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])

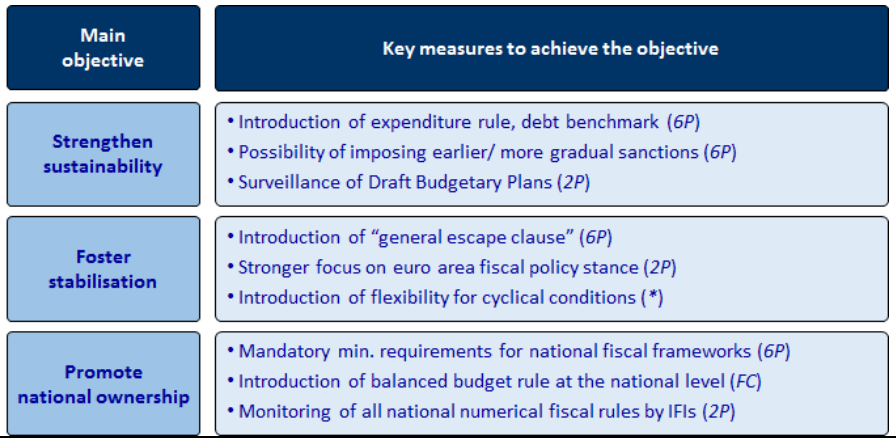
Insights from the initial years of the European Economic and Monetary Union (EMU) and the experiences of the Great Recession revealed some shortcomings of the architecture. ([102]) We describe in the following the key improvements in the fiscal area (Graph IV.1.1), although the governance framework was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

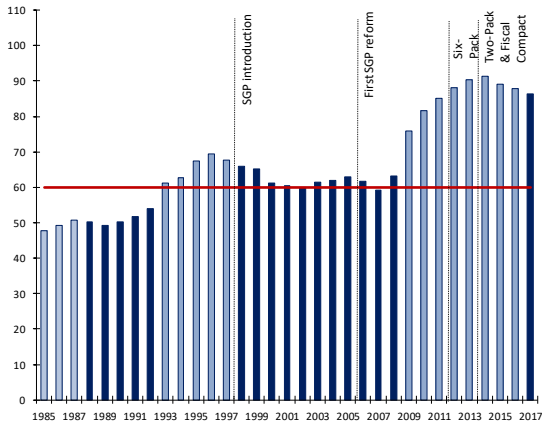
([113]) The reference values were defined in the Protocol on the EDP annexed to the Maastricht Treaty.

([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)**



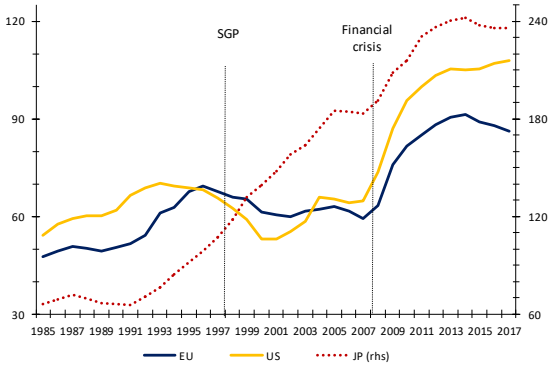
Note: EU corresponds to EU15, i.e. those fifteen countries that were members of the EU in 1995. Dark (light) blue bars indicate periods of good (bad) economic times, as measured by positive (negative) output gaps.
Source: Commission 2018 spring forecast.

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).

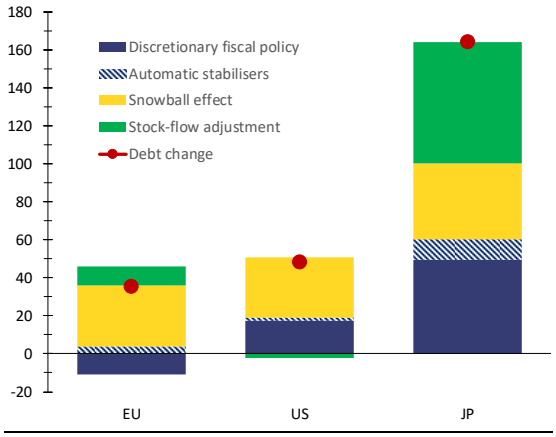
Different factors are at play driving the public debt surge in the EU, US and Japan over the last three decades (Graph IV.2.3 and Table IV.A.1 in Annex):

- **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

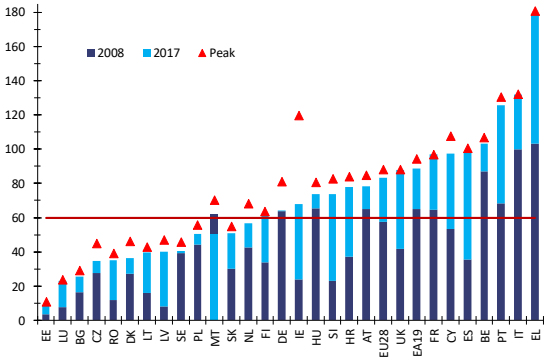
([119]) For a recent assessment of the functioning of automatic stabilisers see European Commission (2017).

([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)**

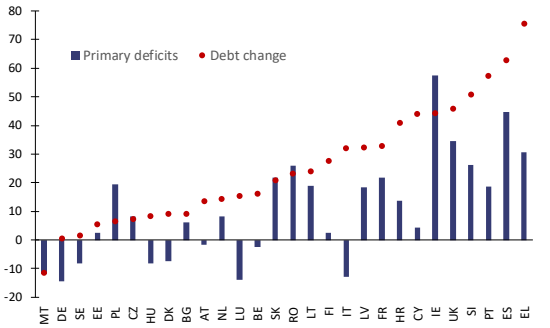


Source: Commission 2018 spring forecast.

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.

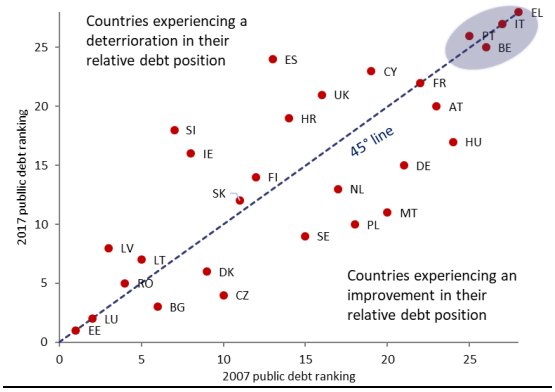
Divergent public debt dynamics during the Great Recession also reflected significant differences in economic conditions across Member States. In general, the weakness in economic activity affected primary deficits, snowball effects and stock-flow adjustments. ([123]) However, some Member States benefitted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

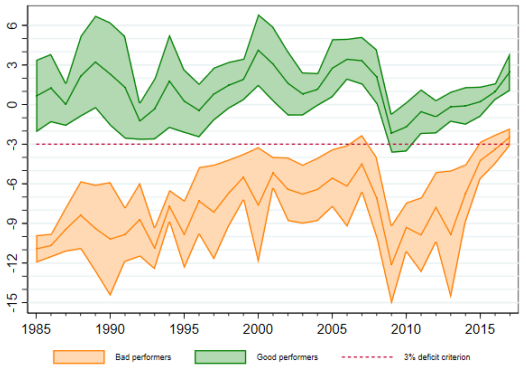
2.4. HAVE EU FISCAL RULES BEEN ASSOCIATED WITH IMPROVED FISCAL POLICY ORIENTATION IN THE EU?

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

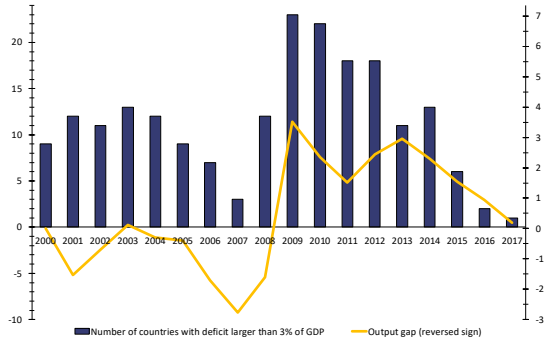
([124]) In contrast, stock flow adjustment contributed to a decline in the debt ratio in Poland, Czech Republic, Slovakia and, in particular, Greece reflecting significant privatisation receipts.

([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**

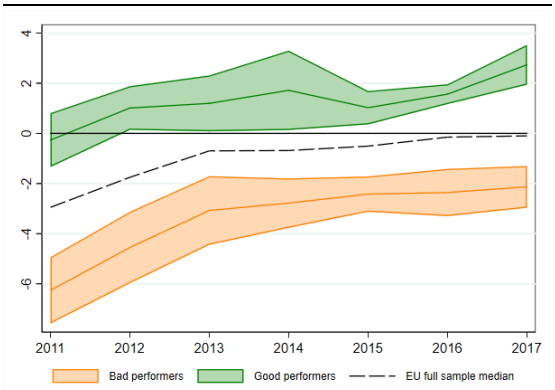


Source: Commission services' calculations based on Commission 2018 spring forecast.

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.

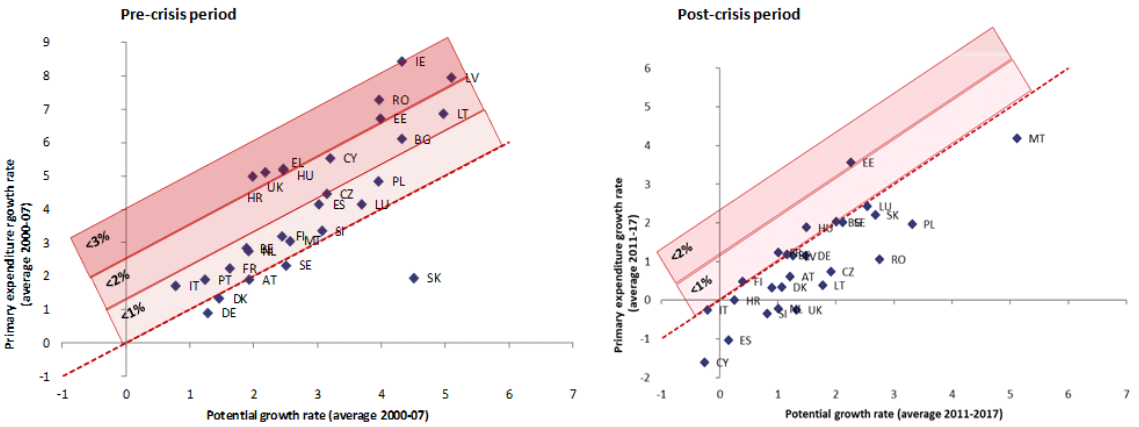
It should also be noted that the recent improvement of the average position to MTO is more the fact of those countries close to their MTO or who have already overreached their MTO, than those more distant to it. For that latter group, the convergence to MTO seems to have come to a halt as of 2015.

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**



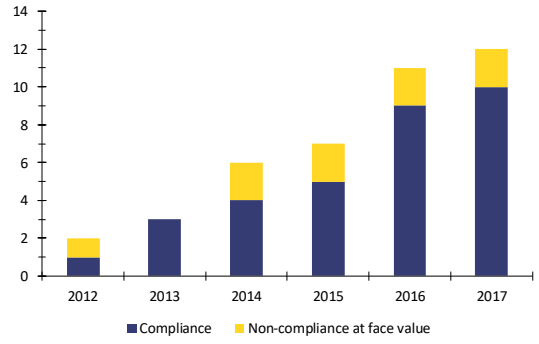
Note: The chart shows total expenditure growth netted out of interest. As the 2008-2010 period triggered exceptionally strong expenditure swings also related to the financial crisis, we compare the situation after the introduction of the expenditure benchmark criteria in 2011 with the pre-crisis period 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.

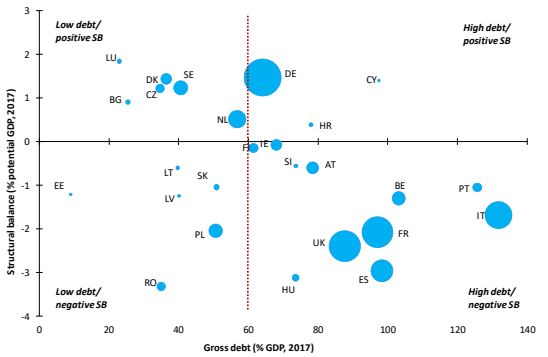
While an increasing number of Member States comply with the debt reduction benchmark, a few Member States still do not comply at face value. As most Member States exited the deficit-based EDP opened following the Great Recession, those with a public debt higher than 60% of GDP became subject to the debt 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)

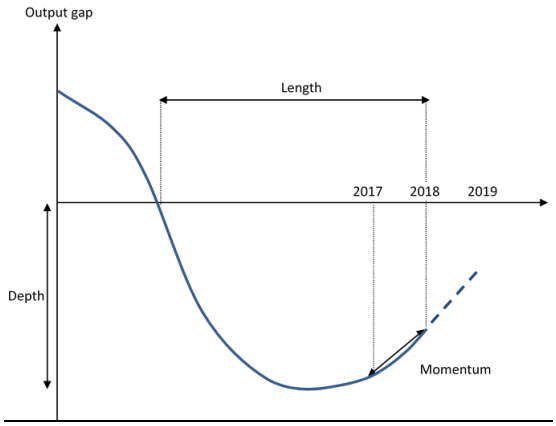
Source: Commission Services

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.

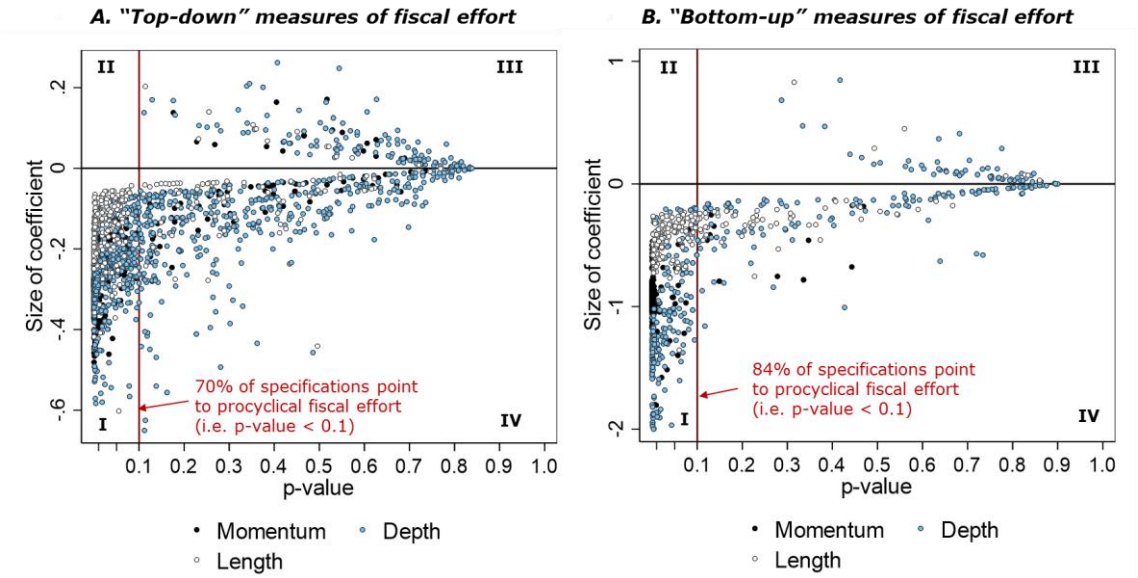
with the previous specification and the main results are robust to changes to the set of independent variables (columns 1-4), estimation techniques (5-7) and datasets (columns 8-9).

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

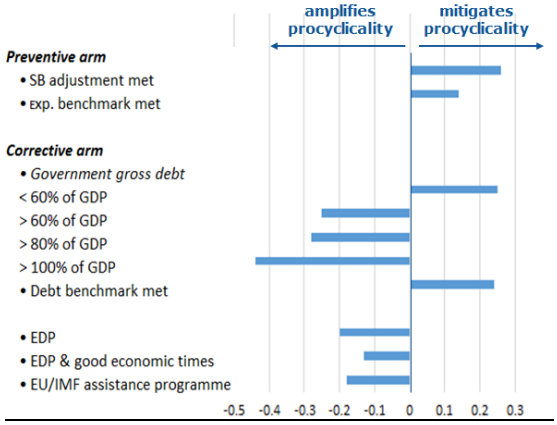
Note: The findings are based on estimations of the interaction model from equation (3) based on a sample of 28 EU countries covering the period 2000-18 using real-time data from Commission autumn forecast reports. Total number of observations amounts to 373. All estimations include the set of independent 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

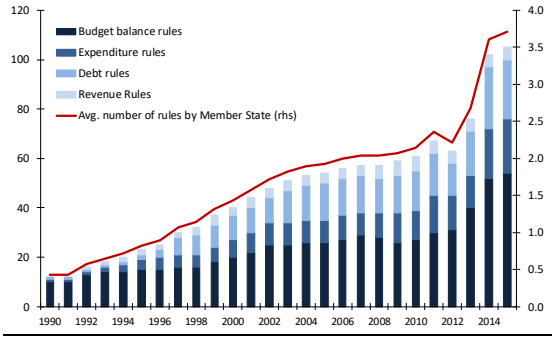
This Section describes the main features of national fiscal frameworks in the EU, focusing on national fiscal rules, IFIs and MTBFs. The data on national fiscal frameworks comes from the Commission's Fiscal Governance Database maintained by DG ECFIN. This is based on annual inputs provided by Member 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**

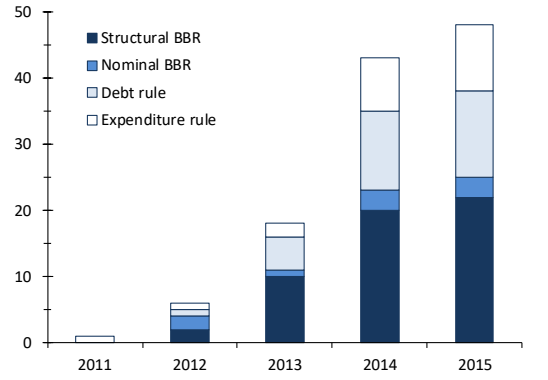
Note: The total number of rules is lower than the sum of sub-totals by either sector or type. That is because a few rules that cover two sectors would be counted twice in the sub-totals by either sector or type, whereas they are counted only once in the overall total.
Source: 2015 vintage of Commission's 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

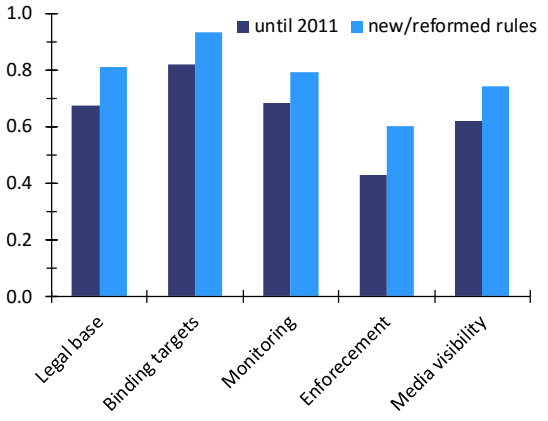
Graph IV.4.2: **Rules for the general government sector in the EU, either new or reformed**



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

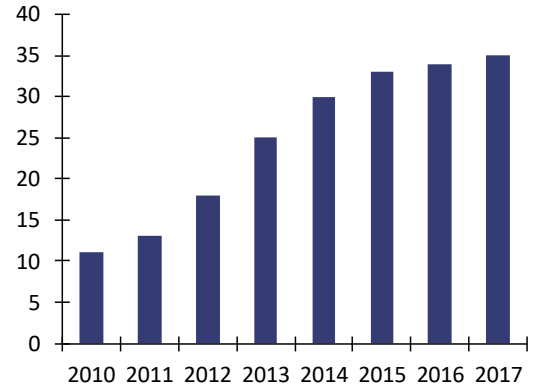
While the merits of strong IFIs have long been documented in the academic literature, it was only after the impetus given by the recent EU fiscal governance initiatives that the number of IFIs in the EU started to noticeably increase. ([171]) "Fiscal watchdogs" can increase accountability and fiscal 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".

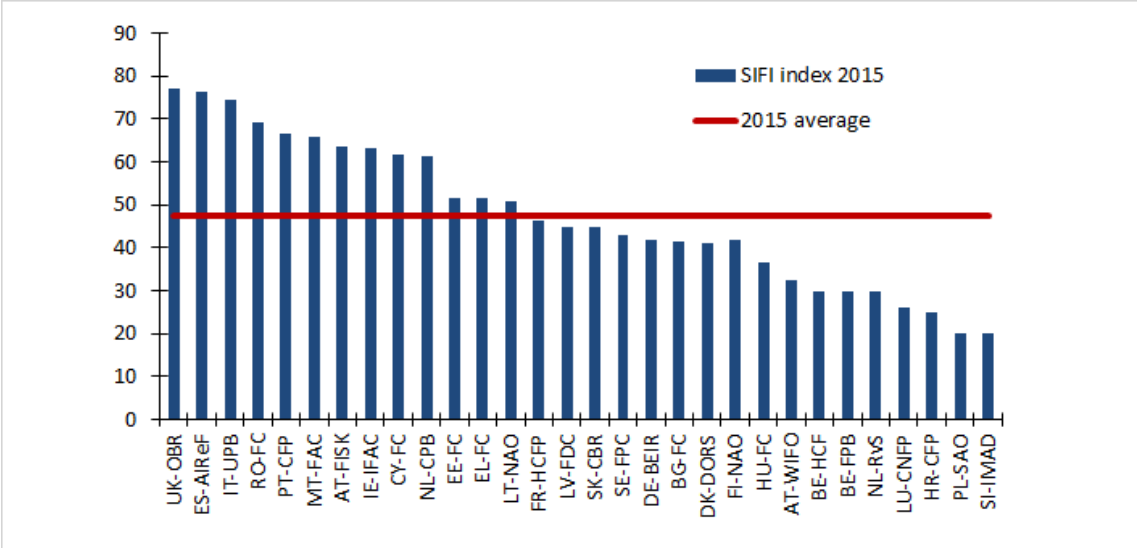
Graph IV.4.4: **Number of IFIs in the EU**



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).

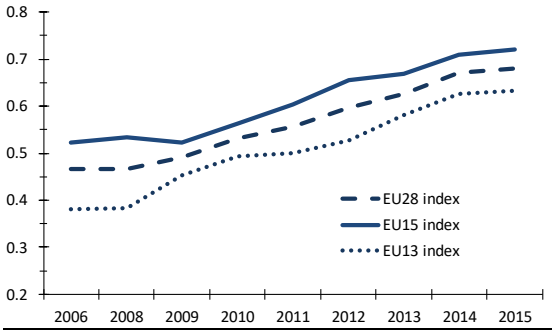
4.2.3. Medium-term budgetary frameworks

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])

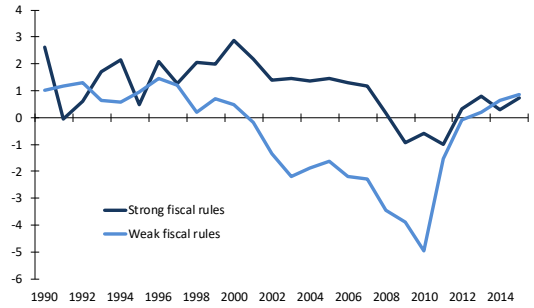
([175]) The SIFI index measuring the mandate of IFIs has been calculated only since 2015.

([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.

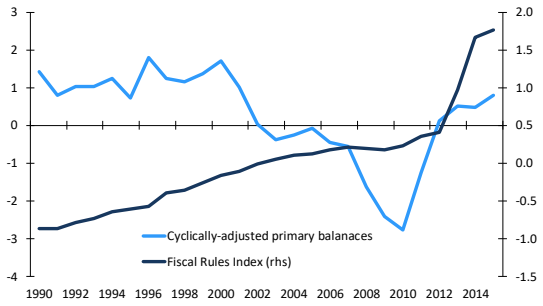
Graph IV.4.7: **Evolution of cyclically-adjusted primary balances for Member States with weak and strong NFRs**



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

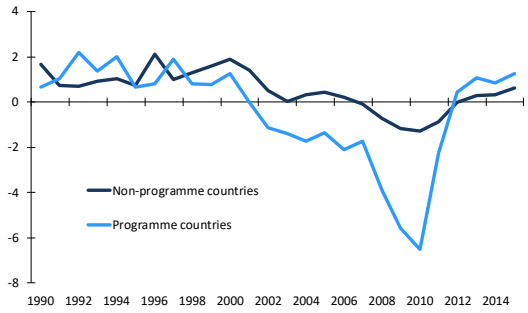
Graph IV.4.8: **Fiscal Rule Index and cyclically-adjusted primary balance (1990-2015, in % of GDP)**



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)**



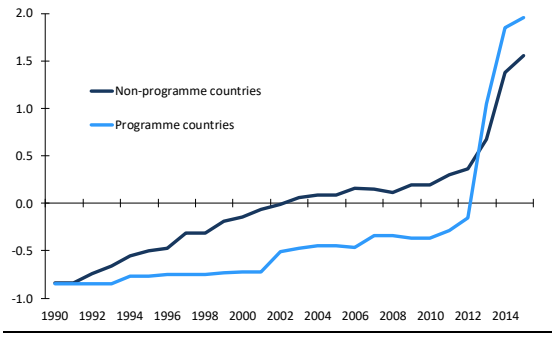
Note: The eight so-called "programme countries" that received financial assistance through macroeconomic or financial adjustment programmes are: Cyprus, Greece, Hungary, Ireland, Latvia, Portugal, Romania and Spain. The CAPB is expressed in % of potential GDP.
Source: Commission 2017 spring forecast 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

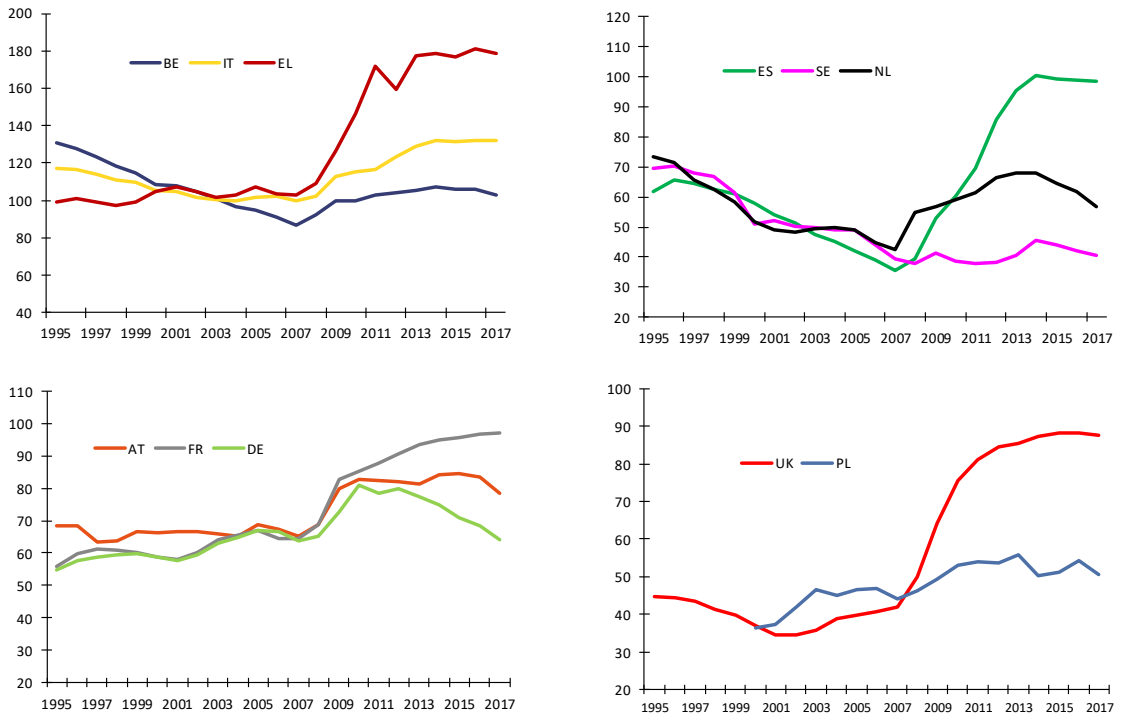
Table IV.A.1: **Contributions to change in public debt in the EU, the US and Japan over the last three decades (pp. of GDP)**

	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.

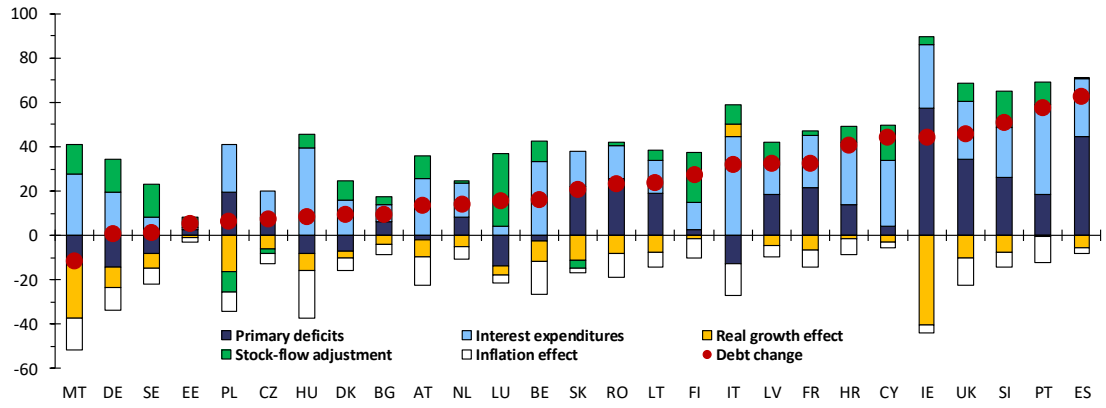
Source: Commission services' calculations based on Commission 2018 autumn forecast, OECD and IMF data.

Graph IV.A.1: **Debt developments for selected Member States**



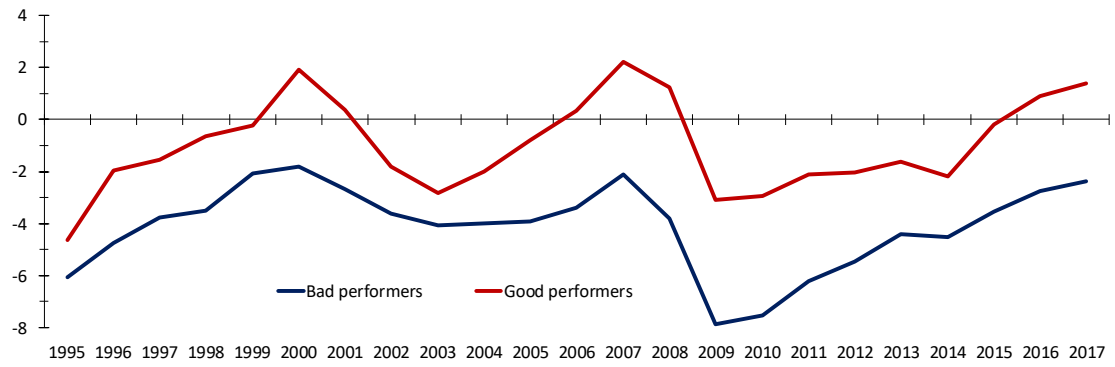
Source: Commission services' calculations based on Commission 2018 spring forecast.

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)**

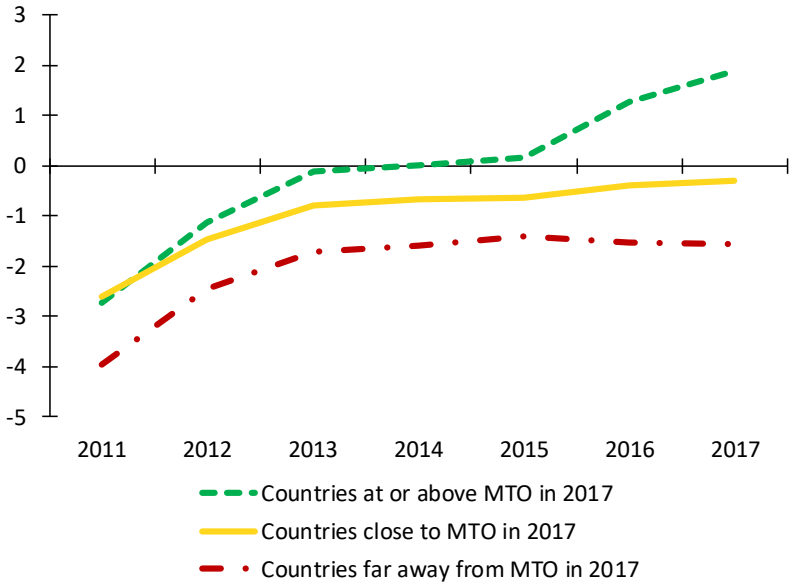


Note: Fixed composition over time for "bad performers", and "good performers" lead to similar results. "Bad performers": ES, FR, IT, HU, PL, PT, UK. "Good performers": DE, CY, LU, NL, SE.
Source: Commission services' calculations based on Commission 2018 spring forecast.

Graph IV.A.4: **Cyclically-adjusted balances (% of potential GDP)**

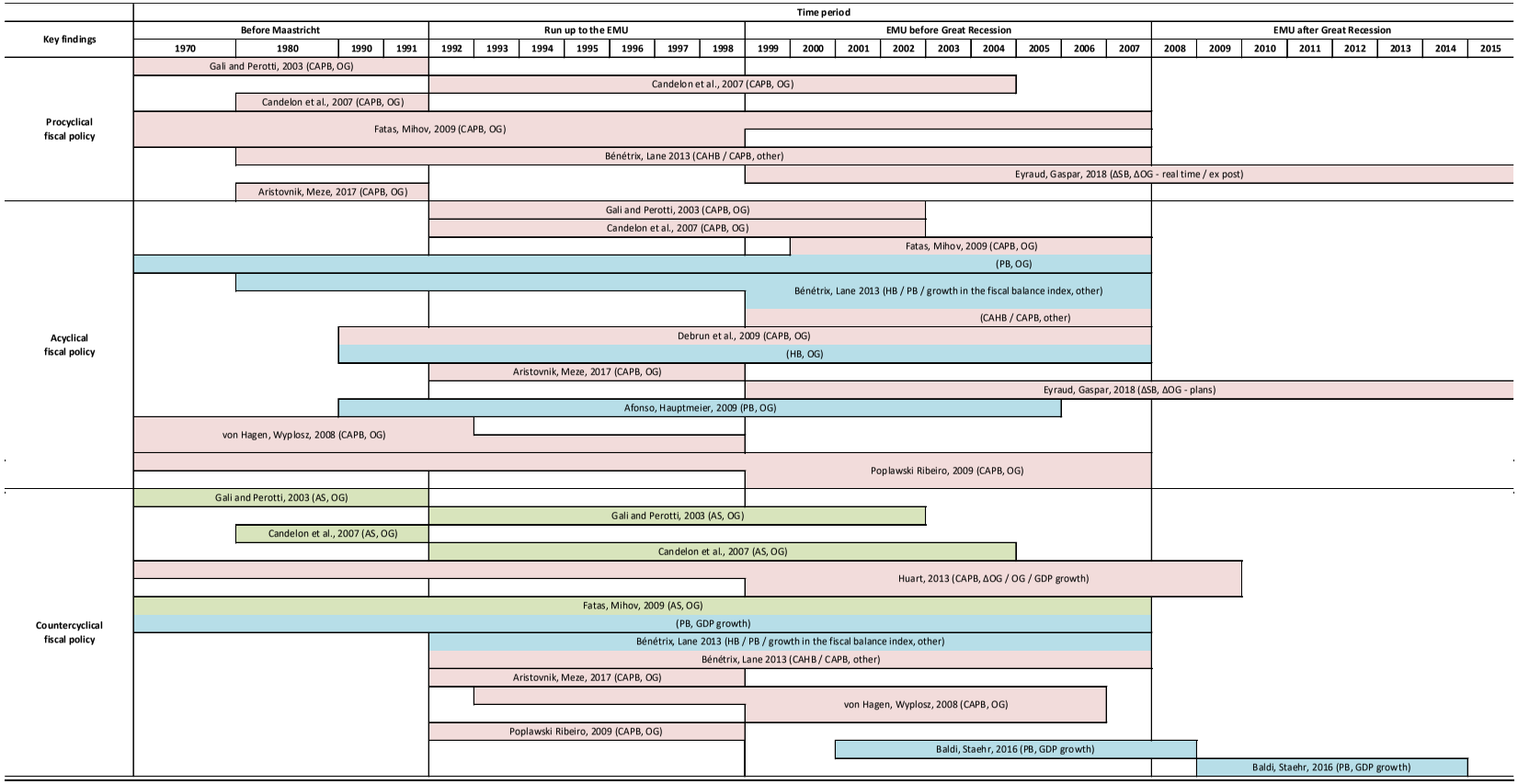
Note: Cyclically-adjusted balances (UBLGAP). Compared with the Structural Balances (UBLGAPS) considered by the fiscal surveillance process of the EU, one-off measures are not excluded. The definition of the latter has evolved over time, which makes comparison with structural balances before 2010 more 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).