
- On the other hand, if higher-than-one elasticities are just a catching up phenomenon that follows a period of revenue shortfalls –as might have been recently the case given the curbing impact of the crisis on actual tax elasticities and the intrinsic volatility of revenue developments– those *apparent* windfalls are not be considered "significant", independently of their size.

What are the implications for fiscal surveillance?

If the windfalls are not assessed to be significant or not essential to achieve the MTO (meaning that their reversal would not jeopardise the MTO achievement), the structural balance trumps the expenditure benchmark in line with the general treatment of Member States that over-achieve their MTO. Indeed, in such a case, Regulation (EC) No 1466/97 explicitly provides that a possible deviation of the expenditure benchmark would not be taken into account. However, an assessment of expenditure developments might still be useful as part of a risk analysis, even in cases where it is not strictly required by the surveillance framework.

On the other hand, if the revenue windfalls are considered significant and are instrumental to the achievement of the MTO (meaning that their reversal would jeopardise the MTO achievement), it is assessed if net expenditure growth is not exceeding medium-term potential growth. Such assessment would consider that the MTO over-achievement is explained by significant revenue windfalls that have inflated over the years the current level of revenues. In those cases, due account is given to the expenditure benchmark to assess compliance with the preventive arm to avoid ignoring unsustainable expenditure trends.

The Commission has recently applied such a case-by-case approach for a number of Member States benefiting from revenue windfalls. Following sizeable revenue windfalls in Cyprus and Malta observed in 2017 coupled with dynamic expenditure growth, the Council adopted the Commission's recommendation that called upon these countries to monitor expenditure developments carefully in the short and medium term, especially in light of possible future risks to the robustness of revenues. ([38])

Conclusions

To sum up, revenue windfalls are factored into country-specific surveillance, with a view to avoid repeating the errors of the past. The six-pack introduced an explicit reference in Article 6(3) of Regulation No 1466/97 to the possibility of windfalls. In particular, if the over-achievement is due to significant revenue windfalls that risk to jeopardise the MTO achievement in the medium term, deviations from the expenditure benchmark are still taken into account as part of the overall assessment under the preventive arm. In order to identify such cases, an assessment of revenue developments takes place when the over-achievement could solely be the result of such windfalls. However, it is difficult to identify windfalls in real time. Therefore, the nature and size of buoyant revenue growth is assessed based on an economic analysis of country-specific elements and covers a multi-annual time horizon. Besides for surveillance purposes, an assessment of revenue windfalls is also useful as part of a fiscal risk assessment. An early identification of buoyant revenue growth as a windfall would act as a warning against spending these revenues and could avoid unsustainable expenditure patterns.

([38]) See for example the opinion on the 2018 and 2019 Draft Budgetary Plans and the assessment of the 2018 Stability Programmes of Malta and Cyprus.

4. REVIEW OF THE FLEXIBILITY UNDER THE SGP

4.1. INTRODUCTION

In 2016, the ECOFIN Council endorsed new guidance on the use of flexibility in the Stability and Growth Pact (SGP). Building on the Commission Communication on "making the best use of the flexibility within the SGP" from 2015, a commonly agreed position on flexibility in the SGP (hereafter commonly agreed position) was endorsed by the ECOFIN Council in February 2016. ([39]) The main objective was to use the flexibility within the SGP when applying the rules without modifying the existing legislation. The Council requested the Commission to review the new approach. The Commission published a review of the new approach as requested by the Council in time in May 2018. ([40])

The new approach introduced the following two types of flexibility in applying the rules.

- *Flexibility for cyclical conditions:* A matrix of requirements (hereafter matrix) was introduced, which specifies the required fiscal adjustment depending on the business cycle and public debt, while ensuring the annual benchmark adjustment of 0.5% of GDP. The matrix envisages a lower (higher) fiscal adjustment in a situation of bad (good) economic times or low (high) public debt (Table II.4.1).
- *Flexibility for structural reforms and investment*: The structural reform and investment clause were introduced to promote structural reforms and public investment through a temporary and limited relaxation of the required fiscal adjustment (technically, a temporary deviation from the Medium-Term Objective or the adjustment path towards it) corresponding to their short-term budgetary impact and conditional on certain eligibility conditions. ([41])

This Chapter presents the main findings of the Commission staff review on the use of flexibility within the SGP. It is structured as follows: Section II.4.2. focuses on the findings of the effectiveness of the flexibility for cyclical conditions. Section II.4.3. presents the results of the review on the application of the structural reform and investment clauses. Finally, Section II.4.4. summarises the main findings.

4.2. REVIEW OF THE FLEXIBILITY FOR CYCLICAL CONDITIONS

What was the mandate of the review?

The Council asked the Commission to assess three elements of the flexibility for cyclical conditions. The Commission examined whether the flexibility for cyclical conditions (i) promoted counter-cyclical fiscal policies by modulating the fiscal effort along the economic cycle and the debt level of Member State, (ii) contributed to the achievement of sound budgetary position over the medium term and (iii) ensured a reduction in government debt at a satisfactory pace (see Chapter 2.2. of the commonly agreed position). ([42]) The review concentrates on the effectiveness of the design of the matrix rather than its enforcement, which corresponds to a much broader issue of compliance with the preventive arm of the SGP.

How was the review conducted?

The review follows an analytical, evidence-based and backward-looking approach, which concentrates on the design of the matrix. It covers Member States in the preventive arm of the SGP, excluding years when they (over-)achieved their medium-term budgetary objective (MTO) or were subject to the excessive deficit procedure (EDP). The review covers not only the period since introduction of the matrix in 2015, but also a longer period to assess its impact over several economic cycles. It uses data in real time from Commission forecast vintages from 2000 to 2017 at two crucial points in time of the EU surveillance process: (i) when the requirements are set for the first time, i.e. based on forecast data from spring for the year ahead ("ex-ante requirement") and (ii) when the fiscal outcomes are assessed for the last time in terms of compliance, i.e. based on outturn data from spring for the previous year ("ex-post requirement").

([39]) Council of the European Union (2015).
([40]) European Commission (2018a).
([41]) For more information on how the flexibility clause for cyclical conditions as well as the structural reform and investment clauses were implemented see European Commission (2018b), p. 37-44.

([42]) For the assessment of ensuring a reduction in government debt at a satisfactory pace see European Commission (2018a).

Table II.4.1: **Matrix of the required annual fiscal adjustment under the preventive arm of the Stability and Growth Pact**

Economic situation		Required annual fiscal adjustment (pp. of GDP)	
		Debt ≤ 60% and low/medium sustainability risk*	Debt > 60% or high sustainability risk
Exceptionally bad times	Real growth < 0 or output gap < -4	No adjustment needed	
Very bad times	-4 ≤ OG < -3	0	0.25
Bad times	-3 ≤ OG < -1.5	0 if actual growth < potential, 0.25 if actual growth > potential	0.25 if actual growth < potential, 0.5 if actual growth > potential
Normal times	-1.5 ≤ OG < 1.5	0.5	> 0.5
Good times	OG ≥ 1.5	> 0.5 if actual growth < potential, ≥ 0.75 if actual growth > potential	≥ 0.75 if actual growth < potential, ≥ 1 if actual growth > potential

* Regulation (EC) 1466/97 does not specify an appropriate annual adjustment for Member States outside the euro area and ERM2 with debt below 60% of GDP and at most moderate risks of debt sustainability. Currently, this would be the case of Bulgaria, Czech Republic, Poland, Romania and Sweden. While those Member States should pursue greater improvements in good times and more limited in bad times, the Regulation does not quantify the adjustment. OG refers to output gap.
Source: European Commission (2018b), p. 38.

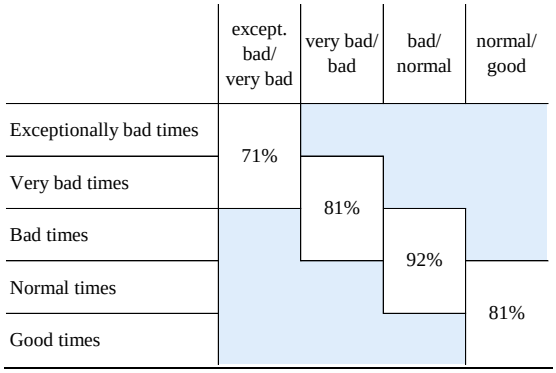
Has the matrix promoted counter-cyclical fiscal policies?

The review finds that the design of the matrix modulates the required fiscal adjustment around the benchmark requirement of 0.5%. If the matrix had been applied since 2000 the most frequent requirements (78% of the sample) would have been 0.5% (the benchmark requirement) and 0.6% of GDP (Graph II.4.1a). In more than 20% of cases, the matrix would have allowed for a more pronounced modulation of requirements (Graph II.4.1a). Member States with public debt-to-GDP ratios exceeding 60% would have received on average requirements exceeding 0.5% of GDP (Graph II.4.1b). In almost 20% of the cases the matrix would have prescribed a significantly higher or lower requirement. Hence, the matrix would have mitigated pro-cyclicality by promoting the stabilisation of the economy in bad times and contributing to building up fiscal buffers in good times.

Does the matrix represent a good balance between cyclical modulation and predictability?

Our analysis shows that the use of less but broader categories to measure the economic situation in the matrix would have greater costs (loss of cyclical modulation) than benefits (improving predictability of matrix categories). The matrix contains five categories measuring the economic situation (Table II.4.1, left hand side). Merging two matrix categories can have costs and benefits. On the one hand, costs can occur due to a loss of cyclical modulation in setting the requirements. On the other hand, benefits can emerge from improving the predictability of the matrix categories between forecast and outturn data (i.e. reducing the forecast error). We quantify the costs and benefits of merging two matrix categories with a cost indicator. ([43]) That indicator

Table II.4.2: **Cost indicator of merging two matrix categories**



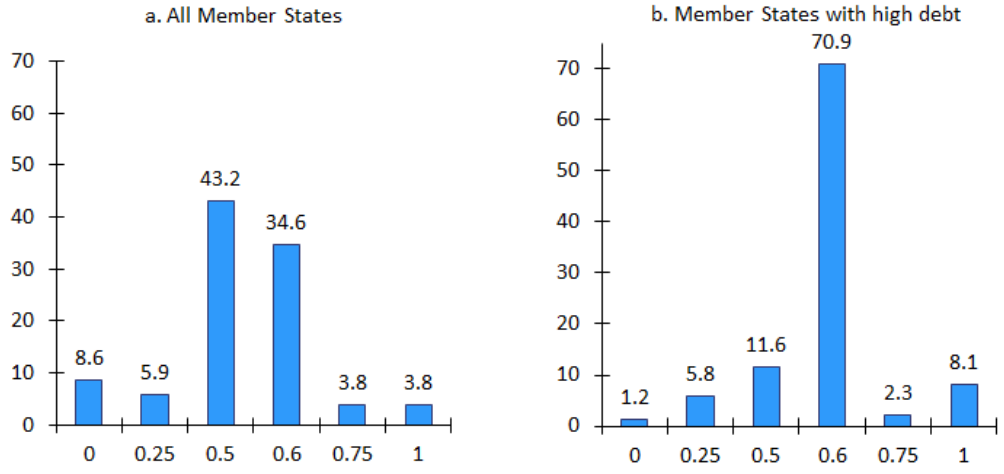
Source: Commission services.

([43]) The cost indicator (κ) of merging two adjacent matrix categories is defined as follows:

$$\kappa = 100 - 100 * \frac{shift_{i \to i+1}^{SFt-1|t} + shift_{i+1 \to i}^{SFt-1|t}}{obs_i^{SFt+1|t} + obs_{i+1}^{SFt+1|t}}$$

where i corresponds to the respective matrix category, i.e. exceptionally bad times (i=1), good times (i=5), SF t-1|t stands for the ex-ante forecast, while SF t+1|t refers to the ex-post outcome. "shift" refers to the number of cases when the matrix category shifted upwards/downwards by one matrix category between the ex-ante forecast and the ex-

Graph II.4.1: **Distribution of pure matrix requirements (in %)**



Note: The figures show frequency distributions of the fiscal adjustment requirements stemming from an application of the "pure matrix", i.e. an application of the matrix irrespective of the distance to the MTO. The required fiscal adjustment refers to the ex-ante requirement requested in spring for the year ahead using Commission spring forecast vintages from 2000 to 2017. The sample covers Member States under the preventive arm of the SGP, i.e. it excludes Member States in EDP. High debt refers to public debt-to-GDP ratios exceeding 60% of GDP.
Source: Commission services.

measures what percentage of cases the merging of two categories would have implied a loss of cyclical modulation. It varies between 100% (i.e. merging two categories has only costs and no benefits since it does not improve the predictability of the matrix categories) and 0% (i.e. merging two categories has only benefits and no costs, since it does not lead to a loss of cyclical modulation). Our findings show that irrespective of which of the two matrix categories analysed are merged, the costs of merging clearly exceed the benefits (Table II.4.2). We therefore conclude that the matrix categories constitute a good balance between cyclical modulation and predictability of requirements over forecast vintages.

Has the matrix contributed to sound budgetary positions over the medium term?

For the EU28 on average, the matrix would have led to a fiscal adjustment requirement close to the benchmark of 0.5% requested in Regulation (EC) 1466/97 (Graph II.4.2). The application of the pure matrix would have resulted in an average fiscal requirement of 0.5% (using forecast vintages since 2000) and 0.53% (since 2015). The higher requirement since 2015 can be explained by both more positive cyclical economic conditions and higher debt-to-GDP ratios compared to the previous period.

post outcome; "obs" refers to the number of observations in category i according to the ex post outcome.

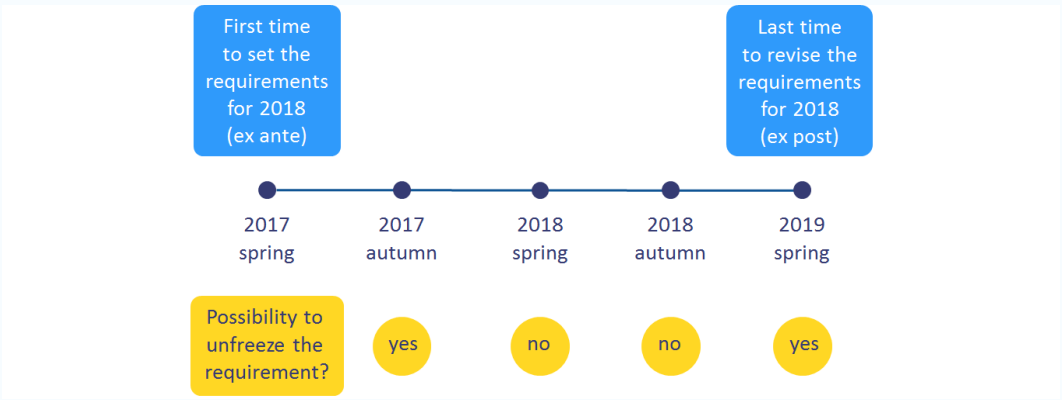
Additional provisions of the fiscal surveillance framework lead on average to a smaller fiscal adjustment requirement (Graph II.4.2). In practice, Member States are often requested to implement an adjustment lower than the one following from a strict application of the matrix (i.e. what we call the "pure matrix" scenario). In particular, the SGP does not oblige Member States to consolidate beyond their MTO. Taking this into account reduces the average matrix requirement by roughly 0.1 pp. (see "Matrix not exceeding MTO"). In addition, considering the so-called "freezing principle" (Box II.4.1) decreases the average requirement further by around 0.1 pp. Finally, taking into account further elements designed to promote structural reforms and investment (structural reforms, public investment and pension clause) and to react to unforeseen developments (unusual event clause) lowers the requirement to around 0.32 (since 2000) and 0.4 (since 2015) on average (Graph II.4.2). ([44])

([44]) Some of these elements (not exceeding MTO, freezing principle, pension clause and unusual event clause) do not come from the commonly agreed position on flexibility. Beyond the scope of this review, the Commission departed from the matrix-based approach in the following few cases, in which there was a justification, namely for Romania in 2015 (to incentivise the absorption of EU funds) and for Slovenia in 2017 (due to uncertainty of the output gap estimates). In addition, the Commission applied its discretion in the cases of Italy and Slovenia in 2018 in light of their particular cyclical conditions.

Box II.4.1: Freezing principle and unfreezing modalities

Member States' compliance with the preventive arm of the SGP for a given year is assessed five times over an entire 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, the compliance is assessed in autumn of the preceding year, in spring and autumn during that year (in-year assessment) and finally in spring of the next year, based on outturn data (ex-post assessment). ([1]) It is this final assessment that can trigger the SDP, 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 2018 surveillance cycle**



Source: Commission services.

The fiscal requirements against which Member States are assessed remain as a rule stable during a surveillance cycle. The key objective of stable requirements is to provide guidance to Member States about the required adjustment and to ensure predictability of the assessment of compliance. For this reason, the specifications on the Significant Deviation Procedure (SDP) introduced the so-called "freezing" of the required adjustment under the preventive arm of the SGP. This freezing means that, as a rule, the requirements in terms of the change in the structural balance and the expenditure benchmark for year t are set on the basis of the Commission's spring forecast of year *t-1* and kept unchanged afterwards.

However, in two particular situations the required fiscal adjustment is reset ("unfrozen") during a surveillance cycle. Freezing the fiscal requirements comes at a price in terms of adaptability to changing economic circumstances. For instance, if economic conditions worsen the required adjustment can turn out to be too large. In order to avoid such unwarranted consequences, it was agreed to reset, or "unfreeze", the requirement in two particular situations.

- *Very bad or exceptionally bad times*: The required fiscal adjustment is lowered in line with the matrix requirement if a Member States enters in "exceptionally bad times" (defined as negative real GDP growth or an output gap below -4%) or "very bad times" (defined as an output gap between -3 and -4%). This type of unfreezing should avoid pro-cyclical fiscal policy in particularly unfavourable economic conditions.

- *Overachievement of the MTO*: The required fiscal adjustment is lowered if the forecasts/data show that the distance to the MTO at the start of the relevant year is smaller than the frozen requirement or that the Member State already achieved its MTO. This type of unfreezing is relevant for countries close to their MTO and should avoid an adjustment that would lead to overachievement of the MTO.

([1]) Between 2013 and 2017, the Member States' compliance was even assessed seven times, including in winter for the given year and in winter for the previous year.

(Continued on the next page)

Box (continued)

The possibility to unfreeze the requirement has been limited since 2017. Up to 2017, such unfreezing of the initial requirement could take place at every assessment round. Since 2018, however, unfreezing can only take place ex ante (based on the autumn forecast preceding the relevant year) or ex-post (based on the spring forecast following the relevant year), while the requirement remains frozen during the in-year assessment (Graph 1).

Overall, the unfreezing is applied asymmetrically and can only lead to a lower fiscal requirement (Graph II.4.2). Where the most recent forecast/data would imply a higher required effort than the one implied by the freezing, the frozen requirement remains valid. The drawback is that in some cases the loosening of the requirement turns out not to be fully justified ex post, thereby unduly protracting the period of convergence to the MTO.

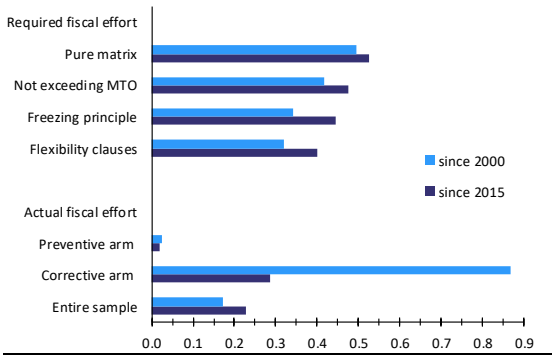
The current application of the freezing principle ensures a good balance between predictability and adaptability. The first type of unfreezing, catering for an unexpected and severe downturn, was carried out only once since 2015, given the return of most Member States to normal or good economic times in recent years. However, it might well be justified at the next downturn. The second type of unfreezing, catering for a change in the starting position with respect to the MTO, has been considerably more common in recent years, with 26 cases between 2015 and 2017. In all cases, the lowering of the requirement was ex post at least partially justified, i.e. the initial requirement would indeed have led to an "overachievement" of the MTO. However, in two thirds of those cases, while the initial requirement was too high, the revised requirement turned out to be too low in hindsight, meaning that ex post it proved insufficient to reach the MTO. If the revised modalities with fewer possibilities for unfreezing at intermediate assessment rounds had applied as of 2015, the number of cases where the downward revision of the requirement was too high would have been significantly smaller.

How does the required adjustment compare with the actual fiscal effort?

The actual fiscal effort of Member States falls short of the required one (Graph II.4.2). Comparing the requested fiscal adjustment with the actual implemented fiscal effort – as measured by the change in the structural balance – points to a sizeable gap with the required fiscal effort.

The gap should be interpreted with caution. First, the matrix did not exist before 2015. It should also be recalled that the actual fiscal effort refers only to the Member States in the preventive arm of the SGP, i.e. excluding years when Member States (over-)achieved their MTO and/or were under the corrective arm of the SGP, the EDP. The average effort for the EU28 and for Member States in the corrective arm of the SGP is significantly higher (see last two rows of Graph II.4.2).

Graph II.4.2: **Requested vs. actual fiscal effort (EU Member States)**



Note: The calculations are updated compared with European Commission (2018a) and now also include data from the Commission 2018 spring forecast. "Pure matrix" and "not exceeding MTO" are computed based on the ex-ante assessment derived from Commission spring forecasts for the year ahead. The remaining elements are based on the ex-post assessment, which is derived from Commission spring assessments for the previous year. The freezing principle includes the unfreezing from two situations (i.e. in case of very bad or exceptionally bad times or over-overachievement of the MTO (Box II.4.1). The freezing based on the first condition only (i.e. very bad or exceptionally bad times) amounts to 0.41 (since 2000) and 0.52 (since 2015). The flexibility clauses include the structural reforms, investment, pension and unusual events clause. The data refer to unweighted averages for the EU28 (changing composition) using Commission forecast vintages from spring 2000 to spring 2018.
Source: Commission services.

4.3. REVIEW OF THE STRUCTURAL REFORM CLAUSE AND INVESTMENT CLAUSE

What was the mandate of the review?

The Council asked the Commission to assess four elements of the flexibility for structural reforms and public investment. The Commission was asked to examine: i) the achievement by the Member States of their MTOs, thereby creating the necessary room to accommodate economic downturns; ii) to what extent the projects eligible for the investment clause were co-funded by the EU; iii) whether the investment clause led to new investments and iv) the implications of the continuation of the investment clause (see Section 5 of the commonly agreed position). The review concentrates on the effectiveness of the design of the clauses and examines the fulfilment of eligibility conditions in cases where flexibility was granted.

Why are the flexibility clauses only granted subject to eligibility conditions?

The eligibility criteria should ensure fiscal sustainability, while not discouraging Member States from implementing structural reforms and promoting additional public investment. The commonly agreed position tries to achieve the right balance between using the flexibility within the SGP in applying the rules and ensuring fiscal sustainability. A key component in ensuring the right balance is the eligibility criteria for accessing the clauses. They need to be sufficiently tight to ensure that the use of the clauses does not jeopardise Member States' sustainability of public finances. At the same time, they should not render access to the clauses practically impossible.

How were the eligibility criteria defined?

There are common eligibility criteria for both the structural reform clause and the investment clause as well as some specific ones for each clause. Several criteria should be fulfilled to be eligible for the clauses. There are common criteria, which hold for both clauses: Member States should respect a safety margin with respect to the MTO so that their headline deficit does not exceed 3% of GDP and the MTO must be reached within four years. In addition, clause-specific conditions exist. In the case of the investment clause, the Member State must experience bad economic times. ([45]) The eligible investment must be, to a large extent, co-financed by the Union, ([46]) while total public investment should not decline. In the case of the structural reform clause, the reforms must have positive long-term budgetary effects, including by raising potential growth, and must be either fully implemented or well-specified (including credible timelines) in a medium-term structural reform plan submitted by Member States.

How was the review conducted?

First, the Commission examined how demanding the key eligibility criteria were in practice. So far only few Member States have made use of the clauses. Nevertheless, the review has retroactively examined eligibility across all Member States ([47]) to see how many Member States would have been eligible for the use of the clauses from its application in 2015 until 2018. The Commission focused on the key eligibility criteria (Table II.4.3). ([48]) Eligibility for the use of the clauses in year *t* is assessed on the basis of the information available in spring of year *t-1*, when a Member State should, as a rule, apply for the clause in their Stability and Convergence Programme (SCP). ([49]) The review assessed whether a Member State met the eligibility criteria in spring for use of the clause in the following year.

([45]) In the following the term "bad economic times" captures years of negative real GDP growth or an output gap below -1.5% of GDP. Using the terminology of the matrix, this refers to bad, very bad and exceptionally bad times.

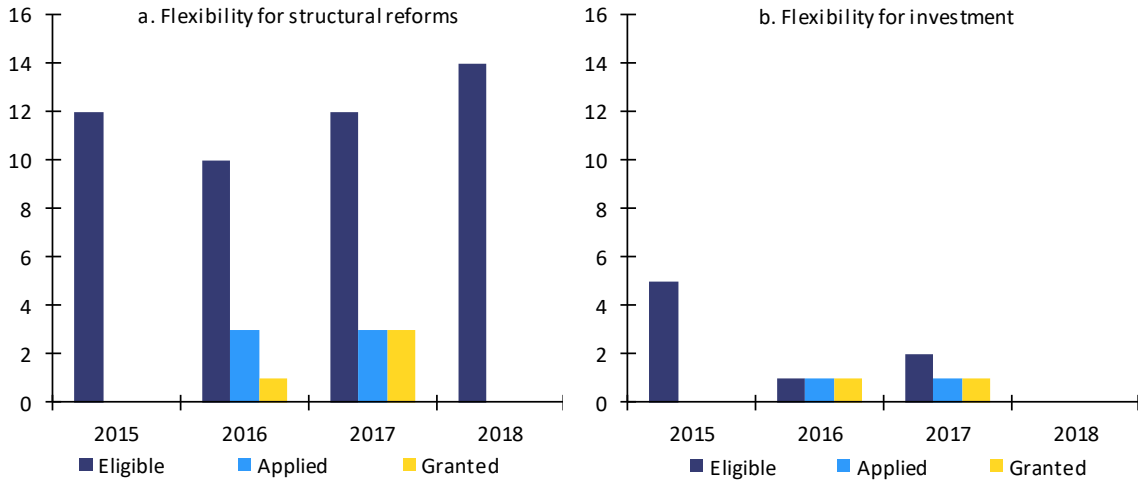
([46]) The following EU funds, instruments and policies are taken into account: European Structural and Investment Funds including Youth Employment Initiative, Trans-European Networks, Connecting Europe Facility, European Fund for Strategic Investments.

([47]) The review excluded Greece, which was subject to an Eurozone/IMF macroeconomic adjustment programme between 2010 and 2018 and hence exempt from the obligation to set the MTO.

([48]) These are: a) preserving an appropriate safety margin over the four years; b) achievement of the MTO within four years; and only for the investment clause c) bad economic times. The other eligibility criteria become relevant only when Member States formally apply for the use of the clauses and submit the information needed to assess them. For that reason, their fulfilment is examined only in the cases where the clauses were actually applied (see following paragraph).

([49]) Member States may request to benefit from the clauses in year *t+1* also by 15 October of year *t* in their Draft Budgetary Plans (euro-area Member States) or through an *ad hoc* application (non-euro-area Member States).

Graph II.4.3: **Eligibility for the clauses (number of Member States)**



Source: Commission services.

Second, the Commission examined the actual application of the clauses. The review examined the fulfilment of the following eligibility criteria for the structural reform clause: i) full implementation (or good specification including credible timelines) and ii) positive long-term budgetary effects, including by raising potential growth; and for the investment clause: i) the extent of co-funding by the EU of the eligible projects and ii) the generation of new investments.

Table II.4.3: **Eligibility criteria under review**

Eligibility criteria	How was it checked by the Commission?
a) Appropriate safety margin is continuously preserved [1]	The structural balance respects the minimum benchmark [2], i.e.: $SB_t \geq$ minimum $benchmark_t$ [3]
b) Achievement of the MTO within four years	The maximum initial distance of the structural balance of a Member State to the MTO is 1.5% of GDP, i.e.: SB_{t-1}-$MTO_{t-1} \geq$-1.5%
c) Only for the investment clause: bad economic times	Real GDP growth t < 0 or output $gap_t \leq$ -1.5%

Notes: [1] The respect of the minimum benchmark is assessed only at the time of the assessment of the application for the use of the clause. That approach is justified by the fact that the clauses are not retracted once granted, if compliance with the minimum benchmark is altered due to future revisions of the minimum benchmark. [2] Minimum benchmark is a level of structural balance which ensures the respect of the 3% reference value under normal cyclical conditions. The minimum benchmark is country specific, estimated by the European Commission for each Member State taking into account their past output volatility and budgetary sensitivity to output fluctuations. [3] The horizon of the spring forecast of year t-1 does not span beyond year t. Therefore, the respect of the minimum benchmark is assessed only for the year t.
Source: Commission services.

How demanding were the eligibility criteria?

More Member States were eligible for the structural reform clause than for the investment clause (Graph II.4.3). ([50]) Considerably more Member States would have been eligible for the use of the structural reform clause (twelve Member States on average between 2015 and 2018) than the investment clause (two Member States on average). Six Member State have always been eligible over the period assessed, while nine Member States have never been eligible for use of the structural reform clause.

The respect of the minimum benchmark was more a demanding criterion than the distance to the MTO, but in most cases neither of the two eligibility conditions was met. Over the years considered (2015-2018), the respect of the minimum benchmark was met less frequently than the maximum distance to the MTO of 1.5% of GDP. While the annual update of the minimum benchmarks has led to marginally stricter benchmarks over time (by 0.3 pp. of GDP over 2015-2018), the update itself stood in the way of eligibility only once. In contrast with that, in more than half of the cases the ineligibility followed from neither the minimum benchmark, nor the distance to the MTO having been respected.

([50]) It is important to highlight that the Graph II.4.3 does not consider cases where these eligibility criteria could be met as a result of the constrained judgement approach.

Indeed, the actual fiscal effort of Member States in the preventive arm of SGP fell repeatedly short of requested adjustment (Graph II.4.2), making the respect of both criteria harder to achieve. By contrast, the condition that the deviation must not lead to a headline deficit above 3% of GDP did not imply an additional constraint to accessing the clauses.

The specific eligibility criterion for the investment clause has become harder to fulfil over time, since economic conditions improved. With respect to the specific eligibility criterion for the investment clause to be in bad economic times, all Member States have experienced positive real GDP growth rates since 2015 and around half of them showed an output gap below -1.5% in 2015. However, as economic conditions improved and output gaps started to close, only Greece still appears to be in bad times, for the purposes of the investment clause, in 2018.

How was the structural reform clause applied?

Only four Member States benefitted from the structural reform clause, while 18 would have been eligible. Lithuania has been eligible for the structural reform clause over the entire period, but it benefitted from it only in 2017. The other three Member States that benefitted from the clause are Italy in 2016 as well as Latvia and Finland in 2017. The four Member States that applied for the structural reform clause were granted flexibility lowering their fiscal requirement by 0.5 pp. of GDP.

The four Member States that benefitted from the structural reform clause met the objective to implement major structural reform with positive long-term budgetary effects to some extent. Regarding the structural reform clause, while some reforms have been implemented in the Member States that were granted the clause, implementation of other reforms is still ongoing. In some cases the implementation has stretched beyond the timelines upon which the flexibility was granted. The Commission assessed the estimated positive impact on growth and the long-term sustainability of public finances as plausible at the time of granting the clause in all four instances. In some cases though, the Commission had to do without an independent evaluation of the estimated impact on the long-term budgetary effects, an obligatory complement of the request for flexibility.

How was the investment clause applied?

While the review confirms that the projects eligible for the investment clause were co-funded by the Union, results are more mixed as to whether it fostered additional investments. Italy and Finland ([51]) applied for the investment clause in 2016 and 2017. Italy, which also benefitted from the structural reform clause, applied for flexibility by 0.25% of GDP, but eventually made use only of 0.21% of GDP. Italy's total public investment declined in 2016 compared to 2015 on the account of the sharp fall in the amount of investment financed though Union funds. Public investment financed nationally increased, but not in volume of the allowed deviation, suggesting that the flexibility was partly used for other purposes than boosting investment. Finland was granted a temporary deviation of 0.1% of GDP under the investment clause in 2017. The outturn data for 2017, however, showed a decline in public investment in 2017 compared to the previous year, while public investment financed nationally remained stable.

4.4. CONCLUSIONS

This Chapter presents the main findings of the Commission staff review on the design of flexibility within the SGP. The ECOFIN Council asked the Commission to review the flexibility in the SGP, which was used in applying the rules since 2015.

The main findings of the Commission review on the flexibility for cyclical conditions can be summarised as follows: The design of the matrix ensures a modulation of the required fiscal adjustment over the economic cycle. The design of the matrix also supports the achievement of the MTO inasmuch as it leads to an average requirement close to the benchmark of 0.5% of GDP. By ensuring the achievement of the MTO, it

([51]) In the case of Finland, the Commission applied "constrained judgement" to the estimate of the output gaps and on that basis concluded on its eligibility for the clauses.

helps debt reduction at a satisfactory pace. ([52]) However, the actual budgetary adjustment falls short of the required one.

In terms of the review on the flexibility of the structural reform and investment clause, the Commission review concludes: The eligibility criteria rendered the structural reform clause accessible to two-thirds of Member States, while the specific eligibility criteria made the investment clause more difficult to access. Where granted, the flexibility witnessed partial implementation of major structural reforms and a mixed pattern of public investments.

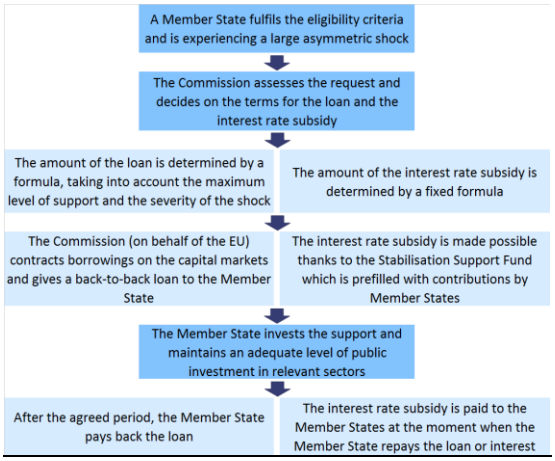
Some caveats remain. In particular, the short time period since application of the two elements of flexibility limit the scope of the review.

([52]) For the assessment of ensuring a reduction in government debt at a satisfactory pace see Part I.2 of European Commission (2018a).

5. COMMISSION PROPOSAL FOR A COMMON STABILISATION TOOL

General discussions on the choice and design of a common fiscal policy instrument for the EU are ongoing. ([53]) In this context, this Chapter recalls the Commission's proposal from May 2018 for a European Investment Stabilisation Function (EISF) (Graph II.5.1). Other (non-mutually exclusive) options concern the creation of a euro area budget with some stabilisation properties or focus on unemployment benefits (possibly in addition to public investment) but are not detailed here.

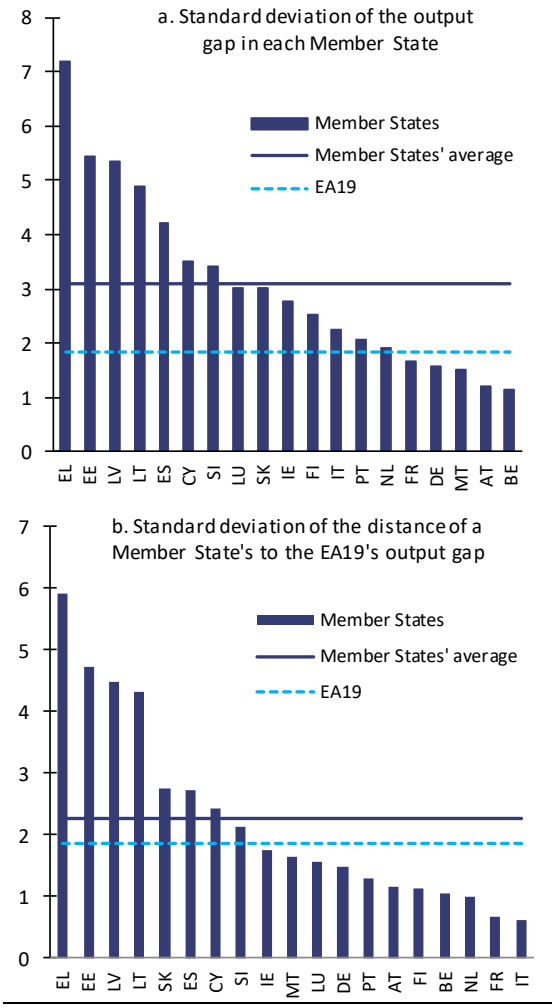
Graph II.5.1: **Commission proposal for a common fiscal policy instrument**



Source: European Commission (2018d).

The crisis has revived the debate about such common fiscal policy instruments. The European Stability Mechanism (ESM) and the process completing the Banking Union are reinforcing the integration of the economies of the Member States. However, national governments, have to ensure the bulk of the stabilisation of economic fluctuations (Graph II.5.2a). Automatic stabilizers are the first instrument to cope with economic fluctuations but can be overwhelmed by large asymmetric shocks in Member States who can no longer use national monetary policies. The single monetary policy itself can be overburdened (especially when interest rates are already low) and is not meant or

Graph II.5.2: **Volatility of the economic fluctuations in the EA19**



Source: Commission services.

equipped to respond to country specific shocks (country specific fluctuations can be as large as several percent of GDP, Graph II.5.2b). In this context, the economies of the Member States can be overly impacted by large asymmetric shocks, a situation which can spill over to the rest of the European Economic and Monetary Union (EMU). Therefore, there is a need for a common fiscal policy instrument in the EMU.

([53]) Arnold et al. (2018), Bénassy-Quéré et al. (2018), Carnot et al. (2017), Claveres and Stráský (2018), Dullien et al. (2017), see also the references listed in the Impact assessment of the Commission proposal (European Commission, 2018c).

Table II.5.1: **Comparison of activation triggers proposed in the literature**

Carnot et al. (2017)	Dullien et al. (2017)	Arnold et al. (2018)	Claveres and Stráský (2018)	Bénassy-Quéré et al. (2018)
Double condition: –unemployment level above the 10–15 years moving average –unemployment rising, possibly above a threshold	**Level of unemployment rate** exceeding average level of past 5 years, by 0.2 pp. for national compartment, by 2.0 pps. for stormy day fund	**Level of unemployment rate** above 7-year moving average (in pp. or in %)	**Double condition:** –unemployment level above the 10-year moving average –unemployment rising	**Change in unemployment rate**, employment or wage bill above/below a threshold (e.g. 2 pps. for unemployment)

Source: European Commission (2018c).

As part of the next multiannual financial framework (MFF), the Commission has proposed to create a European Investment Stabilisation Function. ([54]) This proposal is part of the Commission's aim of deepening the EMU. In economic downturns, it can be easier to cut back on public investment than other current expenditures, even though public investment can be crucial to maintain the growth potential of an economy. Therefore, the Commission proposal is designed to help Member States maintain public investment when large asymmetric shocks occur. In addition, the Commission proposal is targeted at euro area and ERM II countries because other Member States can use their national monetary policies to accommodate the shocks.

The EU budget would guarantee EUR 30 bn of back-to-back loans to Member States over the MFF period (seven years). Doing so, the Member State receiving a loan can benefit from the low interest rate at which the EU can borrow. In addition, the Commission proposed to complement these loans with subsidies covering the interest payments. These subsidies would be financed by contributions of the Member States to a dedicated stabilisation support fund.

To avoid adverse incentives for non-prudent fiscal policies, strict eligibility criteria are proposed. To be eligible for support, a Member State should be compliant over two years with decisions and recommendations in the context of the Stability and Growth Pact and the Macroeconomic Imbalances Procedure. *Ex post*, the Commission would also verify that the Member State has maintained its public investment at the average of the previous five years and used the equivalent of the back-to-back loan to invest in eligible public investment. In addition, the small interest rate subsidy aside, this Fund would be financially balanced by design, as it provides loans.

The Commission proposes that the EISF would offer loans to a Member State when its unemployment is high and rising. A consensus has emerged in the literature to use the unemployment as the trigger for a common fiscal instrument. Disparities in the details remain in recent proposals (Table II.5.1) which are discussed in depth in the impact assessment of the Commission proposal. ([55]) In the present proposal, if the quarterly unemployment rate in a Member State is above its 15-year average and increasing by more than 1 pp. over one year, the Commission would propose a loan to this Member State. The

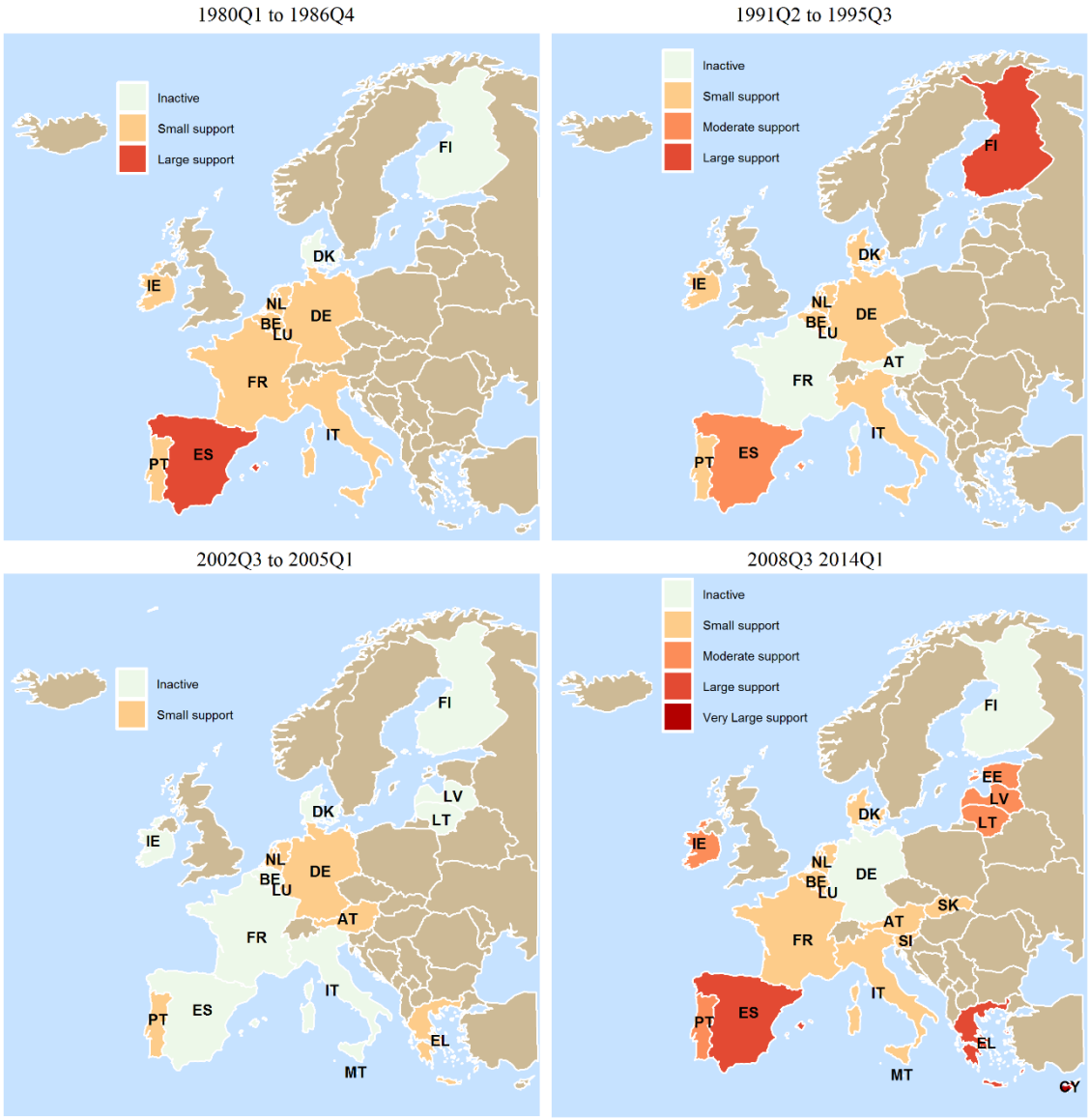
([54]) The proposal to establish a European Investment Stabilisation Function (2018d, 2018e) was adopted on 31 May 2018 together with a proposal to establish a Reform Support Programme (European Commission, 2018f). On 14 December 2018, the Euro Summit mandated the Eurogroup to "work on the design, modalities of implementation and timing of a budgetary instrument for convergence and competitiveness for the euro area, and ERM II Member States on a voluntary basis. It will be part of the EU budget, coherent with other EU policies, and subject to criteria and strategic guidance from the euro area Member States. We will determine its size in the context of the MFF. The features of the budgetary instrument will be agreed in June 2019. The instrument will be adopted in accordance with the legislative procedure, as foreseen by the Treaties, on the basis of the relevant Commission proposal to be amended if necessary" (Euro Summit, 2018).

([55]) European Commission (2018c).

amount of the loan would be proportionate to the unemployment increase and would be of at most 0.34% of its GDP (when the increase in the unemployment rate is larger than 2.5 pps.). With this design, and according to recent simulations, loans would have been offered on average once every ten years to each Member State in the past 30 years; a frequency which reflects the objective of offering support against large asymmetric shocks rather than normal economic fluctuations.

All Member States would have benefited from such a mechanism at some point in the past, if it had been in place over the last decades (Graph II.5.3). Since 1980 the proposed mechanism would have been activated in four periods. In all four periods, the supported Member States and the intensity of the support would have differed. In the mid-nineties, Finland and Spain would have benefited the most from support while many other Member States, less affected, would have received a small support. In the early 2000s, the euro area underwent a moderate downturn and Portugal, Greece, Germany and its neighbours would have benefited from the stabilisation function. In the recent crisis, more countries are included in the sample. Simulations highlight the most crisis-hit Member States (Cyprus, Greece, Italy, Spain, Portugal, Ireland, but also the three Baltics) as the main beneficiaries of support. In addition, loans would have been offered at different times. These simulations exemplify how the Commission proposal targets large asymmetric shocks which are too large to be accommodated by national fiscal policies alone and too country-specific to be dealt with by our common monetary policy.

Graph II.5.3: **Support simulations between 1985 and 2017**



Note: Based on simulation for the EA19 and ERMII since 1980. "Inactive" means that the double trigger condition was not fulfilled in any of the quarters by the Member State. A "small", "moderate", "large" and "maximum" support corresponds to respectively less than 25%, 50% and 75% and more than 75% of the maximum support on average over the period. In practice no Member State would have received on average more than 75% of the maximum support (except Cyprus for which simulations are possible only since 2012), but some would have received this maximum over a fraction of the period. See also European Commission (2018c).
Source: Commission services.

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Part III

Conduct of fiscal policy in the face of economic shocks

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KEY FINDINGS

This part assesses the impact of economic shocks on the conduct of fiscal policy from two different perspectives. First, it empirically assesses the effect of economic shocks on the planned fiscal effort. Second, it provides new estimates of the impact of economic shocks on fiscal outcomes.

Member States often conduct fiscal policy without taking into account the uncertainty surrounding their fiscal forecast.

- We show that uncertain economic outcomes in the form of the forecast error of the fiscal effort have been an integral part of fiscal projections in the EU since 2000.

- Nevertheless, the results from panel regressions reveal that Member States frequently tend to adjust their planned fiscal effort only very late and asymmetrically to forecast errors, relaxing the fiscal effort in case of positive surprises and leaving it unchanged in case of negative ones.

Economic shocks can have a significant and lasting impact on fiscal positions, particularly on public debt in the EU.

- A negative productivity (supply) shock results in a temporary decline in the primary balance, which yields a progressive increase in the public debt-to-GDP ratio.

- A positive inflation (demand) shock has a positive but short-lived impact on the primary balance. At the same time, it inflates away public debt ratio temporarily.

- A positive sovereign interest rate (financial) shock causes a steady increase in the public debt ratio.

A limited learning in the form of disregarding past episodes of uncertainty can lead to insufficient fiscal buffers and jeopardise the sustainability of public finances in the EU.

- A sound approach to fiscal policy requires an adequate and timely reaction from Member States to uncertainty. In particular, a disregard of repeated or large-scale uncertainty, i.e. no learning from past episodes of uncertainty, can lead to insufficient fiscal buffers and jeopardise the sustainability of public finances.

- An appropriate policy response to uncertainty should include taking precautionary measures against the possibility of worse-than-expected outcomes. In addition, policies that foster economic resilience can reduce the likelihood of large negative macroeconomic shocks and limit their adverse consequences.

1. INTRODUCTION

Economic shocks are one element of the uncertainty inherent to economic developments. The recent economic and financial crisis illustrated the effect of unforeseen events on the economy. In the case of the Economic and Monetary Union (EMU), risk of contagion effects put into question the very viability of the euro-area project. ([56]) It does not, however, take the Great Recession to see that uncertainty, shocks and risks are an unavoidable feature of the economy. Indeed, the magnitude of forecast errors found in standard economic projections testify of the inevitability of such economic surprises.

Uncertainty is a broad concept and it can come from a variety of sources. There are multiple meanings and forms of uncertainty. Uncertainty can be broadly described as a situation where economic agents have limited knowledge to assess current and/or future events. ([57]) A canonical separation distinguishes between risk and uncertainty, ([58]) with the former being measurable/insurable and the latter being unmeasurable/uninsurable. It is difficult in practice, however, to disentangle these two concepts and, as a result, they are generally used interchangeably. ([59]) Uncertainty comes from a variety of sources, namely statistical sources (incomplete or inaccurate data), conceptual sources (inadequate or competing models) or structural sources (lack of knowledge about the true structure of the economy). ([60])

Uncertainty also affects fiscal policy. In the short and medium term, much of the uncertainty about fiscal policy comes from shocks to the macroeconomic environment and the impact of these on fiscal variables. ([61]) Therefore, fiscal plans should factor in the uncertainty surrounding fiscal projections. In the longer term, the main sources of budgetary uncertainty stem from potential growth, interest rate on public debt, health-care/ageing expenditure and contingent liabilities. ([62])

This part analyses the impact of economic shocks on planned fiscal efforts and fiscal outcomes. Chapter III.2. reviews how the EU fiscal governance framework deals with uncertainty. Chapter III.3. examines if and to what extent the design of the planned fiscal adjustment takes into account past forecast errors about fiscal outcomes. Chapter III.4. provides new estimates on how economic shocks translate into fiscal policy outcomes. Finally, Chapter III.5. concludes and discusses policy implications.

We focus on two issues related to fiscal uncertainty in our analysis. While uncertainty is inherently unobserved and difficult to quantify, several indicators have been used (see Box III.2.1 for an overview). Admittedly, we do not cover all dimensions of uncertainty in this analysis. In Chapter III.3., we characterise uncertainty about fiscal outcomes on the basis of forecast errors. In Chapter III.4., we take a model-based approach and show how exogenous shocks affect fiscal outcomes.

([56]) Buti and Padoan (2013).
([57]) Ellison and Williams (2012).
([58]) Knigth (1921).
([59]) Balta et al. (2013), Fernandez-Villaverde et al. (2015), Meinen and Roehe (2017); see Rossi et al. (2017) for one attempt to disentangle the two.
([60]) ECB (2016).
([61]) Belinga et al. (2014), Mourre and Princen (2015), Mourre et al. (2016); Fioramanti et al. (2016), Koester and Priesmeier (2017). See also Box III.2.2.

([62]) Auerbach (2014).

2. HOW DOES THE EU FISCAL GOVERNANCE FRAMEWORK DEAL WITH UNCERTAINTY?

The Stability and Growth Pact (SGP) accommodates uncertainty arising from statistical and conceptual sources. There are in particular two reasons why the EU fiscal governance framework acknowledges uncertainty. First, the data used in the assessment of compliance with the fiscal rules are frequently subject to revisions (statistical uncertainty). Second, some key concepts used in the fiscal surveillance process (e.g. the required fiscal effort) are unobserved and must be estimated using model techniques (conceptual uncertainty).

The following provisions of the fiscal governance framework cater for these two types of uncertainty in an asymmetric way. These provisions are meant to cater for negative shocks to avoid that a Member State is penalised by the rules.

Broad compliance margins: Since the 2011 SGP reform of the so-called "six-pack", the preventive arm of the SGP includes the concept of "non-significant deviation". Member States could be considered to be broadly compliant with EU fiscal rules if their required fiscal adjustment towards the medium-term budgetary objectives (MTO) deviates by less than 0.5% of GDP in one year or 0.25% of GDP on average over two years. ([63]) These tolerance margins accommodate uncertainty ex-post at the time of assessing compliance. Overall, they are designed to cater for statistical uncertainty that is not predictable but is consider as likely to occur given past experience.

Constrained judgement approach: A key input into the calculation of the structural balance is the estimate of the output gap, i.e. a numerical assessment of the current cyclical position of the economy. Output gap estimates are surrounded by uncertainty as potential growth, which is used to compute the output gap, is not directly observable. Furthermore, GDP data are frequently subject to revisions. The estimates of the output gap used in the surveillance process are calculated using a commonly agreed methodology based on a production function approach. ([64]) In 2016, the Economic and Financial Committee (EFC) endorsed the use of a "plausibility tool". This tool allows the Commission, under limited and specific circumstances, to exercise some "constrained judgement", i.e. to depart from the output gap estimates of the commonly agreed methodology in its assessment of the cyclical position of Member States when conducting its fiscal assessments.

Freezing principle: The required fiscal adjustment for year *t* is as a rule kept unchanged across forecast vintages, i.e. from the first ex-ante assessment (carried out in spring of year *t-1*) until the ex-post assessment (conducted in spring of the year *t+1*). This principle was designed to provide ex-ante guidance to Member States and to ensure predictability of assessments. However, it comes at a price of non-adaptability to changing economic conditions. For instance, if the economic conditions turn out to be less favourable than expected (i.e. a downward revision of the output gap), the frozen requirement would ask for a too sizeable fiscal adjustment. Against this background, it was agreed to reset, or "unfreeze", the requirements under certain conditions. ([65])

Unusual event clauses and general escape clause: The size or the pace of the required fiscal adjustment can be modified in exceptional cases. The SGP defines two types of events. First "unusual events outside the control of the Member States concerned, which have a major impact on its financial position" (the so-called "unusual event clause"). These events refer to severe asymmetric

([63]) In the preventive arm of the SGP, the required fiscal adjustment is measured by the structural balance and the expenditure benchmark.

([64]) This approach was adopted by the ECOFIN Council following approval from the Economic Policy Committee (EPC). The EPC has a dedicated working group (the Output Gap Working Group (OGWG), which meets regularly to discuss the operational effectiveness and relevance of the existing production function methodology (Havik et al., 2014).

([65]) First, if the most recent forecast/data signal a worsening of the economic situation so that the Member State's output gap would decline below -3% of GDP or the real growth rate would become negative, the required fiscal adjustment based on the most recent forecast/data prevail over the frozen requirement to avoid pro-cyclical fiscal policy in particularly unfavourable economic conditions. Second, if the most recent forecast/data indicate that the frozen requirement would lead to an overachievement of the MTO due to a better starting position, the requirement based on the most recent forecast/data prevail over the frozen requirement.

shock affecting a specific Member State, such as the earthquake in Italy in 2017 or the terrorist attacks in Belgium in 2016. Second, periods of "severe economic downturn for the euro area or the Union as a whole provided this does not endanger fiscal sustainability in the medium term" (the so-called "general escape clause"). In these cases the required fiscal adjustment under the preventive arm of the SGP can be lowered or the deadline for correction of the excessive deficit can be extended.

Opening of an excessive deficit procedure: Various steps are taken under the corrective arm of the SGP when a Member State's deficit or debt ratio is judged to be excessive, i.e. if the general government deficit exceeds 3% of GDP or the debt ratio is higher than 60% of GDP and not sufficiently diminishing towards that level. Exceeding the reference values does not, however, automatically lead to an opening of an excessive deficit procedure (EDP). In particular, an EDP is typically not opened in case of a "small and temporary" or "exceptional" breach of the deficit and debt criterion. In addition, a range of other "relevant factors" (e.g. on the medium-term economic, budgetary and debt position) have to be taken into account in an overall assessment before opening an EDP.

Box III.2.1: Uncertainty: Different measures and focus

While uncertainty is inherently unobserved and difficult to quantify, there is no consensus on how to measure it. ([1])

First, dispersion indicators focus on the dispersion across economic analysts or agents (forecasters, survey respondents, firms). Such indicators assume that a high (low) dispersion indicates a high (low) level of uncertainty. ([2]) While dispersion indicators tend to be based on a large number of observations, some caveats remain. First, agents' opinions may display systematic biases due to financial incentives. ([3]) Second, dispersions across respondents may be explained by differences in available information or in their implications. ([4]) On specific indicators, forecasters do not make predictions simultaneously, therefore dispersion might be caused by time lags between surveys. In addition, firm heterogeneity may be linked to predictable changes, for instance linked to structural evolution of the economy.

Second, stock market volatility is often used as an uncertainty measure. Financial-market data are available at high frequency. Within a certain period one can measure their volatility. Such measures are used to proxy uncertainty, at the same time, it cannot be ruled out that these indicators change for reasons other than uncertainty (e.g. changes in risk aversion or economic confidence). ([5])

Third, forecast errors measures are based on the difference between forecast and outturn data. They assume that a low (high) deviation between forecast and outturn data, e.g. of macro-economic variables ([6]) or financial markets valuations, ([7]) is a sign for a low (high) level of uncertainty. It is possible to aggregate the forecast errors for many variables. ([8])

Fourth, news-based measures count words related to uncertainty in news reports. The more often these words occur, the higher is the degree of uncertainty. ([9]) The main caveats with news-based measures are potential biases due to the subjectivity involved in its execution (e.g. choice of newspapers, search words) as well as the fact that they do not differentiate between national and international uncertainty (e.g. German newspapers writing about Brexit is counted towards Germany's uncertainty). Furthermore, there are limitations regarding data availability, especially for smaller countries.

Finally, to encompass all dimensions, some authors build synthetic indicators combining different measures. ([10])

We exemplify uncertainty measures using four indicators for the EU (Graph 1). We consider the dispersion of forecasters' opinion (ECB SPF), the volatility on the financial market (VSTOXX) and the Economic Policy Uncertainty (EPU).

([1]) For descriptions of uncertainty indicators see also Vašíček (2018), Meinen and Roehe (2017) or Jurado et al. (2015).
([2]) Bloom et al. (2018), Bachmann et al. (2013), Abel et al. (2016).
([3]) Jurado et al. (2015).
([4]) Diether et al. (2002), Mankiw et al. (2003), Vašíček (2018).
([5]) Bekaert et al. (2013).
([6]) Klomp and de Haan (2009), Mohl and Sondermann (2013), Auerbach (2014), Abel et al. (2016), Rossi and Sekhposyan (2017).
([7]) Brown et al. (1988).
([8]) Jurado et al. (2015).
([9]) Baker et al. (2016).
([10]) ECB (2016).

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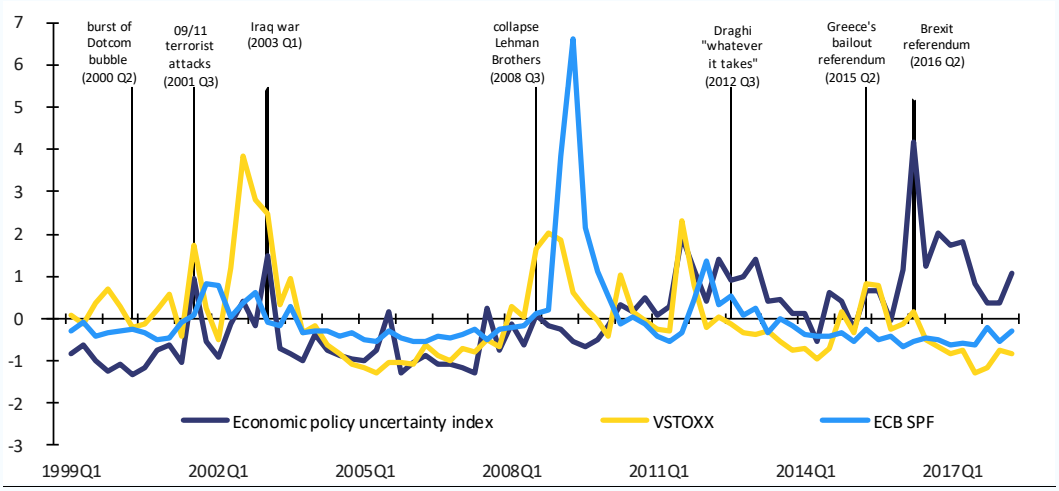
Box (continued)

Graph 1: **Evolution of uncertainty indicators for the EU in comparison**



Source: ECB, European Commission, Baker, Bloom and Davis, Bloomberg.

Uncertainty indicators show marked differences depending on their focus: economic, financial or political uncertainty (Graph 1, Table 1). ([11]) Such uncertainty measures spike at different points in time and exhibit low correlations. The correlation is even negative between the EPU and the dispersion of macroeconomic forecast (-0.08) and it only reaches a level of close to 0.3 between the ECB SPF and the VSTOXX.

The VSTOXX and the bond spreads measure specifically financial markets uncertainty. The VSTOXX increased significantly in reaction to the 9/11 terror attacks, the 2003 Iraq war, and the collapse of Lehman Brothers. It decreased progressively after ECB President Mario Draghi's statement in July 2012 and increased again in 2015 in the context of Greece's bailout referendum.

The Economic Policy Uncertainty (EPU) index focuses on events of a political nature. The EPU index showed significant increases in reaction to the 9/11 terror attacks or the Iraq invasion; two events which also triggered reaction in the financial uncertainty indicators. By contrast, the EPU index did not spike following the fall of Lehman Brothers but it increased following the Brexit referendum, while the measures of financial market and macro-economic uncertainty (e.g. dispersion of indicators) remained at low levels.

Dispersion in the ECB Survey of Professional Forecasts (SPF) primarily measures macroeconomic uncertainty. This indicator shows a spike of uncertainty right after the collapse of Lehman Brothers. The delay compared to the financial indicators around 2009 and 20012 reflects a difference in their nature: the measure of macroeconomic uncertainty peaked after that of financial uncertainty because risks were first observed on the financial market and their materialisation fuelled the risk of contagion to the real economy. The recent referendums on the UK's membership of the EU and Greece's bailout were accompanied by increases in measures of political risk but did not trigger sizeable reactions in measures of macroeconomic uncertainty.

([11]) For the dispersion of indicators we take data from the ECB's Survey of Professional Forecasters (SPF) and estimate the cross-sectional variance of 1-year rolling forward forecast point predictions of Eurozone GDP growth (Abel et al., 2016). In terms of financial-markets measures, we use the VSTOXX, which measures the volatility of the EURO STOXX 50, as well as the bond spread between the German and Greek 10-year government bonds. Finally, the news-based measure is shown by the Economic Policy Uncertainty index, which is applied to Europe (Baker et al., 2016).

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Box (continued)

Table 1: **Uncertainty measures at a glance**

Measure type	Description	Area	Variables analysed	Author
Dispersion indicators	Uses disagreement as a proxy for uncertainty assuming that episodes characterised by high (low) disagreement are indicative of a high (low) level of ex ante uncertainty shared by respondents	Economic	Forecast of output growth, inflation, unemployment	Zarnowitz and Lambros (1987), Lahiri and Sheng (2010), Abel et al. (2016)
		Economic	Business expectations	Bachmann et al. (2013)
		Economic	Business and consumer surveys	Vašíček (2018), Balta et al. (2013)
	Uses dispersion as a proxy for uncertainty assuming that episodes characterised by high (low) dispersion are indicative of a high (low) level of uncertainty	Economic	Firm-level or industry-level sales and productivity	Bloom et al. (2018)
Stock market volatility	Uses stock market volatility indexes as a proxy for uncertainty	Financial markets	Stock market volatility index (VXO, VIX)	Bloom (2009), Bekeart et al. (2013)
Forecast errors	Assumes that episodes associated with low (high) ex post forecast errors are indicative of a low (high) level of ex ante uncertainty.	Economic	Forecast error of output growth, inflation, unemployment	Abel et al. (2016)
		Economic	Inflation, unemployment rate, output growth	Rossi and Sekhposyan (2017)
		Policy	Fiscal, monetary, trade policies	Klomp and de Haan (2009)
		Economic	Fiscal balance	Auerbach (2014)
		Economic	132 macroeconomic series	Jurado et al. (2015)
News-based measures	Evaluates the frequency of articles in countries' leading newspapers that contain words related to uncertainty. The higher the frequency, the higher the uncertainty	Policy	Newspaper articles	Baker et al. (2016)
	Link news reports from politicians' statements to sovereign bond spreads in the EU	Policy	Sovereign bond spreads	Mohl and Sondermann (2013)

Source: Commission services.

Box III.2.2: New approaches to quantify the fiscal impact of unemployment changes with EUROMOD

This box presents novel approaches to quantify the expected fiscal impact of changes in unemployment to be developed by the Joint Research Centre (JRC) of the European Commission.

Large unemployment fluctuations can have a significant budgetary impact as recently evidenced by the Great Recession. For instance, unemployment spending rose by more than 70% in Bulgaria, Estonia, Ireland, Spain, Slovenia and Slovakia, between 2007 and 2011, against an EU average increase of around 30%. ([1]) In the case of Spain, the sharp increase in unemployment spending represented a significant share of public expenditure slippages during the post-crisis period, despite the implementation of measures aimed at increasing incentives for job seekers and the transition of long-term unemployed to alternative social support schemes. ([2])

The identification of the budgetary effects of unemployment changes is a challenging task. At macro level, they are often assessed based on assumptions on the magnitude of the elasticity of the unemployment expenditures with respect to the number of unemployed or the unemployment rate. However, such an approach fails to capture factors linked to the heterogeneity of workers, which matters for at least two reasons: (i) the eligibility for and size of unemployment benefits depend on workers' characteristics (e.g. previous wage, working history, family circumstances); and (ii) the likelihood to find a job also depends on workers' characteristics (in particular, skills, gender, marital status). ([3])

The JRC is exploring innovative approaches to quantify the budgetary costs of changes in unemployment based on micro data using the microsimulation model EUROMOD. Common characteristics across the approaches are the interaction of a macro-model to determine the macroeconomic situation and a micro-simulation model, accounting for policy changes and incorporating workers heterogeneity. The main steps are summarised in Graph 1.

First, a macro-model has to be set up. Both the use of a macro-model providing GDP and unemployment forecasts or of empirical relationships between GDP and unemployment (e.g. Okun's law) could be used to derive the level of unemployment corresponding to a certain GDP level.

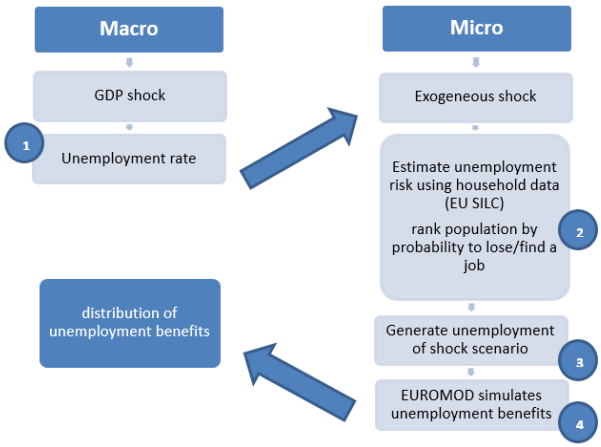
Second, survey micro-data are used to determine unemployment risk. The analysis employs individual level data from the European Statistics on Income and Living Conditions (EU-SILC) to estimate an unemployment risk for each respondent active on the labour market. The estimation is performed separately for each EU Member States using 2015 SILC data. ([4]) Subsequently, EU-SILC respondents are sorted according to their predicted unemployment probability. ([5])

([1]) Based on Eurostat data.
([2]) Martí and Pérez (2015).
([3]) Blundell and Stoker (2005).
([4]) The number of observations varies from more than 4,300 in Luxembourg to just above 20,000 in Italy. A probit regression is used, with dependent variable equal to 1 if the respondent is unemployed. Demographic characteristics and income circumstances are used as regressors. In order to avoid deterministic behaviours, the fitted values of the probit are complemented by a random component before computing the unemployment probabilities. Intuitively, this operation avoids that all the individuals with characteristics strongly associated with being unemployed, for example having a low education level, are automatically identified as those with the highest unemployment risk.
([5]) This approach follows the work by Jara et al. (2015). The matching process that generates employment relationships, i.e. between workers and vacancies, has been documented extensively. For a broad overview of the literature concerning the matching function see Petrolongo and Pissarides (2001). More recently, Elsby et al. (2015) also provided an overview of the extensive research with respect to the resulting relationship between unemployment and the job vacancy rate, i.e. the Beveridge curve.

(Continued on the next page)

Box (continued)

Graph 1: **Schematic representation of the approach**



Source: Commission services.

Third, the target number of unemployed derived in step 1 is recreated in the EU-SILC data. The JRC is testing two different approaches in order to accomplish this:

- The first approach recreates the targeted number of unemployed by first drawing observations from individuals currently unemployed according to their unemployment risk (as estimated in step 2). If, by doing so, the target number of unemployed has not been reached, the model draws from the set of employed people, starting from those with higher unemployment risks. In addition, the selection can account for country- and unemployment-rate-specific benefit coverage rates, estimated using data from the EU Labour Force Survey. While the method replicates the targeted number of unemployed, it fails to simulate the duration of the unemployment spells.

- In the second approach, the JRC is exploring the possibility of targeting not the number of unemployed, but rather the total sum of months spent in unemployment. In this case, using country level panel data from aggregated EU-SILC micro data, an empirical correlation can be determined between levels of unemployment and total duration of unemployment spells. The second approach selects among the observed unemployed and next the respondents in employment, until the desired number of months spent in unemployment in one year is reached for the entire economy.

Fourth, the microsimulation model EUROMOD is used to simulate unemployment benefits for the new stock of unemployed. Individual unemployment payments are aggregated at the country level to analyse the budgetary impact of the changes in unemployment. ([6]) Given this objective, the JRC is also considering to reweight the data as an alternative to introduce unemployment shock into EU-SILC data. A macro model could for example provide information on changes in unemployment by skill group. In that case, the survey weights of the unemployed could be changed accordingly, allowing matching the targeted number of unemployed and, with the help of EUROMOD, simulating the budgetary cost of the unemployment changes. Finally, given a probability distribution of shocks to GDP, model simulations can be repeated in order to construct confidence bounds or fan charts of the simulated distribution of fiscal

([6]) EUROMOD is a tax/social benefits calculator designed to provide results which are representative at country-level and validated against aggregate national statistics. EUROMOD codifies direct taxes and social benefits in all EU countries. For this, it relies on detailed micro data from the EU-SILC survey, including information on socio-demographic characteristics and financial circumstances. The EUROMOD model is therefore a tool suitable for the quantification of the fiscal impact of unemployment changes.

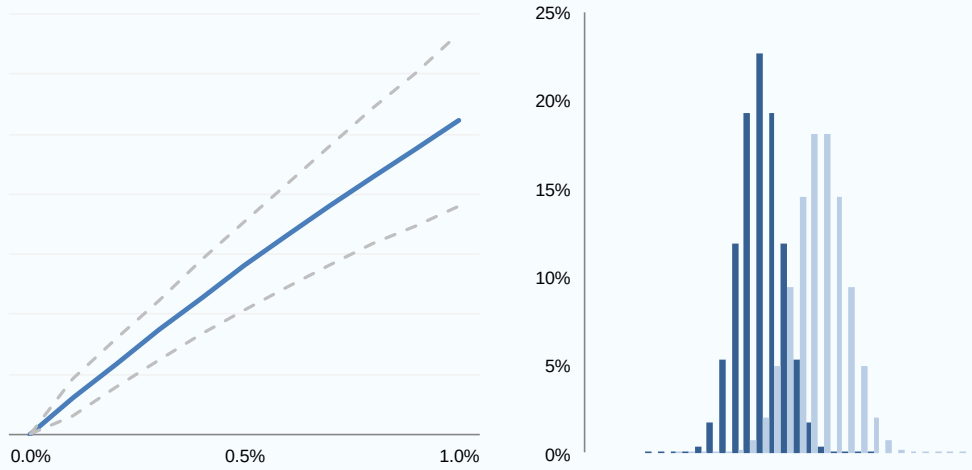
(Continued on the next page)

Box (continued)

outcomes. ([7]) Graph 2 illustrates the expected change in unemployment spending (EUR) as a function of the change in the unemployment rate in a stylised hypothetical simulation.

The proposed approach has three key advantages. The first advantage is to have a measure of the budgetary cost of unemployment which changes with legislation reforms and allows distinguishing the impact of the reforms from the impact of unemployment developments. Second, the measure is micro-based and reflects the heterogeneity of the unemployed and possibly the cost asymmetry in the different phases of the cycle. This heterogeneity could have non-negligible fiscal consequences if different workers are entitled to different unemployment insurance coverage and/or given that the change in their employment status or income level may have implications for their entitlement to other social benefits. Third, the proposed methodology enables "almost" real-time application, since it only requires measures of current unemployment for its application.

Graph 2: **Hypothetical fan chart**



Note: Change in unemployment spending as a function of the change in the unemployment rate (pp. change). On the right graph, dark (light) bars show an increase in the unemployment rate of 0.4 (0.8) pp.
Source: Commission services.

Some caveats remain/require further investigation. First, although the proposed methodology captures heterogeneity in unemployed characteristics through the estimated unemployment risk, it is invariant to the type of shock. A five percent unemployment shock originated by aggregated demand will generate the same pool of unemployed as an aggregated supply shock of the same size. A possible way to overcome this limitation is to use additional information on the type of shock in the selection process. For example, different types of shock may influence high and low skilled workers or some industries in a different way. Second, the time lag with whom EU-SILC is made available is dealt with by EUROMOD with the use of uprating factors for monetary variables, which are only an approximation of monetary update over time.

([7]) The initial distributional characteristics of the macroeconomic shocks can be obtained from a consistent macro model or using estimations as commonly used for the stochastic debt projections in the Commission's Fiscal Sustainability Reports. The methodology has also been followed by the IMF and the World Bank in its fiscal policy analyses, see e.g. Celasun et al. (2007) and Budina and van Wijnbergen (2008).

3. DO MEMBER STATES REACT TO UNCERTAIN OUTCOMES?

3.1. INTRODUCTION

In this Chapter, we assess if and under which conditions Member States adjust their fiscal plans to periods of uncertainty, i.e. if they learn from past episodes of uncertainty. Since uncertainty is an inevitable part of economic life, a sound approach to fiscal policy does not necessarily require Member States to react to uncertainty. However, a myopic disregard of repeated or large-scale uncertainty, i.e. no learning from past episodes of uncertainty, can do serious damage to a Member State's public finances.

The remainder of this Chapter is structured as follows. Section III.3.2. presents some stylised facts about the uncertainty measure used here. Section III.3.3. explains the empirical strategy. Finally, Section III.3.4. presents the main findings.

3.2. STYLISED FACTS: FISCAL FORECAST ERRORS CAN BECOME SIZEABLE

We measure uncertainty as the forecast error of the fiscal effort, a key indicator of the SGP. The fiscal effort is the component of fiscal policy that depends most on the decision of policymakers. It is measured as the change in the structural balance. ([66]) The structural balance adjusts the overall government balance for the impact of the economic cycle as well as for certain one-off revenues (e.g. sales of telecommunication licences) and one-off capital transfers (e.g. financial assistance to the banking sector). The forecast error of the fiscal effort for year *t* is defined as the difference between the one-year ahead forecast for year *t* made in autumn of year *t-1* and the "realised" (outturn) value for year *t* observed in spring of year *t+1*. As a result, a positive (negative) forecast error points to a negative (positive) surprise. The use of the autumn forecast allows us to take into account Member States' draft budgetary plans.

The forecast error is based on Commission forecast reports. We compute the forecast errors for Member States using real-time data from Commission forecast vintages between autumn 2000 and spring 2018. Commission forecasts appear to represent an unbiased forecast using all the available information, therefore capturing the "intrinsic" uncertainty. ([67]) By contrast, forecasts produced by domestic authorities may be overly optimistic in order to avoid potential procedural consequences in case of non-compliance with the targets. ([68])

Our results show that the forecast error of the fiscal effort can be sizeable even for the EU28 on average (Graph III.3.1). In the early 2000s, the forecast error of the fiscal effort for the EU28 points to negative surprises, i.e. the fiscal effort turned out to be smaller than expected resulting in a positive forecast error. The negative surprises were highest during the Great Recession in 2008 and 2009, when the fiscal effort turned out to be more than 1 pp. smaller than expected. Such a figure can be considered very large, as the SGP defines a deviation of the fiscal effort on the adjustment path towards the MTO as "significant" if it exceeds 0.5% of GDP in one year or 0.25% of GDP on average in two years. In the last three years, the EU28 showed positive surprises (i.e. negative forecast errors), which were, however, rather small.

Sizeable forecast errors of the fiscal effort have not only occurred in times of deep crisis (Graph III.3.2). It is true that the forecast errors were particularly high during the Great Recession and the European debt crisis (i.e. between 2008 and 2013). During this period, more than 70% of the forecast errors exceeded 0.5 pp. (see red Kernel distribution in Graph III.3.2). In addition, the forecast errors were characterised more often by negative surprises (explaining the right-skewed distribution). However, in non-crisis times sizeable

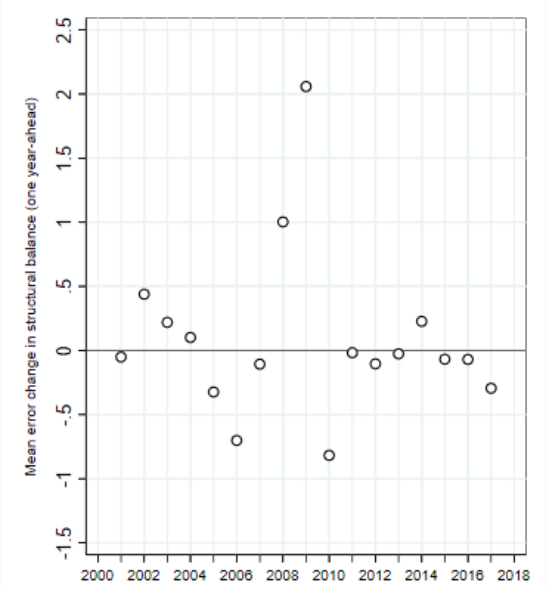
([66]) The preventive arm of the SGP uses a second measure for the fiscal effort, namely the expenditure benchmark.

([67]) González Cabanillas and Terzi (2012) and Fioramanti et al. (2016) for GDP and Mourre et al. (2016) for tax revenues. We ran tests for bias in the Commission's projections, by simply regressing the forecast error on a constant and testing if this constant is statistically different from zero. Our findings show that the forecast of the fiscal effort does not show a bias for country aggregates (EU, euro area, CEEC) and for 25 out of 28 Member States. Only for Croatia, Denmark and Sweden do we find a tendency to underestimate the fiscal effort. For Croatia, the number of observations is limited, since it only joined the EU in 2013. The results broadly confirm similar tests conducted in 2012 (González Cabanillas and Terzi, 2012).

([68]) Frankel and Schreger (2013).

forecast errors (exceeding 0.5%) occurred in around 50% of cases (see green Kernel distribution in Graph III.3.2).

Graph III.3.1: **Mean error of the fiscal effort (EU28 average)**

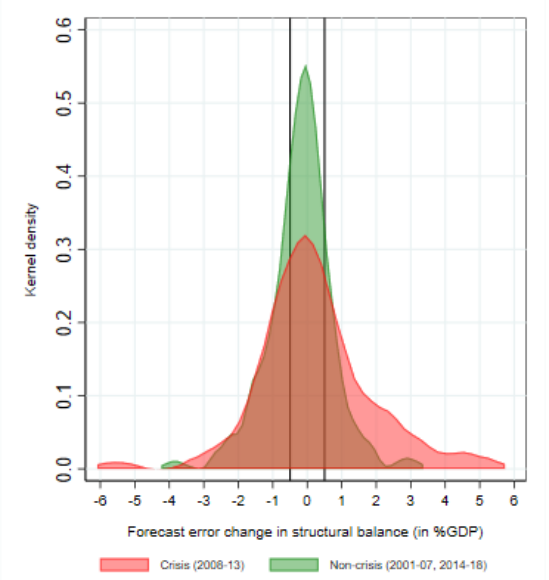


Note: The forecast errors are defined as the difference between the forecast from autumn for year t+1 and the realised value in spring for year t-1. A positive (negative) forecast error corresponds to a negative (positive) surprise. The calculations are based on real-time data from Commission forecast vintages from 2000-2018. For data availability reasons, the cyclically-adjusted balance is used before 2006 instead of the structural balance. EU28 aggregate is calculated based on non-weighted averages.
Source: Commission services.

The forecast error of the fiscal effort was non-negligible for many Member States. For the EU as a whole, positive and negative one-year ahead forecast errors offset each other over the period 2000 to 2018, resulting in a mean error close to zero. However, at country-level the forecast error seems to be more persistent. Over the period 2000 to 2018, on average around 20 (15) percent of the Member States overestimated the fiscal effort by on average 0.25 (0.5) pp. (Graph III.3.3). The mean error represents only a rough indicator of the forecast quality, since positive and negative errors can offset each other, thereby limiting the size of the error. As a consequence, we also calculate the mean absolute error. ([69]) We find that in more than 80% of Member States, the mean absolute error exceeds 1 pp. over the period 2000 to 2018 (Graph III.3.4).

([69]) The mean absolute error (MAE) measures the average absolute difference between the forecast and the outturn.

Graph III.3.2: **Distribution of forecast errors of the fiscal effort (EU28 Member States)**



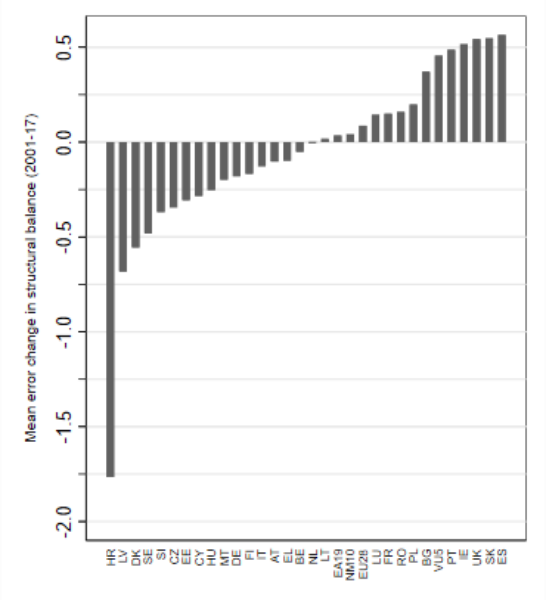
Note: The forecast errors are defined as the difference between the forecast from autumn for year t+1 and the realised value in spring for year t-1. A positive (negative) forecast error corresponds to a negative (positive) surprise. The calculations are based on real-time data from Commission forecast vintages from 2000-2018. For data availability reasons, the cyclically-adjusted balance is used before 2006 instead of the structural balance.
Source: Commission services.

3.3. EMPIRICAL STRATEGY

We analyse Member States' reaction to uncertainty in three steps using a panel data approach (Graph III.3.5, Box III.3.1). As a first step, the key drivers of the planned fiscal adjustment are determined in a baseline model using a classical fiscal reaction function approach. In a second step, we augment the baseline specification with the forecast error of the fiscal effort, in order to get a first rough idea of whether Member States learn from past forecast errors/uncertainty (i.e. a "learning effect"). In a third step, we refine our test of the learning effect. Since forecast errors are an unavoidable part of fiscal projections, we do not expect Member States to react to all kinds of uncertainty. However, a myopic disregard of repeated errors or large-scale uncertainty can do serious damage to a Member State's public finances. Therefore, we use a panel interaction model to find the conditions under which the forecast error becomes important (see Box III.3.1 for a more detailed description of the empirical strategy). The analysis concentrates

on all Member States using real-time data from Commission forecast reports between autumn 2000 and spring 2018.

Graph III.3.3: **Mean error of fiscal effort by country (one-year ahead)**

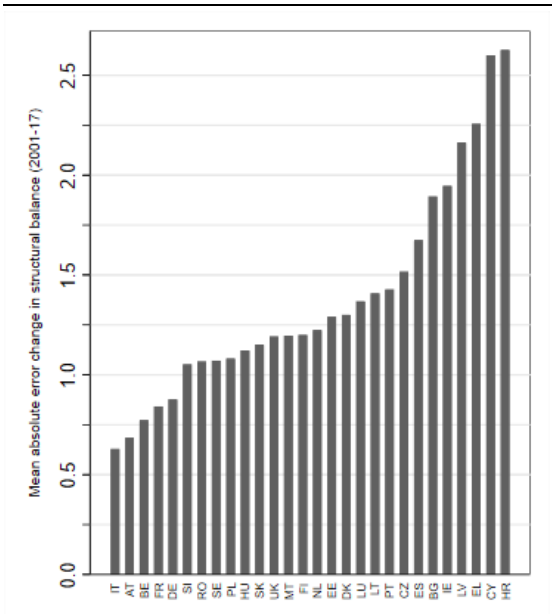


Note: The one-year ahead forecast error is defined as the difference between the forecast from autumn for year t+1 and the realised value in spring for year t-1. A positive (negative) forecast error corresponds to a negative (positive) surprise. The calculations are based on real-time data from the Commission autumn forecasts using forecast vintages from 2000-2018. For data availability reasons, the cyclically-adjusted balance is used before 2006 instead of the structural balance. EU28 aggregate calculated based on non-weighted averages.
Source: European Commission forecast across different vintages.

The dependent variable is defined as the planned fiscal effort for the year ahead and, in line with the academic literature, we control for a number of factors. The dependent variable measures the fiscal effort (the change in the structural balance) planned for the next year, according to Commission forecasts. The independent variables are selected in line with the academic literature. ([70]) We control for the economic cycle, as measured by the change in the output gap, and we use the debt-to-GDP ratio to take account of governments' budget constraints. The remaining independent variables include other macroeconomic indicators (current account balance), political-economic variables (the percentage share of months of a given year before an election), demographic factors (old age dependency ratio) and institutional factors (Member States in EDP, achievement of the MTO). Since the impact of the macroeconomic and demographic variables does not affect the fiscal effort immediately, they are included with a lag of one year.

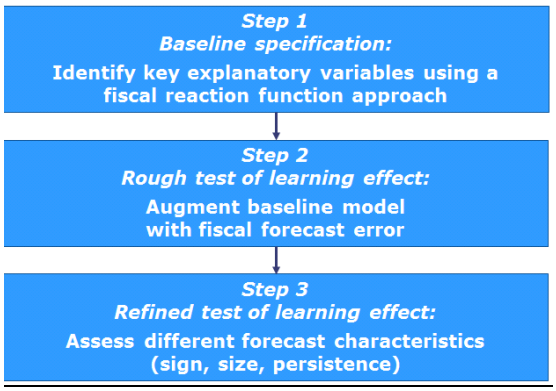
([70]) Bohn (1998), Checherita-Westphal and Žďárek (2017), Combes et al. (2017), European Commission (2011).

Graph III.3.4: **Mean absolute error of fiscal effort by country (one-year ahead)**



Note: The one-year ahead forecast error is defined as the difference between the forecast from autumn for year t+1 and the realised value in spring for year t-1. A positive (negative) forecast error corresponds to a negative (positive) surprise. The calculations are based on real-time data from the Commission autumn forecasts using forecast vintages from 2000-2018. For data availability reasons, the cyclically-adjusted balance is used before 2006 instead of the structural balance.
Source: European Commission forecast across different vintages.

Graph III.3.5: **Estimation strategy: Do Member States react to unexpected fiscal outcomes (learning effect)?**



Source: Commission services.

Box III.3.1: **Estimation strategy: Do Member States learn from past episodes of uncertainty?**

This box provides more details on the estimation strategy, which is conducted in three steps. The key purpose of the empirical approach is to find if Member States react to uncertainty, i.e. if they show a learning effect with regards to past uncertainty:

As a first step, the key drivers of the expected fiscal adjustment are determined in a baseline specification, which can be expressed as follows:

$$\Delta\, SB_{\mathrm{i,t+1,j}} = \beta_1 \Delta\, \mathrm{OG}_{\mathrm{i,t,j}} + \beta_2 \mathrm{public\ debt}_{\mathrm{i,t-1,j}} + \beta_3 X_{i,t,j} + \vartheta_{\mathrm{t}} + \theta_{\mathrm{i}} + \varepsilon_{\mathrm{i,t}} \quad (1)$$

where *i* refers to the Member State, *t* to the year of the observed value and *j* to the Commission forecast vintage. For instance, the variable *public debt*$_{BE,2019,AF2018}$ stands for the public debt ratio of Belgium (*i*) in 2019 (*t*) as published in the Commission 2018 autumn forecast report (*j*). The dependent variable is the expected change in the structural balance. The independent variables are selected in line with the large fiscal reaction function literature and include an indicator for the economic cycle (change in the output gap) and the budget constraint (public debt). Additional control variables are presented in the main text above and summarised in the vector *X*. Furthermore, the specification includes year- (ϑ) and country-fixed effects (θ), while ε represents an error term.

In a second step, the baseline specification is augmented with the forecast error presented above to get a rough idea of the impact of a possible learning effect from the past. The augmented baseline specification looks as follows:

$$\Delta SB_{\mathrm{i,t+1,j}} = \beta_1 \Delta \mathrm{OG}_{i,t,j} + \beta_2 \mathrm{public\ debt}_{i,t-1,j} + \beta_3 X_{i,t,j} + \sum_{k=1}^{3} \beta_{\mathrm{k+3}}\, err(\Delta SB_{t-k}) + \vartheta_{\mathrm{t}} + \theta_{\mathrm{i}} + \varepsilon_{\mathrm{i,t}} \quad (2)$$

where *err(*ΔSB*)* stands for the one-year ahead forecast error of the fiscal effort as measured by the change in the structural balance. This means that a positive (negative) forecast error indicates that the outcome is worse (better) than expected. We also test for the lagged impact of the forecast errors by using the forecast errors of the previous three years. ([1]) In terms of our main hypotheses, we would find evidence for a learning effect from the past if the coefficient of the forecast error is positive and statistically different from zero, meaning that a marginal increase in the fiscal error (i.e. an overestimation of the fiscal effort) leads, ceteris paribus, to a tightening of the fiscal adjustment.

In a third step, we revise the specification to find out under which conditions Member States react to negative or positive surprises. We estimate the following interaction model:

$$\begin{aligned}\Delta SB_{\mathrm{i,t+1,j}} = {} & \beta_1 \Delta \mathrm{OG}_{i,t,j} + \beta_2 \mathrm{public\ debt}_{i,t-1,j} + \beta_3 X_{i,t,j} + \beta_4 err\left(\Delta \mathrm{SB}_{i,t-1,j}\right) + \beta_5 D_{\mathrm{i,t,j}} + \\ & \beta_6 err\left(\Delta \mathrm{SB}_{i,t-1,j}\right) * D_{\mathrm{i,t,j}} + \vartheta_{\mathrm{t}} + \theta_{\mathrm{i}} + \varepsilon_{\mathrm{i,t}} \end{aligned} \quad (3)$$

where *D* represents a dummy variable that is equal to one if the forecast error is positive and/or sizeable and/or persistent. We first assess cases of negative surprises (i.e. positive forecast errors), since they can be considered particularly damaging for the sustainability of public finances. We also test the impact of positive surprises (i.e. negative forecast errors). To find out if these elements have an impact on the expected fiscal effort, the dummy variable is interacted with the forecast error. We can then derive the marginal effect, which measures how a marginal change of the forecast error effects the fiscal effort as follows:

$$\frac{\partial\, SB}{\partial\ \mathrm{err}\ (\Delta SB)} = \beta_4 + \beta_6\, D_{\mathrm{i,t,j}} \quad (4)$$

([1]) Due to multicollinearity the coefficients and standard errors of the forecast error cannot be interpreted if the variable is included into the regression with several lags. As a consequence, we calculate the joint sum of forecast errors coefficients and use a simple Wald test to check whether this short-term elasticity is significant.

(Continued on the next page)

Box (continued)

The equation shows that the marginal effect depends on the value of the dummy variable *D*. The marginal effect is defined as $\beta_4 + \beta_6$ if the dummy variable is equal to 1 (e.g. forecast error shows a negative surprise), whereas it simplifies to β_4 if the dummy variable is 0 (e.g. forecast error shows a positive surprise). ([2]) In addition, the standard errors for both events can to be calculated based on the variance-covariance matrix.

We apply different estimation techniques. In terms of the estimation approach, we apply three different techniques. We first estimate the model with simple LSDV estimations using White heteroscedasticity robust standard errors. ([3]) In addition, we provide further evidence by running first-difference and system-GMM regressions in order to control for endogeneity. ([4]) We consider the forecast error and the output gap 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". ([5]) We test the validity of the GMM specification with AR(1,2) and Hansen tests.

([2]) For the specification and interpretation of interaction terms see Brambor et al. (2006); Braumoeller (2004).
([3]) White (1980).
([4]) Blundell and Bond (1998).
([5]) The standard errors are corrected following Windmeijer (2005).

3.4. MAIN RESULTS

Based on simple correlations, we find a positive but very weak relationship between the planned fiscal effort and the forecast error of the fiscal effort (Graph III.3.6). Linking the forecast error of the fiscal effort with the planned fiscal effort reveals a rather weak relationship for both euro area (light blue) and other Member States (light and dark blue). The correlation remains weak when the forecast error is used with a lag of two or three years. ([71]) However, as correlation does not imply causality, further analysis needs to be undertaken in a regression framework.

Our baseline model largely confirms the findings of the fiscal reaction function literature (Table III.3.1). We find strong evidence of pro-cyclical fiscal policy, as shown by the negative and significant coefficient of the change in the output gap. In addition, an increase of the debt-to-GDP ratio tends to lead to a fiscal tightening. Moreover, election years appear to be significantly linked with a loosening of the fiscal adjustment. The initial years of the Great Recession (2018-09) appear to have resulted in a significant loosening of the fiscal adjustment. Finally, Member States that have overachieved their MTOs seem to set looser fiscal adjustment plans, while Member States in EDP seem to set a tighter fiscal adjustment plan. The findings are robust to the estimators used (columns 1-3). ([72])

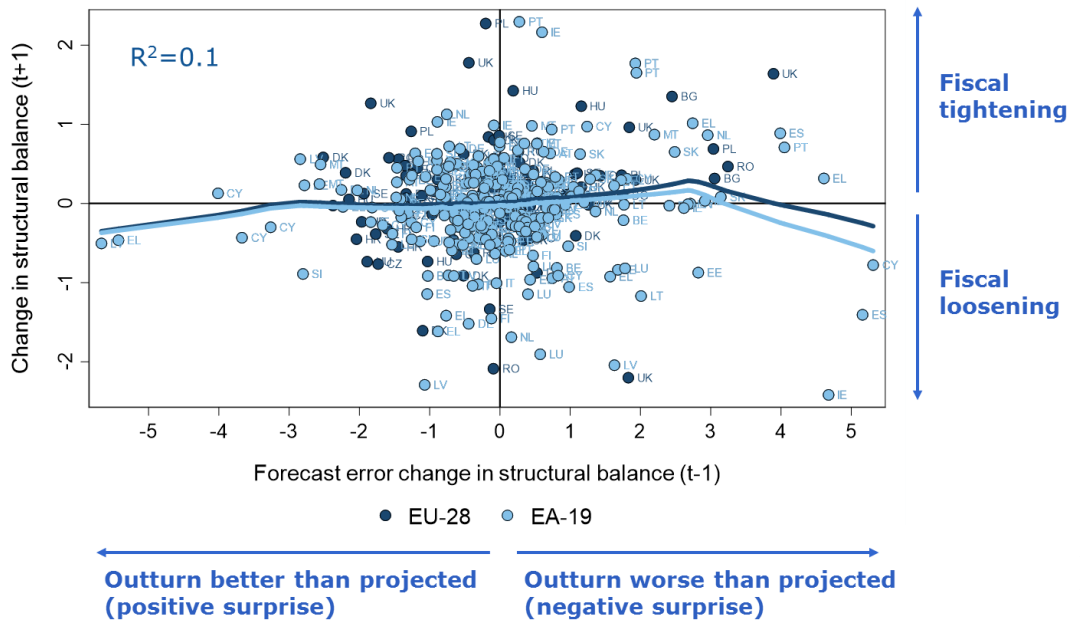
A rough first assessment using the augmented baseline model indicates no significant learning effect (Table III.3.1). To get a rough first idea if Member States learn from past episodes of uncertainty, we augment the model with the forecast error of the fiscal effort. Since the consequences of increased uncertainty may only kick in after repeated forecast errors have occurred, we assess the impact of time lags in greater detail. We run our empirical analyses by adding the lagged forecast error in a stepwise fashion, beginning with a lag of one year (column 2) and ending up with specifications comprising the forecast error with a lag of up to two (column 3) and three years (column 4). The results indicate that an increase (decrease) in the forecast error, corresponding to a negative (positive) surprise, does not have a statistically significant impact. The findings of the other independent variables remain broadly unchanged.

Robustness tests broadly confirm the main findings (Table III.3.1). First, we shorten the sample to re-run the regressions for the time period since 2005 (columns 5-7). The reason for it is that the structural balance has been used in fiscal surveillance only since 2005, while the cyclically-

([71]) These results are not shown here but are available upon request to the authors.

([72]) We also tested for a broad range of additional independent variables (such as the current account balance, openness, ageing), which, however, turned out to be not statistically significant.

Graph III.3.6: **Correlation between forecast error and planned fiscal adjustment**



Note: The graph shows simple correlations between the planned fiscal effort (as measured by the change in the structural balance) for the year ahead (y-axes) and the one-year ahead forecast error of the fiscal effort (x-axes). The sample covers 28 Member States, which are highlighted in light blue (euro area Member States) and dark blue (other Member States). The fit is illustrated using a locally-weighted scatterplot (non-parametric regression), which has the main advantage of not requiring the specification of a global functional form to fit a model and calculated for euro area (light blue line) and other Member States (dark blue line).
Source: Commission services.

adjusted balance was used before.([73]) Second, we assess the sensitivity of our findings by using different estimation techniques (columns 8 and 9). Overall, our key findings do not change much in both cases.

We revise our empirical strategy to find out if Member States learn from past episodes of uncertainty. A myopic disregard of repeated or large-scale uncertainty can do serious damage to the public finances. In order to take this factor into account, we assess the sign, size and persistence of the forecast error in greater detail. We assess negative surprises (i.e. positive forecast errors) and positive ones (i.e. negative forecast errors). We also test if large or very large negative or positive surprises (0.25 pp. or 0.5 pp. of GDP) had an impact. Finally, we test if repeated (large) negative or positive surprises had an impact on Member States' planned fiscal effort.

Our findings of the refined test of the learning effect can be summarised as follows (Table III.3.2):

- ***Sign of the forecast error***: Our results show that neither negative (i.e. a *positive* forecast error) nor positive surprises of the fiscal forecast (i.e. a *negative* forecast error) do have a statistically significant impact on the planned fiscal effort.

- ***Size of the forecast error***: Similarly, *large* or *very large* negative surprises do not cause a significant effect on the planned fiscal effort if they occur only once. This finding holds irrespective of the sign (positive or negative) and the size (0.25 pp. or 0.5 pp. of GDP) of the forecast error. Similarly, the occurrence of one (very) large forecast error in the past (up to three years) have no statistically significant impact on the planned fiscal effort.

([73]) The structural balance corresponds to the cyclically-adjusted balance excluding one-offs and certain temporary measures.

Table III.3.1: **Regression results (augmented) baseline model**

Dependent variable: structural balance	Baseline model	Augmented baseline model with forecast error			Robustness shorter sample (since 2005)			estimation technique	
Estimator	FDGMM	FDGMM			FDGMM			LSDV	SYSGMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Δ Output gap (t)	-0.434***	-0.369***	-0.298***	-0.294***	-0.378***	-0.301***	-0.290***	-0.293***	-0.386***
	(-3.732)	(-3.322)	(-3.698)	(-3.170)	(-3.403)	(-3.407)	(-3.112)	(-4.685)	(-3.436)
Public debt (t-1)	0.006***	0.005***	0.005***	0.006***	0.005***	0.005***	0.006***	0.009***	0.005**
	(3.255)	(2.698)	(2.644)	(3.382)	(2.634)	(2.619)	(3.293)	(2.851)	(2.329)
Election year (t)	-0.001*	-0.002**	-0.002***	-0.002***	-0.002**	-0.002***	-0.003***	-0.000	-0.002*
	(-1.852)	(-2.030)	(-2.819)	(-4.025)	(-2.253)	(-2.679)	(-4.025)	(-1.438)	(-1.946)
Crisis dummy (2008-09)	-0.119*	-0.602*	-0.567**	-0.511*	-1.020***	-0.909***	-0.934***	-0.104	-0.603*
	(-1.842)	(-1.777)	(-2.169)	(-1.785)	(-3.254)	(-4.051)	(-4.046)	(-0.693)	(-1.741)
MTO overachievement (t)	-0.263***	-0.292***	-0.296***	-0.245**	-0.308***	-0.317***	-0.257**	-0.281***	-0.278***
	(-3.829)	(-4.253)	(-4.215)	(-2.509)	(-3.972)	(-3.990)	(-2.496)	(-3.096)	(-4.083)
EDP (t)	0.245***	0.259***	0.296***	0.347***	0.256**	0.289***	0.343***	0.188*	0.280***
	(2.637)	(2.740)	(3.238)	(3.665)	(2.284)	(2.688)	(3.018)	(1.866)	(3.203)
Forecast error ΔSB (t-1)		0.103	0.126	0.088	0.083	0.098	0.074	0.167	0.111
		(1.379)	(1.226)	(1.595)	(0.819)	(1.352)	(0.897)	(0.597)	(1.393)
Forecast error ΔSB (t-2)			0.065	0.139		0.072	0.138		
			(0.883)	(0.525)		(0.747)	(0.796)		
Forecast error ΔSB (t-3)				0.2			0.206		
				(0.949)			(0.853)		
# observations	455	399	371	343	339	326	313	399	399
R-squared								0.49	
Wald time/country dummies (p-value)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 / 0.01	0.00
Forecast error ΔSB (size)		0.10	0.19	0.43	0.08	0.17	0.42	0.17	0.11
Forecast error ΔSB (p-value)		0.17	0.38	0.60	0.41	0.46	0.37	0.55	0.16
AR(1) (p-value)	0.01	0.00	0.00	0.00	0.01	0.01	0.00		0.00
AR(2) (p-value)	0.32	0.32	0.08	0.39	0.73	0.30	0.45		0.33
Hansen (p-value)	0.76	0.66	0.83	0.95	0.94	0.75	0.99		0.66
# instruments	25	25	26	27	21	23	25		25

Note: The Forecast error is defined as the difference between the forecast from autumn for the year ahead and the realised outturn from spring for the previous year. Estimations are based on least square dummy variable estimator using heteroskedasticity-robust standard errors (LSDV). In addition, the use of first-difference GMM (FDGMM) and system-GMM (SYSGMM) estimators follows Blundell and Bond (1998), where we consider the output gap and the forecast error variables to be endogenous. Due to the small sample size, the set of internal instrumental variables is restricted to up to 1 lag 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). Note that the coefficients and standard errors of the forecast error cannot be interpreted if the variable is included in the regression with several lags (column 3, 4, 6, 7). As a consequence, we report the size of forecast errors coefficients (row "forecast error ΔSB (size)") We then use a simple Wald test to check whether this short-term elasticity is statistically different from zero ("forecast error ΔSB (p-value)"). ***, ** and * denote, respectively, statistical significance at 1, 5 and 10%.
Source: Commission services.

- ***Persistence of forecast errors***: We assess up to three lags to assess the impact of persistent forecast errors. We find evidence that persistent forecast errors have an impact on the planned fiscal effort. The strength of the impact depends, however, on the size of the forecast error: Overall, we find only a weak impact in case of negative surprises, but a strong one for positive ones. To be more precise, in case of negative surprises (Table III.3.2, panel A), only a *repeated and very large negative* surprise (i.e. exceeding 0.5 pp. of GDP) leads to a statistically significant impact in the form of a fiscal tightening. It is important to note, however, that this is a rather rare event that only occurs in around 3% of all observations since 2000 (13 out of 399). The main result is only valid in case of three very large negative surprises that are repeated in a row. By contrast, we cannot find significant results if the very large negative surprise occurred only two years in a row or in two out of three years. At the same time, repeated positive surprises have a rather strong impact, resulting in a fiscal loosening (Table III.3.2, panel B).

Table III.3.2: **Regression results conditional on forecast characteristics**

A. Negative surprises		Qualitative assessment	Quantitative assessment		
			Marginal effect		# obs.
			Size	p-value	
Sign	Negative surprise	No impact	0.06	0.51	226
Size	Large negative surprise	No impact	0.03	0.70	155
	Very large negative surpirse	No impact	0.00	0.69	112
Per-sistence	Repeated neg. surprise	No impact	0.15	0.21	100
	Repeated large neg. surprise	No impact	0.16	0.13	45
	Repeated very large neg. surprise:				
	• 2 years in a row	No impact	0.19	0.50	43
	• 2 out of 3 years	No impact	0.17	0.14	108
	• 3 years in a row	Impact: fiscal tightening	0.23**	0.05	21

B. Positive surprises		Qualitative assessment	Quantitative assessment		
			Marginal effect		# obs.
			Size	p-value	
Sign	Positive surprise	No impact	-0.06	0.59	173
Size	Large positive surprise	No impact	-0.03	0.82	118
	Very large positive surpirse	No impact	-0.24	0.25	75
Per-sistence	Repeated pos. surprise	Impact: fiscal loosening	-0.63***	0.00	32
	Repeated large pos. surprise		-0.54***	0.01	8
	Repeated very large pos. surprise:				
	• 2 years in a row		-0.22**	0.04	19
	• 2 out of 3 years		-0.15***	0.00	44
	• 3 years in a row		-0.21*	0.10	1

Note: Forecast errors of the fiscal effort (i.e. the change in the structural balance) are considered to be large (very large) if they exceed 0.25(0.5) pp. The column "qualitative assessment" summarises the quantitative assessments in a (hopefully) simpler manner. The columns "quantitative assessment" show the size and significance level of the marginal effect, which measures the impact of a marginal increase of the forecast error if the forecast characteristic (sign, size, persistence) is fulfilled (see equation (4) in Box III.3.1, see below an example). The findings are based on the same sample and estimations techniques as described in the note of Table III.3.1. The total number of observations in the panel is 399, while "# obs." reports the number of observations of the investigated forecast characteristics, e.g. in 175 out of 399 cases we observed a negative surprise. Example of the quantitative assessment: A negative surprise tends to have a small positive impact on the planned fiscal adjustment (the size of the coefficient is 0.06), which is, however, not statistically significant at the 10% level (p-value of 0.51). ***, ** and * denote, respectively, statistical significance at 1, 5 and 10%.

Source: Commission services.

4. HOW DO ECONOMIC SHOCKS AFFECT FISCAL OUTCOMES?

4.1. INTRODUCTION

Fiscal shocks can have a sizeable impact on the real economy. A large literature analyses the short-term effects of fiscal shocks on output. ([74]) Their impact is captured by the fiscal multiplier, which is typically defined as the percentage change in real GDP resulting from a fiscal shock of 1% of GDP. While there is general agreement that fiscal consolidation has a negative effect on GDP in the short-run, the size of its impact depends on several factors. On average, public spending multipliers are estimated as being between 0.75 and 1. Tax multipliers tend to be several tenths of a percent lower, although this depends on the type of tax shock considered. For instance, recent findings suggest that multipliers for tax rate adjustments are larger (compared to average tax multipliers), while those for tax base changes are smaller and possibly insignificant. ([75]) Moreover, anticipated tax cuts give rise to contractions upon announcement before the medium-term impact of their implementation materialises. Overall, fiscal multipliers tend to be larger during (deep) recessions, when monetary policy is constrained, or in periods of financial stress. At the same time, they tend to be smaller if fiscal sustainability concerns exist or if fiscal consolidation is credibly implemented. The recessionary effect of an expenditure-based fiscal consolidation is more pronounced if it relies on productive spending. ([76])

In this Chapter, we take the opposite perspective and analyse the effect of economic shocks on fiscal variables. Economic shocks can alter fiscal outcomes (reduce/improve revenue or increase/reduce spending in bad/good times) and in bad times limit the capacity of governments to conduct their policies as planned. In undertaking our analysis, we use a standard tool in macroeconomics that is particularly suited to capturing interdependences across variables: a panel vector autoregressive model (VAR). We find that economic shocks can, in particular, result in debt accumulation and pose a risk to the sustainability of public finances.

The remainder of this Chapter is structured as follows. Section III.4.2. describes the methodology ([77]) and data used for this analysis. Section III.4.3. presents our results.

4.2. METHODOLOGY AND DATA

VAR models have been frequently used to analyse the effect of fiscal policy shocks on the rest of the economy. VAR models including fiscal policy variables have been used to analyse the effect on output of spending and revenue shocks, ([78]) and to estimate the effect of fiscal shocks on prices. ([79]) In light of the Great Recession and the ensuing debt crisis, fiscal VAR models have been developed further with a view to gauging output multipliers. Some new approaches use sign restrictions to identify government expenditure and revenue shocks, ([80]) while others explore the non-linearity of the output effects of spending shocks over the business cycle. ([81]) Although non-fiscal shocks have been often studied, ([82]) the impact of non-fiscal economic

([74]) Alesina et al. (2012).
([75]) Dabla-Norris and Lima (2018).
([76]) A more extensive discussion of the size of fiscal multipliers is provided in European Commission (2012), Gechert (2015) and Kilponen et al. (2015). For another approach based on structural models, see Coenen et al. (2012).

([77]) Box III.4.1 provides more technical elements on the methodology.
([78]) Blanchard and Perotti (2002), Romer and Romer (2009, 2010), Caldara and Kamps (2017). Favero and Giavazzi (2007) and Chung and Leeper (2007) consider the effect of the debt level on fiscal multipliers. Mertens and Ravn (2010, 2012) expand the early fiscal VAR analyses to fully account for the reality that fiscal shocks are often anticipated. In those cases, standard SVAR estimates may, for instance, lead to upward biases in consumption and wage responses to spending shocks. Therefore, using assumptions regarding the anticipation horizon and the anticipation rate of government spending shocks, they implement an augmented SVAR estimator applicable to anticipated fiscal shocks.
([79]) Canova and Pappa (2007).
([80]) Mountford and Uhlig (2009), rather than using zero-restrictions on the correlation of revenues and expenditures, they employ restrictions on the sign of the responses of the endogenous variables to the fiscal shock.
([81]) Auerbach and Gorodnichenko (2012). They follow the example of regime-switching models for monetary policy (Sims and Zha, 2006).
([82]) Some examples include: Blanchard and Quah (1989), who disentangle supply and demand shocks using long-run restrictions in a seminal paper; Christiano et al. (1999), who review the identification of monetary policy shocks; Iacoviello (2000), who considers the effect of house prices

shocks on fiscal variables has been less investigated.

Our baseline model is a panel VAR with fiscal and standard macroeconomic variables. We use real quarterly GDP (y^c), inflation (π^c), the nominal interest rate on sovereign debt (i^c), primary expenditure of the general government (g^c) and revenue of the general government (t^c) in country c:

$$X_t^c = \sum_{i=1}^{l} A_i X_{t-i}^c + U_t^c$$

with $X_t^c = [\Delta y_t^c, \Delta \pi_t^c, \Delta i_t^c, \Delta g_t^c, \Delta t_t^c]'$, A_i 5x5 matrices and U_t^c a vector of unstructured residuals. ([83])

We mostly use data from Eurostat since 2000 for a sample of 28 Member States. While the primary source of data is Eurostat, ([84]) some data were complemented using other sources (OECD, Insee, ONS, Bloomberg). All data are seasonally adjusted. ([85]) For most Member States, the data required for the VAR estimation start in around 2000. The time sample is longer for six Member States. ([86])

We are interested in the impact of three types of economic shocks on fiscal outcomes. We identify shocks to productivity (*supply shocks*), which drive the output trend, shocks to inflation (*demand shocks*), which generate cyclical fluctuations in the economy, and sovereign interest rate shocks, i.e. shocks to the effective interest rate paid on public debt (*financial shocks*). We also identify two fiscal shocks on public revenue and primary expenditure, respectively. We assess how these shocks impact key fiscal variables, namely revenues, primary expenditure, primary balance and public debt.

To allow for an economic interpretation of the shocks, we impose several identifying assumptions (Table III.4.1). The components of U_t may be instantaneously correlated, i.e. in any given period several shocks can affect each variable (e.g. the interest paid on public debt can respond to a financial shock and at the same time to fiscal policy measures captured by fiscal shocks). Therefore, the residuals in U, prior to structuration, are impossible to interpret in economic terms. We address this problem by imposing the following identifying assumptions (see Box III.4.1 for further details):

The identification of fiscal shocks builds on a standard strategy used in this literature. ([87]) To identify the fiscal shocks, elasticities of public spending and revenue to inflation and interest rates are calibrated. Blanchard and Perotti, who initiated this approach, based their calibration on previous work conducted by the OECD, ([88]) adjusting work based on annual data for their quarterly model. For the present study, we follow the same strategy and build on the latest update of this work on fiscal elasticities. ([89])

The identification is completed using long-term restrictions that are compatible with a neo-Keynesian model. The identification assumes that inflation shocks have no long-term impact on the level of output. This is a standard assumption, compatible with money neutrality in the long-run and by which the inflation shock we identify is a cyclical demand shock. We also assume that both productivity and inflation shocks have no long-term effect on the effective interest rate paid on public debt. The corollary of these assumptions is that the non-stationary part of sovereign interest rates is not linked to economic fundamentals (supply and demand) but to financial market behaviour. Finally, we assume that in the long run, revenue and expenditure follow GDP developments and, therefore, that productivity shocks leave the revenue- and expenditure-to-GDP ratios unchanged.

shocks; or Barsky and Kilian (2004), who dedicate a section of their review of oil price shocks to structural VARs.

([83]) We take these variables in first difference because we cannot reject the hypothesis of non-stationarity for each of them, based on a Lagrange multiplier test (Hadri, 2000).

([84]) We use quarterly national accounts, government non-financial accounts, sector accounts and Maastricht convergence interest rate.

([85]) Data are seasonally-adjusted either by the data provider or by ourselves using JDemetra+ and the TramoSeats routine.

([86]) The starting year goes back to the mid-1990s for Belgium, Spain, Sweden, the UK and France.

([87]) Blanchard and Perotti (2002), Perotti (2005).

([88]) Giorno et al. (1995), van den Noord (2000).

([89]) Price et al. (2014), see also Part II.2 of this report.

Table III.4.1: **Identifying assumptions of the panel VAR**

Shock \ Outcome	GDP	Inflation	Effective interest rate	Primary expenditure	Revenue
Productivity			No LT effect	Same LT effect as on GDP	Same LT effect as on GDP
Inflation	No LT effect		No LT effect	Calibrated ST elasticity	Calibrated ST elasticity
Effective interest rate				Calibrated ST elasticity	Calibrated ST elasticity
Primary expenditure					
Revenue				No effect within the same quarter	

Note: LT=long term, ST=short term, i.e. within the same quarter.
Source: Commission services.

4.3. RESULTS

Main results

The effect of economic shocks on government revenues, expenditure and the primary deficit is often short lived or rather small (Graph III.4.1).

- **A negative productivity shock leads to a temporary deterioration of the primary balance**. We consider a one percentage point (pp.) decrease in productivity that gradually increases to a 1.9 pps. decline in GDP. Such a shock has, by assumption, no long-run impact on the expenditure- and revenue-to-GDP ratios. As a result, revenues and expenditure (expressed in monetary terms) decline in the long run in the same proportion as GDP following the decrease in productivity. In the short term, both the revenue- and primary-expenditure-to-GDP ratios decline (the effect on expenditure is, however, not statistically significant). As a result, the government primary balance declines slightly by around -0.1 pp. of GDP in the first quarters (this is statistically significant at the 68% threshold only).

- **A positive inflation shock has a short-lived positive impact on the primary balance**. In the short term, a one pp. increase in the inflation rate has a positive effect on the primary balance (+0.4 pp. of GDP upon impact). This effect reflects the fact that higher prices result in a higher tax base and mechanically higher tax revenue, while expenditure are at best indexed on inflation with a delay. This effect rapidly declines and turns negative (but not statistically significant) in the long term (-0.1 pp. of GDP). This development can be explained by the increase in the spending-to-GDP ratio (close to 0.2 pp. of GDP), which more than offsets the slight increase in the revenue-to-GDP ratio (0.1 pp.). ([90]) The long-term effect is entirely due to the reaction of real spending and revenue, since the inflation shock has by assumption no long-term impact on GDP. ([91])

- **A positive sovereign interest rate shock increases (primary) spending and revenue**. We consider a 1 pp. increase of the interest rate paid on sovereign debt. Because of debt rollover, such a shock will have a smaller impact on the effective interest rate. ([92]) Furthermore, this shock does not fully disappear in the long run and the effective interest rate increases only marginally in the long run. As regards the primary balance, in the short term the primary expenditure-to-GDP ratio overshoots while the revenue-to-GDP ratio first declines upon impact, which has a negative but negligible effect on the primary balance. In the long run, both revenue and expenditure ratios very slightly increase.

([90]) Both effects are only statistically significant at the 68% level.
([91]) See the explanation on long-term restrictions above and Box III.4.1. While the inflation shock does not cause a long-term impact on GDP, it has a transitory recessionary effect on GDP of around -0.1% in the first year.
([92]) The average maturity of public debt in the EU in 2017 is 47 quarters, 2.1% of debt is rolled over each quarter and therefore, a 1 pp. increase in the market rate corresponds to a 0.02 pp. increase in the effective interest rate paid on the overall stock of debt.

However, all three shocks have a persistent impact on public debt, demonstrating the long-term risks they pose for fiscal policy (Graph III.4.2).

- Following a 1 pp. negative ***productivity shock***, the debt-to-GDP ratio increases by 3 pps. in the first three years following the shock and continues to increase thereafter, although at a slower pace. This finding can be explained by the impact of the productivity shock on the primary balance in the transition and the resulting increase on the debt burden (i.e., the so-called snowball effect).

- Following an ***inflation shock***, the primary balance tends to increase temporarily and the increase in the price level inflates away the debt stock, thus lowering the debt burden in real terms in the short term. This effect is, however, temporary and after 2 to 3 years the debt ratio reaches a level around 1 pp. of GDP lower before inching up again. Eventually, the effect on the debt-to-GDP ratio turns positive, in line with the decline of the primary balance in the long run.

- The ***sovereign interest rate shock***, despite a negligible effect on the budget balance, increases the debt burden and, therefore, debt accumulation. This is due to a small long-term increase of the interest rate, which puts the debt-to-GDP ratio on an increasing trend that totals more than 0.3 pp. in 5 years.

Robustness

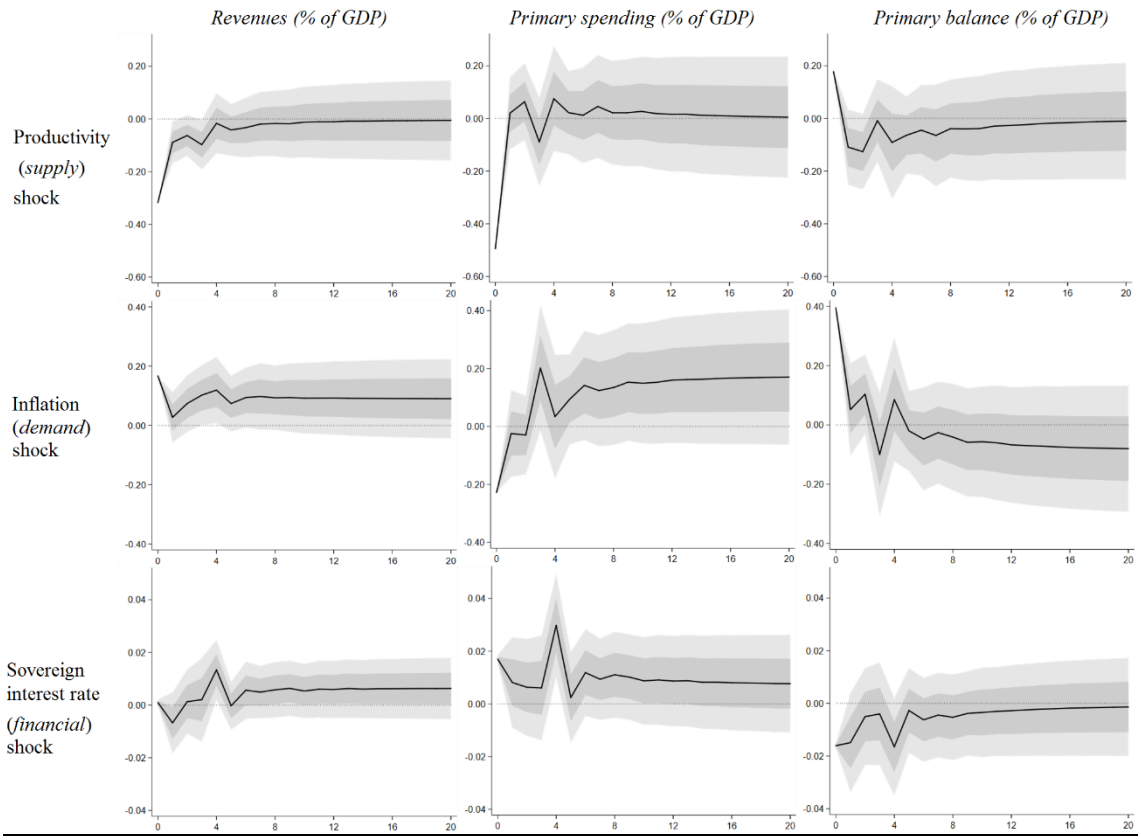
Our results are robust to various empirical tests. The results presented above are based on a GMM estimator. ([93]) A least square dummy variable estimator ([94]) provides comparable results. While our baseline estimation covers all 28 Member States, similar results are obtained for the EU15, the euro area and the Central and Eastern European countries. ([95]) Also, using minimum and maximum values estimated across Member States for the calibration of fiscal elasticities leaves the results essentially unchanged.

Controlling for the effect of public debt on the short-term dynamics does not change the main findings. We introduced the debt-to-GDP ratio as an exogenous regressor in our model. ([96]) Contrary to previous findings for the US, this variable does not improve our model in a statistically significant manner, nor does it modify the impulse responses.

A structuration approach using only the short-term elasticities of expenditure and revenue to output does not change the main findings. This approach corresponds to the well-established approach by Blanchard and Perotti, which does not impose long-term restrictions on the ratios of expenditure and revenue to GDP. With our data, this approach implies long-term decreases in the revenue- and expenditure-to-GDP ratios following productivity increases, which is at odds with the stability of such ratios in the data. However, apart from correcting these long-term effects, our structuration yields very similar results.

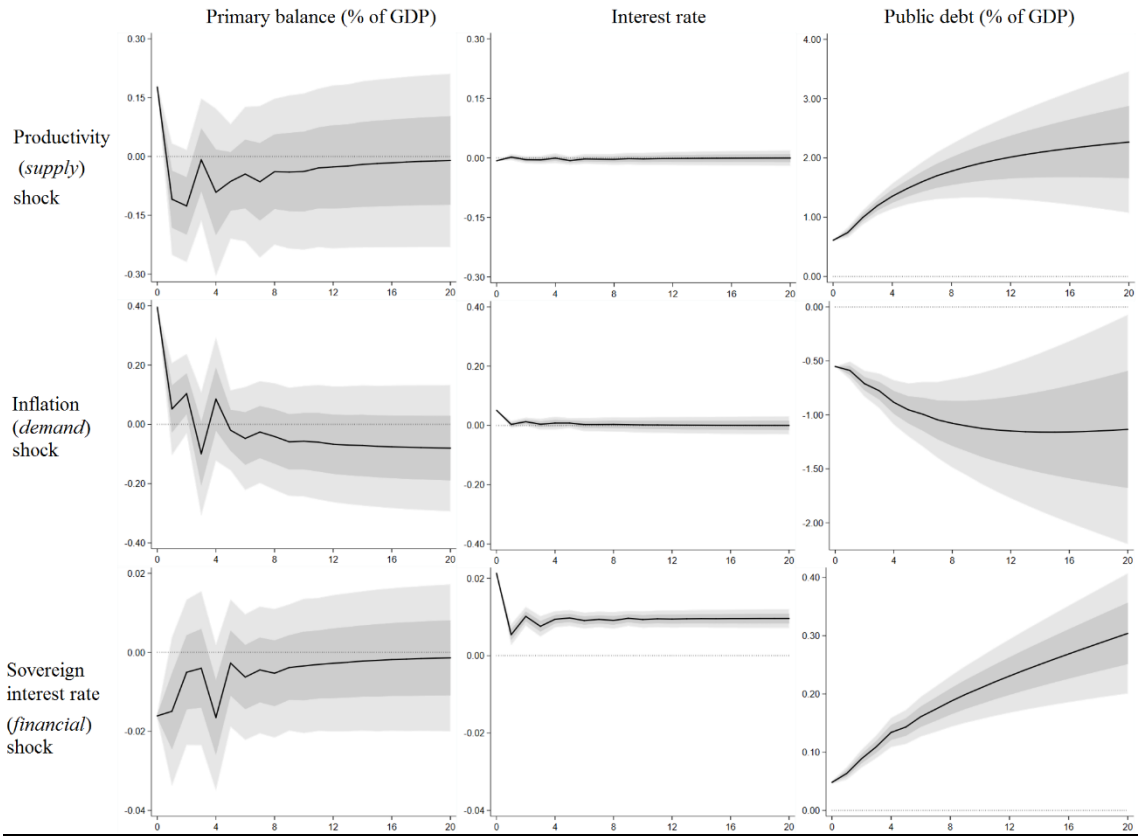
([93]) Abrigo and Love (2016).
([94]) Cagala and Glogowsky (2014).
([95]) The EU15 differs from the other subsamples on the reaction of interest rate to shocks.
([96]) Favero and Giavazzi (2007 and 2009), Cherif and Hasanov (2018).

Graph III.4.1: **Effects of economic shocks on public deficit**



Note: Shaded areas correspond to the 95% and 68% confidence bands. To compute these impulse responses, we need to calibrate the shares of the primary expenditure-to-GDP and revenue-to-GDP ratios at date 0. These are initialised on the EU average at the end of our sample. Confidence intervals are computed based on Monte Carlo simulations.
Source: Commission services.

Graph III.4.2: **Effects of economic shocks on public debt**



Note: Shaded areas correspond to the 95% and 68% confidence bands. To compute these impulse responses, we need to calibrate the shares of debt-to-GDP, primary-expenditure-to-GDP, revenue-to-GDP and the effective interest rate paid on public debt at date 0. These are initialised on the EU average at the end of our sample. The response of debt is shown in deviation from the trajectory computed under a "no shock" assumption. Confidence intervals are computed based on Monte Carlo simulations.
Source: Commission services.

Box III.4.1: **Structuration of the panel VAR model**

1. Model structuration

Based on panel data, we estimate the following VAR model $X_t=A(L)\,X_{(t-1)}+U_t$ where $X_t=[\Delta y_t\,,\Delta\pi_t\,,\Delta i_t\,,\Delta g_t\,,\Delta t_t]'$ is our vector of endogenous variables, ([1]) $A(L)$ is a lag polynomial of order 4 and $U_t = [u_t^y, u_t^\pi, u_t^i, u_t^g, u_t^t]'$ are the unstructured residuals associated with each of the variables. We estimate the structured shocks (e^y, e^π, e^i, e^g, e^t), which are uncorrelated with each other and economically interpretable. ([2])

The structuring equations linking the residuals to the structured shocks are:

$$u_t^y = \beta_{y\pi}\, e_t^\pi + \beta_{yi}\, e_t^i + \beta_{yg}\, e_t^g + \beta_{yt}\, e_t^t + e_t^y \qquad (1)$$

$$u_t^\pi = \beta_{\pi y}\, e_t^y + \beta_{\pi i}\, e_t^i + \beta_{\pi g}\, e_t^g + \beta_{\pi t}\, e_t^t + e_t^\pi \qquad (2)$$

$$u_t^i = \beta_{iy}\, e_t^y + \beta_{i\pi}\, e_t^\pi + \beta_{ig}\, e_t^g + \beta_{it}\, e_t^t + e_t^i \qquad (3)$$

$$u_t^g = \beta_{gy}\, e_t^y + \alpha_{g\pi}\, u_t^\pi + \alpha_{gi}\, u_t^i + \beta_{gt}\, e_t^t + e_t^g \qquad (4)$$

$$u_t^t = \beta_{ty}\, e_t^y + \alpha_{t\pi}\, u_t^\pi + \alpha_{ti}\, u_t^i + \beta_{tg}\, e_t^g + e_t^t \qquad (5)$$

or in matrix notation:

$$(I - M_\alpha)U = M_\beta E$$

The Blanchard and Perotti approach relies on calibrating, in Equations (4) and (5), the elasticities of the fiscal variables to economic variables (α) gathered in matrix M_α. The coefficients β of matrix M_β are then estimated based on simple regressions and our long-term restrictions.

2. Calibration of the fiscal elasticities (matrix M_α)

We calibrate the elasticities of public revenue and expenditure to inflation and sovereign interest rate from Equations (4) and (5). ([3])

On the revenue side, the elasticity to prices can be deducted from the elasticity to output. ([4]) In this respect, seminal papers build on work from the 1990s and early 2000s, ([5]) which compute the semi-elasticities of public revenue and expenditure to output for OECD countries on an annual basis. This work has been updated more recently. ([6]) In our VAR, we build on the latest update using ESA2010 data. ([7]) The price elasticity of revenue is $\alpha_{t\pi}$=0.14.

On the expenditure side, most items are not indexed contemporaneously to prices. Therefore, the elasticities of those expenditure items (in real terms) to prices is -1. Some items, accounting for 20% to 30% of primary expenditures in the EU28 since 2001, are purchased at market prices and, therefore, have an elasticity of 0 to prices in real terms. We calibrate the price elasticity of expenditure to: $\alpha_{g\pi}$=-0.75. This is consistent with the value retained by Perotti ([8]) (-0.5), who uses a definition of expenditure excluding transfers.

([1]) y,π,i,g,t are, respectively, real GDP, inflation from the GDP deflator, the effective interest rate paid on public debt, primary expenditure (deflated using the GDP deflator) and public revenues (deflated using the GDP deflator). All variables expect for the interest rate are taken in logs.
([2]) Perotti (2005).
([3]) Blanchard and Perotti (2002). In contrast to the approach they initiated, we do not calibrate the short-term elasticity of revenue and expenditure to output, but estimate β_{gy} , β_{ty} based on long-term restrictions.
([4]) Perotti (2005).
([5]) Giorno et al. (1995), van den Noord (2000).
([6]) Mourre et al. (2014), Price et al. (2015).
([7]) Lausegger et al. (forthcoming) and Part II.2 of this report.
([8]) Perotti (2005).

(Continued on the next page)

Box (continued)

We set the fiscal elasticity to the interest rate to zero. ([9]) In addition to the arguments previously presented, we add that the interest rate is set as a reference for contracts that will bring dividends or call for payments in future periods. Current payments and capital income are, therefore, indexed on past interest rates depending on the structure and maturity of the portfolio considered. Therefore, the contemporaneous elasticity to interest rate should be zero. This is true for non-tax revenue (10% of government revenues) and interest payments (excluded from total primary expenditures), but also for taxes based on such gains (included in other tax revenues).

3. Long-term restrictions

By imposing long-term restrictions, we can isolate combinations of the unstructured residuals (u^y, u^π, u^i, u^g, u^t) that are orthogonal to some of the economic shocks (e^y, e^π, e^i, e^g, e^t). We can then exploit those orthogonalities to isolate each economic shock. Identifying the long-term restrictions requires the specification of the cumulated impulse-response function (IRF) to a shock E_0:

$$\left(\sum_{i=0}^{\infty} A(1)^i\right)(I - M_\alpha)^{-1} M_\beta E_0 = \underbrace{(I - A(1))^{-1}(I - M_\alpha)^{-1}}_{M} M_\beta E_0$$

Matrix M is computable based on the estimation output (matrix A) and the calibration of matrix M_α. ([10])

The fact that inflation shocks ($E_0 = [0,1,0,0,0]$) have no long-term impact on output implies that:

$$M[1,1]\beta_{y\pi} + M[1,2] + M[1,3]\beta_{i\pi} = 0$$

From Equations (1), (2) and (3), we can infer a combination of the residuals which is orthogonal to the inflation shock:

$$M[1,1]u_t^y + M[1,2]u_t^\pi + M[1,3]u_t^i = combination(\, e_t^y, e_t^i, e_t^g, e_t^t)$$

In a similar fashion, the fact that inflation and productivity shocks ($E_0 = [0,1,0,0,0]$ *or* $[1,0,0,0,0]$) have no long-term impact on interest rate gives a combination of the residuals orthogonal to the inflation and productivity shocks.

In addition, the long-term restrictions on the revenue- and primary-expenditure-to-GDP ratios give two combinations orthogonal to the productivity shock.

Having calibrated the fiscal elasticities (M_α), we can isolate two final combinations of the unstructured residuals orthogonal to the inflation or the sovereign interest rate shock.

$$\hat{u}_t^g = u_t^g - \alpha_{g\pi} u_t^\pi - \alpha_{gi} u_t^i = \beta_{gy}\, e_t^y + \beta_{gt} e_t^t + e_t^g \qquad (4')$$

$$\hat{u}_t^t = u_t^t - \alpha_{t\pi} u_t^\pi - \alpha_{ti} u_t^i = \beta_{ty}\, e_t^y + \beta_{tg} e_t^g + e_t^t \qquad (5')$$

From regressions of the unstructured residuals on those combinations, we can sequentially isolate the economic shock e_t^π, then e_t^y and finally e_t^i. Once the shocks are isolated, the β coefficient can be directly estimated or inferred from the previous regressions. To identify e^g and e^t we can impose either β_{gt} or $\beta_{tg} = 0$. In practice, this last choice has no effect on our identification of non-fiscal shocks.

([9]) Perotti (2005).

([10]) Because the eigenvalues of our estimated VAR are smaller than one in modulus, the following applies $\sum_{i=0}^{\infty} A(1)^i = (I - A(1))^{-1}$ and M is easily computable.

5. CONCLUSIONS

Economic shocks are inherent features of the macroeconomic environment and can affect fiscal policy. We consider two sides of this broad issue in the present study. We first look at how policymakers account for fiscal forecast errors in their fiscal planning. We then identify how economic shocks can affect fiscal outcomes.

The EU fiscal governance framework avoids penalising Member States because of uncertainty. There are several provisions of the SGP that can lower the required fiscal adjustment in case of negative economic shocks. These clauses cater, in particular, for two sources of uncertainty inherent to numerical fiscal rules. First, the data used in the assessment of compliance with the fiscal rules are subject to revisions (statistical uncertainty). Second, key concepts used in the fiscal governance framework cannot be directly observed (conceptual uncertainty).

Economic shocks can have a significant and lasting impact on fiscal policies in the EU, according to new VAR estimations. We find that a negative shock on productivity leads to a temporary decline in the primary balance and a persistent increase in public debt. A positive inflation shock has a weak negative impact on the primary balance, but it generates a temporary decline in public debt ratio. Finally, a positive shock to the effective interest rate paid on public debt leads to a steady increase of public debt, due to the higher interest payments.

Member States, however, often conduct fiscal policy without taking into account the uncertainty surrounding their fiscal forecast. We show that uncertain economic outcomes in the form of the forecast error of the fiscal effort have been an integral part of fiscal projections in the EU since 2000. Nevertheless, the results from panel regressions reveal that Member States frequently do not adjust their planned fiscal effort to economic shocks. We find that Member States only very late and asymmetrically to forecast errors, relaxing the fiscal effort in case of positive surprises and leaving it unchanged in case of negative ones.

Against those risks, a more cautious design of fiscal policy is advisable. A sound approach requires Member States to react to uncertainty, since a biased reaction function to uncertain fiscal outcomes can jeopardise the sustainability of public finances in the EU. An appropriate policy response to uncertainty should include taking precautionary measures against the possibility of worse-than-expected outcomes. ([97]) In addition, policies that foster economic resilience can reduce the likelihood of large negative macroeconomic shocks and limit their adverse consequences.

([97]) Such mechanisms include: delegation of specific operations to agencies that would follow more closely the relevant economic developments; triggers that predefine the context for activating a policy or putting it back on the political agenda; expiration dates that would give a policy a temporary effect; and indexing that would allow a policy to gradually adjust to economic and social conditions (Auerbach, 2014; Kamin, 2014).

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Part IV

Fiscal outcomes in the EU in a rules-based framework – new evidence

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KEY FINDINGS

This part analyses fiscal outcomes in the EU from three non-exhaustive angles. Based on a quantitative analysis of fiscal outcomes, it assesses the ability of fiscal rules to contribute to sustainable public finances, mitigate procyclicality and strengthen national ownership.

While Member States with fragile fiscal positions have made significant progress towards more sustainable fiscal policies, public debt remains very high and fiscal buffers small in several Member States.

- Public debt-to-GDP ratios in the EU have increased far less than in the US and Japan over the past two or three decades thanks to a more prudent conduct of fiscal policy.

- Member States with the most fragile fiscal positions before improved their fiscal positions following the introduction and subsequent reforms of the fiscal governance framework. This suggests that the EU's fiscal governance framework has contributed to more prudent fiscal policies in individual Member States, although causality is difficult to establish.

- Still public debt ratios remain high and fiscal buffers small in several Member States.

The respect of fiscal rules seems to have mitigated procyclicality of fiscal policy in the EU.

- In the EU on average we find evidence of a procyclical fiscal effort since 2000, implying that discretionary fiscal policy tightens in bad times and loosens in good times. The cost of procyclicality can be high, as discretionary fiscal policy measures counteract the functioning of automatic stabilisers.

- The results reveal that discretionary fiscal policy tends to be most procyclical in good times.

- We find that the respect of fiscal rules seems to have mitigated the procyclicality of fiscal policy in the EU.

Stronger national fiscal frameworks promote sound fiscal policies.

- Several legal requirements put forward at the EU level aimed at strengthening the national ownership of EU rules and have led to a broad-based and robust improvement in national fiscal frameworks in the EU.

- As a result, the number of national fiscal rules has greatly increased in recent years in most Member States. Those rules now tend to be stronger in terms of monitoring and enforcement mechanisms than in the past. The number of national independent fiscal institutions has also risen significantly in recent years and their mandates often go beyond the minimum requirements set at the EU level. Moreover, all Member States now have a medium-term budgetary frameworks (MTBFs) in place that is connected to the annual budget process.

- Findings from panel regressions indicate a positive and significant impact of both national fiscal rules and medium-term budgetary frameworks on the cyclically-adjusted primary balance.

1. INTRODUCTION

The Maastricht Treaty signed in 1992 provides a clear division of responsibilities between monetary and fiscal policy. It confers competence as regards monetary policy to an independent European Central Bank (ECB) to tackle the time-inconsistency problem and to foster credibility in fulfilling its primary mandate to ensure price stability. ([98]) At the same time, it leaves fiscal policy under the responsibility of Member States, subject to respecting two main criteria, namely public deficit- and debt-to-GDP ratios must not exceed 3% and 60% of GDP respectively. The Stability and Growth Pact (SGP), agreed in 1997 was primarily designed to enforce those deficit and debt limits.

This "Maastricht assignment" can reinforce the deficit bias and therefore requires common EU fiscal rules. ([99]) The deficit bias and its consequences can be reinforced by the creation of a currency union, mainly for two reasons. First, externalities arising across Member States from fiscal policy can lead to sizable negative spillover effects. For instance, a banking or debt crisis in one region can spill over to other regions. An extreme amplification of spillover effects can lead to "contagion" effects. ([100]) Second, a common currency gives rise to adverse incentives. In a monetary union, the country relaxing its budgetary policy can put upward pressure on interest rates in the whole euro area. The cost of borrowing is therefore partly passed on to other Member States. ([101])

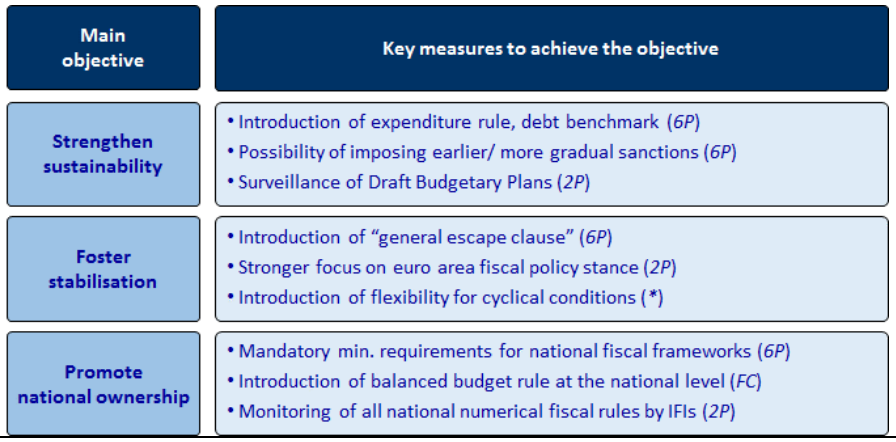
Insights from the initial years of the European Economic and Monetary Union (EMU) and the experiences of the Great Recession revealed some shortcomings of the architecture. ([102]) We describe in the following the key improvements in the fiscal area (Graph IV.1.1), although the governance framework was also strengthened in terms of its economic and financial dimension.

First, the fiscal governance framework was reinforced to foster fiscal sustainability. The favourable macroeconomic conditions in the years prior to the Great Recession were not sufficiently used to build up fiscal buffers. ([103]) High debt ratios did not decline substantially, which slowed down economic growth and lengthened the recovery from the severe recession. ([104]) In addition, both rule design problems and governance failures contributed to poor enforcement of the SGP. ([105]) Therefore, the 2011 reform, in the form of the so-called "six-pack", aimed at promoting fiscal adjustment in good times (through the introduction of an expenditure benchmark and the "significant deviation" procedure). In addition, a debt reduction benchmark was introduced to support debt reduction, and the system of sanctions was made more gradual and more automatic. Finally, the 2013 reform, in the form of the so-called "two-pack", introduced the obligation for euro-area Member States to submit their draft budgets to the Commission and the Eurogroup before the adoption of those budgets by national parliaments.

Second, the stabilisation objective was given more weight. The Maastricht assignment put a clear emphasis on the sustainability of public finances, reflecting the then prevailing consensus that automatic stabilisers should be the primary tool for countercyclical policy, while discretionary fiscal policy was essentially regarded with suspicion, in particular due to challenges in an effective implementation. ([106]) However, the macroeconomic role of fiscal policy has received greater attention in recent years. It was recognised that the automatic stabilisers did not play out fully in practice throughout the cycle. In addition, there was greater acceptance for discretionary support under well-defined circumstances, for instance in deep economic shocks and/or if monetary policy is constrained, as spillovers can be larger and multipliers higher. ([107]) As a consequence, a collective "escape clause" was introduced in the EU fiscal governance framework, allowing (but not prescribing) a suspension of the rules in case of a "severe economic downturn" in the EU or the euro area as a whole. The 2013 reform of the Two-

([98]) Kydland and Prescott (1977); Barro and Gordon (1983); Rogoff (1985).
([99]) The deficit bias refers to the tendency of governments to allow deficit and public debt levels to increase (see for instance, Alesina and Perotti, 1995 or Issing, 2000.
([100]) Allen and Gale (2000).
([101]) Beetsma and Bovenberg (1998).
([102]) Deroose and Mohl (2016), Buti (2019).
([103]) Schuknecht et al. (2011).
([104]) Chudik et al. (2017) and Jordà et al. (2016).
([105]) Eyraud and Wu (2015).
([106]) Barro (1979).
([107]) Blanchard et al. (2013); Blanchard and Leigh (2013), Christiano et al. (2011).

Graph IV.1.1: **Main changes to the EU fiscal governance framework since 2011**



Note: Key institutional reform steps are shown in italics in brackets, namely six-pack (6P), Fiscal Compact (FC) as part of the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union, the two-pack (2P) and commonly agreed position on flexibility in the Stability and Growth Pact, see Council of the European Union (2015) and European Commission (2015) (*).
Source: Commission services.

Pack directed more attention to the role of an appropriate fiscal policy stance for the euro area as a whole. Finally, in 2015 the framework was improved without changing the rules by better modulating the required fiscal effort across the economic cycle and providing incentives for to implement structural reforms and foster investment. ([108])

Third, national ownership of the EU fiscal framework was strengthened. The gap between national budget discussions and European surveillance was a fundamental weakness of the framework in the pre-crisis decade. ([109]) While fiscal projections as reported by EU Member States in their annual Stability and Convergence Programmes (SCPs) typically moved in line with the requirements, implementation often diverged from the plans. To strengthen national ownership, national fiscal frameworks were strengthened in 2011 by establishing mandatory minimum requirements at the national level in the area of accounting and statistics, forecasts, fiscal rules monitored by independent bodies, and transparency. In addition, outside the framework of EU law, the Treaty on Stability, Coordination and Governance (TSCG), signed in 2012, lays down that national budgets have to be in balance or in surplus under the Treaty's definition. Finally, the 2013 reform of the two-pack sets out for the euro area Member States that compliance with all numerical fiscal rules in force has to be monitored by independent fiscal institutions, while the official macroeconomic forecasts have to produced or endorsed by an independent body.

Against this background, this part analyses the fiscal outcomes in the EU from the three non-exhaustive objectives presented above. Chapter IV.2. explores if EU fiscal rules have contributed to sustainable public finances. Chapter IV.3. analyses if EU fiscal rules the fostered stabilisation properties. Chapter IV.4. assesses if and to what extent the reinforced national fiscal frameworks promoted national ownership. Finally, Chapter IV.5. concludes. The analysis is factual, backward-looking and conducted on the basis of quantitative analyses.

([108]) Council of the European Union (2015) and European Commission (2015).
([109]) Buti and Carnot (2012).

2. HAVE EU FISCAL RULES BEEN ASSOCIATED WITH MORE SUSTAINABLE PUBLIC FINANCES?

2.1. INTRODUCTION

High public debt can hamper economic growth, jeopardise financial stability and distort the effective functioning of monetary policy. Large public debt can have detrimental effects on the economy via three channels. First, high public debt can reduce economic growth. ([110]) In particular, growth-friendly investment can be hold back in highly-indebted countries either because private investors are worried about the country's creditworthiness or policymakers are constrained by a high interest burden. Second, large public debt can jeopardise financial stability. Concerns about a country's fiscal sustainability can devalue bank portfolios, which can require help from the government to ensure the banks' solvency. The increasing borrowing pressure on the already stressed sovereign further reduces the value of the bonds. This "doom loop" between sovereigns and banks even threatened the sustainability of the euro area project as a whole. ([111]) Third, high government debt can hamper the smooth functioning of monetary policy. In particular, it can put pressure on monetary policy to prevent the government from bankruptcy, which can conflict with the key mandate of the central bank, for instance to keep prices stable over the medium term. ([112])

The main goal of the EU fiscal rules is to ensure sustainable public finances and notably to avoid excessive public deficits and debt. The Maastricht Treaty signed in 1992 obliges Member States to pursue sound fiscal policies by respecting two main criteria, namely public deficit- and debt-to-GDP ratios must not exceed 3% and 60% of GDP respectively. ([113]) The Stability and Growth Pact (the Pact) agreed in 1997 was primarily designed to enforce those deficit and debt limits. ([114]) The SGP's focus on sustainability was strengthened repeatedly in the past decade. The 2011 reform (so-called "six-pack") aimed at promoting fiscal adjustment in good times (through the introduction of an expenditure benchmark and the "significant deviation" procedure). In addition, a debt benchmark was introduced to support the debt reduction, and the system of sanctions was made more gradual and automatic. The 2013 reform (so-called "two-pack") introduced the obligation for euro-area Member States to submit their draft budgetary plans to the European Commission and the Eurogroup before the adoption of draft budget laws by national parliaments.

To find out whether the EU fiscal rules have contributed to sustainable public finances in the EU is challenging. Looking at the developments of public debt in the EU may suggest that debt ratios declined in the years after the various reform steps of the EU fiscal governance framework (Graph IV.2.1). This is also consistent with empirical studies showing that countries with sound fiscal rules have, on average, lower debt ratios compared to countries without rules. ([115]) Nevertheless, the EU fiscal rules have not prevented debt ratios from increasing to very high ratios. In addition, it is difficult to disentangle the impact of the institutional changes from the economic cycle, since periods of debt reduction have frequently coincided with good economic conditions (see dark blue bars in Graph IV.2.1). Moreover, causality is difficult to establish for endogeneity reasons. Having or adopting a fiscal rule indeed depends on a range of factors that can correlate with fiscal performance. For instance, countries with fiscal rules may have a preference for a prudent conduct of fiscal policy whether or not a rule is in place. ([116]) Similarly, countries may consolidate in the face of high public debt irrespective of the presence of a fiscal rule, simply to keep sovereign interest rates in check.

([110]) While there is clear evidence that countries with high public debt grow substantially slower (Reinhart and Rogoff, 2010, Woo and Kumar, 2015, Cecchetti et al., 2011, Chudik et al., 2017), there is controversy over the precise threshold level of debt to GDP beyond which growth slows down significantly. The influential study by Reinhart and Rogoff (2010) suggests that public debt in excess of 90% of GDP is harmful to growth in advanced countries.

([111]) Beck (2012), Jordà et al. (2016).

([112]) Issing (2017).

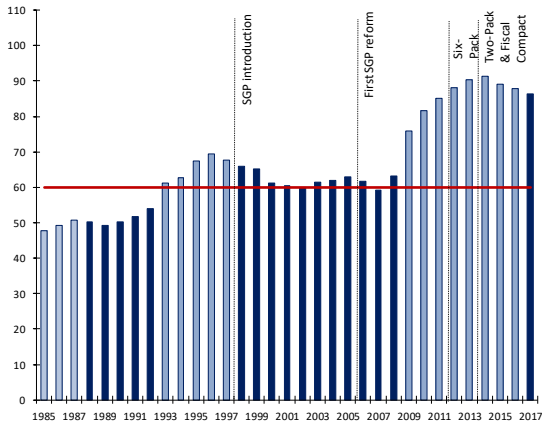
([113]) The reference values were defined in the Protocol on the EDP annexed to the Maastricht Treaty.

([114]) While Member States agreed in 1997 on the Pact, the preventive/corrective arm of the Pact entered into force in 1998/1999.

([115]) See IMF (2009), Heinemann et al. (2018), Tapsoba (2012), Debrun et al. (2008), Caselli et al. (2018).

([116]) Poterba (1996).

Graph IV.2.1: **Public debt in the EU (% of GDP)**



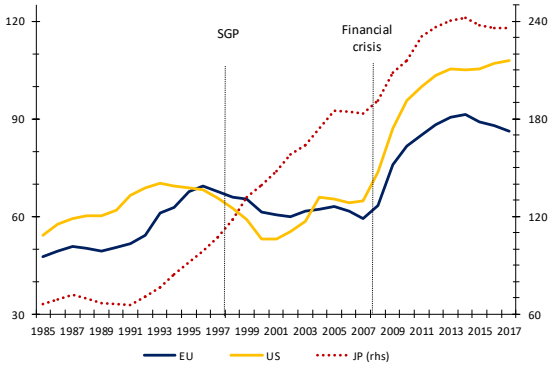
Note: EU corresponds to EU15, i.e. those fifteen countries that were members of the EU in 1995. Dark (light) blue bars indicate periods of good (bad) economic times, as measured by positive (negative) output gaps.
Source: Commission 2018 spring forecast.

Against that background, this Chapter provides some further input to the discussion whether EU fiscal rules have contributed to sustainable public finances in the EU. The Chapter is structured as follows. Section IV.2.2. compares the public debt developments in the EU since 1985 with other large advanced economies, namely the US and Japan. ([117]) Section IV.2.3. describes the debt developments at EU Member States' level since the Great Recession in greater detail. Section IV.2.4. provides some tentative assessment if the EU fiscal rules have promoted sustainable fiscal positions. Finally, Section IV.2.5. concludes.

2.2. PUBLIC DEBT DEVELOPMENTS IN THE EU, COMPARISON WITH THE TWO LARGEST OECD ECONOMIES

Public debt ratios have increased much less in the EU than in the US and Japan since 1985 (Graph IV.2.2). Between 1985 and 2007, gross public debt-to-GDP ratios evolved similarly in the EU and the US. In both countries public debt climbed by about 10 pps. of GDP to around 60% of GDP (EU) and 65% of GDP (US). In Japan the public debt ratio rose over the same period sharply by almost 120 pps. of GDP to around 185% of GDP in 2007. Following the Great Recession, gross public debt went up substantially in all three countries. In the EU, it peaked at 88% of GDP in 2014, before mildly declining to 83% of GDP in 2017. In the US, public debt increased significantly reaching an all-time high of almost 110% of GDP in 2017. In Japan public debt soared to around 240% of GDP in 2014, before decreasing slightly to 236% in 2017. Overall, the debt increase over the past three decades was significantly smaller in the EU (35 pps. of GDP) compared with the US (49 pps. of GDP) and Japan (164 pps. of GDP). The differences are even more pronounced since the entry into force of the SGP in 1998 (EU: 19 pps. of GDP, US: 42, Japan: 129).

Graph IV.2.2: **Public debt developments in EU, US and Japan since 1985 (% of GDP)**



Note: EU represents EU15. The results are broadly unchanged when the EU is measured by a different sample (e.g. EU28 since 2000, backcastig before).
Source: Commission services' calculations based on Commission 2018 spring forecast, OECD and IMF data.

The change in the debt-to-GDP ratio can be broken down into three factors: ([118])

- The ***government primary balance*** (i.e. the headline balance excluding interest payments) captures the key contribution of fiscal policy to debt dynamics. It can be broken down into two determinants: the impact of discretionary fiscal policy (measured by the cyclically-adjusted primary balance) and the effect of automatic

([117]) The Chapter focuses on debt developments expressed in gross terms. Gross public debt excludes any financial assets held by governments that could be used to liquidate debt. For an assessment of public financial assets see Part V of this year's Report on Public Finances in EMU.

([118]) The following simple accounting framework shows the impact of these three factors on the change in the debt-to-GDP ratio (b) : $\Delta b_t = -pb_t + \frac{(i_t - g_t)}{(1+g_t)} b_{t-1} + SFA_t$ where $-\text{pb}_t = -CAPB_t - \text{cyclical budget component}_t$, pb is the primary balance, $CAPB$ stands for the cyclically-adjusted primary balance, i is the nominal interest rate, g is the nominal growth rate and SFA refers to the stock-flow adjustment.

stabilisers, which follows at unchanged policies from the cyclical conditions of the economy (measured by the cyclical budget component). ([119])

- The ***snowball effect*** records the impact of the difference between the nominal interest rate and the nominal economic growth rate on the debt-to-GDP ratio. The higher the interest-growth differential, the larger the snowball effect and the higher the detrimental effect on the debt-to-GDP ratio.

- The ***stock-flow adjustment*** (SFA) relates to those financial transactions or statistical factors that affect the outstanding debt stock but are not recorded as part of the primary balance. Prominent examples are privatisation receipts (which reduce public debt) and measures to recapitalise banks or state-owned companies at market conditions (which have a debt-increasing impact).

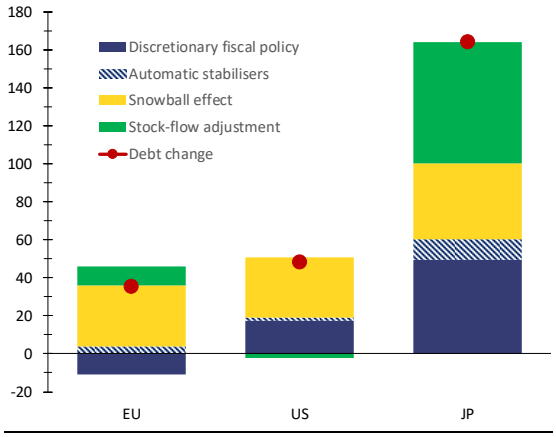
Different factors are at play driving the public debt surge in the EU, US and Japan over the last three decades (Graph IV.2.3 and Table IV.A.1 in Annex):

- **First and foremost, the government primary balance –and in particular its discretionary part– had a debt-reducing impact in the EU, whereas it contributed to rising debt ratios in the US and Japan**. In the EU, a cumulated primary surplus lowered public debt (7 pps. of GDP). This effect was driven by tighter discretionary fiscal policy, which more than offset the slight debt-increasing impact from automatic stabilisers. By contrast, loose discretionary fiscal policy, in particular, contributed to a sizeable debt-increasing impact from primary balances in the US (19 pps. of GDP) and Japan (60 pps. of GDP). The differences across the three economies are even stronger since introduction of the SGP in 1998.

- **The snowball effect had a sizeable adverse impact on debt in all three economies**. It led to a cumulated debt-increase of similar size in the EU and US (around 32 pps. of GDP). The decline in interest rates limited a higher contribution from the snowball effect in the EU and US. In Japan, the impact of the snowball effect was higher (40 pps. of GDP), mostly due to weaker economic growth. ([120])

- **The stock flow adjustment increased debt in the EU and Japan, but not in the US**. Bank recapitalisation measures following the Great Recession had a sizeable debt-increasing impact in the stock flow adjustment in the EU (10 pps. of GDP). The stock flow adjustment was very high in Japan (64 pps. of GDP). The US benefitted from a small debt-reducing contribution from the stock flow adjustment.

Graph IV.2.3: **Key contributions to change in public debt in EU, US and Japan (in pps. of GDP, 1988-2017)**



Note: The contribution from the primary government balance is split into discretionary fiscal policy (measured by the cyclically-adjusted primary balance) and the automatic stabilisers (measured by the cyclical component of the budget balance). For data availability reasons, data for the EU refer to EU15.
Source: Commission services' calculations based on Commission 2018 spring forecast, OECD and IMF data.

2.3. DEBT DEVELOPMENT IN EU MEMBER STATES SINCE THE GREAT RECESSION

Despite a recent decrease in the EU debt ratio, public debt is still close to the historic peak in many Member States. ([121]) Public debt increased substantially in both the EU (26 pps. of GDP) and euro area (24 pps. of GDP) since the Great Recession (Graph IV.2.4). It peaked in 2014 before declining moderately thereafter. Despite relatively

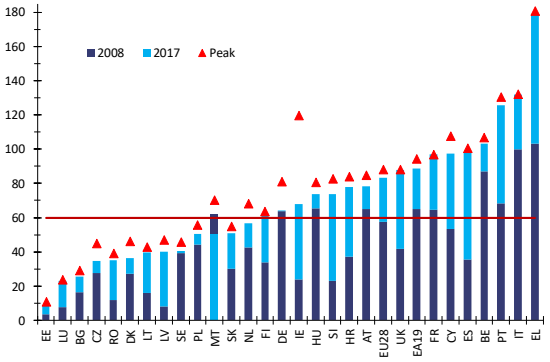
([119]) For a recent assessment of the functioning of automatic stabilisers see European Commission (2017).

([120]) In the last decade (2008-2017), the snowball effect contributed to a higher debt increase in the EU than in the US and Japan, notably due to relatively higher real interest rates and lower growth.

([121]) The start period under consideration is 1985.

robust growth in recent years, public debt remains close to the peak in the majority of Member States and in particular in some large and highly indebted Member States such as Italy, Spain, France and the UK.

Graph IV.2.4: **Debt developments since the Great Recession (% of GDP)**

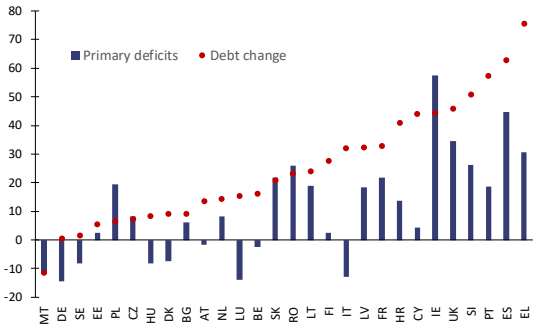


Source: Commission 2018 spring forecast.

At the same time, debt developments and their drivers have proved to be highly country-specific during the last decade, making it difficult to categorise Member States. In addition to large differences in debt ratios across the EU, Member States with similar debt ratios before the Great Recession have experienced divergent debt developments over the last decade (e.g. FR, DE, ES and SE or PL and the UK, see Graph IV.A.1 in Annex). Indeed, the underlying debt drivers (primary deficits, snowball effects and stock-flow adjustments) have also proven to be largely country-specific (Graph IV.A.2 in Annex). Some stylised facts can however be highlighted.

The accumulation of primary deficits has been a key driver of rising debt ratios in many Member States (Graph. IV.2.5). Over the last decade, a number of Member States recorded significant primary deficits that contributed to an increase in their debt ratio. This includes, in particular, Member States severely affected by the crisis such as Greece, Spain, Portugal, Slovenia, and Ireland, but also countries experiencing better economic conditions such as the UK, France, Poland, Slovakia or Romania.

Graph IV.2.5: **Debt changes since the Great Recession and the contribution of primary balances (% of GDP)**



Source: Commission 2018 spring forecast.

The countries with the highest debt ratios already experienced a very high debt legacy before the crisis. Indeed, most Member States with the highest (resp. lowest) debt on the onset of the Great Recession remained those with the highest (resp. lowest) debt in 2017 (Graph IV.2.6). In a majority of Member States, interest payments were lower over the last decade than in the decade before the Great Recession, due to lower interest rates. However, high interest payments in some Member States were mostly the result of their high debt ratios. ([122]) For instance, over the last decade cumulative interest payments amounted to more than 40 pps. of GDP in highly-indebted Member States such as Greece, Italy and Portugal, and more than 33 pps. in Belgium (Graph IV.A.2 in Annex). In contrast, cumulated interest payments represented less than 10 pps. of GDP for low-debt countries such as Estonia, Luxembourg or Bulgaria.

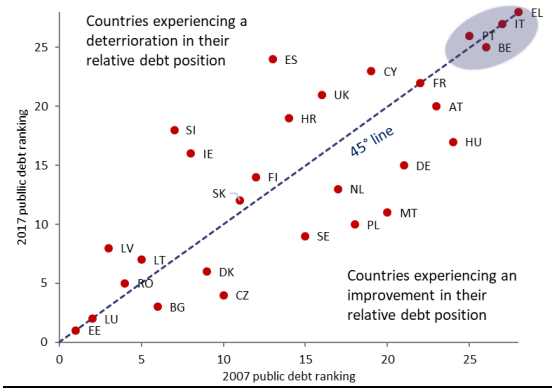
Divergent public debt dynamics during the Great Recession also reflected significant differences in economic conditions across Member States. In general, the weakness in economic activity affected primary deficits, snowball effects and stock-flow adjustments. ([123]) However, some Member States benefitted from stronger real growth and/or inflation than their

([122]) In contrast, in previous decades (and notably the 1988-1997 decade) the contribution of interest payments to increases in debt ratios mainly reflected higher real interest rates.

([123]) Via either nominal effects on the denominator of the debt-to-GDP ratio, or growth effects on the fiscal balance. However, the contribution from the snowball effect has declined in recent years reflecting the pick-up in economic activity and highly accommodative financial conditions.

peers (Graph IV.A.2 in Annex). In addition, stock-flow adjustments contributed to debt increases in almost all Member States ([124]) but to a different extent, often reflecting significant support extended to the banking sector. ([125])

Graph IV.2.6: **Ranking in public debt ratios, in 2007 and 2017**



Note: The chart compares how Member States ranked, on the base of their debt ratio, in 2007 and ten years after.
Source: Commission services' calculations based on Commission 2018 spring forecast.

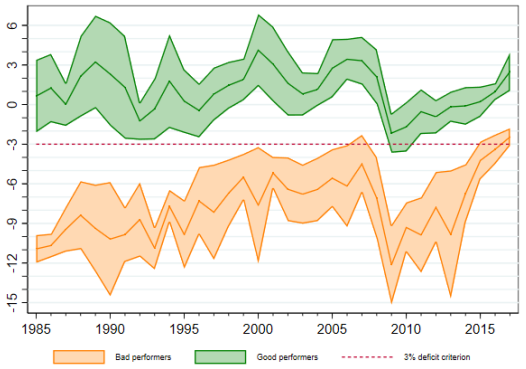
2.4. HAVE EU FISCAL RULES BEEN ASSOCIATED WITH IMPROVED FISCAL POLICY ORIENTATION IN THE EU?

To allow for a tentative assessment of the impact of EU rules, we compare the developments of key fiscal outcome variables before and after the introduction of the rule. The Section presents some tentative findings on the effect of rules, as causality between fiscal rules and fiscal outcomes is difficult to establish. It focuses on the most important fiscal rules used in fiscal surveillance.

3% deficit criterion

Member States with large headline deficits just before the launch of the Pact reduced their deficits significantly, with the exception of the Great Recession period (in Graph IV.2.7, the orange area shows, for each year, where the deficits of the 25% of the Member States with the highest deficits stood). Before the launch of the Pact in 1998, several Member States had deficits exceeding 5% of GDP. The deficits then decreased slowly until the outbreak of the Great Recession, so that only three Member States displayed deficits exceeding 3% of GDP in 2007. It is true that in the aftermath of the crisis, Member States' deficits soared again significantly: 24 out of the then 27 Member States exhibited deficits exceeding 3% of GDP (Graph IV.2.8) and entered the excessive deficit procedure (EDP). ([126]) However, in 2018 only one Member State (Spain) was still in EDP. Overall, the developments suggest that the 3% of GDP deficit criterion contributed to better fiscal outcomes than before the introduction of the Pact, in Member States characterised by high public deficits. At the same time, the deficit criterion seems to have acted as a target rather than a lower limit, since several Member States with a record of high deficits still have public deficits close to 3% of GDP.

Graph IV.2.7: **Headline balances in EU Member States (% of GDP)**



Note: For a given year, the "bad performers" (orange area) represent the range where the deficits of the 25% of the Member States with the highest deficits stood. The "good performers" (green area) represent the range where the deficits of the 25% of the Member States with the highest surpluses/lowest deficits stood. Headline deficit of the general government sector is based on ESA 2010 from 1995 while previous figures are backcasted according to the observed change in the ratio as from the series based on ESA 1995. For Germany, West Germany is considered up to 1990. Similar results can be obtained when considering EU28 deficit ratio.
Source: Commission services' calculations based on Commission 2018 spring forecast.

By contrast, there seems to be no clear-cut impact of the 3% deficit criterion on Member States with headline surpluses or low deficits before the introduction of the Pact (in

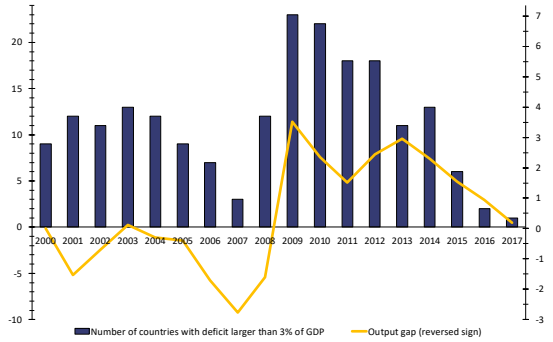
([124]) In contrast, stock flow adjustment contributed to a decline in the debt ratio in Poland, Czech Republic, Slovakia and, in particular, Greece reflecting significant privatisation receipts.

([125]) Indeed, bailouts to the private sector seem to be correlated to growth slowdowns and previous spending booms as highlighted by Bova et al. (2016), IMF (2016), Jaramillo et al. (2017).

([126]) Finland was put in EDP for planned breach, although the deficit eventually stayed below 3% of GDP.

Graph IV.2.7, the green area depicts, for each year, the range where the fiscal balance of the 25% of the Member States with the highest surpluses/lowest deficits stood). The 3% deficit criterion appears to have not played a decisive role in Member States that already followed prudent fiscal policy before the launch of the Pact. The group of good performers had on average already public surpluses since the launch of the Pact in 1998 with the exception of the years following the Great Recession. The results also hold if the composition of the groups of good and bad performers is fixed over time, e.g. based on the fiscal outcomes of 2017 (Graph IV.A.3 in Annex). At the same time, we do not find evidence of a downward convergence of the good performers towards the 3% of GDP deficit criterion as recently argued in policy papers. ([127])

Graph IV.2.8: **Number of Member States breaching the 3% limit and slack in the economy**

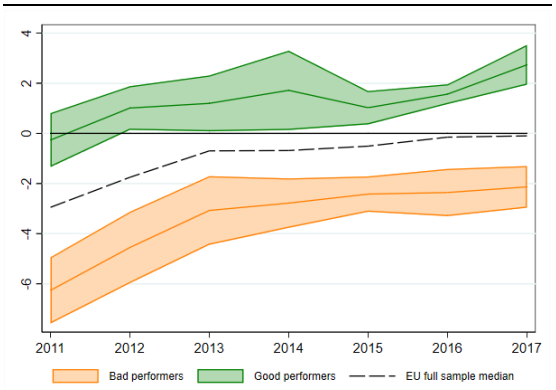


Source: Commission services' calculations based on Commission 2018 spring forecast.

Structural deficits converging towards sound medium-term budgetary positions (MTO)

Member States made significant progress in coming closer to a balanced budget position. Since 2011, Member States with a large distance to their MTO made significant progress in closing their gap towards the MTO (Graph IV.2.9, the red area depicts balances between the minimum and the 25% percentile across countries). This is consistent with a possible effect of the six-pack on the structural balances. A comparison with the pre-crisis period, using cyclically-adjusted balances, would lead to the same results. ([128]) Nevertheless, a significant gap towards the MTO of around 2 pps. remains. Structural balances also improved for the group of good performers (see Graph IV.2.9, where the green area depicts balances between the 75% percentile and the maximum across countries, the results of this Section also hold if the composition of the groups of "good performers" and of "bad performers" is fixed, considering fiscal outcomes in 2017, see Graph IV.A.5 in Annex).

Graph IV.2.9: **Distance to the MTO (% of potential GDP)**



Note: The graph shows the difference between structural balance and the country-specific MTO. For a given year, the "bad performers" (orange area) represent the range where this difference is the highest among EU Member States (first quartile), and the "good performers" (green area) represent the range where the difference is the lowest among EU Member States (last quartile).
Source: Commission services' calculations based on Commission 2018 spring forecast.

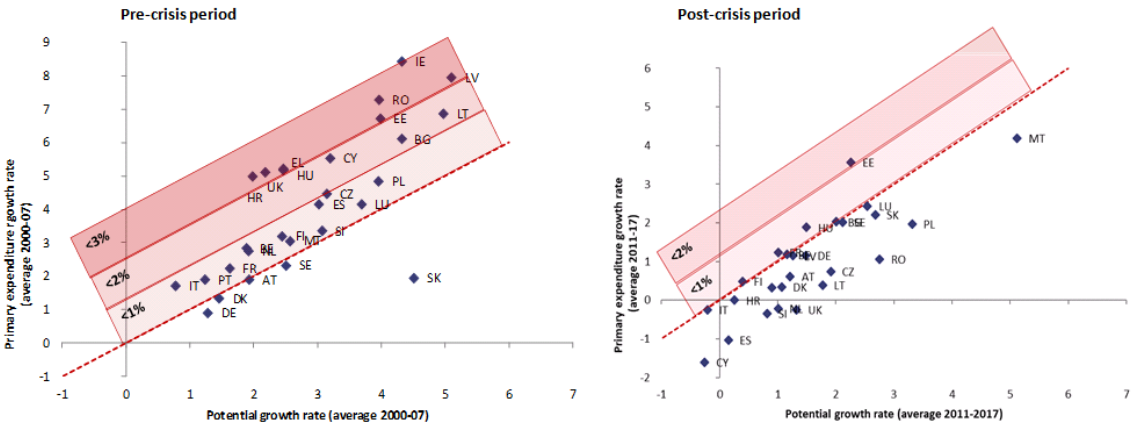
It should also be noted that the recent improvement of the average position to MTO is more the fact of those countries close to their MTO or who have already overreached their MTO, than those more distant to it. For that latter group, the convergence to MTO seems to have come to a halt as of 2015.

Expenditure benchmark

Expenditure dynamics seem to have been better controlled since the introduction of the expenditure benchmark in 2011. Under the expenditure benchmark, increases in primary spending net of discretionary revenues measures that go beyond a country's medium-term potential growth rate must be matched by additional discretionary revenue measures. The pre-crisis period showed that in most Member States primary expenditure grew much faster than the average

([127]) See Caselli and Wingender (2018).
([128]) For a longer time perspective, see Graph IV.A.4 in Annex, which shows that large cyclically-adjusted deficits exceeding 4% of GDP occurred relatively often before 2011, and less after.

Graph IV.2.10: **Controlling primary expenditure dynamics**



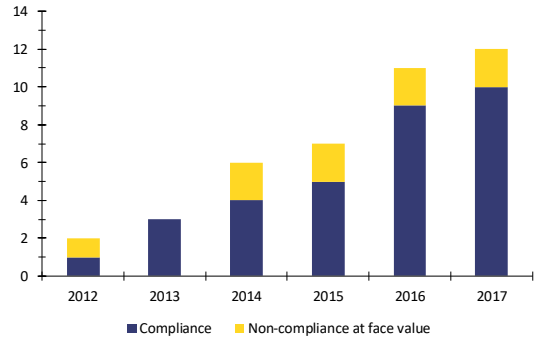
Note: The chart shows total expenditure growth netted out of interest. As the 2008-2010 period triggered exceptionally strong expenditure swings also related to the financial crisis, we compare the situation after the introduction of the expenditure benchmark criteria in 2011 with the pre-crisis period between 2000 and 2007.
Source: Commission services' calculations based on Commission 2018 spring forecast.

potential growth rate. In ten Member States, mostly those that joined the EU in 2004, spending increased more than 1 percentage points faster than potential growth (Graph IV.2.10). ([129]) Since the introduction of the expenditure benchmark, most Member States show primary expenditure growth below or close to potential growth. On the top of this, discretionary revenue measures have increased over the period 2011-2017 in almost all Member States, contributing to further improvements in the expenditure benchmark.

Debt reduction benchmark and position of gross debt compared to 60% of GDP

The debt reduction benchmark (often called "debt rule") was introduced to operationalise the appropriate pace of public debt reduction. The debt reduction benchmark was introduced in 2011 with the six-pack reform of the Pact with the aim to put a stronger focus on fiscal sustainability. The debt reduction benchmark operationalises the appropriate pace of debt reduction over the long term. It requires Member States to reduce the differential of the government debt-to-GDP ratio with respect to the 60% of GDP by one twentieth on average over a period of three years. ([130]) With this specification, the debt rule aims to ensure that Member States with higher debt make greater efforts in debt reduction.

Graph IV.2.11: **Compliance with the debt reduction benchmark at face value**



Note: This chart shows the number of countries compliant with the debt reduction benchmark (both in transition period and after) since its introduction. See for more details on compliance with the debt reduction benchmark European Commission (2017b), pp.70-74.
Source: Commission services' calculations based on real time data (each year's Commission spring forecast.

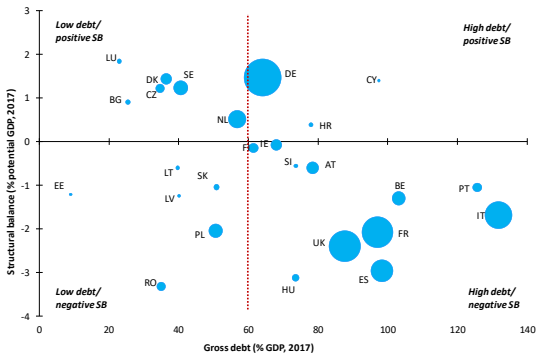
While an increasing number of Member States comply with the debt reduction benchmark, a few Member States still do not comply at face value. As most Member States exited the deficit-based EDP opened following the Great Recession, those with a public debt higher than 60% of GDP became subject to the debt reduction benchmark (or the MLSA during the three-year transition period), in the 2010s. Most of them managed to be compliant with the provisions of the debt reduction benchmark (Graph IV.2.11), but since 2014 two Member States (Italy and Belgium) have not

([129]) Note that this group includes several Member States who joined the EU in 2004.
([130]) For Member States exiting the deficit-based EDP after 2011, there is initially a 3-year transition period during which a Minimal Linear Structural Adjustment (MLSA) is required instead of an adjustment in the debt-to-GDP ratio.

fulfilled those provisions at face value (i.e. before considering the relevant factors). The relevant factors considered include unfavourable economic conditions, notably low inflation and real growth, which made the respect of the debt reduction benchmark more demanding, notably for Member States with very high debt ratios. ([131])

While many Member States witness a public debt lower than or close to 60% of GDP, some Member States show much higher debt ratios, and in particular some large Member States combine high debt with relatively high structural deficits (Graph IV.2.12). On the one hand, many Member States show debt ratios below or close to 60% of GDP (see Box IV.2.1 for a summary of the Commission's fiscal sustainability assessment 2018). Some of them have also balanced budget in structural terms, reaching or exceeding their MTOs. This includes Germany, the Netherlands, Luxembourg, the Czech Republic, Bulgaria, Sweden and Malta. Some catching-up Member States, enjoying relatively high growth and/or inflation, also show low debt despite sizable structural deficits (e.g. Poland, Romania, Slovakia and the Baltics). On the other hand, several Member States witness debt much in excess of 60% of GDP, and among those, several large Member States also still have high structural deficits. This includes Italy, France, UK, Portugal and Belgium.

Graph IV.2.12: **Debt ratios and structural balances across Member States, weighted by country size**



Source: Commission services' calculations based on Commission 2018 spring forecast.

2.5. CONCLUSIONS

Public debt ratios increased much less in the EU compared with the US and Japan over the past three decades, in particular due to a more prudent conduct of fiscal policy. The massive increase in public debt in the EU since the 1980s seems to be a common feature amongst most advanced economies. However, compared with the US and Japan, debt ratios increased less in the EU. In fact, the EU showed a higher primary balance than the US and Japan over the last two and three decades.

Member States with the most fragile fiscal positions before the launch of the Pact improved their fiscal balances significantly thereafter and following the subsequent reform steps of the fiscal governance framework. Member States with large headline deficits before the launch of the Pact reduced their deficits significantly. Member States also made significant progress in coming closer to a balanced budget position in structural terms. In addition, public expenditures dynamics are today better in check than before the Great Recession. This suggests that the EU fiscal governance framework contributed to more prudent fiscal policy, thereby enhancing fiscal sustainability. At the same time, this assessment is only preliminary and more analysis would be required to assess a causal relationship.

Nevertheless, there is still unfinished business, in particular regarding the high public debt ratios in several Member States. The deficit criterion seems to have acted more as a target rather than a lower limit: several Member States still have public deficits close to 3% of GDP. Moreover, some Member States still show a significant gap towards a sound medium-tem budgetary position, as captured by their distance to MTO.

([131]) In the context of very low nominal GDP growth, the Commission has considered respect of the preventive arm requirements a key relevant factor when assessing compliance with the debt criterion.

Box IV.2.1: European Commission's fiscal sustainability assessment

The purpose of this box is twofold: It describes the Commission's framework to assess the sustainability of public finances and presents the findings of the recent version of this assessment.

A. Commission framework to assess fiscal sustainability

The European Commission's fiscal sustainability assessment critically contributes to the monitoring and coordination of Member States' fiscal policies, underlying the aggregate euro area fiscal stance. Such coordination of national fiscal policies, in accordance with the common fiscal rules, is essential for the proper functioning of the European Union and euro area. The common fiscal rules are geared towards pursuing debt sustainability at the national level, while providing room for macroeconomic stabilisation. With this aim, the Commission's fiscal (debt) sustainability analysis serves multiple purposes: i) an early-warning function by identifying potential building fiscal risks in Member States; ii) a basis for the formulation of policy requirements in the context of the Stability and Growth Pact (SGP), and of policy recommendations in the context of the European Semester; and iii) a key input in the context of euro area financial assistance programmes.

The European Commission regularly assesses fiscal sustainability of Member States using a comprehensive and harmonised framework. The results of this analysis are published on a regular basis in the Commission's Fiscal Sustainability Report (FSR) (every 3 years), while the Debt Sustainability Monitor (DSM) provides a yearly update of this analysis. The Commission framework comprises: (i) fiscal sustainability indicators that distinguish risks at different time horizons (short-, medium- and long-term), (ii) a fully-fledged debt sustainability analysis (DSA) that includes a detailed set of deterministic and stochastic debt projections, and (iii) a review of additional mitigating and aggravating country-specific factors, including the composition of government debt, implicit and contingent liabilities and government assets.

B. Key findings of the Commission's Fiscal Sustainability Report 2018

The latest Commission assessment published in the Fiscal Sustainability Report 2018 acknowledges the decline of government debt ratios in the EU, but stresses that debt remains high in several –often large– European economies. ([1]) The EU government debt ratio has been continuously decreasing by almost 7 percentage points since 2014 reaching around 81% of GDP in 2018. This positive development was supported by the solid economic activity, still favourable financial conditions and a surplus of the primary balance. The declining debt ratio of the EU, which contrast with developments observed in other major advanced economies, such as Japan and the United-States, is projected to continue over the next ten years. Yet, some high-debt Member States (notably IT, CY, FR and ES) still face increasing or not sufficiently receding debt burdens, therefore remaining exposed to unfavourable shocks and to sudden changes in financial markets' sentiments.

Short-term risks of fiscal stress have declined since 2009 ([2]) but increased compared to last year in some Member States (Table 1). In 2009, more than half of the Member States were considered to be at high risk of fiscal stress in the short term. In 2018, one Member State (CY) is found to be at risk of fiscal stress (based on the S0 indicator, ([3]) albeit a borderline value), a result notably driven by the strong increase of government debt last year following banking support measures. ([4]) Some short-term vulnerabilities are also identified (based on the S0 fiscal sub-index) in four additional Member States (ES, FR, IT and HU). For

([1]) See European Commission (2019).
([2]) The average level (across Member States) of the S0 indicator peaked in 2009, providing lead signal for the onset of the euro area sovereign debt crisis.
([3]) The S0 indicator is an early-warning indicator of fiscal stress in the upcoming year. It is a composite indicator based on a large set of fiscal and macro-financial variables (see Berti et al. (2012) and Pamies Sumner and Berti (2017)).
([4]) However, some qualifying mitigating factors should be considered, such as the limited short-term government financing needs, the recent improvement of financial markets' perceptions, as well as the forecasted decrease of Cyprus' government debt in 2019.

(Continued on the next page)

Box (continued)

these Member States, vulnerabilities are not deemed acute enough to spark significant risks of fiscal stress in the short term. Yet, they point to a need for caution, especially in a context of volatility of financial markets' sentiments. Italy is particularly exposed to sudden changes in financial markets' perceptions, notably in the light of its still sizeable government financing needs.

Medium-term risks of fiscal stress are assessed to be high in seven Member States (BE, ES, FR, IT, HU, PT and UK). The assessment of medium-term sustainability challenges relies on the joint use of the debt sustainability analysis (DSA, namely deterministic debt projections over a ten-year horizon and stochastic projections) and the S1 indicator. ([5]) In four additional Member States (HR, CY, RO and SI), medium-term fiscal sustainability risks are deemed medium. ([6]) These results are driven in most cases by still high post-crisis debt burdens, weak projected fiscal positions and / or sensitivity to unfavourable shocks. The proportion of Member States at high- or medium-risk is overall declining (e.g. compared to the DSM 2017), yet in some – often large – Member States identified high medium-term risks are not receding.

Table 1: **Summary heat map of risks to fiscal sustainability, Fiscal Sustainability Report 2018**

	Overall short-term risk category	**Overall medium-term risk category**	S1 indicator - overall risk assessment	Debt sustainability analysis - overall risk assessment	S2 indicator - overall risk assessment	**Overall long-term risk category**
BE	LOW	HIGH	HIGH	HIGH	MEDIUM	HIGH (MEDIUM)
BG	LOW	LOW	LOW	LOW	LOW	LOW
CZ	LOW	LOW	LOW	LOW	MEDIUM (LOW)	MEDIUM (LOW)
DK	LOW	LOW	LOW	LOW	LOW	LOW
DE	LOW	LOW	LOW	LOW	LOW	LOW
EE	LOW	LOW	LOW	LOW	LOW	LOW
IE	LOW	LOW	LOW	LOW	MEDIUM (LOW)	MEDIUM (LOW)
ES	LOW	HIGH	HIGH	HIGH	MEDIUM (LOW)	HIGH (LOW)
FR	LOW	HIGH	HIGH	HIGH	LOW	MEDIUM (LOW)
HR	LOW	MEDIUM (HIGH)	MEDIUM	MEDIUM (HIGH)	LOW	MEDIUM (LOW)
IT	LOW	HIGH	HIGH	HIGH	MEDIUM (LOW)	HIGH (LOW)
CY	HIGH (LOW)	MEDIUM	LOW (MEDIUM)	MEDIUM	LOW	MEDIUM (LOW)
LV	LOW	LOW	LOW	LOW	LOW	LOW
LT	LOW	LOW (MEDIUM)	LOW (MEDIUM)	LOW	LOW (MEDIUM)	LOW (MEDIUM)
LU	LOW	LOW	LOW	LOW	HIGH (MEDIUM)	HIGH (MEDIUM)
HU	LOW	HIGH	MEDIUM	HIGH	MEDIUM	HIGH (MEDIUM)
MT	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM
NL	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM
AT	LOW	LOW (MEDIUM)	LOW (MEDIUM)	LOW (MEDIUM)	MEDIUM	MEDIUM
PL	LOW	LOW (MEDIUM)	LOW (MEDIUM)	LOW (MEDIUM)	MEDIUM	MEDIUM
PT	LOW	HIGH	HIGH	HIGH	LOW	MEDIUM (LOW)
RO	LOW	MEDIUM (HIGH)	MEDIUM	MEDIUM (HIGH)	MEDIUM	MEDIUM
SI	LOW	MEDIUM	MEDIUM	LOW (MEDIUM)	MEDIUM (HIGH)	MEDIUM (HIGH)
SK	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM
FI	LOW	LOW (HIGH)	LOW (MEDIUM)	LOW (HIGH)	MEDIUM	MEDIUM
SE	LOW	LOW	LOW	LOW	LOW	LOW
UK	LOW	HIGH	MEDIUM	HIGH	MEDIUM	HIGH (MEDIUM)

Note: In brackets, previous classification as in the DSM 2017, whenever the risk category has changed.
Source: Commission services.

([5]) The S1 indicator is a fiscal gap indicator that measures the required fiscal adjustment (in terms of structural primary balance, and in cumulated terms over 5 years) to bring the debt-to-GDP ratio to the Treaty reference value of 60% of GDP in 15 years.

([6]) In the case of Ireland, which is classified at low risk according to the standard approach, more acute vulnerabilities appear when scaling government debt with GNI, rather than GDP. Indeed, GNI can be considered as a more accurate measure of repayment capacity for this country (European Commission (2019), Box 3.1).

(Continued on the next page)

Box (continued)

Long-term risks of fiscal stress are assessed to be high in six Member States (BE, ES, IT, LU, HU and UK. In the FSR 2018, long-term fiscal sustainability challenges are identified based on the joint use of the DSA and the S2 indicator ([7]). In five cases (BE, ES, IT, HU and UK), the significant level of the S2 indicator, combined with important vulnerabilities according to the DSA results, drive the high-risk classification. The substantial long-term fiscal gap can be either largely due to the projected increase in ageing costs (BE, HU and UK) or the unfavourable initial budgetary position (ES and IT). In Luxembourg, the high-risk classification is determined by the sizeable S2 indicator due to fast-increasing projected ageing costs. In fourteen additional Member States (CZ, IE, FR, HR, CY, MT, NL, AT, PL, PT, RO, SI, SK and FI), long-term fiscal sustainability risks are deemed medium. In most cases, the updated risk classification (compared to last year) points to more important long-term risks and the proportion of Member States at high or medium risk in the long-term has clearly increased. The revised ageing costs' projections (based on the Commission's Ageing Report 2018 ([8])), taking into account latest demographic trends and in some cases pension reform reversals, largely contribute to these changes – as well as the methodological improvements.

The FSR 2018 confirms the need for pursing policies aimed at further enhancing fiscal sustainability, by enacting differentiated policies in full respect of the SGP, in line with the different challenges across countries, highlighted by the analysis. Favourable macroeconomic conditions and an accommodative monetary policy should be used to re-build fiscal buffers, especially in high-debt Member States, given the risk of heightened market pressures in those Member States, which could also have negative spillover effects on other Member States.

([7]) The S2 indicator is a fiscal gap indicator that measures the required fiscal adjustment (in terms of structural primary balance) to stabilise the debt-to-GDP ratio over the long term. In the FSR 2018, the methodology to assess long-term risks was revised compared to the past. In particular, the results of the DSA are considered in order to reach an overall long-term risk assessment. This improvement aims at capturing risks linked to high debt burdens, an aspect largely ignored by the traditional inter-temporal budget constraint.

([8]) See European Commission (2018b).

3. HAVE EU FISCAL RULES MITIGATED PROCYCLICALITY?

3.1. INTRODUCTION

Fiscal policy can play an important role in stabilising the domestic economy, in particular in the context of the European Economic and Monetary Union (EMU). The European Central Bank (ECB) can only react to shocks affecting the currency union as a whole and it has been constrained by the zero lower bound in the aftermath of the crisis. Moreover, the size of the shock from the recent economic and financial crisis has been exceptionally large. Therefore, fiscal policy has gained importance at the national level to smooth economic fluctuations at the national level.

While the EU fiscal governance framework aims at ensuring sustainable public finances in the long-term, it offers space for counter-cyclical stabilisation in the short-term. The main goal of the Stability and Growth Pact (SGP) is to achieve sound budgetary positions (the so-called medium-term budgetary objectives (MTO)) and to prevent the build-up of excessive deficits and debt. This allows in principle Member States to deal with normal cyclical fluctuations by letting automatic stabilisers operate freely. ([132]) As such, during downturns (upturns), total government spending as a share of GDP should go up (down), while government revenues as a share of GDP should go slightly down (up) or remain broadly stable, which results in a declining (increasing) budget balance as a share of GDP. ([133]) In the case of very large shocks ([134]) or constrained monetary policy, ([135]) automatic stabilisers alone may not be sufficient to smooth income and demand and may need to be complemented by discretionary fiscal policy, i.e. the component of fiscal policy that depends on the decisions of policymakers (Chapter IV.1.). However, discretionary fiscal policy interventions can have drawbacks (e.g. imprecise design, implementation lags, objectives unrelated to stabilisation) and should only be used in the case of a clear need and sufficient fiscal space to prevent risks for the sustainability of public finances (see Table IV.A.6 in the Annex for an overview of the literature).

The empirical evidence on the cyclicality of fiscal policy in the EU is inconclusive. While there is strong evidence on procyclical fiscal policy in developing countries, the findings for the EU are not clear-cut: they are particularly sensitive to the time period covered and the indicators used to measure fiscal policy and the economic cycle. ([136]) In the run-up to EMU, studies find evidence for a procyclical fiscal tightening. ([137]) In the first decade of EMU, the findings range from acyclical ([138]) to (especially in good times) procyclical fiscal policy. ([139]) More recent studies show that fiscal reaction has become more prudent since the Great Recession, resulting in acyclical ([140]) or countercyclical ([141]) fiscal policy. Overall, the evidence seems to be in particular inconclusive regarding the cyclicality of *discretionary* fiscal policy, whereas the *overall* fiscal policy (i.e. including automatic stabilisers) tends to be rather acyclical or countercyclical. The indicator used to measure the economic cycle seems also to drive the results: the findings appear less conclusive based on the level rather than the change in the output gap.

The role of the reinforced EU fiscal rules on cyclicality has only scarcely been investigated. Before the introduction of the euro, several scholars were concerned that the Maastricht Treaty

([132]) On an assessment of automatic stabilisers in the EU see European Commission (2017), Dolls et al. (2012), in't Veld et al. (2013).

([133]) Abstracting from revenue windfalls, revenues as a percent of GDP slightly decrease or remain broadly stable during recessions: they follow on average in monetary units the cyclical fluctuations of output, while the denominator, GDP, slightly declines (i.e. the revenue-to-GDP ratio has an elasticity of close to 0). By contrast, expenditure as a percent of GDP increases significantly during downturns: expenditure remains rather rigid while output drops (i.e. the expenditure-to-GDP ratio has a negative elasticity of around -0.5). The fiscal balance as a percentage of GDP has an elasticity of about 0.5.

([134]) Christiano et al. (2011).

([135]) Blanchard et al. (2013); Blanchard and Leigh (2013).

([136]) For developing or emerging economies the literature rather clearly points to procyclical fiscal policy (Gavin and Perotti, 1997, Kaminsky et al., 2004, Ilzetzki and Végh, 2008, Frankel et al., 2013).

([137]) European Commission (2008), Gali and Perotti (2003).

([138]) Buti and van den Noord (2004), Fatás and Mihov (2009), Ballabriga and Martinez-Mongay (2002).

([139]) European Commission (2004), Candelon et al. (2010), Deroose et al. (2008), Larch et al. (2010), Cimadomo (2012).

([140]) Checherita-Westphal and Žďárek (2017), Baldi and Staehr (2016); The findings by Eyraud et al. (2017) indicate acylical fiscal policy based on Member States plans, but procyclical fiscal policy based on real-time and ex-post data.

([141]) Huart (2012).

could weaken the stabilisation properties of fiscal policy. ([142]) Early evidence, however, shows that the SGP has not mitigated the stabilisation function of fiscal policy. ([143]) One recent study concludes that high public debt can hamper stabilisation properties in EMU. ([144])

There are several reasons for procyclical fiscal policy in the EU. ([145]) From a political-economy perspective, policymakers may attach less weight to stabilisation of output than other objectives. ([146]) These considerations can lead to excessive spending in good times, eroding fiscal buffers and necessitating procyclical fiscal tightening in downturns. ([147]) The existence of a few powerful groups can aggravate this effect, with each group attempting to gain a greater share of the "common pool" by demanding more transfers. ([148]) Moreover, procyclicality may result from a wrong assessment of the economic cycle in real time or an imprecise or delayed implementation of discretionary fiscal policy. ([149]).

Against this background, the Chapter provides new empirical evidence on the cyclicality of the fiscal effort, with a special focus on the impact of EU fiscal rules. The assessment focuses on the discretionary component of fiscal policy (the fiscal effort). Section IV.3.2. presents the main challenges by analysing the cyclicality of the fiscal effort. Section IV.3.3. describes the empirical specification. Section IV.3.4. presents the main findings regarding the cyclicality of fiscal policy focusing, in particular, on the role of EU fiscal rules. Finally, Section IV.3.5. concludes.

3.2. KEY CHALLENGES

Challenge 1: How to measure the fiscal effort?

The fiscal effort can be measured "top-down" by identifying the change in the budget balance attributable to government policy (Chart IV.3.1). The change in the general government budget balance does not reveal the discretionary fiscal policy effort of policymakers due to the impact of automatic stabilisers. Therefore, a frequently used "top-down" measure is the change in the cyclically-adjusted budget balance, i.e. the government budget balance netting out the impact of the economic cycle. An important "top-down" indicator for the fiscal effort in the SGP is the change in the structural balance. Apart from the cycle, it corrects the budget balance for certain one-off measures, since the latter have only a temporary effect and thus cannot lead to a sustained improvement or deterioration in the government's fiscal position. In the academic literature, many authors also exclude interest payments from the structural or cyclically-adjusted balance, since they are not under the control of policymakers in the short-run. ([150]) While "top-down" measures are well-established and widely-known, they may imperfectly measure the fiscal effort, in particular due to the irregular response of tax revenues and unemployment spending with respect to output.

The fiscal effort can also be measured using a "bottom-up" approach. In its pure form, the "bottom-up" approach measures the fiscal effort as the estimated impact of individual government revenue and expenditure measures. ([151]) In the preventive arm of the SGP, a quasi "bottom-up" indicator for the fiscal effort is used as a complement to the structural balance, i.e. the so-called expenditure benchmark. This indicator compares the primary expenditure growth net of discretionary revenue measures against an appropriate benchmark, namely the ten-year average potential growth rate. ([152]) While "bottom-up" measures as approaches may offer a more direct quantification of the fiscal effort, they face challenges in terms of data availability and measurement (e.g. accuracy may depend on government information, indirect effects are difficult to capture). In addition, it is challenging to

([142]) Buiter et al (1993), Calmfors (2003).
([143]) Gali and Perotti (2003), Fatás and Mihov (2010).
([144]) Huart (2013).
([145]) For developing economies the phenomenon is usually explained by the lack of access to international credit markets (Gavin and Perotti, 1997) or poor institutions (Alesina et al., 2008).
([146]) Deroose et al. (2008).
([147]) Turrini (2008).
([148]) Tornell and Lane (1999).
([149]) Tanzi (2005).
([150]) See for instance Debrun et al. (2008).
([151]) Romer and Romer (2010), Agnello and Cimadomo (2012), Carnot and de Castro (2015).
([152]) To be more precise, the expenditure benchmark is based on total expenditure netting out interest payments, government expenditure on EU programmes which is fully matched by EU funds revenues, cyclical unemployment benefit expenditure, discretionary revenue measures and one-offs.

Graph IV.3.1: **How to measure the fiscal effort?**

	"Top-down" measure	"Bottom-up" measure
Key SGP indicator	• Structural balance	• Expenditure benchmark
Basic idea	• Use the change of the govt. budget balance, which is under the control of policymakers	• Compare expenditure growth with an appropriate benchmark
Pros	• Well-established and widely-known • Used in the SGP	• More direct assessment of fiscal effort • Used in the SGP
Cons	• Large fluctuations of tax revenues and unemp. spending w.r.t. output gap • Benchmark neutral stance (potential output) unobservable	• Measurement challenging, data availability limited • Benchmark neutral stance (av. potential output gr.) unobservable
Reference	Alesina and Perotti (1995)	Romer and Romer (2010), Carnot and de Castro (2015)

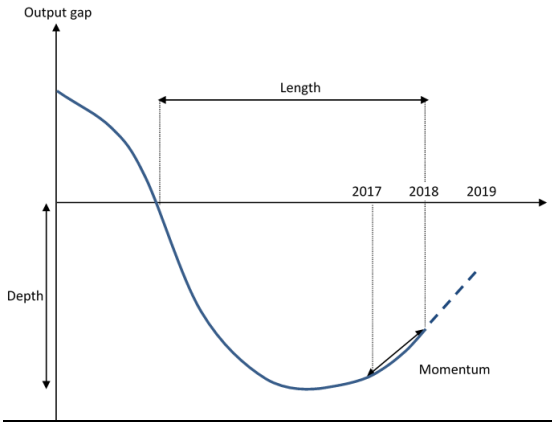
Source: Commission Services

design the appropriate benchmark (i.e. counterfactual scenario) against which spending developments should be compared. ([153])

Challenge 2: How to measure the economic cycle?

The output gap is a frequently used indicator that synthetically assesses the economy's position in the cycle. It measures the gap between potential and actual output, thus gives an estimate of whether the economy is booming or lagging behind compared to its potential. For fiscal surveillance in the EU, the output gap has been estimated since 2002 using a commonly agreed methodology based on a production function approach. ([154]) While empirical analyses of fiscal policy usually measure cyclical conditions by the output gap either in level or in change, the length can also provide an important information to assess the stabilisation needs of an economy. The European Commission developed a methodology to use three aspects of the shape of the economic cycle, namely the length, the depth and the speed of change or momentum (Graph IV.3.2). ([155])

Graph IV.3.2: **How to measure the economic cycle?**



Note: Graph closely follows European Commission (2016), p.126.
Source: Commission services.

The use of the output gap has several merits, but it also faces challenges. On the positive side, the output gap is a clear economic concept and a widely used indicator to disentangle the trend and the cycle of GDP growth, although with different methodologies to estimate potential output. Evidence shows that the Commission methodology performed better than estimates by the OECD and IMF with respect to its ability to track the euro area's business cycle. ([156]) On the negative side, the

([153]) Instead of using the ten-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).

([154]) This approach was adopted by the ECOFIN Council following approval from the Economic Policy Committee (EPC). The EPC has a dedicated working group (the Output Gap Working Group - OGWG) which meets regularly to discuss the operational effectiveness and relevance of the existing production function methodology (Havik et al., 2014).

([155]) European Commission (2016).

([156]) Mc Morrow et al. (2015).

output gap is based on non-observables as it requires an estimate of potential output, which makes it sensitive to the methodology used. In addition, it is difficult to assess the position in the economic cycle, especially in real time and in level terms. ([157])

Challenge 3: How to control for other factors that explain the fiscal effort?

Controlling for additional variables driving the fiscal effort is important for achieving valid estimation results. A large part of the literature explains the fiscal budget balance or effort almost exclusively with a measure of the economic cycle. However, this approach omits other relevant transmission channels.

We control for relevant explanatory variables in line with the previous literature. The following list gives the key independent variables used to prevent omitted variable bias. The expected sign with respect to the fiscal effort is shown in brackets, while + /- corresponds to a fiscal tightening/loosening: ([158])

- Persistence (+): lagged dependent variable (e.g. structural balance)
- Economic cycle (-/~/+): output gap
- Public debt (+): gross debt of the general government
- Macroeconomic conditions: current account balance (+), openness (+)
- Demographic factors (-/+): share of persons above 65 years in the total population
- Political economy channel: election year (-)
- Great Recession (-): ([159]) dummy = 1 for the years 2008 to 2009

3.3. ESTIMATION STRATEGY

The cyclicality of the fiscal effort is investigated using a panel data approach. The analysis concentrates on up to 28 EU Member States (i) and 17 years (t), covering the time period 2000 to 2018. We primarily use real-time data from past Commission autumn forecast vintages, but also analyse the findings with ex-post data using the Commission 2018 autumn forecast.

As a first step, the key drivers of the fiscal effort are determined in a baseline specification. The specification follows a fiscal reaction function approach, which has been used extensively in the literature for assessing the behaviour of fiscal variables over the economic cycle. ([160])

$$\text{effort}_{i,t} = \beta_1 \,\text{effort}_{i,t-1} + \beta_2\, cycle_{\,i,t} + \beta_3 debt_{i,t-1} + \beta_4 X_{\,i,t-1} + \theta_t + \vartheta_i + u_{i,t} \qquad (1)$$

We use both "top-down" and "bottom-up" indicators to measure the fiscal effort. The change in the structural primary balance is our preferred "top-down" measure for the fiscal effort, since it best captures the intended effort of policymakers by netting out the impact of the economic cycle, interest payments and certain one-offs from the budget balance. In addition, we use the difference between the net expenditure and the 10-year potential growth rate as the preferred "bottom-up" indicator. In contrast to the vast majority of the literature, which uses a specification in levels, we prefer this specification in changes, since it allows comparing bottom-up and top-down measures. Please note, however, that our main findings still hold when using a specification in levels. The specification includes the lagged fiscal effort on the right hand side of equation (1) to test for its potential persistence.

As our main indicator for the economic cycle, we use the change in the output gap. We do so for at least three reasons. First, the change of the output gap is typically less affected by revisions

([157]) Therefore, a tool based on several cyclical indicators was developed at the European Commission to assess the plausibility of the production function-based output gap estimates (Hristov et al., 2017).

([158]) Note that most papers assess the impact of the explanatory variables on the level of the cyclically-adjusted budget balance not the fiscal effort (i.e. the change in the cyclically-adjusted budget balance); see in particular Checherita-Westphal and Zdarek (2017), Golinelli and Momigliano (2006).

([159]) Controlling for the economic and financial crisis is debatable. On the one hand, you could argue that you should not control for it, since it represents the major cyclical episode within the sample, for which the test on cyclicality should be conducted. On the other hand, you could argue that controlling for it is important, since the period of the Great Recession represents a very atypical cyclical episode, namely the deepest crisis since World War II. While we report in the following the specifications including a dummy for the economic and financial crisis, the results are broadly unchanged when excluding it.

([160]) Lane (2003).

than its level. ([161]) 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 ex-post dataset from the Commission's 2018 autumn 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.

We control for relevant independent variables. X is a vector of control variables derived from the literature (see above). Since the impact of these control variables tends to occur only gradually, they are included with a lag of one year. Furthermore, the specification includes year- (ϑ) and country-fixed effects (θ) to capture systematic differences across countries and time, while ε represents an error term. The source of the variables and the summary statistics as well as the correlation matrix are presented in Table IV.A.2 in the Annex.

As a second step, the baseline specification is augmented to analyse the impact of EU fiscal rules on the fiscal effort:

$$effort_{i,t} = \beta_1\, effort_{i,t-1} + \beta_2\, cycle_{i,t} + \beta_3\, debt_{i,t-1} + \beta_4\, X_{i,t-1} + \beta_5\, dummy_{i,t} \cdot cycle_{i,t} + \beta_6\, dummy_{i,t} + \theta_t + \vartheta_i + u_{i,t} \qquad (2)$$

We assess the impact of EU rules on the cyclicality of the fiscal effort indirectly by adding a dummy variable. The dummy measures several fiscal dimensions of the EU governance framework, such as public expenditure in line with productivity growth, debt levels above or below the Maastricht reference values or Member States under an EDP or EU/IMF macroeconomic adjustment programme. For instance, to account for the potential non-linear effect of public debt on the fiscal effort, the dummy variable is equal to one for Member States with a public debt above 60% of GDP. ([162]) To find out if these elements of performance with respect to the fiscal governance framework had an impact on the cyclicality of the fiscal effort, the dummy variable is interacted with the change of the output gap. From equation (2) we can derive the marginal effect, which measures how a marginal change of the output gap impacts the fiscal effort (the change in the structural primary balance), as follows:

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

Equation (3) shows that the marginal effect depends on the value of the conditioning dummy variable. The marginal effect is defined as $\beta_2 + \beta_5$ if the dummy variable is equal to 1 (e.g. debt above 60% of GDP), whereas it simplifies to β_2 if the dummy variable is 0 (e.g. debt below 60% of GDP). ([163]) Furthermore, the standard errors for both events can be calculated based on the variance-covariance matrix.

3.4. MAIN FINDINGS

Has the fiscal effort been procyclical in the EU?

Our empirical findings point to a mild procyclical pattern of the fiscal effort in the EU on average since 2000, i.e. implying a fiscal tightening (loosening) in bad (good) times (Table IV.3.1). We start the analysis using our preferred "top-down" measure for the fiscal effort, namely the change in the structural primary balance. The results point to a procyclical pattern of the fiscal effort, as shown by the significant and negative coefficient of the change in the output gap. This means that an improvement in economic conditions (i.e. a positive change in the output gap), results in a fiscal loosening (i.e. a negative impact on the structural primary balance). The results turn out to be broadly robust to changes of the set of control variables (columns 1-4), estimation techniques (columns 5-7) and datasets (columns 8-9).

The main control variables mostly confirm the findings of the previous literature (Table IV.3.1). The results show a strongly persistent pattern of the fiscal effort, as demonstrated by the highly significant lagged dependent variable. Higher debt ratios seem to

([161]) Mc Morrow et al. (2015).

([162]) While there is clear evidence that countries with high public debt grow substantially slower, there is controversy over the precise threshold level of debt to GDP beyond which growth slows down significantly (Reinhart and Rogoff, 2010).

([163]) For the specification and interpretation of interaction terms see Brambor et al. (2006), Braumoeller (2004).

Table IV.3.1: **Empirical findings on cyclicality - "top-down" measure for fiscal effort**

Dependent variable: Δ Structural prim. balance	Baseline specifications				Robustness				
					Estimators			Datasets	
Dataset	Real-time AF	Real-time AF	Real-time AF	Real-time AF	Real-time AF	Real-time AF	Real-time AF	Real-time SF	Ex post AF 2018
Estimator	SYS-GMM	SYS-GMM	SYS-GMM	SYS-GMM	LSDV	LSDVc	FD-GMM	SYS-GMM	SYS-GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Δ Structural primary balance (t-1)	0.128*	0.08	0.079	0.074	0.075	0.077	0.074	0.147**	0.11
	(1.758)	(1.226)	(1.158)	(1.135)	(0.892)	(1.600)	(1.135)	(2.384)	(1.165)
Δ Output gap (t)	-0.321***	-0.370***	-0.371***	-0.369***	-0.328***	-0.339***	-0.369***	-0.370***	-0.330***
	(-3.756)	(-5.190)	(-5.093)	(-4.730)	(-4.728)	(-6.674)	(-4.730)	(-4.517)	(-4.100)
Public debt (t-1)	0.006***	0.011***	0.011***	0.011***	0.025***	0.021***	0.011***	0.007*	0.007***
	(3.529)	(3.804)	(3.209)	(2.897)	(3.729)	(2.918)	(2.897)	(1.693)	(2.933)
Current account (t-1)		0.108***	0.114***	0.112***	0.056***	0.049**	0.112***	0.120***	0.045*
		(3.315)	(3.508)	(3.487)	(2.745)	(2.425)	(3.487)	(4.412)	(1.787)
Age dependency ratio (t-1)		-0.074***	-0.076**	-0.103**	0.009	-0.109*	-0.103*	-0.002	-0.056***
		(-3.332)	(-2.440)	(-2.584)	(0.191)	(-1.758)	(-1.884)	(-0.209)	(-2.940)
Election year (t-1)			-0.003**	-0.003**	-0.003*	-0.003	-0.003**	-0.002*	-0.005**
			(-2.106)	(-1.974)	(-1.757)	(-1.490)	(-1.974)	(-1.949)	(-2.062)
Crisis dummy 2008-09				-1.584**	-1.840***	-1.709***	-1.584**	-1.118***	-1.514***
				(-2.102)	(-4.482)	(-5.276)	(-2.102)	(-4.991)	(-4.443)
# observations	437	427	427	427	427	404	427	376	445
# countries	28	28	28	28	28	28	28	28	28
R-squared					0.52				
Wald test time/country dummies	0.00	0.00	0.00	0.00	0.0 / 0.20	0.00	0.00	0.00	0.00
AR(1) (p-value)	0.00	0.00	0.00	0.00			0.00	0.00	0.00
AR(2) (p-value)	0.31	0.22	0.28	0.29			0.29	0.84	0.90
Hansen (p-value)	0.29	0.83	0.78	0.77			0.77	0.37	0.41
# instruments	25	29	30	30			30	27	28

Note: The dependent variable used is the structural primary balance. The sample includes 28 EU Member States covering the period 2000-18. All estimations include time and country dummies and a constant, which are not shown due to space constraints. Dataset: "Real time": Commission spring forecast or autumn forecast vintages, "Ex post": Commission 2018 spring forecast. Estimator: LSDV: FE using heteroskedasticity-robust standard errors: LSDVc: corrected LSDV following Kiviet (1995) as operationalised by Bruno (2005). FD-GMM: first-step difference, SYS-GMM: two-step system GMM estimator following Blundell and Bond (1998), controlling for endogeneity of the lagged dependent variable, output gap and current account. Due to the small sample size the set of internal instrumental variables is restricted by "collapsing" the matrix of instruments and restricting its lags up t-3. The standard errors are corrected following Windmeijer (2005). AR(1,2) and Hansen tests confirm the validity of the system GMM specifications. ***, ** and * denote respectively statistical significance at 1, 5 and 10%.
Source: Commission services.

trigger a fiscal tightening to improve the budgetary position. An increase in the current account balance appears to lead to an increased fiscal effort, supporting the twin-deficit hypothesis that countries with fiscal budget deficits will also run a current account deficit. ([164]) Election years and an ageing society tend to be characterised by a fiscal loosening, although the results of the latter are not significant in all specifications. Finally, we find evidence that the (initial) years of the Great Recession (2008-09) resulted in a fiscal loosening.

The procyclical pattern is also evident when using a "bottom-up" measure for the fiscal effort, namely the expenditure benchmark (Table IV.3.2). Since the results of the previous literature tend to be sensitive to the indicators used to measure fiscal policy, we re-run the analysis using a "bottom-up" measure for the fiscal effort, namely the difference between net expenditure growth and ten-year potential GDP growth rate. ([165]) In this case, the expected impact of the explanatory variables (see list above) changes its sign. As a result, the positive and significant indicator of the change in the output gap points to a procyclical pattern of fiscal policy. The findings of the other control variables are broadly in line

([164]) Kim and Roubini (2008).

([165]) It refers to the net expenditure concept used for the expenditure benchmark and defined in European Commission (2018a, p. 52). Note that some expenditure components are not available (*in real time)* over the entire sample period. This includes government expenditure on EU programmes, which is fully matched by EU funds revenues (only available in real time since Commission 2017 spring forecast for a period for date since 2000), cyclical unemployment benefits, discretionary revenue measures (since Commission 2009 autumn forecast, Commission 2016 autumn forecast used to fill the gaps before). We have not excluded one-offs (since Commission 2008 autumn forecast, assumed to be zero before) due to data availability. The findings are robust to two alternative definitions of the expenditure growth rate, (i) total expenditure net of interest payments and (ii) total expenditure net of interest payments and unemployment benefits.

Table IV.3.2: **Empirical findings on cyclicality - "bottom-up" measure for fiscal effort**

Dependent variable: EB-based fiscal effort	Baseline specifications				Robustness				
					Estimators			Datasets	
Dataset	Real-time AF	Real-time AF	Real-time AF	Real-time AF	Real-time AF	Real-time AF	Real-time AF	Real-time SF	Ex post SF 2018
Estimator	SYS-GMM	SYS-GMM	SYS-GMM	SYS-GMM	LSDV	LSDVc-ah	FD-GMM	SYS-GMM	SYS-GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
EB-based fiscal effort (t-1)	0.288**	0.307**	0.309**	0.261*	0.069*	0.272***	0.191**	0.275***	0.192*
	(1.978)	(2.357)	(2.355)	(1.890)	(1.729)	(4.519)	(2.109)	(3.735)	(1.770)
Δ Output gap (t)	0.754***	0.892***	0.869***	0.791**	0.762***	0.827***	0.762***	0.737***	0.753***
	(2.765)	(2.908)	(2.847)	(2.166)	(4.133)	(6.656)	(2.780)	(2.587)	(3.525)
Public debt (t-1)	-0.019**	-0.036***	-0.036***	-0.045***	-0.084***	-0.069***	-0.031**	-0.033***	-0.044***
	(-2.485)	(-2.874)	(-2.754)	(-3.530)	(-3.891)	(-4.647)	(-2.575)	(-2.585)	(-3.617)
Current account (t-1)		-0.198	-0.198	-0.087*	-0.076	-0.071*	-0.239	-0.427**	-0.282**
		(-1.265)	(-1.252)	(-1.973)	(-0.955)	(-1.934)	(-1.560)	(-2.477)	(-2.045)
Age dependency ratio (t-1)		0.244*	0.249*	0.211**	0.353**	0.328**	0.282**	0.022	0.251**
		(1.664)	(1.702)	(2.139)	(2.256)	(2.334)	(2.280)	(0.939)	(2.543)
Election year (t-1)			0.011**	0.014***	0.012***	0.012**	0.009**	0.007*	0.008*
			(2.436)	(3.388)	(2.919)	(2.276)	(2.197)	(1.762)	(1.956)
Crisis dummy 2008-09				1.396*	1.473***	1.912**	1.662***	1.798	1.842***
				(1.948)	(4.457)	(2.208)	(3.216)	(1.170)	(4.165)
# observations	347	340	340	340	340	332	340	331	348
# countries	27	27	27	27	27	27	27	27	27
R-squared					0.44				
Wald test time/country dummies	0	0	0	0	0 / 0.057	0	0	0	0
AR(1) (p-value)	0.00	0.00	0.00	0.00			0.00	0.00	0.00
AR(2) (p-value)	0.84	0.84	0.83	0.90			0.88	0.80	0.65
Hansen (p-value)	0.52	0.58	0.57	0.68			0.48	0.43	0.64
# instruments	22	26	27	28			28	25	28

Note: The dependent variable used is defined as the difference between the expenditure net of interest payments, unemployment benefits and discretionary revenue measures and the 10-year potential GDP growth rate. In terms of sample and estimation techniques, see Table IV.3.1 for further details. ***, ** and * denote respectively statistical significance at 1, 5 and 10%.
Source: Commission services.

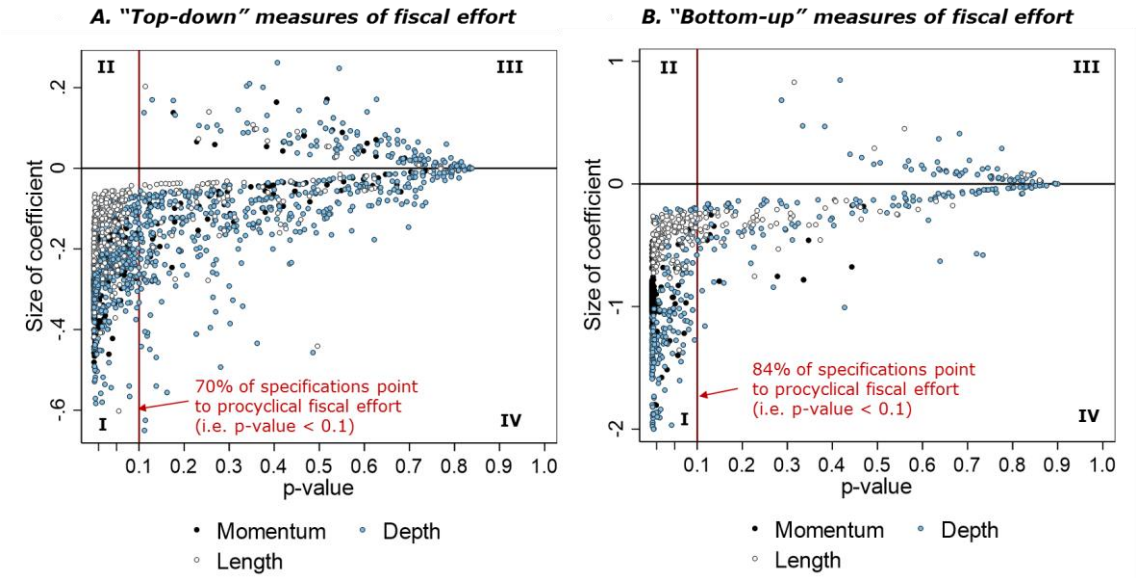
with the previous specification and the main results are robust to changes to the set of independent variables (columns 1-4), estimation techniques (5-7) and datasets (columns 8-9).

Finally, the findings on procyclicality appear to be weaker when using an indicator that measures the depth of the economic cycle, i.e. the level of output gap (Graph IV.3.3). We assess the sensitivity of the findings using three sets of measures for the economic cycle, namely the depth, length and momentum or speed of closure. ([166]) We check their impact using different estimation techniques, sets of independent variables and datasets. These result in more than thirteen thousand specifications. ([167]) Overall, the findings show rather strong evidence for procyclicality based on a "top-down" approach for the fiscal effort (70% of the specification point to a procyclical pattern of the fiscal effort) (Table IV.A.3 in the Annex). The results also show rather strong evidence for procyclicality based on the momentum (85%) and the length (76%) of the cycle, but less clear-cut results when based on a measure for the depth of the economic cycle (only 53%). The bottom-up measures show on average even stronger evidence for procyclicality (84%). While the type of indicator used for the economic cycle matters less than in case of the "top-down" approach, the evidence for procyclicality is still strongest when based on the momentum (93%), followed by the length (84%) and the depth of the economic cycle (75%).

([166]) The indicators for the economic cycle are defined as follows: depth (level of output gap), length (number of consecutive years with positive/negative (change in) output gap) and speed of closure (change of output gap). In addition, we use the difference between the unemployment rate and the non-accelerating wage rate of unemployment (nawru) as a proxy for the economic cycle.

([167]) We use different measures for the economic cycle (speed of closure, depth and length), additional top-down and bottom-up measures for the fiscal effort, different types of datasets (real-time spring, autumn and ex post), specifications (different sets of control variables) and estimations techniques (LSDV, LSDVc, first difference and system-GMM estimator using different sets of internal instruments).

Graph IV.3.3: **Robustness tests: findings on cyclicality**



Note: The figures summarise the robustness checks on procyclicality using different measures for the economic cycle, namely the momentum (black circle), depth (blue circle) and length (white circle). Panel A shows the findings based on four top-down measures (structural (primary) balance and cyclically-adjusted (primary) balance). Panel B focuses on three bottom-up measures (the difference between three net expenditure growth rates and the 10-year potential growth rate, whereas the net expenditure growth rates are defined as follows total government expenditure growth net of (i) interest payments, (ii) interest payments and cyclical unemployment benefits and (iii) interest payments, cyclical unemployment benefits, discretionary revenue measures. To allow for a better comparability between top-down and bottom-up measures, the coefficients of the bottom-up measures are shown with a reversed sign. Evidence points to a procyclical (quadrant I), countercyclical (quadrant II) and acyclical (quadrant III and IV) fiscal effort. For further information see Table IV.A.3 in the Annex.
Source: Commission services.

Has procyclicality been seen throughout the economic cycle?

Our findings show that procyclicality happens in particular in good times (Table IV.3.3). An important question is whether procyclicality occurs throughout the cycle or only during an upturn or downturn. The analysis reveals that good times are characterised by a procyclical pattern, whereas bad times exhibit an acyclical pattern.

Table IV.3.3: **Cyclicality of the fiscal effort in good vs. bad times**

Economic situation	Qualitative findings	Quantitative findings	
		# obs.	Size (sign.) of coefficient of ΔOG
Good times (ΔOG > 0)	procyclical	197	-0.46**
Bad times (ΔOG < 0)	acyclical	176	-0.16

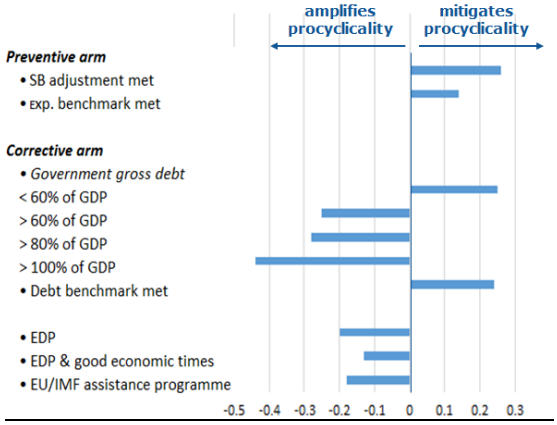
Note: The findings are based on estimations of the interaction model from equation (3) based on a sample of 28 EU countries covering the period 2000-18 using real-time data from Commission autumn forecast reports. Total number of observations amounts to 373. All estimations include the set of independent variables shown in Tables IV.3.1 and IV.3.2 including time and country dummies. The specifications are estimated using the two-step system GMM (SYS-GMM) estimator following Blundell and Bond (1998), controlling for endogeneity of the lagged dependent variable, output gap and current account. Due to the small sample size the set of internal instrumental variables is restricted by "collapsing" the matrix of instruments and restricting its lags up t-2. The standard errors are corrected following Windmeijer (2005). AR(1,2) and Hansen tests confirm the validity of the system GMM specifications. ***, ** and * denote respectively statistical significance at 1, 5 and 10%.
Source: Commission services.

Have EU fiscal rules mitigated procyclicality?

Importantly, the analysis shows that the respect of fiscal rules seems to have mitigated the procyclicality in the EU (Graph IV.3.4). This analysis is solely based on the preferred specification using the top-down measure for the fiscal effort and the change in the output gap. The findings can be summarised as follows:

First, Member States that met the requirements of the preventive arm of the SGP benefited from reduced procyclicality of the fiscal effort. We assess procyclicality for Member States that conducted fiscal policy in line with the structural balance and expenditure benchmark requirement. For this purpose, we use real-time data from past Commission forecast vintages to test if the current requirements of the preventive arm of the SGP have been met since 2000. ([168]) The positive coefficients shown in Graph IV.3.4 imply that Member States who met the requirements of the preventive arm exhibited on average a lower procyclical fiscal effort.

Graph IV.3.4: **Cyclicality of the fiscal effort and performance with EU rules**



Note: The graph shows the size of the interaction coefficient (β_5) from equation (2), which are significant at the 10% level. The findings are based on the same sample and estimations techniques as described in the note of Table IV.3.3.
Source: Commission services.

([168]) This means that the dummy variable shown in equation (2) is one for Member States who met the criteria of the preventive arm, i.e. structural balance requirement (Min(matrix, distance to MTO) or expenditure benchmark requirement (primary expenditure growth below 10-year potential growth).

Second, avoiding high headline deficits appear to reduce procyclicality of the fiscal effort. The empirical findings show that Member States with general government deficits exceeding 3% exhibit a more procyclical pattern than Member States with public deficits below 3% of GDP. This can be explained by the fact that Member States who need to correct gross policy errors are typically requested to conduct a fiscal tightening in bad economic times. We find evidence for such an intensified procyclical pattern for Member States under an EDP or EU/IMF economic adjustment programme. In addition, our findings show that Member States under an EDP who face good economic conditions tend to relax their fiscal effort and rely on meeting the nominal target of the headline balance.

Finally, keeping public debt below 60% of GDP mitigates the procyclical pattern of the fiscal effort. We find that Member States with public debt ratios below 60% of GDP show on average a smaller procyclical fiscal effort than Member States with a debt ratio above 60% of GDP. In addition, we find evidence that procyclicality becomes even stronger for Member States with debt ratios above 80% and 100% of GDP. Finally, Member States that achieved the debt benchmark showed on average a less procyclical pattern of discretionary fiscal policy.

3.5. CONCLUSIONS

This Chapter provides new evidence on the cyclicality of the fiscal effort. While the academic literature finds rather clear-cut evidence for a procyclical pattern of fiscal policy in developing countries, the findings for the EU are less conclusive.

For the EU on average, we find evidence that discretionary fiscal policy has not been counter- but procyclical since 2000. The findings are robust to using a measure for the speed of closure (change in the output gap) or length of the economic cycle, but somewhat weaker when using a measure of the depth of the economic cycle (the level of the output gap).

Procyclicality appears to be evident in particular in good times. This asymmetric fiscal policy reaction can partly explain the debt accumulation over the past decades.

Our findings show that respecting the EU fiscal rules help mitigate the procyclicality. First, Member States that met the requirements of the preventive arm of the SGP benefits from reduced procyclicality of the fiscal effort. Second, avoiding high headline deficits appear to reduce the procyclicality of discretionary fiscal policy. Third, keeping public debt at a reasonable level mitigates the procyclical pattern of the fiscal effort.

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

4. HAS OWNERSHIP OF THE EU'S FISCAL RULES BEEN STRENGTHENED BY NATIONAL FISCAL FRAMEWORKS?

4.1. INTRODUCTION

The economic developments during the recent Great Recession highlighted the need for strengthening national ownership of EU fiscal rules. One of the fundamental weaknesses exposed by the euro-area sovereign debt crisis was insufficient national ownership of EU fiscal rules, with Member States not always internalising these rules in order to achieve and maintain fiscal sustainability. For example, the Stability and Convergence Programmes (SCPs) – which aimed inter alia at providing a medium-term orientation for national fiscal policy – were often seen as primarily designed to comply with EU requirements, while being largely disconnected from national budgetary processes. Moreover, the pre-crisis governance framework did not set any minimum requirements for national fiscal frameworks, the design of which remained at the full discretion of the Member States (ECB, 2013). At the same time, the imperative of strengthening Member States' fiscal governance is supported by a large economic literature that illustrates the benefits of national fiscal frameworks.

In response, minimum legal requirements for national fiscal frameworks were put forward at the EU and international levels. Such requirements were laid down as part of the "Six-Pack", in the form of Directive 2011/85/EU on national budgetary frameworks (henceforth "the Directive"), the Fiscal Compact and, within the "Two-Pack", Regulation 473/2013 (see Box IV.4.1 for an overview). Of particular significance is the Directive, which comprehensively sets out minimum requirements for five different areas of the national fiscal frameworks that would enhance their ability to ensure compliance with EU fiscal rules. Recital (1) of the Directive explicitly acknowledges the importance of "strengthening the national ownership and having uniform requirements as regards rules and procedures forming the budgetary procedures of the Member States". As a result, national fiscal frameworks have experienced a broad-based and robust strengthening in recent years, reflected, most notably, in an increase in the number of fiscal rules and independent fiscal institutions (IFIs) in the Member States. Medium-term fiscal planning has also become more detailed and better connected to annual budgets.

Against this background, this Chapter aims to take stock and assess the budgetary implications of these recent significant developments in the national fiscal frameworks in the EU. Section IV.4.2. is descriptive in nature and provides some stylised facts on the three main building blocks of national fiscal frameworks: national fiscal rules, medium-term budgetary frameworks (MTBFs) and IFIs. Section IV.4.3. takes a more analytical approach and provides an estimate of the budgetary impact of national fiscal rules and MTBFs. Section IV.4.4. concludes.

Box IV.4.1: Key innovations of the six-pack, two-pack and Fiscal Compact on national fiscal frameworks

This box summarises the main innovations of the six-pack, two-pack and Fiscal Compact on national fiscal frameworks.

Directive 2011/85/EU ([1]) on national budgetary frameworks (the Directive) is the cornerstone legislative piece on national fiscal frameworks. The Directive was adopted as part of the "six-pack" legislative package in November 2011 and Member States had until end-2013 to transpose it. It introduced a set of comprehensive requirements covering the entire domestic budgetary framework, namely for:

- ***Numerical fiscal rules***: Member States must have in place numerical fiscal rules that are specific to them and which must contain specifications regarding the target definition and scope of the rules, the effective and timely monitoring of compliance with the rules based on independent analysis and consequences in the event of non-compliance. In addition, if numerical fiscal rules contain escape clauses, such clauses must set out a limited number of specific circumstances.
- ***Medium-term budgetary frameworks***: Member States must have a credible, effective medium-term budgetary framework providing for a fiscal planning horizon of at least 3 years and including procedures for establishing the following items: comprehensive and transparent multiannual objectives in terms of the general government deficit, debt and any other summary fiscal indicator; projections for each major expenditure and revenue items of the general government; a description of medium-term policies envisaged and their impact compared to projections based on unchanged policies as well as their impact on long-term sustainability of public finances; the medium-term fiscal planning document shall be based on realistic macroeconomic and budgetary forecasts.
- ***Forecasts***: Member States must ensure that fiscal planning is based on realistic (macroeconomic and budgetary) forecasts, which must be compared with the most updated forecasts of the Commission and any significant differences found must be explained with reasoning; within the frameworks of sensitivity analysis, the forecasts must examine paths of main variables under different assumptions as to growth and interest rates. The institution responsible for producing the forecasts must be made public as well as the underlying methodologies, assumptions and relevant parameters. Finally, the forecasts must be subject to regular, unbiased and comprehensive evaluation based on objective criteria.
- ***Statistics and transparency***: Member States must have in place public accounting systems that cover comprehensively and consistently all sub-sectors of general government and are subject to independent control; comprehensive high-frequency data shall be published for all sub-sectors of general government; requirements to publish information regarding extra-budgetary units and funds, contingent liabilities and tax expenditures.
- ***Coordination mechanisms***: Member States must establish appropriate mechanisms of coordination across sub-sectors of general government to provide for comprehensive and consistent coverage of all sub-sectors of general government in all budgetary procedures.

The "Fiscal Compact" further strengthened the national fiscal frameworks. It requires its signatories to introduce in their national legal order a structural budget-balance rule equipped with a correction mechanism and to set up a national independent institution to monitor its operation. Both the correction mechanism and the independent monitoring institution should respect common principles proposed by the European Commission. ([2]) Those provisions, which were part of the so-called "Fiscal Compact" (Title III of the Treaty on the Stability, Coordination and Governance in the EMU), apply to euro-area Member States and those

([1]) Council Directive 2011/85/EU of 8 November 2011 on requirements for budgetary frameworks of the Member States. OJ L 306, 23.11.2011, p. 41.
([2]) Commission communication "Common principles on national fiscal correction mechanisms" COM(2012) 342 of 20 June 2012.

(Continued on the next page)

Box (continued)

Member States which declare the willingness to be bound by them (BG, DK and RO). ([3]) The Fiscal Compact was agreed in March 2012 and entered into force in January 2013.

Finally, the "two-pack" (Regulation 473/2013) introduced more specific requirements for the euro-area member States. ([4]) Requirements concerned the monitoring of national fiscal rules by independent fiscal institutions, the use of independently produced or endorsed macroeconomic forecasts in budgeting, and a common domestic budgetary timeline for national medium-term fiscal plans and annual budgets. Regulation 473/2013 entered into force in 2013.

([3]) See also European Commission (2017). Communication "The Fiscal Compact: Taking stock". C(2017) 1200 final. Brussels, 22.2.2017.
([4]) Regulation (EU) No 473/2013 of the European Parliament and of the Council of 21 May 2013 on common provisions for monitoring and assessing draft budgetary plans and ensuring the correction of excessive deficit of the member States in the euro area – OJ L 140, 27.5.2013, p. 11-23.

4.2. STYLISED FACTS ABOUT NATIONAL FISCAL FRAMEWORKS IN THE EU

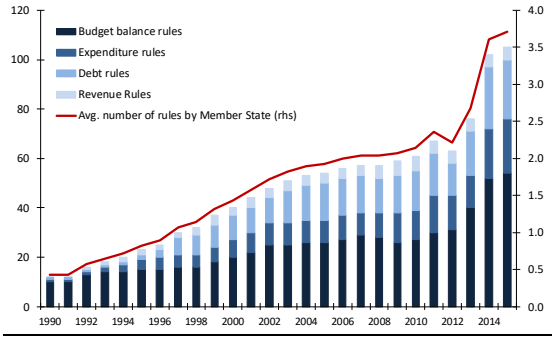
This Section describes the main features of national fiscal frameworks in the EU, focusing on national fiscal rules, IFIs and MTBFs. The data on national fiscal frameworks comes from the Commission's Fiscal Governance Database maintained by DG ECFIN. This is based on annual inputs provided by Member States (see Box IV.4.2 for details). ([169])

4.2.1. National fiscal rules

In recent years, the number of national fiscal rules has increased significantly in the EU (Graph IV.4.1). In 2015, there were roughly twice as many rules in force in the EU compared to a decade earlier and more than three times as many since the adoption of the Stability and Growth Pact in 1997. This implies about 3.5 rules in force per Member State in 2015, compared to less than 0.5 in 1990, which is a 7-fold increase in average terms. At the same time, the increase in the number of rules was not gradual during the last decade, with two sharp jumps registered immediately after the entry into force of the Directive and the Fiscal Compact (in 2013 and 2014), the two legal instruments that contain specific provisions for national fiscal rules (as described in Box IV.4.1).

([169]) The Fiscal Governance Database is available here: https://ec.europa.eu/info/business-economy-euro/indicators-statistics/economic-databases/fiscal-governance-eu-member-states/what-fiscal-governance_en

Graph IV.4.1: **Number of national fiscal rules in the EU28 (1990-2015)**



Note: The rules cover all sub-sectors of the general government.
Source: 2015 vintage of Commission's Fiscal Governance Database.

Most new rules introduced since 2011 target the general government sector. Indeed, the number of rules covering the general government more than tripled since 2011 (Table IV.4.1, panel A), leading to an average of two rules for this sector in each Member State in 2015. At the same time, the number of rules targeting the various sub-sectors of general government remained broadly unchanged.

The long-existing pattern whereby certain rule types appeared more suitable for certain sectors no longer applies in 2015, when all types of rules apply to the general government sector. For example, in 2011, while expenditure rules were most commonly set at the general/central level, budget balance rules and debt rules tended to constrain local budgets more than any other level of government (Table IV.4.1, panel B). By contrast, in 2015, the largest number of rules of any type applies to the general government level (Table IV.4.1, Panel A). By type of rule, budget

Table IV.4.1: **Type and sector coverage of national fiscal rules**

Panel A: Number of rules in 2015 (Column 1) and their percentage increase compared to 2011 (Column 2)

	General Government		Central government		Social security		Regional government		Local government		*Sub-total*	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Budget balance rule	**28**	*300%*	**3**	*0%*	**3**	0%	**5**	*0%*	**17**	*21%*	**56**	*75%*
Expenditure rule	**14**	*133%*	**4**	*33%*	**3**	50%	**2**	*0%*	**1**	*0%*	**24**	*71%*
Debt rule	**14**	*367%*	**2**	*-50%*	**0**	-100%	**1**	*0%*	**7**	*-13%*	**24**	*41%*
Revenue rule	**1**	*0%*	**3**	*200%*	**3**	0%	**0**	-	**0**	-	**7**	*40%*
2015 sub-total	**57**	*235%*	**12**	*9%*	**9**	0%	**8**	*0%*	**25**	*9%*		
2015 total											**104**	*58%*

Panel B: Number of rules in 2011

	General Government	Central government	Social security	Regional government	Local government	*Sub-total*
Budget balance rule	7	3	3	5	14	**32**
Expenditure rule	6	3	2	2	1	**14**
Debt rule	3	4	1	1	8	**17**
Revenue rule	1	1	3	0	0	**5**
2011 Sub-total	**17**	**11**	**9**	**8**	**23**	
2011 total						**66**

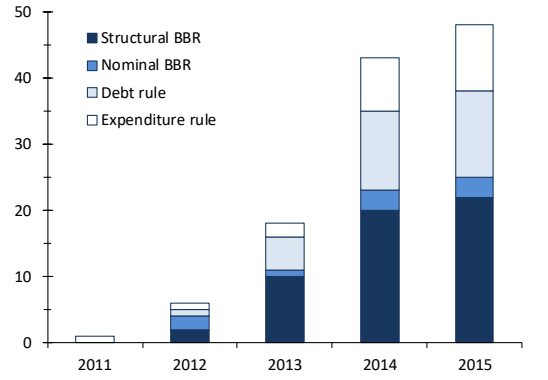
Note: The total number of rules is lower than the sum of sub-totals by either sector or type. That is because a few rules that cover two sectors would be counted twice in the sub-totals by either sector or type, whereas they are counted only once in the overall total.
Source: 2015 vintage of Commission's Fiscal Governance Database.

balance rules continue to be, by far, the most widespread. At the same time, their concentration has shifted from the local to the general government level, accompanied by a significant rise of rules specified in structural terms as compared to nominal terms. Of the new rules targeting the general government sector, almost half are structural budget balance rules, with the others roughly equally split between expenditure and debt rules. The number of budget balance rules at the general government level increased four-fold between 2011 and 2015 (Table IV.4.1, Panel A).

The broad-based increase in the number of rules at the general government level in the EU can be linked to legal requirements introduced at European level. For example, the sharp rise in the number of structural balanced rules is a consequence of the Fiscal Compact (Graph IV.4.2). As regards the adoption of expenditure and debt rules, the Directive is likely to have been influential: it contains a provision requiring Member States to have numerical fiscal rules in place, without specifying the fiscal aggregate(s) constrained by the rule. In addition, the introduction of expenditure rules could be linked to the Directive's requirements concerning the strengthening of MTBFs, in particular medium-term expenditure plans. Other factors also appear to have played an important role, in particular the 2011 reform of the Stability and Growth Pact, which brought about *inter alia* a new debt reduction benchmark and a new expenditure benchmark. While the requirements of the Stability and Growth Pact do not require national transposition, some Member States used the opportunity to undertake broader reforms of their domestic legislation (as reported by some Member States through the Fiscal Governance Database questionnaires). At a time of high uncertainty, commitment to the EU fiscal rules (and fiscal discipline, more broadly) via their integration into national legislation was seen as a means of reassuring investors. Another catalyst for a broad overhaul of fiscal frameworks –also cited in the questionnaires– was the occurrence of a macroeconomic/financial assistance programme, which strengthened the political impetus to introduce broad fiscal framework reform.

The rules that have been introduced since 2011 have incorporated significantly stronger features than earlier rules. The stronger legal base is mainly a consequence of the Fiscal

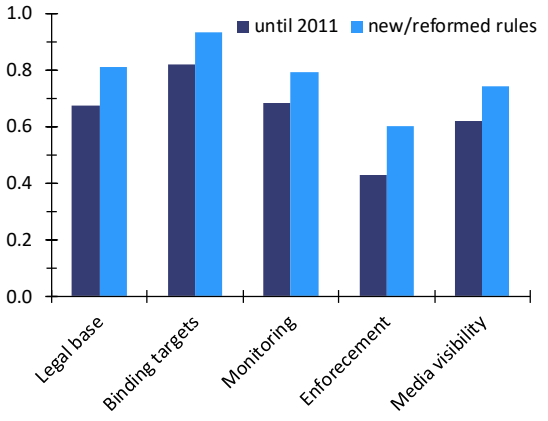
Graph IV.4.2: **Rules for the general government sector in the EU, either new or reformed**



BBR stands for budget balance rule.
Source: 2015 vintage of Commission's Fiscal Governance Database.

Compact's high legal force requirement for the structural balanced-budget rule (Graph IV.4.3), which also affected other rules that were part of the same legislative process. Indeed, in a majority of cases, all of the newly introduced or reformed

Graph IV.4.3: **Features of the new/reformed rules compared to those in force in the EU in 2011**



Note: Each indicator ranges between 0 (not existing) and 1 (very strong) and is averaged across all rules in force.
Source: 2015 vintage of Commission's Fiscal Governance Database.

rules were enshrined in the same pieces of legislation as the structural balanced-budget rule. This, in turn, highlights the prominent role of the Fiscal Compact as a catalyst for reform of the national fiscal frameworks. ([170]) The improved monitoring arrangements and enforcement mechanisms are primarily a result of the rise of national IFIs, whose critical role in the monitoring of compliance with national fiscal rules and involvement in the correction mechanism is recognised in all three European legislative initiatives (more details are provided in Section IV.2.2.).

4.2.2. Independent fiscal institutions

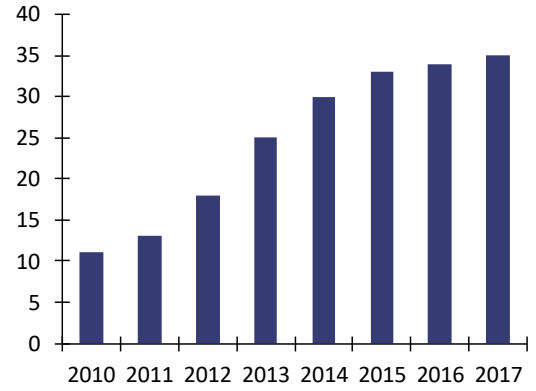
While the merits of strong IFIs have long been documented in the academic literature, it was only after the impetus given by the recent EU fiscal governance initiatives that the number of IFIs in the EU started to noticeably increase. ([171]) "Fiscal watchdogs" can increase accountability and fiscal transparency (e.g. Debrun et al. 2009 for a survey on IFIs). The recent emerging consensus has also suggested that IFIs can strengthen the enforceability of fiscal rules by increasing their scrutiny and visibility (e.g. Jankovics and Sherwood, 2017; Debrun and Kinda, 2017). In recognition of the essential role played by IFIs in the national budgetary process, all three EU and international legislative initiatives with bearing on national fiscal frameworks contained provisions to that effect (Box IV.4.1).

The number of IFIs in the EU has increased more than three-fold between 2010 and 2017 (Graph IV.4.4). Of the 35 IFIs present in the Member States in 2017, only 11 were operational in 2010. Slovenia and the Czechia are the latest Member States to set up IFIs. As with fiscal rules, the creation of new IFIs or the reform of existing ones was concentrated in the years immediately before or after the entry into force of relevant EU legal instruments. The few IFIs that became operational between 2010 and 2012 were typically set up in countries that were subject to macroeconomic assistance programmes (e.g. Romania, Ireland). In eight Member States (Austria, Belgium, Finland, Greece, Luxembourg, the Netherlands, Slovakia and Slovenia) the tasks prescribed by the EU legislation have been entrusted to two different IFIs.

([170]) Data show that for every new rule introduced by the six Member States that did not adhere to the Fiscal Compact, there were, on average, two and a half new rules introduced by a Fiscal Compact Contracting Party. This is not necessarily due to a catching-up phenomenon in terms of number of rules, as Fiscal Compact Contracting Parties had on average slightly more rules in force than the non-signatories in 2010 (1.9 versus 1.7, on average).

([171]) The institutions referred to this Chapter are those that have specifically been designated by Member States to fulfil requirements set out in the above-mentioned legislation put forward at the EU level regarding "independent bodies" or "monitoring institutions".

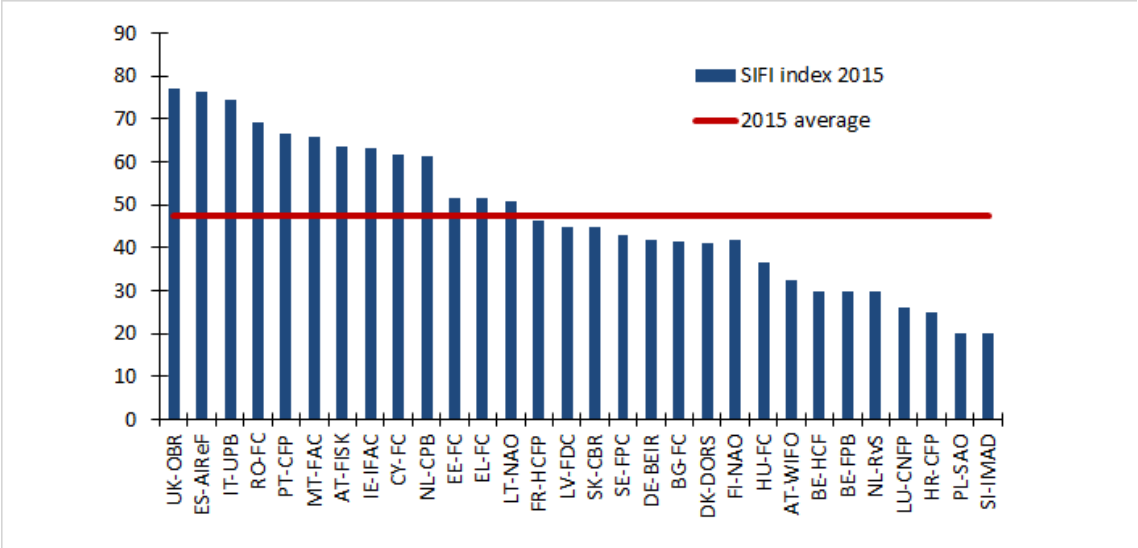
Graph IV.4.4: **Number of IFIs in the EU**



Source: 2015 vintage of the Commission's Fiscal Governance Database and public information (for 2016 and 2017).

assessment of compliance with fiscal rules, quantitative policy costing, analysis of long-run sustainability of public finances, promotion of fiscal transparency and recommendations on fiscal policy. The Fiscal Governance Database contains an index of the mandate of the IFIs (the SIFI), which can be taken as a proxy for the strength of the IFI. This index captures the relative diversity of the tasks discharged by the IFIs and places higher weight on tasks conducted on a legal (rather than voluntary) basis, of which the EU-based tasks are valued most (Box IV.4.2). It illustrates the variety of IFIs' mandates in the EU, ranging from the relatively few "singularly mandated" examples (e.g. either producers of macroeconomic forecasts (such as IMAD in Slovenia) or bodies monitoring compliance with national fiscal rules (such as RvS in the Netherlands) to the almost "all-encompassing" ones (e.g. FC in Romania, OBR in the UK, ([173]) AIReF in Spain) (Graph IV.4.5). ([174])

Graph IV.4.5: **Mandates of the IFIs in the EU in 2015**



Note: The index ranges between 0 (not existing) and 100 (very strong). The line represents the average value of the index. See Table IV.A.4 in the Annex for the full name of the institutions mentioned in the chart.
Source: 2015 vintage of Commission's Fiscal Governance Database.

The mandates of the IFIs in the EU are very diverse, often going beyond the monitoring of rules. They typically consist of some or most of the following tasks and activities: macroeconomic forecasting (production/endorsement), budgetary forecasting (production/endorsement), ([172])

([172]) Independent production of budgetary forecasts implies that that the Ministry of Finance outsources the production of budgetary forecasts to an IFI (e.g. the UK OBR). The endorsement of budgetary forecasts refers to the situation where an IFI is mandated to validate the plausibility of the budgetary forecasts produced by the Ministry of Finance (e.g. The Maltese Fiscal Council).

([173]) The inclusion of the UK Office for Budget Responsibility (OBR) constitutes an exception in that the UK is not subject to EU requirements in terms of independent fiscal bodies. However, the OBR has been included in the IFI group given the strong connections of its task portfolio with other equivalent IFIs.

([174]) See Annex 1 for the full name of those institutions.

Box IV.4.2: **European Commission's Fiscal Governance Database: Background information and recent methodological improvements**

The Commission's fiscal governance database collects qualitative information on national fiscal rules, MTBFs and IFIs in the EU through annual questionnaires filled out by national experts in the Member States. The information is very detailed and covers all the main features of the respective blocks. While the first round of questionnaires was launched in 2006, the database has been updated every year since 2008. Based on the qualitative information submitted by Member States, DG-ECFIN constructs numerical strength indices for each of the three blocks. This database has established itself as the main data source on national fiscal rules in the EU and is widely used in academic studies and research (e.g. Reuter, 2015; Debrun et al., 2008). Its particular advantage consists of the coverage of rules at the sub-national level which are not available from similar datasets, such as the IMF Fiscal Rules dataset. ([1])

Following the broad-ranging reforms to national fiscal frameworks in recent years, the index methodology was revised in 2015. As a result, the existing FRI and MTBF index methodology was improved while a new index on the scope of IFIs' mandates (SIFI) was added.

The revised **FRI** captures the strength of fiscal rules along five equally-weighted dimensions: (i) legal base of the rule, (ii) binding character of the target of the rule, (iii) nature of monitoring bodies, (iv) correction mechanism and (v) resilience to shocks outside the control of the government. This gives the index at the rule level. The index at the country level is calculated as the sum of the rule index taken over all rules in force in a country, weighted by the sector coverage (i.e. rules targeting the general government get highest weight, while those at other levels of government get lowest weight depending on their share in general government) while additional rules targeting the same sector get a decreasing weight (i.e. the second, third, etc. rule at the general government level –or any other sector– get a weight of 1/2, 1/3 and so on).

The revised **MTBF index** captures characteristics across the following dimensions: (i) coverage of the targets/ceilings included in the national medium-term fiscal plans; (ii) connectedness between the targets/ceilings included in the national medium-term fiscal plans and the annual budgets; (iii) involvement of national parliament in the preparation of the national medium-term fiscal plans; (iv) involvement of IFIs in the preparation of the national medium-term fiscal plans; and (v) level of detail included in the national medium-term fiscal plans.

The new **SIFI** measures the breadth of the mandate of IFIs looking at the following tasks: macroeconomic forecasting (production/endorsement), budgetary forecasting (production/endorsement), assessment of compliance with fiscal rules, quantitative policy costing, analysis of long-run sustainability of public finances, promotion of fiscal transparency and recommendations on fiscal policy. The SIFI is calculated at the institution level (not country) as the sum over the scores by dimensions, where tasks conducted on a legal rather than voluntary basis receive higher weight, of which, the Union-based tasks are valued most.

([1]) See Schaechter et al. (2012).

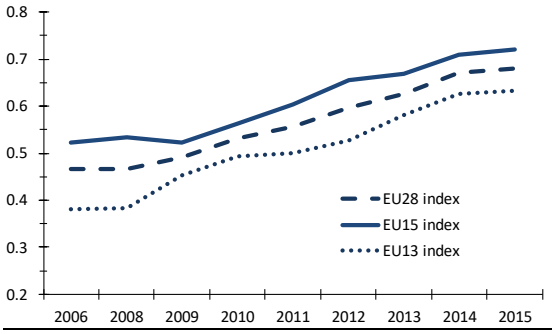
4.2.3. Medium-term budgetary frameworks

All Member States now have in place a national MTBF grounded in national legislation and connected to the annual budgetary process. The medium-term orientation of fiscal policy is essential for robust and predictable policy making. While the Stability and Convergence Programmes have been designed with this purpose in mind, they have often been seen as primarily designed to comply with EU requirements and of being largely disconnected from national budgetary processes. As a result, provisions aimed at strengthening the national dimension of medium-term fiscal planning have been put forward at the EU level, notably in the Directive and the Two-Pack (Box IV.4.1). Consequently, many Member States have introduced a national medium-term fiscal planning document that is distinct from the Stability and Convergence Programmes.

The features of the new or reformed MTBFs have improved in recent years. MTBFs are overall stronger in terms of coverage,

connectedness of targets with the annual budget process, involvement of national parliaments and of IFIs, and the level of detail included in fiscal planning documents. A numerical proxy for these qualitative features is offered by the Fiscal Governance Database's MTBF index, which illustrates how the average strength of MTBFs increased gradually over time (see Graph IV.4.6 and Box IV.4.2 for more details on the index). It also highlights that the improvement has been broad-based across Member States, although the initial gap between those that entered the EU after 2004 and the rest remains, albeit narrowing somewhat. This contrasts with the situation of fiscal rules, where the initial gap has closed following the recent reforms.

Graph IV.4.6: **MTBF index across different country groupings**



Note: The index ranges between 0 (very weak) and 1 (very strong). EU15 refers to the 15 Member States that entered the EU before 2004, while EU13 refers to those that entered after 2004.
Source: 2015 vintage of Commission's Fiscal Governance Database.

4.3. BUDGETARY IMPACT OF NATIONAL FISCAL FRAMEWORKS

This Section aims to provide an estimate of the impact that national fiscal frameworks have had on budgetary outcomes. It starts by presenting some stylised facts on the co-movement of these two variables (Sub-section IV.4.3.1.) before presenting estimates based on an econometric model (Sub-section IV.4.3.2.). In the absence of a readily-available numerical proxy for IFIs, this analysis focuses on the impact of fiscal rules and MTBFs. ([175]) To some extent, however, the impact of the IFIs in their rule monitoring capacity is implicitly included in the estimated impact of fiscal rules, thanks to the fiscal rules dimension on monitoring arrangements. Moreover, some tentative findings show that the accuracy of macroeconomic forecasts improved in the euro area since the requirement on independent production/endorsement came into effect. ([176])

4.3.1. Stylised facts

Budgetary outcomes are measured by the cyclically-adjusted primary balance (CAPB), while the quality of national fiscal frameworks is measured by the fiscal rules and MTBF indices. The CAPB, which is also used in similar studies, aims to capture discretionary fiscal behaviour (as opposed to the automatic response of the budget to macroeconomic shocks) by filtering out the impact of automatic stabilizers on the primary balance. ([177]) The proxy for fiscal rules is the Fiscal Rule Index (FRI) based on the Fiscal Governance Database, which measures the strength or quality of the design of fiscal rules along five criteria. It should be stressed that the FRI exclusively reflects elements of the design of fiscal rules and excludes elements of compliance. In addition to *quality*, this index reflects also the *quantity* of rules by summing up the quality indices for each rule in force, including a correction for sector coverage of the rule (see Box IV.4.2 for more details). The sample period for which this index is available is 1990-2015.

For most of the sample, budget balances are higher when national fiscal rules are stronger. As a simple illustration of the relationship between fiscal rules and the CAPB, Graph IV.4.7 plots a simple average of CAPB across Member States with FRI above the median (blue line) and below the median (red line) in every year of the 1990-2015 period. The chart highlights that CAPB tends to be much higher in Member States with FRI above the median than below it. This difference between the two is positive, large and statistically significant (1.6% of GDP). ([178])

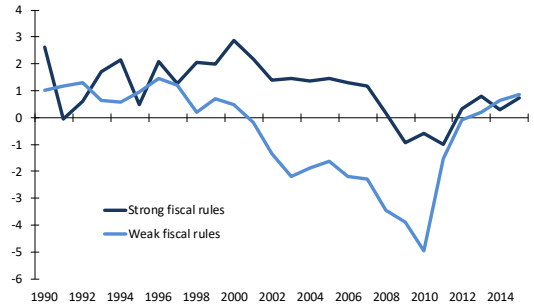
([175]) The SIFI index measuring the mandate of IFIs has been calculated only since 2015.

([176]) Jankovics and Sherwood, 2017.

([177]) see Debrun et al. (2008) and Gali and Perotti (2003). Other measures for budgetary outcomes such as the structural balance or total expenditures are left for future work.

([178]) The full period difference in the CAPB averaged between Member States with FRI above median and those with FRI below median is 1.6% of GDP when controlling for country fixed effects, which is statistically significant at the 1% level of significance.

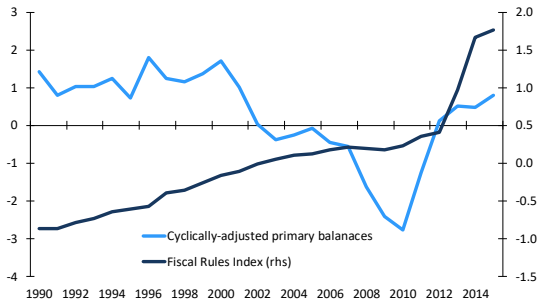
Graph IV.4.7: **Evolution of cyclically-adjusted primary balances for Member States with weak and strong NFRs**



Note: The CAPB is expressed in % of potential GDP. The weak (strong) fiscal rules refers to the average CAPB in Member States with FRI below (above) its median value in that year.
Source: Commission 2017 spring forecast and Commission 2015 vintage of Commission's Fiscal Governance Database.

The apparent co-movement between the CAPB and FRI in recent years has been affected by independent developments that affected each variable separately. Graph IV.4.8 illustrates the developments of the CAPB and the FRI over 1990-2015, averaged across the Member States. The chart highlights the "outlier" nature of the Great Recession, during which the CAPB experienced very negative values in contrast to the generally positive or mildly negative values over the rest of

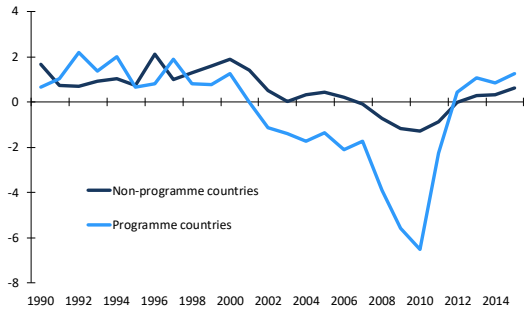
Graph IV.4.8: **Fiscal Rule Index and cyclically-adjusted primary balance (1990-2015, in % of GDP)**



Note: The cyclically-adjusted primary balance is expressed in % of potential GDP; the FRI is standardised over the 1990-2015 period. The weak (strong) fiscal rules refer to FRI below (above) its median value in that year.
Source: Commission 2017 spring forecast and Commission 2015 vintage of Commission's Fiscal Governance Database.

the period. As a result, the recent strong recovery in the CAPB is mainly related to the post-crisis recovery. In some cases, this is linked to external financial support provided through macroeconomic or financial adjustment programmes. Looking at the FRI, it shows a period of gradual and slow growth during the first two decades, before it rose sharply over the last five years of the sample. This, as described above, was essentially driven by EU fiscal governance initiatives. In particular, the jump in FRI reflects a marked increase in the number of rules (Graph IV.4.1).

Graph IV.4.9: **Cyclically-adjusted primary balances for Member States that had financial assistance in the wake of the 2008 crisis vs. those that did not (in % of GDP)**



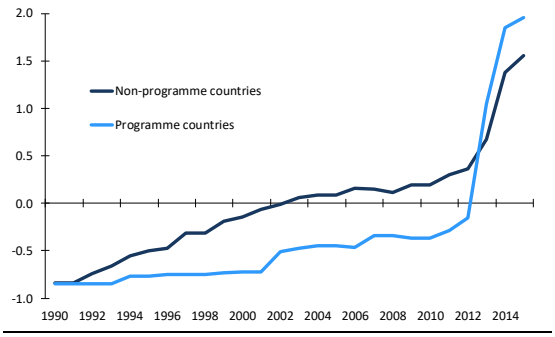
Note: The eight so-called "programme countries" that received financial assistance through macroeconomic or financial adjustment programmes are: Cyprus, Greece, Hungary, Ireland, Latvia, Portugal, Romania and Spain. The CAPB is expressed in % of potential GDP.
Source: Commission 2017 spring forecast and Commission 2015 vintage of Commission's Fiscal Governance Database.

Data also suggests that Member States that had financial programmes had a lower FRI than the others, the gap being large, persistent and statistically significant. While fiscal policy was not the main cause of financial distress in all Member States that had macroeconomic or financial assistance programmes, weak fiscal rules are one of the features that they shared. Graph IV.4.9 and IV.4.10 illustrate the CAPB (left-hand chart) and the FRI (right-hand chart) for the eight Member States that received financial assistance during the crisis ([179]) versus the rest of the Member States. The chart highlights that Member States that received financial assistance had a significantly lower FRI prior to the crisis. At the same time, for the same group of Member States that received financial assistance, the CAPB fell significantly in 2010, to a much lower level than for the other group of Member States and following more than a decade of lower and falling levels. After 2010, that historical relationship broke down, with laggard Member States catching up quickly and even surpassing the other Member States in terms of both CAPB and FRI. As

([179]) The eight so-called "programme countries" that received financial assistance through macroeconomic or financial adjustment programmes are: Cyprus, Greece, Hungary, Ireland, Latvia, Portugal, Romania and Spain.

explained above, this is primarily a reflection of specific shocks affecting the CAPB and FRI, rather than an indication of a joint relationship.

Graph IV.4.10: **Strength of fiscal rules for Member States who received/not received countries that had financial assistance in the wake of the 2008 crisis vs. those that did not**



Note: The eight so-called "programme countries" that received financial assistance through macroeconomic or financial adjustment programmes are: Cyprus, Greece, Hungary, Ireland, Latvia, Portugal, Romania and Spain. The CAPB is expressed in % of potential GDP.
Source: Commission 2017 spring forecast and Commission 2015 vintage of Commission's Fiscal Governance Database.

4.3.2. Estimated impact of national fiscal frameworks

This analysis follows a relatively narrow strand of the empirical literature, which tends to find a positive and significant budgetary impact for both fiscal rules and MTBFs. In a seminal paper on this subject, Debrun et al. (2008) analysed the impact of fiscal rules in the EU over the period 1990-2005 and found a strong, positive impact of the strength of fiscal rules on the CAPB. Those findings were confirmed in a recent study, which includes all regions of the world over the period 1985-2015, but only for well-designed rules. ([180]) In a rather rare empirical analysis documenting the impact of MTBFs, Nerlich and Reuter (2013) show that their adoption tends to strengthen the budgetary impact of fiscal rules, which is further strengthened by the setting up of IFIs with a monitoring role.

4.3.2.1 Econometric model and data

The econometric model estimates a fiscal reaction function augmented with the FRI. To assess econometrically the impact of national fiscal rules on fiscal discipline, the FRI has been introduced into a conventional model of fiscal behaviour (*a fiscal reaction function*). The model used here – largely based on Debrun et al (2008) – is specified in line with Bohn (1998), who shows that a country's fiscal policy can essentially be described as the response of the primary balance to (1) cyclical fluctuations, (2) past developments in government debt, and (3) institutional and political determinants and temporary events (wars, disasters, etc.). ([181])

Equation (1) below illustrates the main specification:

$$capb_{i,t} = \alpha_0 + \rho capb_{i,t-1} + \theta debt_{i,t-1} + \beta \Delta OG_{i,t-1} + \gamma FRI_{i,t} + \delta_i + \tau_t + \varepsilon_{i,t} \quad (1)$$

where $t = 1, \dots, T$ refer to time dummies, and $i = 1, \dots, 28$ to the number of Member States. Specifically, the dependant variable is the ratio of CAPB to potential GDP ($capb_{i,t}$) in country i and year t, while the explanatory variables include: $capb$, the lagged ratio of CAPB to potential GDP, $debt$, the lagged government debt-to-potential-GDP ratio, ΔOG, the lagged change in output gap, and FRI, measuring the strength and number of fiscal rules. The δ_i (the country "fixed effects") captures country-specific characteristics affecting fiscal policy (such as institutional and political determinants but also other factors for which no proxy variable is available), ([182]) while τ_t captures year-specific temporary events affecting fiscal policy. ([183])

([180]) Caselli et al. (2018).

([181]) Institutional and political determinants that may affect the willingness of a country to introduce national numerical fiscal rules include the institutional set-up (e.g. large countries with complex administrative structures and countries with fragmented governments are expected to be more prone to deficit bias, and to be in greater need of containing it via fiscal rules), the fiscal governance model (e.g. countries characterised by a commitment model of fiscal governance are expected to use more intensively national fiscal rules), as well as political variables (such as the ideological inclination and diversity of the government in place, the stability of governments and the dates of elections). See Debrun et al. (2008) for an extensive discussion on this topic.

([182]) Debrun et al. (2008) show that there is a large degree of overlap between institutional/political variables and country-fixed effects. For simplicity, only country-fixed effects are used in this estimation.

([183]) Note that the crisis period is implicitly covered by the analysis, namely through the sum of the five year-specific-dummy estimates during the crisis period.

Assessing the influence of fiscal rules on budgetary outcomes raises a number of conceptual issues, such as reverse causality, omitted determinants or the "Nickell bias". A major conceptual issue is the possibility that rules might actually be a mere reflection of deeper preferences for fiscal discipline, i.e. *reverse causality* running from fiscal performance to rules. This is a potentially serious problem because, if severe enough, it entails a statistical bias in the estimated effect of fiscal rules with classical estimation methods (i.e. least squares), exaggerating their impact on fiscal discipline. However, there are statistical models correcting such bias, which rely on finding certain variables (called instrumental variables (IV)) that are highly correlated with fiscal rules but truly exogenous, namely independent of budgetary outcomes. Similar to Debrun et al. (2008), the IV used in this analysis is the lagged FRI. ([184]) While, admittedly, other type of IVs could be tested, recent research (e.g. Caselli et al. 2018) suggests that reverse causality is less of an issue when the design of the rules is taken into account, which is the case in this analysis. A second, and related, issue is that fiscal rules could be correlated with *omitted determinants* of fiscal behaviour (i.e. determinants of fiscal behaviour that are not included in equation (1)), which could entail a statistical bias similar to reverse causality. However, in a panel set-up (i.e. with a cross-sectional dimension (Member States) and a time dimension (years)), dealing with omitted cross-country determinants is simple because the impact of these omitted variables is captured by country "fixed-effects". Finally, another statistical problem arises because of the so-called "*Nickell bias*" owing to the fact that the lagged dependent variable (lagged CAPB) appears among the explanatory variables in the fiscal reaction function (1). In this analysis two corrective estimation methods are used. One is Kiviet (1995)'s corrected Least Square Dummy Variable (LSDV) estimator (as extended by Bruno, 2005), which is suitable for moderately large N and finite T as is our case. The alternative is an IV estimation, which has the advantage of allowing for simultaneous control of multiple endogenous variables, such as the CAPB and the FRI in this analysis.

To assess the relative importance of the different statistical problems described above, three different estimation methods of equation (1) are reported. All results correct for bias due to possible omitted variables (captured by the country fixed effects). Column (1) shows results for a panel fixed effects estimation. Results in Column (2) also correct for bias due to the lagged dependent variable being included among explanatory variables, using LSDV estimation. Finally, Column (3) also corrects for potential reverse causality between FRI and CAPB using an IV estimation method where both the lagged CAPB and the FRI are instrumented with their own one-period lag. All fiscal variables are expressed in percentage of potential GDP and are obtained from Ameco, while the FRI is based on the Fiscal Governance Database. Basic summary statistics for the main variables are provided in the Table IV.A.5 in the Annex.

4.3.2.2 Key findings on the impact of national fiscal rules

Fiscal rules are found to have a positive and statistically significant impact on the CAPB. The relation between fiscal rules and budgetary outcomes is robust to all three possible sources of bias discussed above, as the magnitude of the impact is broadly similar across the different estimations (Table IV.4.2). The estimated impact of fiscal rules on CAPB ranges between 0.25 and 0.35 pp. of potential GDP (depending on the estimation method) for a 1-unit increase in the standardised FRI. This captures the short-term impact on budget balances (i.e. during the same period). The long-term impact –i.e. the compounded impact over the long-term that accumulates through the persistence of CAPB– is higher, ranging between 0.54 and 0.90 pp. of GDP (e.g., 0.35/(1-0.61)≈0.9). The magnitude of the estimated impact is similar to that found in earlier studies (e.g. Debrun et al. 2008).

([184]) The lagged FRI fulfils the two conditions of a good instrument: 1) it is strongly correlated with the FRI, as the process of reforming the fiscal rule framework is generally slow and long; and 2) the primary balance in the current period should not be impacted by the fiscal rules in force one period before.

Table IV.4.2: **Panel regressions of equation (1) for period 1990-2015**

Estimator	LSDV[a] (1)	LSDV-C[b] (2)	IV[c] (3)
CAPB (t-1)	0.54***	0.61***	0.61***
	(15.79)	(17.02)	(7.41)
Δ output gap (t-1)	-0.1**	-0.1**	-0.1*
	(-2.32)	(-2.60)	(-1.85)
Public debt (t-1)	0.03***	0.03***	0.03***
	(5.10)	(4.22)	(4.98)
Fiscal Rule Index	0.25*	0.23*	0.35*
	(1.8)	(1.73)	(1.86)
# obs.	577	577	575
R^2 ('within' for fixed-effects estimator)	0.51	-	0.66
Number of countries	28	28	28
F-test country fixed effects	2.2***	-	53.20***
Fraction of variance due to country fixed effects	0.2	-	-
F- test time fixed effects	3.6***	119.85***	89.33***

Note: The dependent variable is the cyclically-adjusted primary balance (CAPB). Constants and dummy variables are not reported. Robust t or z-statistics in parentheses. *, **, and *** denote, respectively, significance at the 10, 5 and 1% level. All fiscal variables are ratios on potential GDP. Time and country fixed effects are included in all three estimations.
a Panel estimation with country fixed effects and time fixed effects; b LSDV-C accounts for the small sample bias in dynamic panels with country fixed effects. Results refer to Kiviet's corrected LSDV estimator on a specification that includes time-fixed effects. The R2 and F-test of country fixed effects are not calculated. c The IV estimation method (GMM) controls for country- and time-fixed effects, as well as for the bias due to the lagged dependent being included among the explanatory variables. The instrumented variables are the CAPB and the FRI; their own one-period lags are used as instruments.
Source: Commission services.

The impact of the other factors has the expected sign and magnitude and confirms the results of the existing literature. This analysis finds a pro-cyclical response of fiscal policy (i.e. the coefficient on the change in output gap is negative and significantly different from zero), a stabilising response to debt developments (i.e. positively and statistically different from zero coefficient on lagged debt), and a significant degree of persistence (i.e. large positive auto-regressive coefficient of CAPB) (see among others Gali and Perotti, 2003).

The sharp increase in the number of rules during the recent period may have affected the historical relationship between fiscal rules and budgetary outcomes. As noted, the marked increase in the number of rules in 2013 and 2014 is strongly reflected in the FRI, which is sensitive to the number of rules (Graph IV.4.8). While the FRI-index methodology does control for the number of rules to some extent (Box IV.4.2) it still resulted in a sharp rise in the FRI. Moreover, it would be sensible to think that with no or few fiscal rules, any new introduced rule could have a bigger impact than the same rule introduced in addition to many existing rules. This argument is supported by evidence in Debrun et al. (2008), who found that the impact of rules was almost three times higher in Member States with fewer rules (i.e. Member States that acceded in 2004 or after) than the rest (i.e. Member States that acceded prior to 2004). This analysis does not explicitly control for those developments and further work would be needed to uncover possible non-linearities in the impact of fiscal rules.

4.3.2.3 Key findings on the impact of MTBFs

The impact of MTBFs is estimated based on the same fiscal reaction function described above, except that instead of the FRI is the MTBF index that enters the equation. In addition, the same estimation techniques is used for this specification. An important difference from the FRI analysis is that the MTBF index is available on a much shorter period than the FRI. The MTBF index starts in 2006 compared to the FRI that starts in 1990.

MTBFs are found to have a large, positive and statistically significant impact on the CAPBs. In a second step, panel regressions of equation (1) are extended with the MTBF index, which measures the average strength of MTBFs across five relevant characteristics (see Box IV.4.2 for details). It should be noted that the MTBF index is available for a much shorter period than the FRI (i.e. the period 2006-2016). The findings reveal a large, positive and statistically significant impact of MTBF on the CAPB (Table IV.4.3). The CAPB rises by more than 1 pp. of GDP in the short-term (and 1.9 pp. of GDP in the long-term) following a one-unit increase in the standardised MTBF index (see Column 1).

Table IV.4.3: **Estimated budgetary impact of MTBFs based on panel regressions on period 2006-2015**

Estimator	LSDV[a] (1)	LSDV-C[b] (2)	IV[c] (3)
CAPB (t-1)	0.35***	0.46***	0.44***
	(6.46)	(6.85)	(4.12)
Δ output gap (t-1)	-0.20***	-0.20***	-0.19**
	(-3.00)	(-3.52)	(-2.61)
Public debt (t-1)	0.05***	0.05***	0.05***
	(3.42)	(3.20)	(3.29)
MTBF Index	1.17***	1.05***	1.05***
	(4.39)	(3.64)	(3.91)
# obs.	273	273	273
R^2 ('within' for fixed-effects estimator)	0.48	-	0.64
Number of countries	28	28	28
F-test country fixed effects	3.08***	-	62.61***
F- test time fixed effects	3.75***	41.77***	34.09***

Note: The dependent variable is the cyclically-adjusted primary balance (CAPB). Constants and dummy variables are not reported. Robust t or z-statistics in parentheses. *, **, and *** denote, respectively, significance at the 10, 5 and 1% level. All fiscal variables are ratios on potential GDP. Time and country fixed effects are included in all three estimations.
a Panel estimation with country fixed effects and time fixed effects; b LSDV-C accounts for the small sample bias in dynamic panels with country fixed effects. Results refer to Kiviet's corrected LSDV estimator on a specification that includes time-fixed effects. The R2 and F-test of country fixed effects are not calculated.
c The IV estimation method (GMM) controls for country- and time-fixed effects, as well as for the bias due to the lagged dependent being included among the explanatory variables. The instrumented variables are the CAPB and the FRI; their own one-period lags are used as instruments.
Source: Commission services.

4.4. CONCLUSIONS

The national ownership of EU fiscal rules has been strengthened in recent years thanks to stronger national fiscal frameworks being created, following legislative initiatives put forward at the EU level. Of particular influence has been the Directive on budgetary frameworks of the Six-Pack, the Fiscal Compact and the Two-Pack. As a result, the number of national fiscal rules, covering all or parts of the general government, has greatly increased in recent years in most Member States. These rules tend to be stronger in terms of monitoring and enforcement mechanisms than in the past. The number of independent fiscal institutions has also risen significantly in recent years and their mandates often go beyond the minimum requirements set at the EU level. Finally, all Member States now have a medium-term budgetary framework in place that is connected to the annual budget process.

The empirical analysis shows that strong national fiscal frameworks are an effective tool to foster sound fiscal policy. The analysis shows a positive and statistically significant impact of both national fiscal rules and MTBFs on the budgetary outcomes as measured by the CAPB. That means that well-designed fiscal rules and MTBFs are conducive to fiscal discipline. While the IFI impact is not measured distinctly in this analysis, its contribution is included in the estimated impact for national fiscal rules through the monitoring arrangements dimension.

5. CONCLUSIONS

This part analyses the fiscal outcomes in the EU's fiscal rules-based framework from three non-exhaustive angles. It investigates the fiscal rules' ability to strengthen fiscal sustainability, foster stabilisation and promote national ownership. The analysis is factual, backward looking and conducted primarily based on quantitative analysis.

Our main findings can be summarised as follows (Graph IV.5.1):

First, while significant progress towards more sustainable fiscal positions has been achieved, public debt remains very high and fiscal buffers small in several Member States. Public debt-to-GDP ratios in the EU have increased far less than in most other advanced economies such as the US and Japan over the past three decades thanks to a more prudent conduct of fiscal policy. Member States with the most fragile fiscal positions improved their fiscal positions following the introduction and subsequent reforms of the fiscal governance framework. This suggests that the EU's fiscal governance framework has contributed to more prudent fiscal policies in individual Member States over the last two decades, although causality is difficult to establish. Nevertheless, there is still unfinished business, as public debt ratios remain high and fiscal buffers remain small in several Member States.

Second, our analysis shows that the respect of fiscal rules seems to have mitigated the procyclicality of fiscal policy in the EU. In the EU on average we find evidence of a procyclical fiscal effort since 2000, implying that discretionary fiscal policy tightens in bad times and loosens in good times. The findings show that discretionary fiscal policy tends to be most procyclical in good times. The respect of fiscal rules seems to have mitigated the procyclicality of fiscal policy in the EU. Overall, the cost of procyclical fiscal efforts can be high, as discretionary fiscal policy measures counteract the functioning of automatic stabilisers and prevent them from operating freely.

Third, we find that strengthened national fiscal frameworks are effectively promoting budgetary discipline. Several legal requirements put forward at the EU level aimed at strengthening the national ownership of EU rules and have led to a broad-based and robust improvement in national fiscal frameworks in the EU. The number of national fiscal rules has greatly increased in recent years in most Member States. These rules tend to be stronger in terms of monitoring and enforcement mechanisms than in the past. The number of national independent fiscal institutions has also risen significantly in recent years and their mandates often go beyond the minimum requirements set at the EU level. Finally, all EU Member States now have a medium-term budgetary frameworks (MTBFs) in place that is connected to the annual budget process. Using relevant econometric models, results show a positive and statistically significant impact of both national fiscal rules and medium-term budgetary frameworks on the cyclically-adjusted primary balance.

Graph IV.5.1: **Overview of main findings**

Main objective	Key findings
Strengthen sustainability	• Public debt increased much less in the EU compared with most advanced economics, in particular due to a more prudent conduct of fiscal policy • Significant improvements in Member States with most fragile fiscal positions • Debt is still very high and fiscal buffers small in some Member States
Foster stabilisation	• Fiscal adjustment effort appears procyclical in the EU • Discretionary fiscal policy tends to be most procyclical in good times • Respect of fiscal rules can mitigate procyclicality
Promote national ownership	• The number of national fiscal rules has greatly increased in most Member States • Strengthened national fiscal frameworks are effectively promoting sound fiscal positions • Medium-term budgetary frameworks contribute to more prudent fiscal policy

Source: Commission services.

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ANNEX

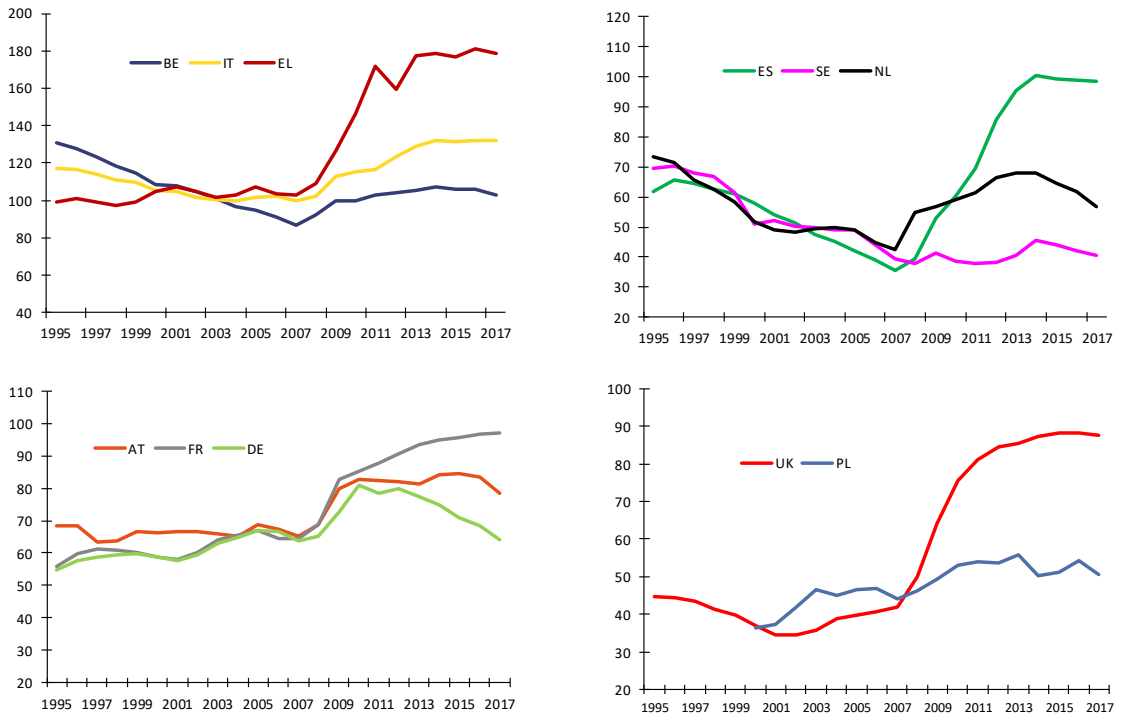
Table IV.A.1: **Contributions to change in public debt in the EU, the US and Japan over the last three decades (pp. of GDP)**

	1988-1997			1998-2007			2008-2017		
	EU	US	JP	EU	US	JP	EU	US	JP
Change in gross debt	**16.7**	**6.3**	**35.4**	**-8.4**	**-0.9**	**76.3**	**27.1**	**43.1**	**52.6**
Drivers									
primary balance	**-3.6**	**-11.0**	**-21.3**	**-13.0**	**-9.1**	**36.8**	**9.8**	**39.3**	**44.9**
p.m. CAPB	*-3.5*	*-11.8*	*-17.1*	*-7.9*	*-5.4*	*33.9*	*0.7*	*34.7*	*32.7*
snowball effect	**16.5**	**18.7**	**7.2**	**3.6**	**6.0**	**23.2**	**11.9**	**7.1**	**9.7**
p.m. r-g differential	*24.4*	*24.3*	*6.7*	*3.6*	*7.6*	*17.8*	*17.7*	*9.4*	*6.4*
pm. real GDP growth	*24.2*	*31.1*	*30.2*	*25.8*	*30.4*	*10.4*	*7.2*	*14.2*	*5.5*
p.m. real IR	*48.9*	*55.9*	*36.6*	*29.3*	*38.1*	*28.2*	*24.4*	*23.3*	*11.3*
p.m. nominal IR	*82.3*	*84.2*	*46.0*	*50.9*	*61.3*	*17.2*	*32.6*	*39.1*	*8.8*
p.m. inflation (GDP delator)	*32.1*	*26.8*	*9.0*	*21.1*	*22.4*	*-10.7*	*8.2*	*15.4*	*-2.3*
Stock flow adjustment	**3.8**	**-1.3**	**49.5**	**1.1**	**2.2**	**16.3**	**5.4**	**-3.3**	**-2.0**

Note: The contribution from the primary government balance is split into discretionary fiscal policy (measured by the cyclically-adjusted primary balance) and the automatic stabilisers (measured by the cyclical component of the budget balance). For data availability reasons, data for the EU refer to EU15.

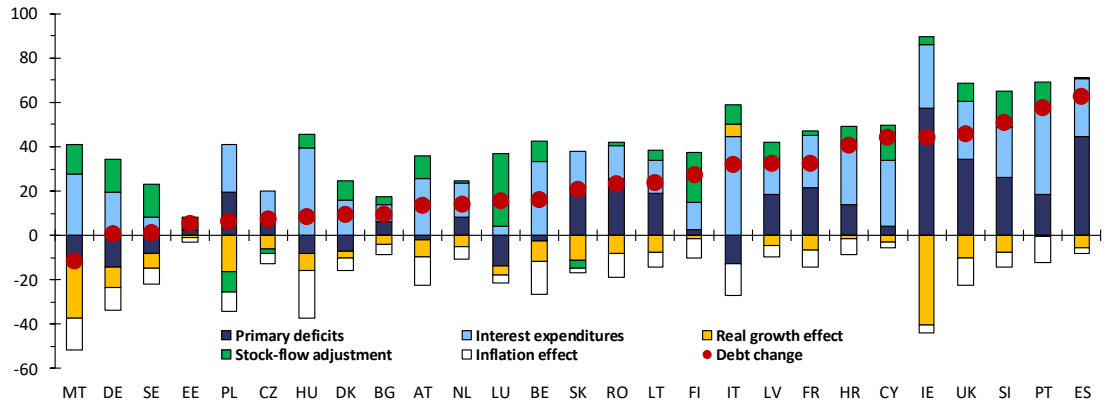
Source: Commission services' calculations based on Commission 2018 autumn forecast, OECD and IMF data.

Graph IV.A.1: **Debt developments for selected Member States**



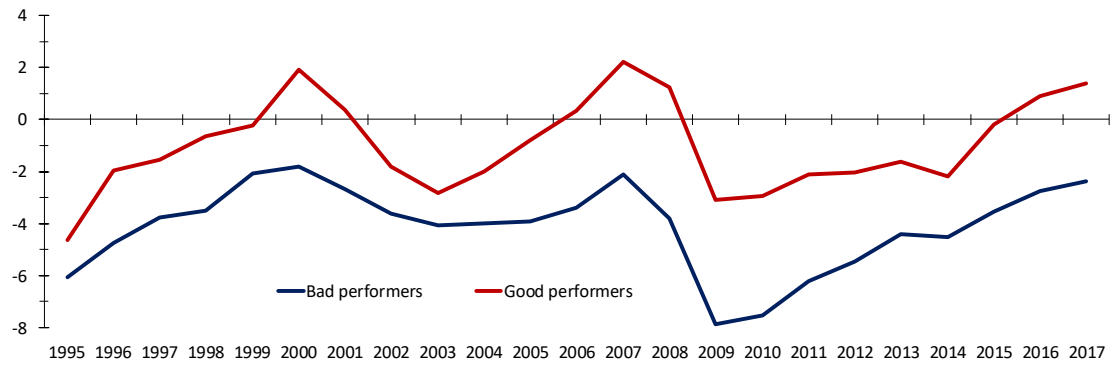
Source: Commission services' calculations based on Commission 2018 spring forecast.

Graph IV.A.2: **Drivers of public debt developments since the crisis in high debt Member States (cumulated effect over 2088-2017, pps. of GDP)**



Note: Member States with debt ratio above 60% of GDP in 2017 are considered. EL is not shown in order to not distort the scale, given the higher magnitude of contributions to debt developments. The fiscal contribution for IE mainly comes from the bank support, which affected the fiscal balance in IE, whereas it affected the SFA in other countries.
Source: Commission services' calculations based on Commission 2018 spring forecast.

Graph IV.A.3: **Average headline balance for selected Member States (% of GDP)**

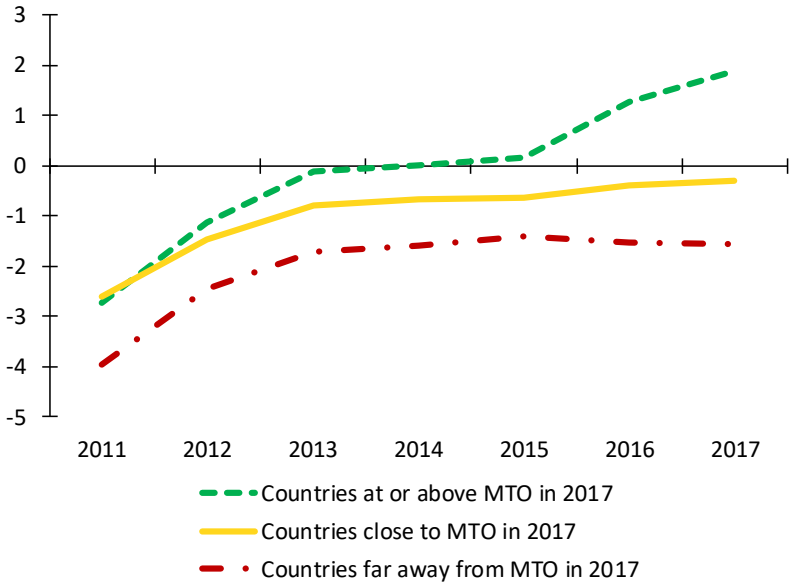


Note: Fixed composition over time for "bad performers", and "good performers" lead to similar results. "Bad performers": ES, FR, IT, HU, PL, PT, UK. "Good performers": DE, CY, LU, NL, SE.
Source: Commission services' calculations based on Commission 2018 spring forecast.

Graph IV.A.4: **Cyclically-adjusted balances (% of potential GDP)**

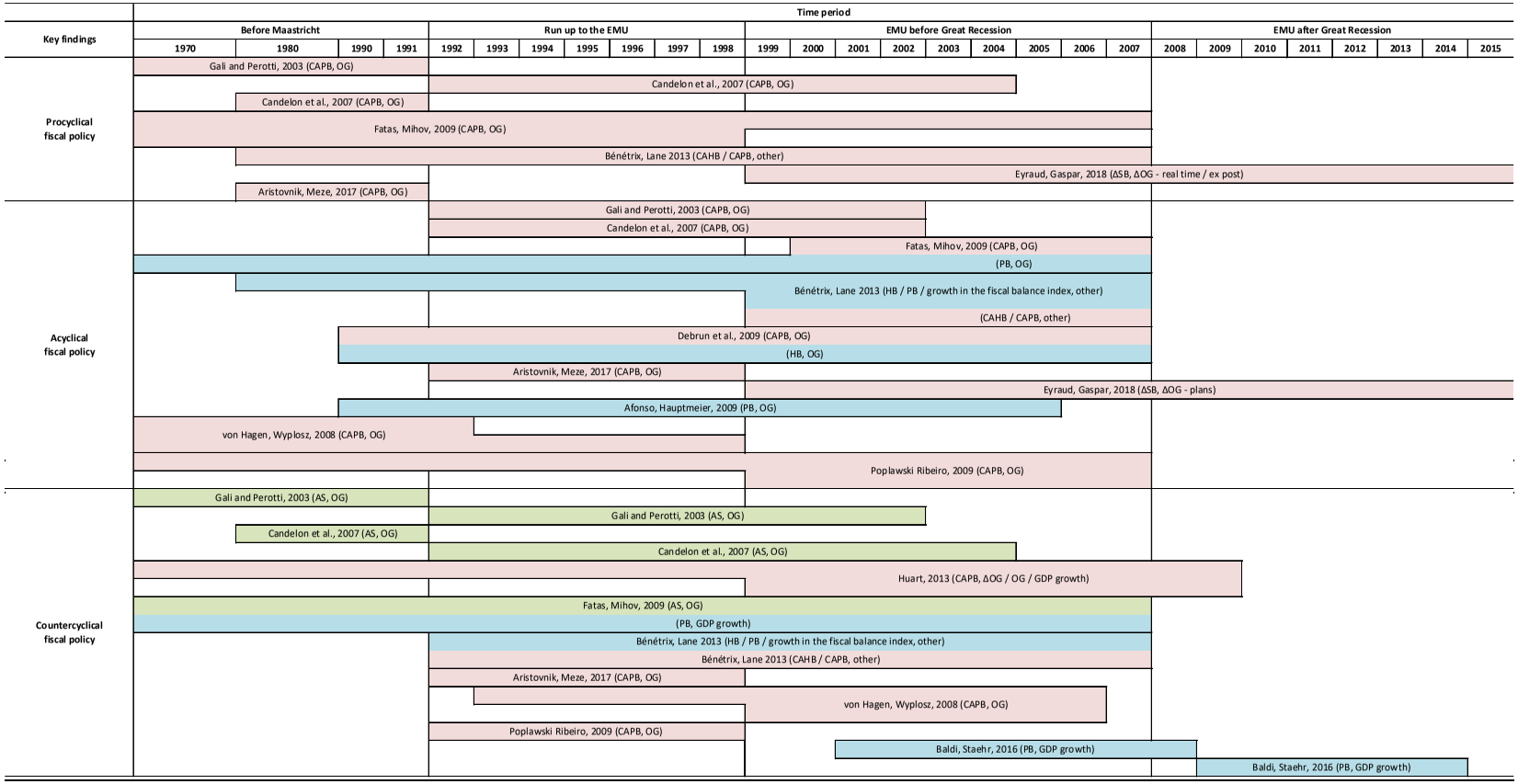
Note: Cyclically-adjusted balances (UBLGAP). Compared with the Structural Balances (UBLGAPS) considered by the fiscal surveillance process of the EU, one-off measures are not excluded. The definition of the latter has evolved over time, which makes comparison with structural balances before 2010 more difficult. Therefore, cyclically-adjusted balances are shown.
Source: Authors' calculations based on Commission 2018 spring forecast.

Graph IV.A.5: **Distance between the structural balance and the MTO (% of potential GDP)**



Note: The composition of the groups is the following:
• Member States at or above MTO in 2017: BG, CZ, CY, DE, DK, EL, FI, HR, IE, LT, LU, MT, NL, SE.
• Member States close to MTO in 2017: AT, LV, SK.
• Member States far away from MTO in 2017: BE, EE, ES, FR, HU, IT, PL, PT, RO, SI, UK.
Source: Commission services' calculations based on Commission 2018 spring forecast.

Table IV.A.6: **Overview: Key findings on cyclicality of fiscal policy**



Note: Cells highlighted in blue/red/green show the focus of the study, namely concentrating on total fiscal policy/fiscal effort/automatic stabilisers. The precise fiscal and business-cycle indicators are shown in brackets. Abbreviations of fiscal variables: CA(P)B: cyclically-adjusted (primary) balance, PB: primary balance, HB: headline balance, SB: structural balance; AS: automatic stabilisers. abbreviations of business-cycle indicators: OG: output gap, ΔOG: change in output gap, GDP growth: real GDP growth.

Source: Commission services.

Table IV.A.2: **Summary statistics**

Variable	Obs.	Mean	Std. dev.	Min.	Max.
Structural balance (% pot. GDP)	409	-1.9	2.9	-14.2	5.3
Structural primary balance (% pot. GDP)	409	0.5	2.9	-8.9	8.5
Cyclically-adjusted balance (% pot. GDP)	409	-2.0	3.3	-29.3	5.3
Cyclically-adj. primary balance (% pot. GDP)	409	0.4	3.3	-26.2	9.3
Exp. benchmark (net of interest payments)	364	-0.7	4.3	-21.3	18.0
Exp. benchmark (net of IP and unemp. benefits)	394	-0.2	5.4	-29.0	31.4
Exp. benchmark (SGP definition)	380	-0.3	5.2	-29.0	31.9
Public debt ratio (% GDP)	409	60.1	33.1	3.5	180.8
Δ output gap	409	-0.3	2.5	-18.5	6.5
Output gap	409	-0.8	3.0	-13.8	11.8
Current account balance (% GDP)	404	-1.1	6.1	-22.5	11.0
Age dependency ratio (share of tot. pop.)	405	48.3	4.0	38.0	58.2
Openness (imp. and experts by GDP)	409	80.3	33.4	30.6	164.8
Election year	465	22.2	36.5	0.0	100.0
Crisis dummy (2008-13 = 1)	465	0.4	0.5	0.0	1.0

Source: Commission services.

Table IV.A.3: **Robustness checks**

	"Top-down" measure		"Bottom-up" measure		Total sample	
	Obs.	in % of valid	Obs.	in % of valid	Obs.	in % of valid
Total sample						
# regressions	7,367		5,968		13,335	
# valid	3,138		3,680		6,818	
Significant at 10%	2,187	70	3,081	84	5,268	78
Economic cycle measured by "momentum"/"speed of closure"						
# regressions	3,070		2,387		5,457	
# valid	1,272		1,426		2,698	
Significant at 10%	1,083	85	1,326	93	2,409	89
Economic cycle measured by "depth"						
# regressions	3,128		2,366		5,494	
# valid	1,331		1,433		2,764	
Significant at 10%	700	53	1,069	75	1,769	66
Economic cycle measured by "length"						
# regressions	1,169		1,215		2,384	
# valid	535		821		1,356	
Significant at 10%	404	76	686	84	1,090	81

Note: The table shows the corresponding data from the robustness tests shown in Graph IV.2.1 of Chapter IV.2. The tests include different measures for the economic cycle (speed of closure, depth and length), fiscal effort (top-down (structural (primary) balance, cyclically-adjusted (primary) balance) and bottom-up measures (differences between three different expenditure concepts and the 10-year potential growth rate), types of datasets (real-time spring, autumn and ex post), sets of independent variables (different sets of control variables) and estimations techniques (LSDV, LSDVc, first difference and system-GMM estimator using different sets of internal instruments). The total number of conducted robustness checks amounts to 13,330. "# regressions" point to the total number of regressions, while "# valid" presents the number of regressions with valid GMM specifications (i.e. AR(10), AR(2) and Hansen tests confirm the validity of the specification). "Significant at 10%" shows the number of regressions which are significant at the 10% level or higher.
Source: Commission services.

Table IV.A.4: **List of acronyms for Independent Fiscal Institutions**

Member State	Name	Name in native language	Acronym used in the note
AT	Fiscal Advisory Council	*Fiskalrat*	AT-FISK
	Institute for Economic Research	*Österreichisches Institut for Wirtschaftsforschung*	AT-WIFO
BE	Federal Planning Bureau	*Federaal Planbureau/Bureau fédéral du Plan*	BE-FPB
	High Council of Finance	*Hoge Raad van Financiën/Conseil Supérieur des Finances*	BE-HCF
BG	Fiscal Council	*Фискален Съвет На България*	BG-FC
CY	Fiscal Council of Cyprus	*Δημοσιονομικό Συμβούλιο*	CY-FC
CZ	National Budget Council		CZ - NBC
DE	Independent Fiscal Advisory Council to the Stability Council	*Unabhängiger Beirat des Stabilitätsrates*	DE-BEIR
DK	Economic Councils	*De Økonomiske Råd*	DK-DORS
EE	Fiscal Council	*Eelarvenõukogu*	EE-FC
EL	Hellenic Fiscal Council	*Ελληνικο Δημοσιονομικο Συμβουλιο*	EF-FC
	Parliamentary Budget Office	*Γραφείο Προϋπολογισμού του Κράτους στη Βουλή*	EL-PBO
ES	Independent Authority for Fiscal Responsibility	*Autoridad Independiente de Responsabilidad Fiscal*	ES-AIReF
FI	National Audit Office (Fiscal Policy Audit and Evaluation Dpt.)	*Valtiontalouden Tarkastusvirasto*	FI-NAO
	Ministry of Finance (Economics Department)		FI-MoF
FR	High Council for Public Finance	*Haut Conseil des Finances Publiques*	FR-HCFP
IE	Fiscal Advisory Council	*Irish Fiscal Advisory Council*	IE-IFAC
IT	Parliamentary Budget Office	*Ufficio Parlamentare di Bilancio*	IT-UPB
HR	Fiscal Policy Committee	*Odbor za fiskalnu politiku*	HR-CFP
HU	Fiscal Council	*Költségvetési Tanács*	HU-FC
LT	National Audit Office (Budget Policy Monitoring Department)	*Lietuvos Respublikos Valstybes Kontrole*	LT-NAO
LU	National Statistical Office	*STATEC*	LU-STATEC
	National Council for Public Finance	*Conseil National des Finances Publiques*	LU-CNPF
LV	Fiscal Discipline Council	*Fiskālās disciplīnas padome*	LV-FDC
MT	Fiscal Advisory Council	*Il-Kunsill Fiskali*	MT-FAC
NL	Council of State	*Raad van State*	NL-RvS
	Bureau for Economic Policy Analysis	Centraal Planbureau	NL-CPB
PL	Supreme Audit Office	*Najwyzsza Izba Kontroli*	PL - SAO
PT	Public Finance Council	*Conselho das Finanças Publicas*	PT-CFP
RO	Fiscal Council	*Consiliul Fiscal*	RO-FC
SE	Fiscal Policy Council	*Finanspolitiska Rådet*	SE-FPC
SI	Institute of Macroeconomic Analysis and Development	*Urad RS Slovenije za makroekonomske analize in razvoj*	SI-IMAD
	Fiscal Council	Fiskalni Svet	SI - FC
SK	Council for Budget Responsibility	*Rada pre rozpočtovú zodpovednosť*	SK-CBR
	Macroeconomic Forecasting Committee		SK-MFC
UK	Office for Budget Responsibility	*Office for Budget Responsibility*	UK-OBR

Source: Commission services.

Table IV.A.5: **Summary statistics for the main variables (1990-2015)**

	Obs.	Mean	Std. dev.	Min.	Max.
Fiscal Rules Index (standardised)	728	0.0	1.0	-1.0	3.5
MTBF Index (standardised)	273	0.0	1.0	-2.9	1.6
Cyclically adjusted primary balance (in % GDP)	632	0.1	3.1	-27.7	8.7
Government debt (in % GDP)	640	55.6	31.0	4.2	157.8
Change in output gap (in % GDP)	612	-0.1	2.4	-16.5	7.1

Note: The fiscal rules and MTBF indices are standardised by subtracting the respective full-sample mean and dividing by the respective standard deviation. Data for the cyclically adjusted primary balance, government debt and the output gap is not available since 1990 for some countries. Data for the MTBF index starts only in 2006.
Source: 2016 vintage of Commission's Fiscal Governance Database (Fiscal rules index and the MTBF index) and Commission 2017 spring vintage (all fiscal and macroeconomic variables).

Part V

Overview of public financial and non-financial assets

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Contributor: E. Bova using input from a consulting consortium consisting of KPMG Advisory S.p.A and Bocconi University.

KEY FINDINGS

This part presents the first overview of a selection of financial and non-financial assets owned by the public sector in all Member States. The asset side of a public balance sheet contributes to expanding our understanding of a government's financial health and long-term fiscal sustainability.

About 37,000 firms in the EU have a public stake and play an important role in the economy in terms of revenue, employment and value added.

- EU governments have stakes in around 37,000 firms (with assets amounting to around 40% of GDP), based on 2015 firm-level data. There is a great degree of diversity both in terms of number of firms with public stakes and amount of assets across Member States.

- A large number of those stakes are in unlisted companies that are involved in the provision of services and public utilities, as well as in the financial sector where the largest value of assets is held. In many cases, the government has total ownership of the company.

- Companies wholly or partly owned by the state contribute to the economy, through revenue, value added and employment, which compare well with private sector peers. The extent to which these companies contribute to a country's fiscal balance cannot yet be established in an exact way; yet, some preliminary evidence points to some relevance for non-tax revenue.

Public non-financial assets examined in the study are mostly composed by roads, real estate and natural resources, including land.

- EU governments also own non-financial assets, but given data availability, a complete picture of these assets is not available. Based on a selection of non-financial assets, at times estimated, the public non-financial assets examined in this study amount to an estimated 71% of EU GDP in 2015 in the EU.

- Also for non-financial assets, public ownership differs substantially across Member States, with an amount of these assets corresponding to about 250% of GDP in Bulgaria and Croatia, and about 40% in Belgium and the Netherlands.

- These assets include the real estate, some specific structures, mineral reserves and other natural resources. Within these, roads and the real estate are estimated to be the largest components for most countries.

Limited data availability leads to some shortcomings in the analysis and calls for more transparency in the reporting of public assets.

- This part provides only reviews the relevance of public assets across Member States, as efforts to provide a more comprehensive and complete picture on these assets are still ongoing.

- The analysis reveals some important information gaps. Data on public financial assets are not fully comparable across countries, due mostly to different accounting systems. Some data on public non-financial assets are not available and, for the purpose of this analysis, they have been estimated.

- Developing comparable public asset databases in Member States could contribute to better public financial management.

1. INTRODUCTION

Understanding the different dimensions of public ownership of financial and non-financial assets is a step in the right direction to enhance product and service market reforms. While the ownership, market dynamics and financial profiles of State-owned enterprises (SOEs) have been extensively analysed (European Commission, 2016), a review of additional dimensions of public ownership would help capture more comprehensively the operational and fiscal challenges weighing on public accounts and on national and European product and service markets. Furthermore, a more complete overview of public finance stocks would help better understand movements in related flows and help address possible fiscal risks. With this in mind, this part examines evidence on public assets by looking at both government stakes in companies (here more generally defined as financial assets) and at some selected clusters of non-financial assets.

Public assets provide important information about a government's financial health. According to the European System of Accounts (ESA) 2010,[185] economic assets are defined as "a store of value representing the benefits accruing to the economic owner by holding or using the entity over a period of time. It is a means of carrying forward value from one accounting period to another". As a major component of a government's net worth, data on public assets complement the information provided by the more commonly used indicators of fiscal balance and debt. Therefore, they contribute to offering a comprehensive picture of a government's financial health. Indeed, the government's stock of assets can affect a country's fiscal stance and medium-term sustainability through various channels. On the one hand, assets may generate a stream of income, which would accrue to the revenue side of the government fiscal balance. Box V.1.1 illustrates, as an example, the relationship between selected public assets and non-tax revenue. Some assets can generate transfers or subsidies (in case of loss-making activity), thus affecting the expenditure side of the government balance. On the other hand, volume and value changes in the stock of assets, while impacting a government's net worth, can have implications for its financing needs and, in turn, on the capacity to repay its debt. Information about the public stock of assets could, therefore, be a good predictor for a country's fiscal developments.

The asset side of a government's balance sheet can be a source of fiscal risks. Not largely understood nor monitored, public assets might be the source of important shocks to the economy. As expressed by the UK Office for Budget Responsibility, "Balance sheet risks come in various forms. Financial asset sales included in forecasts are subject to uncertainty (e.g. student loan sales have been delayed repeatedly in the past). Other assets could be sold that have not yet been factored in" (2017, p. 11). Furthermore, some risks could materialise from, for example, the need to support a loss-making firm that has a large state ownership, from escalating maintenance needs of a property, or from a natural resource discovery. Such shocks may at times have very large impacts on the government balance and debt. To this end, more transparency on the extent and type of public sector ownership, public management of assets and their linkages with a country's macro-fiscal position are an essential tool for preventing and mitigating fiscal risks.

The need for a closer look at the asset side of the balance sheet has become more important over the last two decades as seen by the substantial change in the stock of asset and liabilities in many EU economies. In the run up to the creation of the euro, in order to comply with the Maastricht criteria some EU economies experienced debt increases that were not linked to higher deficits but rather to changes in the stock of assets and liabilities. ([186]) For example, to curb subsidies to a loss-making State-owned enterprise (SOE), countries could have chosen in some cases to grant debt guarantees which, once called, would have increased government debt but not the deficit. More recently, during the global financial crisis, many bail-out programmes for banks and companies entailed the expansion of the asset side of the government's balance sheet, often counterbalanced by an increase in debt issuance. ([187]) In contrast, the stock of assets declined for those governments with limited fiscal space and high debts which had to recur to sizeable asset sales.

([185]) European Commission (2013).

([186]) Milesi-Ferretti (2003); Von Hagen and Wolff (2006) and Buti et al. (2007).

([187]) Eurostat (2014); Eurostat (2018).

Box V.1.1: **Matching public assets with non-tax revenues**

Among the various ways public assets can impact fiscal policy is through the fiscal balance. On the revenue side, the stock of public assets is a source of some non-tax revenue flows. According to ESA 2010 (Eurostat, 2013), non-tax resources range from government production to property income and capital transfers. As detailed in Table 1, some streams of non-tax revenue result from government holdings of specific assets. For example, currency and deposits, debt securities, loans and other accounts receivable yield an interest, which feeds into revenue as property income. In turn, equities (and investment fund shares or units) yield distributed income and reinvested earnings in the case of foreign direct investment. Similarly, natural resources are a source of rent that also feeds into property income. Within non-financial assets, some fixed assets are a source of production income. This is the case of dwellings, buildings and machinery and equipment, which all contribute to market and non-market output.

Table 1: **Matching non-tax revenue (flows) with public assets (stocks)**

Public assets	Non-tax revenue
Currency and deposits (AF.2) Debt securities (AF.3) Loans (AF.4) Other accounts receivable (AF.8)	→ Interest (D.41)
Equity and investment fund shares or units (AF.5)	→ Distributed income of corporations (D.42) Reinvested earnings on foreign direct investment (D.43)
Natural resources (AN.21)	→ Rent (D.45)
Dwellings (AN.111) Other buildings and structures (AN.112) Machinery and equipment (AN. 113)	→ Market output (P.11) Output for own final use (P.12) Payments for non-market output (P.131)

Source: ESA (2010).

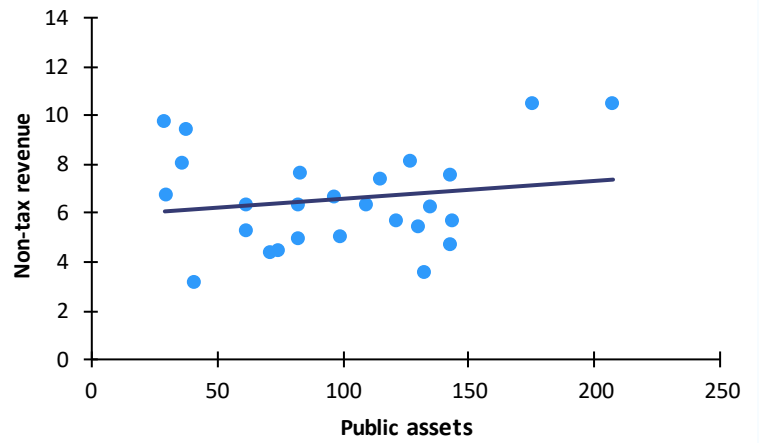
How comprehensively are data on public assets reflected in non-tax revenues? A rough illustration of stocks of public assets and non-tax revenues per Member State for 2015 shows somehow a positive relationship (Graph 1), suggesting that the higher the stock the higher is the flow. More in detail, Graph 2 illustrates (i) the relationship between interest revenue and its related assets stock (currency and deposits, debt securities, loans and other accounts receivable) (left panel) and (ii) the relationship between distributed income of corporations and equities (right panel). In both cases, the higher the asset stock the higher is the revenue flow. ([1]) The examined relationships between stocks and flows warrant further investigation. As found in Mourre and Reut (2018), non-tax revenue is an important source of fiscal volatility. Understanding the factors behind such volatility could definitely contribute to sound public financial management. To this end, more information on stocks that underlie the flow of revenue could provide more insights as regards future changes of non-tax revenue.

([1]) The selection of flows and stocks in Graph 2 is largely driven by data availability. Data on reinvested earnings of corporations are not available, hence the equities stock is only seen in relation to distributed income.

(Continued on the next page)

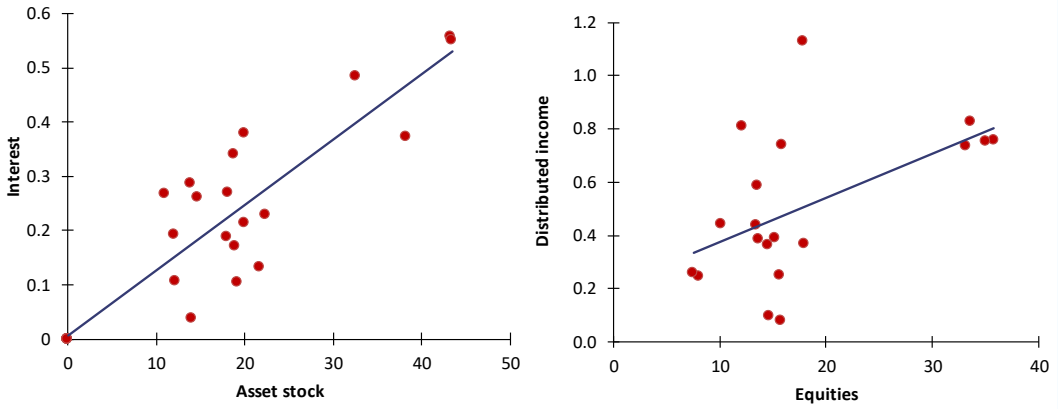
Box (continued)

Graph 1: **Non-tax revenue and public assets in the Member States (2015, % of GDP)**



Source: Eurostat.

Graph 2: **Interest, distributed income and their assets in the Member States (2015, % of GDP)**



Note: The stock of assets for interest includes currency and deposits, debt securities, loans and other accounts receivable.
Source: Eurostat.

The evidence on public assets in the EU (presented below) comes from work conducted for the Commission by a consulting consortium, following up on an initiative of the European Parliament. The analysis draws heavily on the analytical outputs of a study proposed by the European Parliament and undertaken on behalf of the Commission's Directorate General for Economic and Financial Affairs (DG ECFIN) by a consulting consortium consisting of KPMG Advisory S.p.A. and Bocconi University. DG ECFIN oversaw the study. The outputs of the study are available on the Commission's website. ([188])

This study provides the first quantification and analysis of public assets for all Member States. The consortium charged with preparing the study used several data sources to compile a detailed dataset on public assets held by the governments of

([188]) European Commission (2018).

all Member States. Most data are for 2015. For financial assets, it collected data from the business accounts of 37,000 firms with a government stake. On this basis, it built a quite comprehensive public equity database with detailed information, including on firms' contribution to the economy and to the budget. The study also provides a detailed account of selected non-financial assets owned by Member State governments, including roads, railways, airports and natural resources. In doing so, it puts forward innovative methodologies for the estimation and valuation of these assets. More precisely, to account for the heterogeneity and complexity of each cluster of non-financial assets, the study develops a valuation method that is specific to each cluster of assets.

Due to data shortcomings, this part presents a partial evidence of public assets rather than a comprehensive and complete picture. Data shortcomings reflect limited comparability across Member States for financial assets and lack of data for non-financial assets. As they are mostly based on information from business accounts, data on public equities may differ due to differences in the underlying accounting practices used by firms. They may also over-report public ownership as a result of multiple control chains, or omit some information due to the exclusion of small businesses from the sample. Lack of data is a critical issue for some non-financial assets, necessitating the use of proxies in the estimation of asset-specific valuations.

This part of the Report is organised as follows. Chapter V.2. presents evidence on financial assets. Chapter V.3. presents evidence on non-financial assets. Chapter V.4. discusses data sources and gaps and major methodological hurdles.

2. FINANCIAL ASSETS

In 2015, EU governments own stakes in more than 37,000 firms, corresponding to assets worth 40% of EU GDP. Firms with public stakes are defined as Public Sector Holdings (PSHs). Based on data for 37,000 firms with a public sector stake, assets of EU governments in such companies are estimated to be 40% of EU GDP (EUR 6 tn). With 7,854 stakes, Germany has by far the largest number of PSHs in the EU in 2015, followed by Spain with 3,809 PSHs. PSHs are also numerous in Italy (3,467), Poland (3,072) and Bulgaria (3,063). Weighing the stock of assets held by PSHs by the share of the public stake in the company, public assets in PSHs are particularly large, and at around 100% of GDP, in Slovenia and Belgium, followed by Luxembourg (80% of GDP), Sweden (62%) and Croatia (59%) (Graph V.2.1). If compared with Eurostat data, the value of these assets tends to be larger due to the more comprehensive coverage of firms conducted by the study. Annex A.1 compares and contrasts data from the study with those available in Eurostat.

Most PSHs are fully owned by the government, are unlisted and are involved in domestically-oriented activities. PSHs can be divided into four types according to the degree of public ownership. Public ownership is *full*, when the stake corresponds to 100% of the company; it is a *control ownership* when the stake is between 50% and 100% of the company; it is *influential* for stakes between 10% and 50%; and it is a *minority ownership*, when stakes are below 10% of the total ownership of the company. In 2015, 44.8% of EU PSHs are fully public, 21.6% have a public majority control, 17.3% have an influential State ownership and 7.2% have a minority ownership. For the remaining 9%, data on shareholders are not available (Graph V.2.2). Countries with a large number of PSHs do not necessarily have the highest degree of ownership, as it is the case for Germany, where less than half PSHs are fully public. More generally, full ownership is quite common in Central and Eastern European countries. Most PSHs have a very strong domestic focus and the vast majority of PSHs are unlisted (98% of total PSHs or about 57% of total PSHs assets). In contrast, listed PSHs in Finland and Croatia are more than 10% of each country's total PSHs and assets of listed PSHs are above 90% of total PSHs assets in Ireland and Malta.

While most PSHs are involved in services and public utilities, financial sector PSHs hold most assets. Almost 40% of PSHs are involved in services, such as the management of regional investments in Austria, construction and maintenance of power plants and grid in Lithuania, or in the national lottery in Spain (Graph V.2.3 and Graph V.A.2 in Annex A.2). ([189]) About 25% of EU PSHs are utility providers, mainly of electricity (Denmark, Estonia and Romania). ([190]) PSHs are also largely involved in the real estate business (19%). Looking at the sectoral composition on the basis of asset values (Graph V.A.3 in Annex V.A.2), the financial sector dominates in most countries and is particularly prevalent in Ireland, Malta and the Netherlands. ([191]) Utilities are prevalent in Slovakia (mostly for provision of electricity and water), Estonia (electricity), and France (electricity), while services are large in Lithuania (construction of power plants), Greece (motorways) and Denmark (engineering companies).

PSHs contribute to the economy in various ways not least because of their size and number of employees. While PSHs correspond to less than 0.1% of all EU firms, their contribution to the economy in 2015 is quite significant in terms of revenue (almost 3% of total economy), market capitalisation (above 3% of total economy, and only for listed companies), and value added (2.1% for non-financial PSHs). Collectively, PSHs are a large employer, with more than 4 million people employed across the EU in 2015, corresponding to 2% of total EU employment. ([192]) Around 980,000

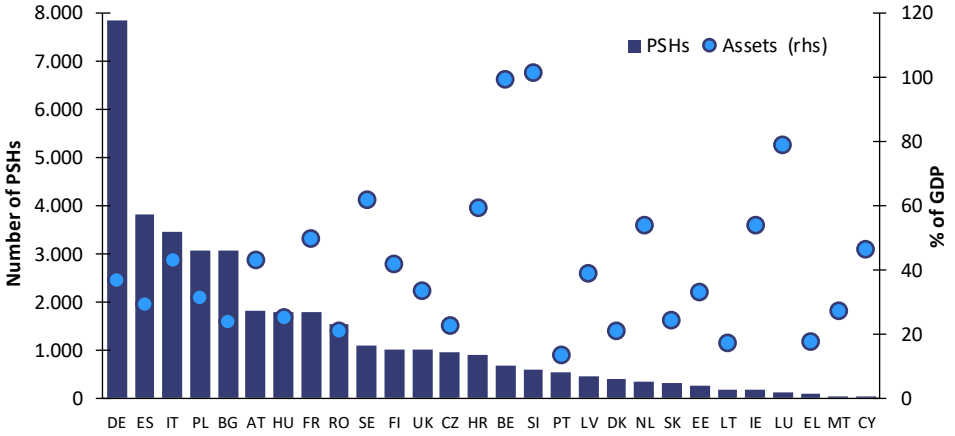
([189]) The category *services* here includes the following NACE sectors: M (Professional, scientific and technical activities), N (Administrative and support service activities), O (Public administration and defence, compulsory social security), P (Education), Q (Human health and social work activities), R (Arts, entertainment and recreation), S (Other service activities).

([190]) The category *utilities* here includes the following NACE sectors: B (Mining and quarrying), D (Electricity, gas, steam and air conditioning supply), E (Water supply, sewerage, waste management and remediation activities), H (Transportation and storage).

([191]) The category *financial sector* corresponds to the NACE sector K (Financial and insurance activities). In Cyprus financial sector assets were mostly those of the Cooperative Banking Group and the prevalence of this sector in the country is largely because of a lack of data for other PSHs.

([192]) Like asset figures, employment figures have been here weighted by the share of public ownership in the company.

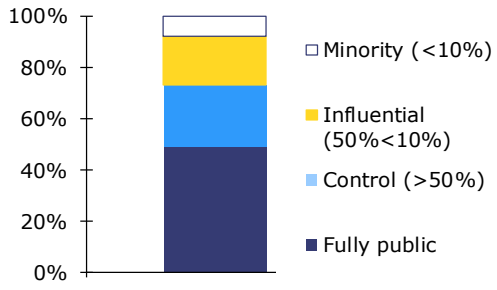
Graph V.2.1: **Number of Public Sector Holdings and value of their assets by Member State**



Note: Values for total stock of assets have been weighted by stake(s) owned by the public sector in PSHs.
Source: KPMG and Bocconi University calculations based on Orbis (BvD) database.

PSHs employees worked in Germany, largely in the national railway, and 850,000 worked in France, mainly in postal and electricity services. Despite higher labour costs, profitability and debt indicators of non-financial PSHs are quite close to the one of private peers (Graphs V.2.4 and V.2.5). On average EBITDA margins ([193]) and return on assets (ROA) for non-financial PSHs are slightly below those of private peers, although with large country variation (Graph V.2.5). Despite higher non-performing loans ratio, financial PSHs are slightly better capitalised and as profitable as private firms (Graph V.2.5). That divergence could arguably be the result of government bank support which would increase NPLs for a public bank but improve its capital level.

Graph V.2.2: **Ownership structure of EU PSHs**

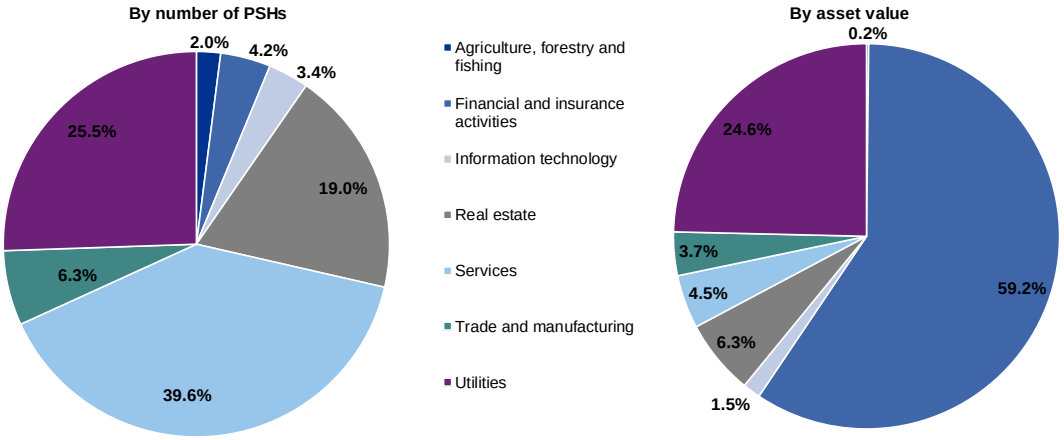


Source: KPMG and Bocconi University calculations based on Orbis (BvD) database.

PSHs' contribution to government revenue is around 0.4% of GDP on average in the EU in 2015. Companies' profits are usually distributed at least partially as dividends to stakeholders and, as such, they accrue to the government budget as non-tax revenue. Graph V.2.6 reports data on total income and profit of PSHs (from business accounts) and data on distributed income of corporations (from Eurostat national accounts). The graph shows that, overall, income flows in 2015 are positive, pointing to a positive performance of these companies during the year. On average, income of PSHs (calculated as net profits minus net losses) in the EU is 0.5% of GDP in 2015, while total profit is about 1% of GDP. Eurostat data show instead that PSHs' contribution to government revenue, through distributed income of corporations, amounts on average to 0.4% of GDP. The distributed income coming from Eurostat is indeed very close to the total income from the business accounts, and in some cases, like Slovenia or Austria, distributed income is even higher than total income. That puzzling figure reflects differences in the coverage and to a less extent in the valuation of the Eurostat database and the database used in the KPMG-Bocconi University study (see Annex for further explanation).

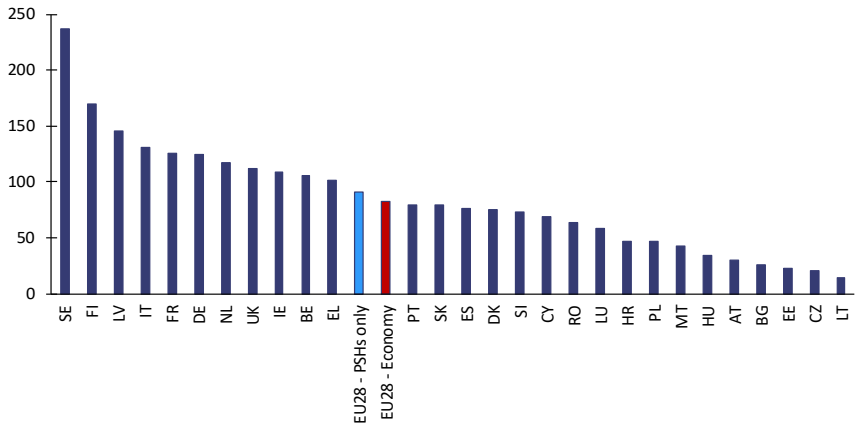
([193]) EBITDA stand here for Earnings before interest, tax, depreciation and amortisation.

Graph V.2.3: **Sectoral distribution of public financial assets**



Note: Assets are weighted by the share of the public stake.
Source: KPMG and Bocconi University calculation based on Orbis (BvD) database.

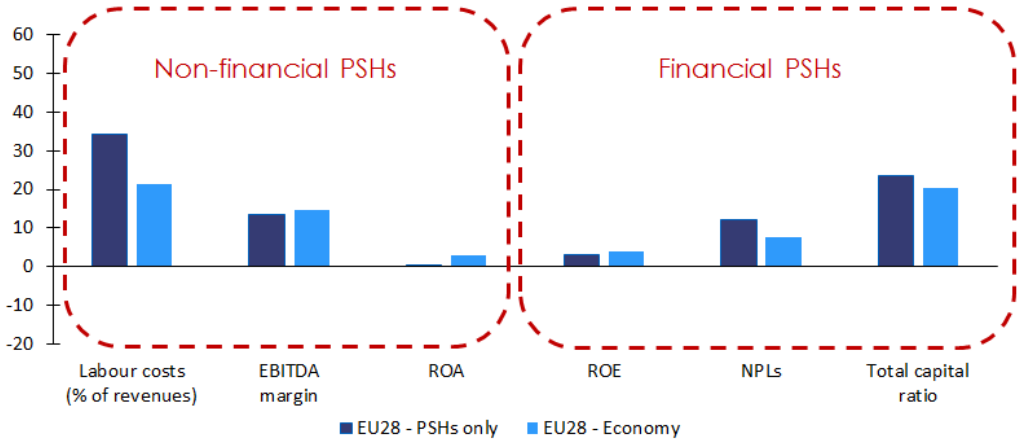
Graph V.2.4: **PSHs debt to equity ratio (non-financial PSHs, in %)**



Source: KPMG and Bocconi University calculations based on Orbis (BvD) database.

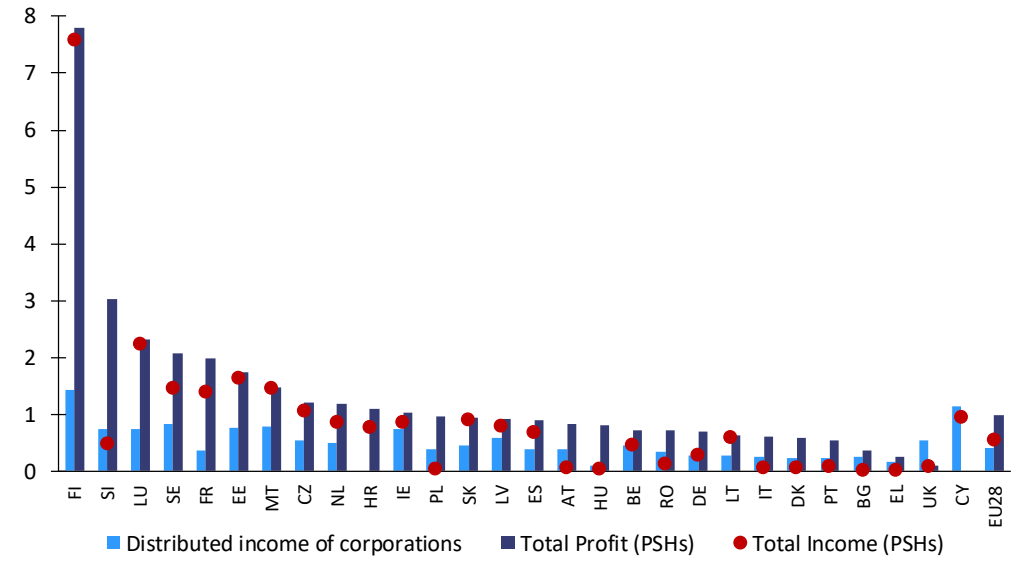
Hence, the comparison between the two sets of data should be handled with caution. While insightful, the information presented here on the distributed dividends accruing to the public sector points to only one direction of the flows between financial assets and the government balance. For a complete assessment, such analysis would require information on outlays from the government to PSHs, possibly in the form of transfers or subsidies. However, such information was not available.

Graph V.2.5: **Key performance indicators of non-financial and financial PSHs (in %)**



Source: KPMG and Bocconi University calculations based on Orbis (BvD) database.

Graph V.2.6: **PSHs' net income, profits and distributed income of corporations in 2015 (in %)**



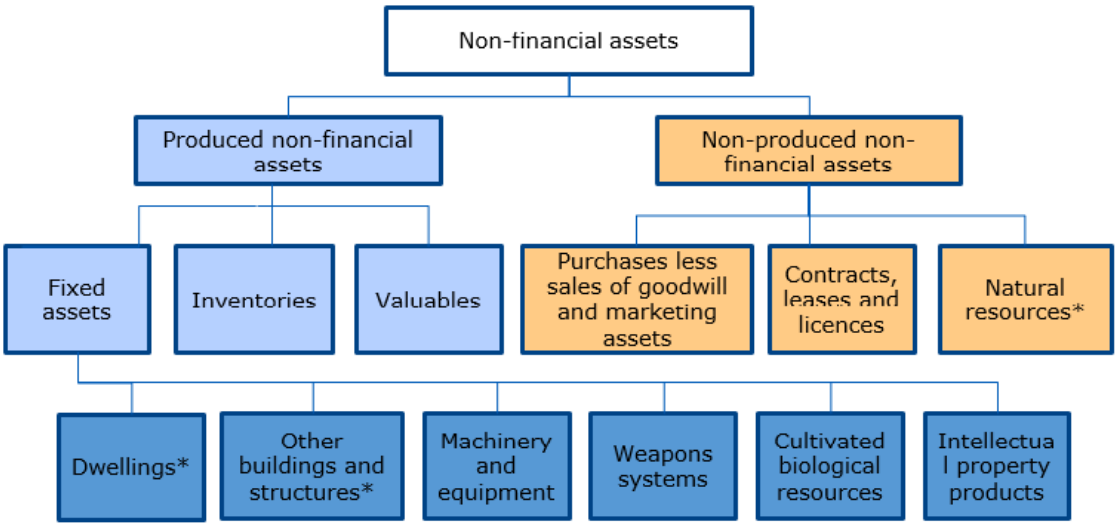
Source: KPMG and Bocconi University calculations based on Orbis (BvD) database.

3. NON-FINANCIAL ASSETS

Public non-financial assets encompass a large variety of asset categories. According to ESA 2010, non-financial assets are "non-financial items over which ownership rights are enforced by institutional units, individually or collectively, and from which economic benefits may be derived by their owners by holding, using or allowing others to use them over a period of time". ([194]) ESA 2010 classifies these assets into two categories: *produced* and *non-produced assets*. Produced assets include fixed assets, inventories and valuables. In turn, fixed assets include dwellings and other buildings and structures, machinery and equipment, weapons systems, cultivated biological resources and intellectual property products. Non-produced assets instead consist of natural resources, contracts, leases and licenses, and purchases less sales of goodwill and marketing assets (Graph V.3.1). Among produced non-financial assets, this analysis covers dwellings and other buildings, as well as airports, motorways, maritime ports and railways as a sub-set of "buildings and other structures". In terms of non-produced non-financial assets, it considers mineral and energy reserves and other natural resources, such as land, non-cultivated biological resources (e.g. fisheries and forests) and water resources (e.g. aquifers).

A large share of non-financial assets consists of roads and natural resources. Based on various estimation techniques (discussed in Chapter V.4.), EU public non-financial assets are estimated to be almost 71% of GDP (EUR 10,500 bn) in 2015. Those assets are quite substantial in France (85% of GDP, EUR 1.9 tn), Germany (56% of GDP, EUR 1.7 tn) and the UK (43% of GDP, EUR 1.1 tn). In terms of GDP, non-financial assets tend to be higher in the Member States in Central and Eastern Europe (CEE), particularly in Croatia and Bulgaria (around 240% of GDP) (Graph V.3.2). Looking at the different clusters, roads account for 34% of total non-financial assets, other natural resources account for 28%, and buildings other than dwellings account for 24% of

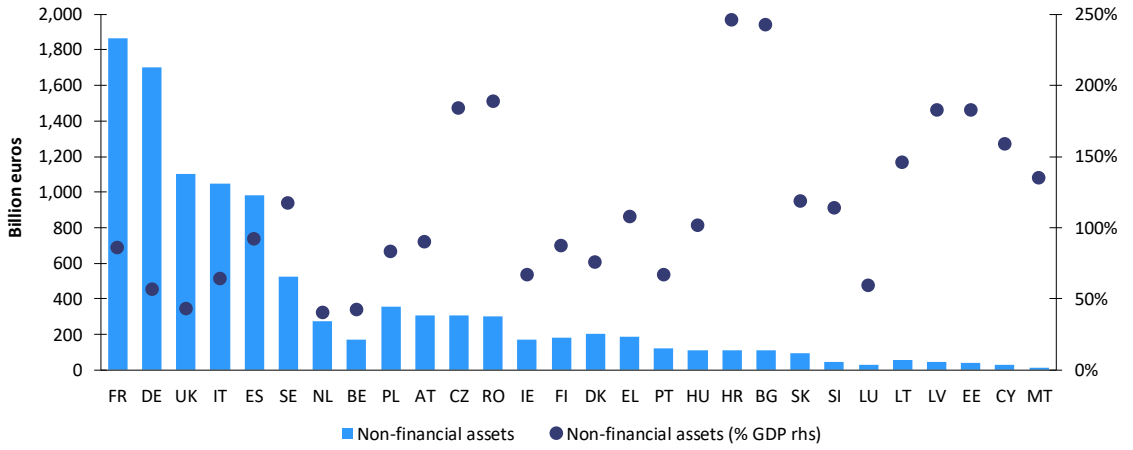
Graph V.3.1: **Clusters of non-financial assets**



Note: * refers to clusters that are covered in this part. Structures include roads, ports, airports, railways, which are covered in the study.
Source: ESA 2010.

([194]) European Commission (2013).

Graph V.3.2: **Non-financial assets in the EU**



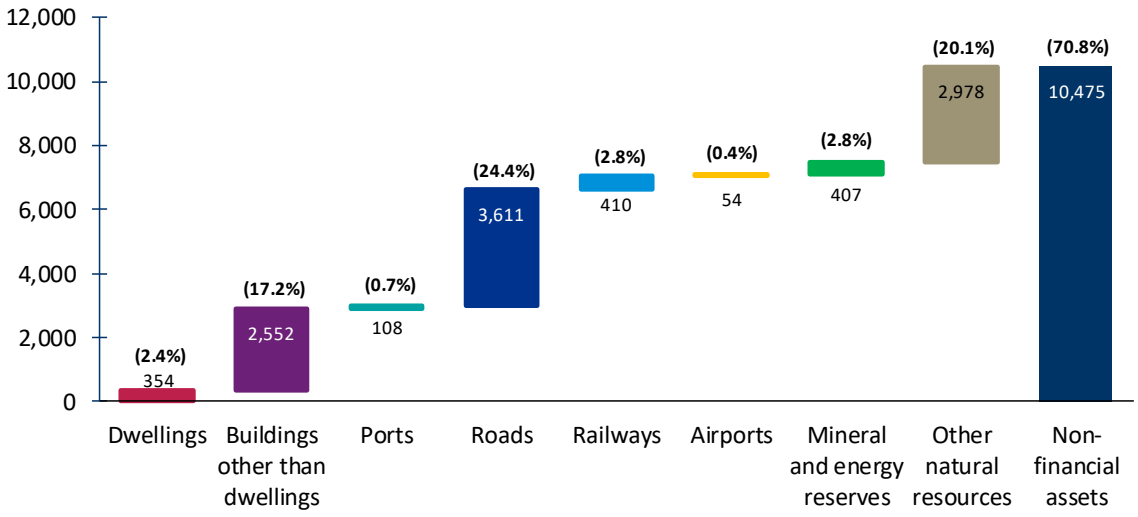
Source: KPMG and Bocconi University calculations.

the total. In contrast, the value of airports and maritime ports was much lower (Graph V.3.3). This result is affected by the fact that when some of these assets are owned and managed by PSHs, they have been classified as financial assets hence included in the analysis in Chapter V.2. ([195])

The composition of non-financial assets is broadly similar across Member States. Roads, other natural resources and buildings other than dwellings are the largest components of non-financial assets for most countries in 2015 (Graph V.3.4). Some differences emerge, however. For example, roads are quite important (relative to the total non-financial assets) in France, Germany, Estonia and Romania. Other natural resources are important in Austria, Ireland and Poland. Not surprisingly, mineral resources are quite relevant in the UK and the Netherlands. As regards buildings other than dwellings, they are quite significant in Malta and Luxembourg, while railways are significant in Slovakia and Latvia, whereas airports and maritime ports are in almost all cases a negligible component (less than 5% of total non-financial assets). Those data and comparisons should be treated with some caution as they rely in some cases on estimates. Indeed, an exact picture of those assets in most countries is not always observable.

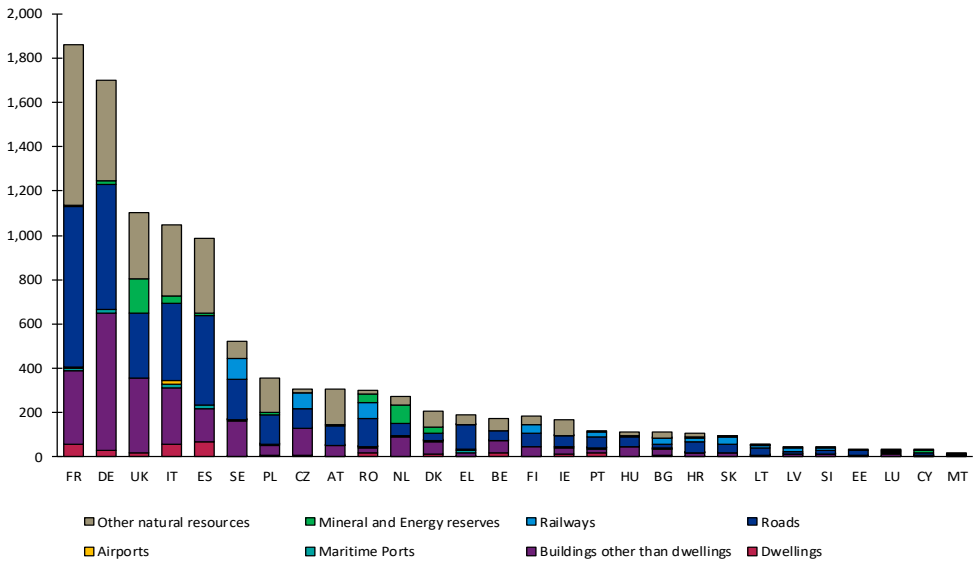
([195]) The consortium included in non-financial assets only those assets that are directly owned by the government. When railways, ports, airports, roads and mineral and energy reserves are owned by PSHs, then these are treated in the financial assets chapter. For more information see European Commission, 2018b.

Graph V.3.3: **Composition of non-financial assets (EUR bn)**



Source: KPMG and Bocconi University calculations.

Graph V.3.4: **Non-financial assets by cluster per EU Member State (in EUR bn)**



Source: KPMG and Bocconi University calculations.

4. DATA, METHODS AND SHORTCOMINGS

The financial assets database compiled for this study uses firms' data adjusted to avoid multiple control chains. Data on government equities have been retrieved primarily from the Orbis database (Bureau van Dijck), which represents the most comprehensive source of ownership and financial data for European firms. ([196]) For some counties, including Spain, Finland, Croatia, Denmark, Malta and Lithuania, data availability was found to be limited, and additional sources were used when possible. Alongside the share of government stakes in individual companies, the Orbis database provides a large variety of information ranging from profits and main activity, to value added and non-performing loans (NPLs). As part of this study, the consulting consortium retrieved data for more than 37,000 companies that have a stake belonging to any public sector entity included in general government. That exercise required some adjustment and filtering in order to avoid double counting in case of multiple control chains. Despite rigorous checks on the data, and consequent adjustments conducted by the consulting consortium, the sample of companies identified is not likely to be comprehensive. ([197]) First of all, ownership data for smaller firms are usually missing. Secondly, a small and negligible risk of double-counting related to multiple control chains remains. Comparability of the data could also be an issue as the companies retained in the sample are likely to follow different accounting standards (local GAAP versus IFRS). ([198])

Data on non-financial assets are scarce and heterogeneous. Only a few international databases provide these data: the OECD, Eurostat and the Governance Finance Statistics (GFS) of the IMF, albeit with some data gaps across time and countries (Bova et al., 2013). Hence, when feasible, the consortium complemented this information with data from national sources or from asset-specific sources (for example, the EU Building Stock Observatory for buildings). When data are not available in Eurostat or national sources, non-financial assets have been estimated.

The estimations for this study were done based on a variety of sources and proxies. In some cases, assets quantities and volumes were obtained from various alternative sources, e.g. data on roads and railways were taken from the Commission's Directorate-General Mobility and Transport (DG Move), data on mineral and gas reserves are from the CIA Factbook (Table V.4.1). In a number of cases, estimates were made based on the information available for other Member States. For example, the EU building stock observatory was used to obtain information on square meters of the total building stock (both private and public). The average ratio of publicly-owned buildings of countries with available data was applied to those countries with missing data to obtain the area of public buildings. When data on the stock of public land were missing from the Eurostat database, they were estimated taking into account the stock of other Member States and Eurostat data on land uses. ([199])

Different asset valuation methodologies were used for each cluster of assets. A specific asset method was proposed for each cluster as an attempt to enhance the accuracy of the process. Therefore, in addition to the more commonly proposed *perpetual inventory method* to measure public capital (OECD, 2009), the analysis included a market approach, as well as an income and multiplier methods. For dwellings and buildings, valuation was done according to the *market approach* method, whereby the volume was multiplied by the Eurostat price per square meter (Tables V.4.1 and V.4.2). The same method was used for mineral and gas reserves and other natural resources, using prices from Eurostat and financial markets. Valuation for ports followed a *multiplier method* which used information of recent port sales. In particular, the unit of port traffic of the sold port and the price of the sale were used to calculate a unit price for port traffic. That price was subsequently applied to the flow of traffic of other ports. Airports were valued using an *income*

([196]) Out of 41 million firms for the EU28, Orbis provides balance sheets data for 13 million and ownership data for nearly 15 million of them.

([197]) See methodological notes for Pillar 1 for an account on how double-counting was treated by the consultant.

([198]) The International Financial Reporting Standards (IFRS) used in about 110 countries and the Generally Accepted Accounting Principles (GAAP) used in the United States feature important differences, including among other things the methods for tracking inventory, the treatment of development costs and the valuation of intangible assets.

([199]) For more information regarding estimation and valuation techniques for those data, please consult the methodological notes of the study.

Table V.4.1: **Estimation of volumes and values of non-financial assets**

	Volume		Value		Adjustments	
	Item	Source	Item	Source	Item	Source
Dwellings	Public dwellings (sq m)	Eurostat/Entranze/EU Building Stock Observatory	Price	Eurostat		
Buildings	Public buildings (sq m)	Eurostat/Entranze	Price	Eurostat		
Ports	Port traffic	Eurostat	Price	Mergermarket database (from previous sale)		
Airports	Airport traffic	Eurostat	Concession fees	Financial statements of airport	Government default-free bonds	Market indicators
Roads	Km per type of road	DG Move	Cost per Km	DG Regio/EIB/ECA/WB Report	Country specific construction costs, road infrastructure investment & road life	Eurostat-OECD, DG Move, Canning 1998
Railways	Km	DG Move	Cost per Km	DG Regio/EIB/ECA	Country specific construction costs, investment & railway life	EEA/UNDP/Eurostat/OECD, DG Move, Canning 1998
Mineral and energy resources	Stock of proven reserves	CIA	Price BrentICE/Generic 1st Natural Gas	Market indicators		
Other natural resources	Land	Eurostat	Price	Eurostat		

EIB stands for European Investment Bank; ECA stands for European Court of Auditors; EEA stands for the European Environmental Agency; CIA stands for Central Intelligence Agency and WB stands for the World Bank.
Source: KPMG and Bocconi University.

method that multiplies concession fees (obtained from airport companies' financial statements) by airport traffic and calculates the underlying value of the entire asset by using a national discount rate. As regards the perpetual inventory method, the study provides an interesting example of its application based on various sources of data and information. Roads and railways have been valued using the *perpetual inventory method*. Data on the length of road and railway networks (in kilometres) from DG Move were multiplied by unit construction costs (calculated based inter alia on project cost information obtained from the Commission, the European Investment Bank and the European Court of Auditors). To adjust for investment and depreciation of the assets, the investment and average life of the network were obtained from several sources, including Eurostat and the OECD.

Table V.4.2: **Valuation methods per cluster of assets**

Dwellings	Market approach
Buildings	Market approach
Ports	Multiplier method
Airports	Income method
Roads	Perpetual inventory method
Railways	Perpetual inventory method
Mineral and energy resources	Market approach
Other natural resources	Market approach

Source: KPMG and Bocconi University.

5. CONCLUSIONS

This part of the PFR has presented a broad overview of a sample of public assets in Member States. Based on a novel dataset with firms' data on governments' equities and estimated data on selected non-financial assets, we have presented some facts on public assets in the Member States. The total value of the assets reviewed was estimated to amount to approximately 111% of EU GDP, with a large diversity across Member States. Within it, more than 60% is composed of non-financial assets and the rest is composed of financial assets in the form of public stakes. A large number of those stakes are in fully public, domestic and unlisted firms that are involved in the provision of public services and utilities, or that operate in the financial sector. In addition, publicly-owned firms contribute significantly to the economy in terms of revenue and value added and are large employers, with more than 4 million people employed across the EU. They also have a positive contribution to the public accounts through distributed profits, yet a complete picture about the way they impact the fiscal balance is not available. Compared with a fairly broad availability of data on financial assets (equities), data on non-financial assets remain very limited and, when missing, they have been estimated**.** Relying on different estimation techniques and valuation methods, non-financial assets in the EU have been estimated to be around 71% of EU GDP (EUR 10.5 tn). Within that figure, roads account for 34% of the total, natural resources account for 28%, and buildings other than dwellings for 24%.

Going forward, the wealth of information collected in this study opens up future avenues for research. For instance as mentioned in Box V.1.1 the relationship between public assets and flows (such as revenue and expenditure) could be better explored to find out how sensitive the fiscal balance is to changes in the assets. Once, this relationship is established and proven to be significant, monitoring these assets would help limit fiscal risks. Besides information on the dividends from company (here reported), this type of analysis would require information on revenue stemming from non-financial assets (rents or other income sources) and on expenditure outlays (subsidies and transfers) related to public assets. In addition, the study offers rich information on managerial practices, which deserves further attention, e.g. by analysing how these practices can better address efficiency and societal goals.

Notwithstanding its ambitious scope, the study presents a number of limitations. The coverage of financial assets is in fact not exhaustive as some data are missing while, because of data gaps, a large part of the non-financial asset stock is based on estimated rather than observed values. Furthermore, a comprehensive picture of public assets would require coverage of clusters that are not taken into consideration. These include, for example, loans and securities (for the financial assets), and machinery and equipment, and valuables (for non-financial assets). A robust comparable methodology for the valuation of financial and non-financial assets is missing. Companies' financial statements follow different accounting standards, which limits their comparability. More importantly, as most public equities are in unlisted firms, market valuation is not possible. The reporting of non-financial assets suffers from lack of data, for both asset volume and pricing. On these grounds, the evidence reported in this part should be considered as the result of a stock-taking exercise of an ongoing effort that aims at capturing a comprehensive picture of public assets.

Efforts to enhance transparency for public assets are warranted. Going forward, public registers with information on financial and non-financial assets that are based on commonly-agreed accounting standards and valuation methods could be developed with a view to improving transparency and accountability of public accounts. More transparency would better equip policy makers for predicting related changes in public finance flows (e.g. the deficit) and, more generally, in taming fiscal risks arising from these assets. By and large, more accountability on the type and use of these assets would allow policy makers to develop better ways to manage them, such as through the exchange of best practice.

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ANNEX

A1. PUBLIC ASSETS DATA AND COVERAGE COMPARISONS

Table V.A.1: **Public assets clusters in ESA (2010)**

Public Assets				
Financial assets				
AF.1	Monetary gold and special drawing rights			
AF.2	Currency and deposits			
AF.3	Debt securities			
AF.4	Loans			
AF.5	Equity and investment fund shares or units			
AF.6	Insurance, pension and standardised guarantee schemes			
AF.7	Financial derivaties and employees stock options			
AF.8	Other accounts receivable			
Non-financial assets				
AN.1	Produced assets			
	AN.11	Fixed assets		
		AN.111	Dwellings	
		AN.112	Other buildings and structures	
			AN.1121	other buildings
			AN.1122	Structures (airports, ports, railways and roads)
		AN.113	Machinery and equipment	
		AN.114	Weapons systems	
		AN.115	Cultivated biological resources	
		AN.117	Intellectual property products	
	AN.12	Inventories		
	AN.13	Valuables		
AN.2	Non-produced assets			
	AN.21	Natural resources		
		AN.211	Land	
		AN.212	Mineral and energy reserves	
		AN.213	Non-cultivated biological resources	
		AN.214	Water resources	
		AN.215	Other natural resources	
	AN.22	Contracts, leases and licenses		
	AN.23	Purchases less sales of goodwill and marketing assets		

Note: Shaded items in this table correspond to categories of assets for which data are reported by Eurostat.
Source: ESA (2010).

This annex illustrates main differences between public assets data reported in the study (referred to as ECFIN-KPMG) and those reported by Eurostat and the IMF. ([200]) As mentioned, for public financial assets the study examines public equities, which correspond to the balance sheet item "Equity and investment fund shares (AF.5)" of Eurostat. For the EU 2018 equities amounted to about 42% of the total stock of financial assets in 2015. In terms of non-financial assets, the study examines dwellings, other buildings, airports, ports, railways and roads, mineral and energy reserves and other natural resources. According to ESA 2010, dwellings and buildings other than dwellings correspond to "Dwellings (AN.111)" and "Other buildings (AN.1121)". The clusters airports, ports, railways and roads are included in "Structures (AN.1122)". Mineral and energy reserves correspond to "Mineral and energy reserves (AN.212)", while the cluster Other natural resources corresponds to all items included in "Natural resources (AN.21)", with the exception of "Mineral and energy reserves" (Table V.A.1). For

([200]) Data on public assets are published in the October 2018 IMF Fiscal Monitor (IMF 2018).

those countries with large availability of non-financial assets data, the selected non-financial assets amounted to about 85% of the total in 2015. ([201])

Table V.A.2: **Eurostat coverage of non-financial assets (2015)**

	Dwellings	Other buildings	Other structures	Mineral and energy reserves	Other natural resources
BE		x	x		
CZ	x	x	x	x	x
DK		x	x		
DE	x				x
EE	x	x	x		x
IE					
EL	x	x	x		
FR	x	x	x	x	x
IT	x	x	x		
CY		x	x		
LV	x	x	x		
LT	x	x	x		
LU	x	x	x		
HU	x				
MT	x				
NL	x	x	x	x	x
AT	x				x
PL	x	x	x		
PT	x	x	x		
RO	x				
SI	x	x	x		
SK	x	x	x		
FI	x	x	x		x
SE	x	x	x		x
UK	x	x	x		x

Source: Eurostat.

While Eurostat publishes data on equity for almost all Member States, the data availability for non-financial assets is limited. In the Eurostat database, data on equity are complete for all years between 2004 and 2016 for all Member States (except Greece). As regards non-financial assets, however, Eurostat reports a complete 2004-2016 series for the total (and its two sub-items, i.e. produced and non-produced assets) for only a handful of countries (CZ, FR, SE, UK). For other Member States, data are available only for some selected items (Table V.A.2). For example, for 2015 data on dwellings are available in all Member States but four (BE, DK, IE, CY). Data for other buildings and other structures are missing in six countries (DE, IE, HU, MT, AT, RO). Finally, data for mineral and energy reserves are available only for few Member States (CZ, FR, NL), while for other natural resources they are available in nine countries (CZ, DE, EE, FR, NL, AT, FI, SE, UK).

A relevant question is how much the Eurostat data, when available, match the ECFIN-KPMG study data. Looking at equities, the discrepancy between Eurostat data and the data reported in the study is quite large. The discrepancy is due to both coverage and valuation issues. While the coverage of equities in Eurostat exclusively encompasses those owned by the general government, excluding equities owned by public corporations classified outside the general government, the analysis of the study also accounts for indirect shares, namely those that the general government holds through other (mostly

([201]) The average has been here calculated for CZ, FI, FR, LV, SE and UK.

public) companies with public shares, including promotional banks (KFW, Caisse de dépôts et consignations, etc.). As explained in the study, in case of indirect ownership through promotional banks, when the latter are fully publicly-owned, then all the PSHs with their stakes would be included in the sample but the promotional banks would be excluded to avoid double counting. When the promotional bank is not fully-owned then it would remain in the sample. As regards valuation, ESA 2010 requires data to be expressed in market value, although when a market value is not available nominal value can also be considered. It could be the case for example for those unlisted companies included in the sample. As the business accounts follow different accounting standards, the valuation methods used in the ECFIN-KPMG study are various and do not necessarily match those used by Eurostat. ([202])

As regards non-financial assets, the study uses Eurostat data for dwellings, other buildings and natural resources for almost all Member States (Graph V.A.1). In few cases, the data do not match, as at the time data were retrieved, Eurostat data were not available. This is the case for dwellings for Romania and Malta, where the study reports assets that are by 9% and 19% of GDP, respectively, higher than Eurostat data. That discrepancy could be explained by the fact that in its calculation for dwellings (and buildings) Eurostat nets out the value of constructed land. Similarly, other buildings in the study are smaller than Eurostat by 23% of GDP for Slovakia; while natural resources are larger than Eurostat by 28% of GDP for Austria. ([203]) As expected, the sum of the four selected structures -airports, railways, roads and ports- does not match the category other structures in Eurostat. Data on mineral and energy reserves are available only for three Member States in the Eurostat database (FR, NL, CZ). For France and the Netherlands the values between the two data sources are comparable (0.2% of GDP in ECFIN-KPMG against 0.03% of GDP in Eurostat for France, and 12.6% of GDP against 15% of GDP for the Netherlands), but not for the Czech Republic possibly because the study uses CIA data for the stock of reserves while Eurostat uses data submitted by national governments.

The IMF 2018 Fiscal Monitor reports balance sheets data for the public sector of some Member States (AT, DE, FI, FR, PT, UK). ([204]) On the asset side, the IMF reports the aggregate for financial assets, which presents larger values than those provided by Eurostat as the IMF covers the public sector and not only the general government. No information is provided on equity amounts. As regards non-financial assets, the IMF study only provides a disaggregation for natural resources, which exclude land and include mineral and energy reserves, hence they are more comparable with data on mineral and energy reserves. For example, data for France in 2015 are quite comparable between the IMF and Eurostat (0.02% of GDP against 0.03% of GDP), but are higher in the ECFIN-KPMG study. For Germany, the UK and Austria the data reported by the IMF are close to those from the ECFIN-KPMG study. Finally, the remaining non-financial assets data (hence net of natural resources) are not directly comparable as the KPMG-ECFIN study does not present the total. However, it is important to underline that part of the fixed assets stock in the IMF study has been estimated based on the IMF capital stock and investment database (IMF 2017), which arguably would not be part of the ECFIN-KPMG study which mostly relies on Eurostat data where available. ([205])

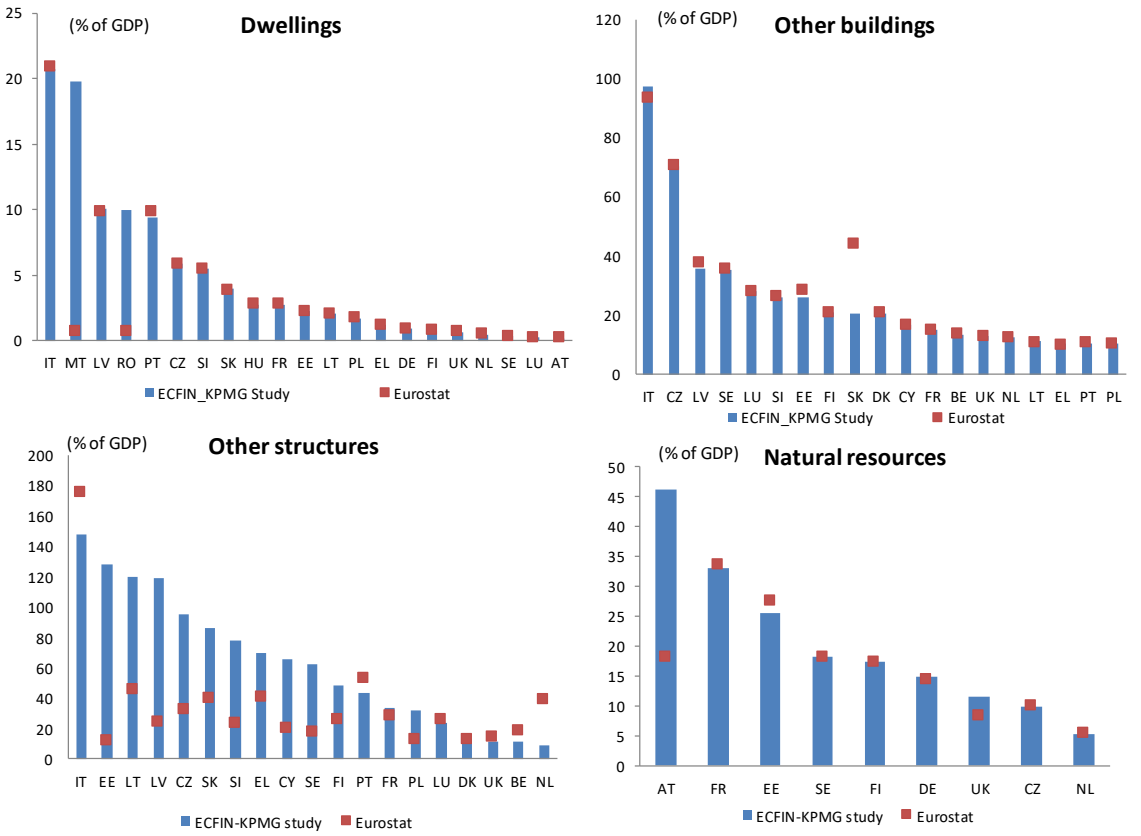
([202]) Regarding valuation of financial assets the study indicates the following: "the data reported in the financial statements (of the companies) originate from several different valuation techniques but to report and account for these differences was not possible". See more in the methodology annex at: https://ec.europa.eu/info/sites/info/files/economy-finance/dg_ecfin_am_final_report_pillar_1_methodological_notes_0.pdf

([203]) For Slovakia, data were estimated based on information from national data on building renovation complemented with data from the Buildings Performance Institute Europe (BPIE) and valued at Eurostat's prices. For Austria, the natural resource data estimated covers mostly land, for which the stock of land owned by the government has been calculated using the average EU public land (over total land) and the Eurostat price for agricultural land.

([204]) For almost all Member States it reports data for the general government on financial assets and non-financial assets net of natural resources.

([205]) For a more comprehensive comparison with IMF data see European Commission (2019).

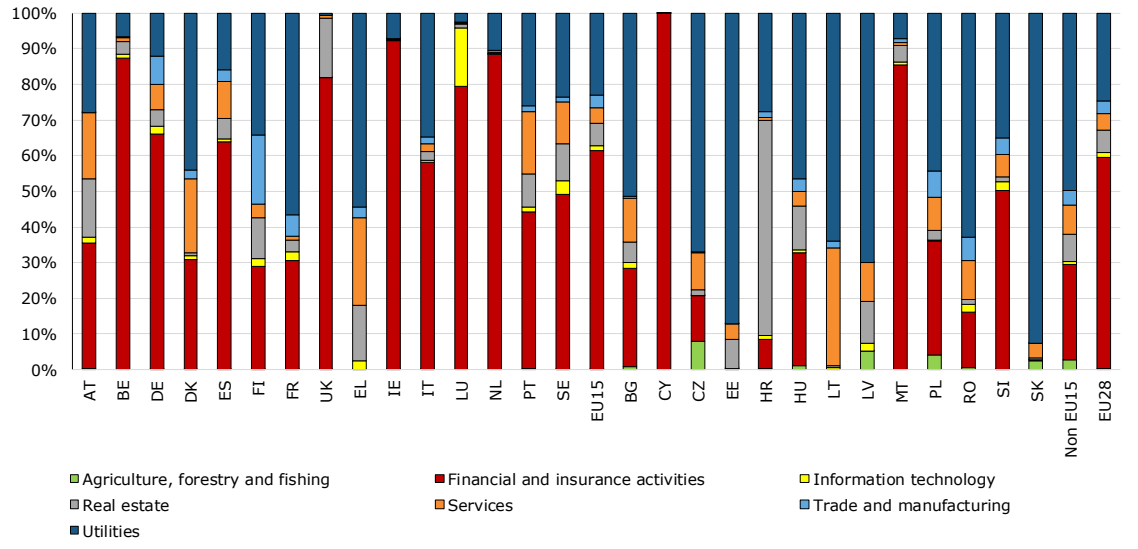
Graph V.A.1: **Selected public non-financial assets (2015)**



Source: ECFIN-KPMG Study and Eurostat.

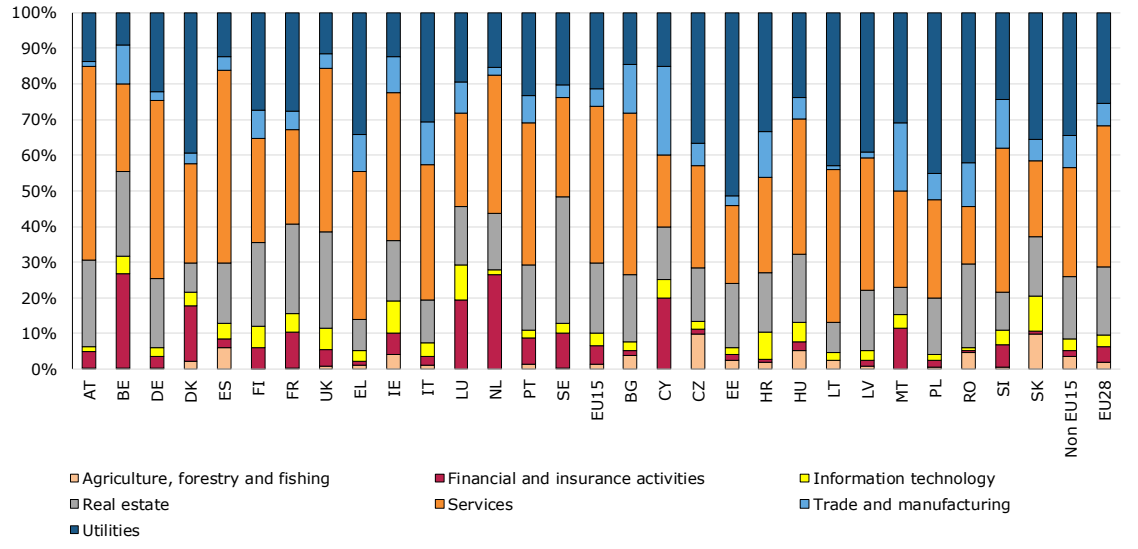
A.2. SECTORAL DISTRIBUTION OF PSHs

Graph V.A.3: **Distribution of PSHs by sector (by assets) 2015, weighted**



Source: KPMG and Bocconi University calculations based on orbis (BvD) database.

Graph V.A.2: **Distribution of PSHs by sector (by number of PSHs) 2015**



Source: KPMG and Bocconi University calculations based on Orbis (BvD) database.

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