
Uniting European Fiscal Rules: How to Strengthen the Fiscal Framework

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Working Paper 04/2018^{*)}

September, 2018

^{*)} Working papers reflect the personal views of the authors and not necessarily those of the German Council of Economic Experts.

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September 12, 2018

Abstract

The current European fiscal framework is highly complex. The multitude of fiscal rules and the discretion in their enforcement precludes an effective oversight and weakens the effectiveness of fiscal rules substantially. Against this background, we present a proposal for a careful refocusing of the framework to promote fiscal sustainability. The proposal is centered around an expenditure rule as an annual operational target supplemented by a debt-correction factor and a multi-purpose adjustment account which implements a medium-term structural balance rule. Together with a significant reduction in exemptions and escape clauses as well as less discretion in the imposition of sanctions, the proposal increases transparency and efficacy of fiscal rules at the European level.

JEL classification: H50; H60; E62

Keywords: Expenditure rule; Fiscal rules; Public finance; European fiscal framework

Acknowledgements: This article reflects the personal views of the authors and not necessarily those of the German Council of Economic Experts. We would like to thank the members and scientific staff of the German Council of Economic Experts, as well as Martin Larch, Astrid Lemmer, Gilles Mourre, participants of the workshops at the Deutsche Bundesbank, the Federal Ministry of Finance as well as the Federal Ministry of Economic Affairs and Energy for their valuable comments and helpful discussions. Leonie Bossemeyer and Felix Köhler provided excellent research assistance.

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1 Introduction

The public debt to GDP ratios of European as well as many highly industrialised countries have increased substantially since the 1970s. The politico-economic incentives in the budgetary decision making process underlying this long-run trend are well understood and have been studied extensively.¹ Different kinds of strategies and institutional innovations have been implemented to address such a deficit bias. Among others, these involved the introduction of fiscal rules at all government tiers; the subnational, national as well as supranational level. While empirical studies document that fiscal rules are conducive to improved budget balances, this effect may not be sufficient in size or robustness to confine the bias towards increasing debt ratios sustainably.² However, this is not due to an inherent weakness of a rules-based approach, but rather due to poor implementation, narrowing the efficacy of fiscal rules.

This holds true especially at the European level, where the fiscal framework has been extended substantially with more rules, while existing rules have become increasingly complicated. In particular, this is due to the consideration of cyclically adjusted figures and the introduction of a multitude of flexibility and escape clauses. Ultimately, this has reduced the transparency of the framework substantially. As a result, the technical handbook of the European Commission, the Vade Mecum on the Stability and Growth Pact (SGP), needs more than 200 pages to document and explain the application of the rules (European Commission, 2018). This precludes an effective oversight by the public and the media, which is essential to maximise the constraining effect of rules.³

Against this background, a reform of the European fiscal rules framework ranks high on the political agenda. The need for a simplification of the framework has been stressed by Manasse (2014), the European Fiscal Board (2017), Deutsche Bundesbank (2017), the German Council of Economic Experts (2017), Debrun et al. (2018), and Eyraud et al. (2018), among others. In this context, expenditure rules have gained a lot of attention.⁴ In many of the recent proposals, the current system is proposed to be replaced by an expenditure rule, sometimes supplemented by a debt-reduction target. In this paper, we introduce a refocused fiscal framework at the European level adding to the series of

¹ For a survey, see Debrun et al. (2008), Wyplosz (2012) or Feld (2018).

² The empirical literature is summarised, e.g., in Burret and Feld (2014). In larger country groups, e.g., for 74 countries worldwide (Badinger and Reuter, 2015, 2017) or the member states of the European Union (Debrun et al., 2008; Nerlich and Reuter, 2013), as well as on subnational levels, e.g., for Swiss cantons and municipalities (Feld and Kirchgässner, 2001; Feld and Kirchgässner, 2008; Pfeil and Feld, 2016; Burret and Feld, 2018a,b), Italian municipalities (Grembi et al., 2016), or for German municipalities (Christofzik and Kessing, 2018), a negative effect on public deficits or debt has been observed. However, research is still ongoing. Heinemann et al. (2018) provide a meta study and point out that it is difficult to properly identify the causal effects of fiscal rules. Therefore, results might be biased if endogeneity is not successfully accounted for.

³ For example, Hopland (2014) shows that providing voters with information on non-compliance improves the performance of fiscal rules.

⁴ In a general context, expenditure rules have been studied by Hauptmeier et al. (2011), Holm-Hadulla et al. (2012), Ayuso-i-Casals (2012), Caselli et al. (2018), among others.

recent contributions, e.g., by Andrle et al. (2015), Claeys et al. (2016), Bénassy-Quéré et al. (2018), and the French Council of Economic Analysis (Darvas et al., 2018).

In contrast to the other proposals, we stress the importance of keeping the structural balanced budget rule as a medium-term rule. Our proposal, therefore, combines a long-term debt limit with the obligation to avoid structural deficits in the medium-term and operationalises these goals by an annual growth ceiling on nominal expenditure. A further simplification of the framework is achieved by limiting the number of exceptions and escape clauses substantially. Together with improved enforcement and monitoring, this should increase political costs of non-compliance leading to stronger fiscal rules.

The remainder of the paper is organised as follows: Section 2 presents problems of the current framework with respect to forecasts and revisions, procyclicality, and exemptions. In Section 3, we propose elements of a reformed framework which addresses the shortcomings analysed before. Section 4 concludes.

2 Problems of the current framework

Fiscal rules were first introduced at the European level with the ratification of the Treaty of Maastricht in 1992 (European Communities 1992, 92/C 191/01, Treaty on European Union). At this time, two rules were supposed to confine the debt bias and to support fiscal sustainability; the three percent deficit rule and the 60 percent debt to GDP ratio. In 1997, these rules were embedded into the newly established SGP with its provisions for monitoring and the correction of excessive deficits through its corrective arm. Since its introduction, however, the SGP has been substantially augmented with new rules and competencies via several major reforms.

These reforms involved the switch to cyclically adjusted budget figures in 2005 and the introduction of medium-term budgetary objectives (European Union 2005, Council Regulation 1055/2005). Reforms in 2011 intended to strengthen policy coordination at the European level in light of the financial crisis and introduced an expenditure rule together with the requirement for a debt reduction by one twentieth in the corrective arm of the SGP (European Union 2011, Regulation 1175/2011 & 1177/2011). The Fiscal Compact obliged ratifying member states in 2013 to introduce structural budget balance rules at the national level matching the provisions of the SGP and to strengthen the monitoring of fiscal policy via national fiscal councils which were initially introduced by the six-pack reforms in 2011 (Council Directive 2011/85/EU).

While the intention of these reforms was to increase the efficacy of the SGP, they triggered a strong increase in complexity and flexibility in implementation, hence, effectively counteracting its initial motivation. The multitude of coexisting rules which were not necessarily enforced to the same degree and the continuous addition of exemptions to the SGP resulted in a very low level of transparency, which in turn effectively precludes tractability and oversight by the media and the public. While these past reforms

might at first sight be justified by economic rationale, in fact, they had strong negative repercussions on the effectiveness of fiscal rules.

Against this background, a reform of fiscal rules at the European level should ideally exhibit a set of properties that would maximise their efficacy in confining the debt bias. First, fiscal rules should target fiscal aggregates which are under the direct control of executive governments, can be forecast reliably and are prone to only minor revisions. Second, these rules should not limit automatic stabilisers and thus prevent pro-cyclicality in fiscal policy. Third, fiscal rules should ensure the reduction of debt to GDP ratios over a reasonable time horizon in case of public debt above a certain threshold. Fourth, the violation of rules should be associated with high political costs for non-compliance which could be achieved by a high level of transparency vis-à-vis the public as well as quasi-automatic and noticeable sanctions. The following sections will discuss each of these points in more detail.

2.1 Forecasts and Revisions

Fiscal rules can exert their intended effects on fiscal policy only if the measures constrained by the rules are under direct control of the government and can reliably be forecast ex-ante. Otherwise, separating the effect of actions taken by policy-makers from external factors and the occurrence of uncertain events is too cumbersome. This makes public (or even academic) judgement on the reasons for compliance or non-compliance difficult. Currently, fiscal rules constraining debt and (structural) deficit measures are in the centre of public and media attention. However, the revenue side of deficits is highly dependent on the state of the business cycle, which cannot be directly controlled by governments and makes forecasts much less reliable (Mourre et al., 2013).

Figure 1 shows the deviation of forecasts for public deficits for selected EU countries between 1990 and 2017 based on AMECO data by the European Commission. The forecasts very rarely correspond to the actual values observed a few years later and deviations can be quite large. In a more general view, Breuer et al. (2018) analyse the available set of vintages of the AMECO data and compare the forecasts of fiscal variables from one year ahead of year t with the values observed in the first vintage in year $t + 1$. The results show (an excerpt of the results is presented in Table 1) that the mean (absolute) forecast errors for fiscal variables in general can be quite large, especially with respect to the early forecasts. However, regarding the different measures, they find that forecast errors for public deficit and revenues are considerably higher than those for expenditures. One of the main reasons might be the difficulty to forecast GDP figures reliably. Thus, in order to reduce ex-ante uncertainty if rules will be complied with or not, fiscal rules that constrain expenditures would be preferable.

The problem of the reliability of forecasts is even more pronounced for cyclically adjusted measures involving uncertain estimates of elasticities and time-varying charac-

Revisions of forecasts of the budget balance using AMECO vintages

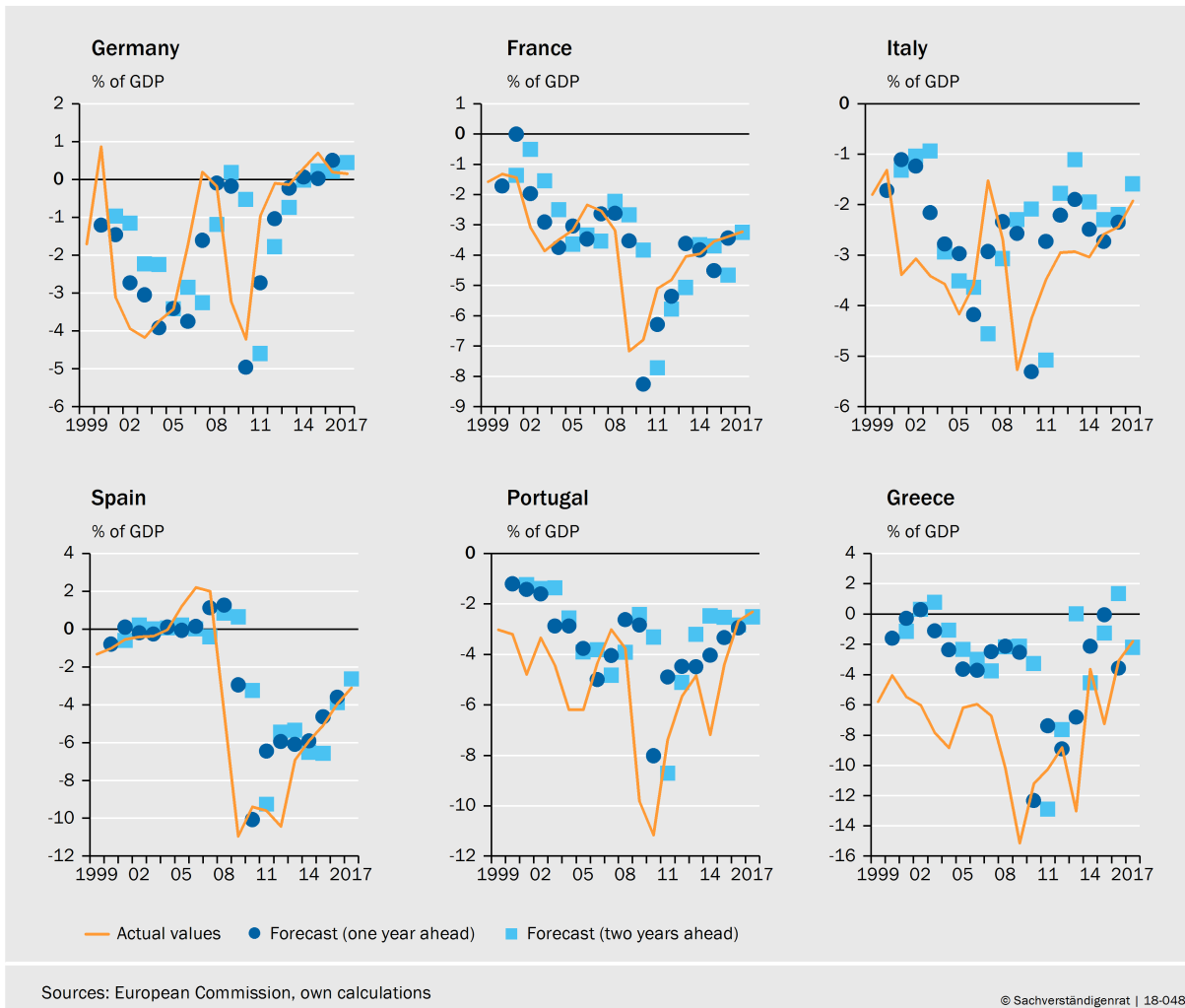


Figure 1: Comparison of two years ahead and one year ahead forecasts to actual values in year t

teristics of the economy. Estimates of structural deficits by the European Commission are based on estimates of the contemporaneous output gap. Based on vintages of the AMECO database, we calculate the average (absolute) forecast error of the real-time estimate of the output gap relative to its update in $t+1$ and $t+5$ (Figure 2) for EU-28 countries. As is evident from the figure, the error can become quite large and is on average larger than one percentage point of GDP (upper panel). Even more critical for the correct assessment of cyclical impulses from fiscal policy, the majority of revisions indicate an upward revision (bottom panel). The real-time estimates would have indicated a larger fiscal space than based on actual figures following revisions in later years. Overall, this makes a correct real-time assessment of the fiscal stance, especially with respect to the limit set by the rule and forecasts, nearly impossible and can lead to serious policy errors.

The reliability of the fiscal measure constrained by fiscal rules is not only important ex-ante, but also ex-post. To ensure the credibility of a rule, it is important that judgements on compliance with the rule in a specific year remain valid over time. However, today the

Table 1: Forecast errors and revisions for Germany, France, Italy and Spain from 2003 to 2014 based on AMECO data (Breuer et al., 2018)

		Mean forecast error ² (Spring $t - 1$ to Spring $t + 1$)	Mean (absolute) forecast error (Spring $t - 1$ to Spring $t + 1$)	Mean revisions ² (Spring $t + 1$ to Spring $t + 4$)	Mean (absolute) revisions (Spring $t + 1$ to Spring $t + 4$)
Original Data					
Expenditures	Percent	-0.5	1.7	1.0	1.2
Revenues	Percent	0.2	3.8	0.9	1.1
Nominal GDP	Percent	0.4	2.6	1.1	1.6
Net Lending	Percentage Points	0.3	1.5	0.0	0.2
Adjusted Data¹					
Expenditures	Percent	-0.3	1.6	0.3	0.5
Revenues	Percent	0.6	3.3	0.3	0.3
Nominal GDP	Percent	0.8	2.0	0.0	0.6
Net Lending	Percentage Points	0.3	1.4	0.0	0.2

Notes: Averages across time and countries (Germany, France, Italy, Spain); Included vintages: Vintage 2002(1) to 2018(1); 33 vintages per country; First (last) analysed calendar year: 2003 (2014); Data source: European Commission (AMECO). ¹Back-of-the-envelope adjustment for structural breaks between the vintages. Any data revision in the vintages of 2005(2), 2006(1), 2011(2) and 2014(2) is assumed to be completely driven by major revisions of the System of National Accounts. ²Positive forecast errors indicate an overestimation in advance; positive revisions indicate a subsequent upward revision.

judgement often changes considerably when it is based on ex-post rather than real-time data. The reason is the reliance on variables that are prone to large ex-post revisions. As a result, policy misinterpretations occur in which a violation of rules is only detected ex-post or non-adherence is erroneously assumed until data revisions are available. Figure 3 shows the changes of judgement on compliance with the 3% deficit rule of the SGP due to ex-post revisions. In quantitative terms, Breuer et al. (2018) show that revisions, while they can be quite large in the first few semesters, are close to zero following the second after a specific year.

Revisions of the real-time estimate of potential GDP in t+1 and t+5¹

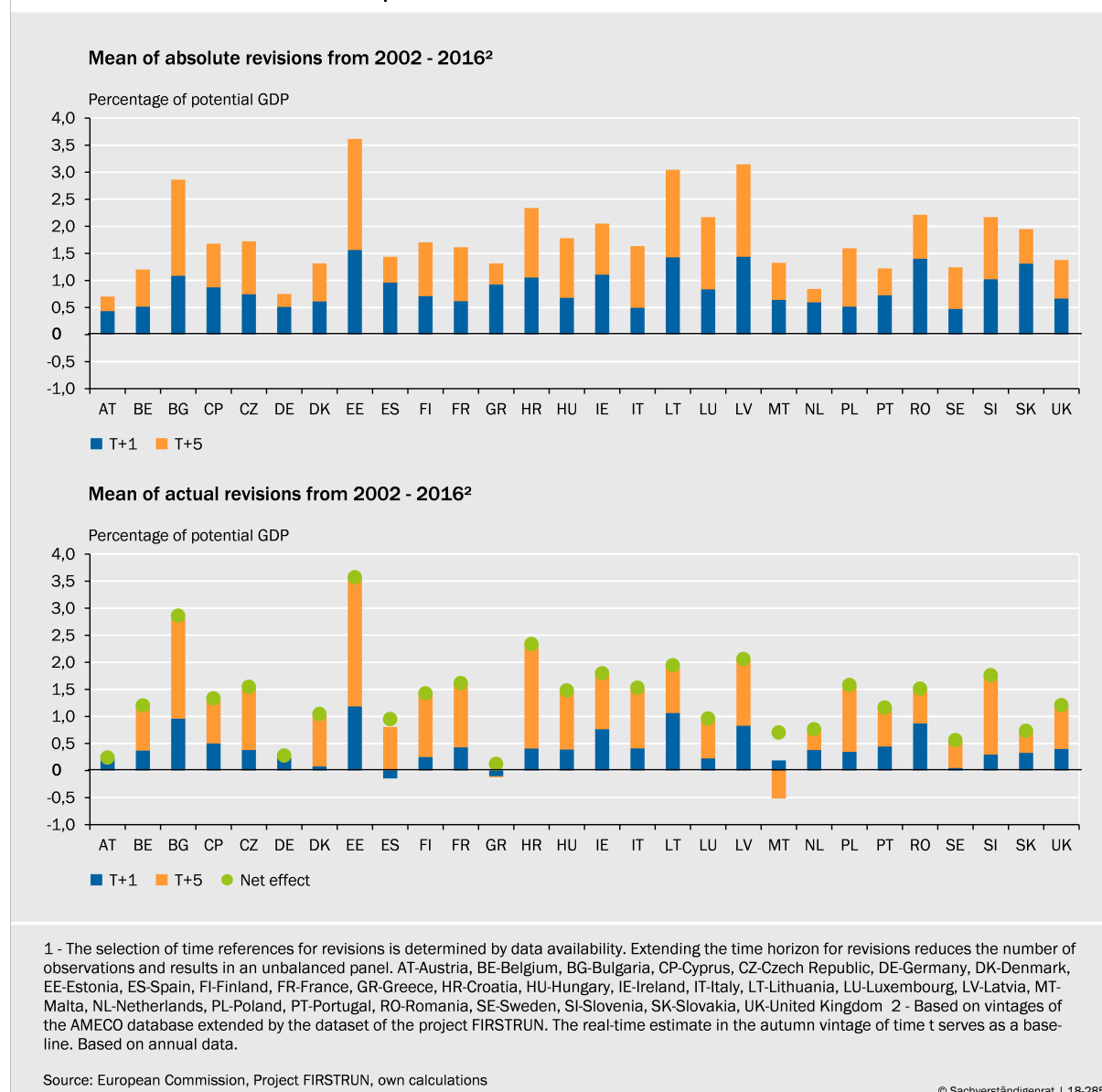


Figure 2: Average (absolute) revisions of the output gap

In its current framework, the European Commission tries to address the issue of forecast errors and revisions by a set of corrections applied to the structural balance measure. The "alpha-correction" takes into account revisions of potential output growth compared to the forecasts underlying the Council recommendations, the "beta-correction" considers the revenue wind- or shortfalls and the "gamma-correction" the unexpected events. The judgement as to whether a rule is complied with or not is then based on this adjusted measure, but the corrections complicate the assessment of compliance for politicians and the public even more and render a real-time judgement of compliance almost impossible. In a reformed system which would rely solely on public expenditures the necessary corrections would be much smaller in size and could be abolished if possible revisions are collected in an adjustment account. One exception is the one for unexpected events, like natural disasters, which in this case could be covered by an escape clause.

Evaluation of compliance with the deficit rule of the stability and growth pact based on real-time and ex post data¹

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Belgium	-0,6	-0,1	0,2	0,0	-1,8	-0,2	-2,6	0,2	0,1	-1,1	-5,4	-4,0	-4,1	-4,2	-3,0	-3,1	-2,6	-2,8
Germany	-1,7	0,9	-3,1	-3,9	-4,2	-3,7	-3,4	-1,7	0,2	-0,2	-3,2	-4,2	-1,0	-0,1	-0,1	0,3	0,7	0,2
Estonia	-3,3	-0,1	0,2	0,4	1,8	2,4	1,1	2,9	2,7	-2,7	-2,2	0,2	1,2	-0,3	-0,2	0,8	0,4	-0,1
Finland	1,7	6,9	5,0	4,1	2,4	2,2	2,6	3,9	5,1	4,2	-2,5	-2,6	-1,0	-2,2	-2,6	-3,2	-2,7	-2,5
France	-1,6	-1,3	-1,4	-3,1	-3,9	-3,5	-3,2	-2,3	-2,5	-3,2	-7,2	-6,8	-5,1	-4,8	-4,0	-4,0	-3,5	-3,4
Greece	-5,8	-4,1	-5,5	-6,0	-7,8	-8,8	-6,2	-5,9	-6,7	-10,2	-15,2	-11,2	-10,2	-8,8	-13,0	-3,6	-7,2	-3,1
Ireland	2,4	4,9	1,0	-0,3	0,4	1,3	1,6	2,8	0,3	-7,0	-13,8	-32,3	-12,6	-8,0	-5,7	-3,8	-2,3	-1,2
Italy	-1,8	-1,3	-3,4	-3,1	-3,4	-3,6	-4,2	-3,6	-1,5	-2,7	-5,3	-4,2	-3,5	-2,9	-2,9	-3,0	-2,6	-2,4
Latvia	-3,7	-2,7	-2,0	-2,2	-1,6	-1,0	-0,4	-0,6	-0,7	-4,1	-9,1	-8,5	-3,4	-0,8	-0,9	-1,6	-1,3	-1,0
Lithuania	-2,8	-3,2	-3,5	-1,9	-1,3	-1,4	-0,3	-0,3	-0,8	-3,1	-9,1	-6,9	-8,9	-3,1	-2,6	-0,7	-0,2	-1,0
Luxembourg	3,5	5,9	6,0	2,5	0,2	-1,3	0,1	2,0	4,2	3,4	-0,7	-0,7	0,5	0,3	0,8	1,7	1,2	1,0
Malta	-6,7	-5,5	-6,1	-5,4	-9,1	-4,4	-2,7	-2,6	-2,3	-4,2	-3,3	-3,2	-2,6	-3,5	-2,6	-2,0	-1,5	-0,9
Netherlands	0,3	1,9	-0,3	-2,1	-3,0	-1,7	-0,3	0,2	0,2	0,2	-5,4	-5,0	-4,3	-3,9	-2,4	-2,4	-1,8	-1,7
Austria	-2,6	-2,0	-0,6	-1,3	-1,8	-4,8	-2,5	-2,5	-1,3	-1,4	-5,3	-4,4	-2,6	-2,2	-1,3	-2,7	-1,2	-1,5
Portugal	-3,0	-3,2	-4,8	-3,3	-4,4	-6,2	-6,2	-4,3	-3,0	-3,8	-9,8	-11,2	-7,4	-5,7	-4,8	-7,2	-4,4	-2,7
Slovakia	-7,3	-12,0	-6,4	-8,1	-2,7	-2,3	-2,9	-3,6	-1,9	-2,3	-7,9	-7,5	-4,1	-4,3	-2,7	-2,7	-3,0	-2,4
Slovenia	-3,0	-3,6	-3,9	-2,4	-2,6	-2,0	-1,3	-1,2	-0,1	-1,4	-5,9	-5,6	-6,7	-4,1	-15,0	-5,0	-2,9	-2,4
Spain	-1,3	-1,0	-0,5	-0,4	-0,4	0,0	1,2	2,2	2,0	-4,4	-11,0	-9,4	-9,6	-10,4	-6,9	-5,9	-5,1	-3,9
Cyprus	-4,0	-2,2	-2,1	-4,1	-5,9	-3,7	-2,2	-1,0	3,2	0,9	-5,5	-4,8	-5,7	-5,8	-4,9	-8,9	-1,0	-0,4

1 - ■ Non-compliance indicated using real-time data; ■ Non-compliance erroneously indicated using real-time data (type II error); ■ Compliance erroneously indicated using real-time data (type I error).

Sources: European Commissions, own calculations

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Figure 3: Compliance with the headline deficit rule based on real-time and ex-post data

2.2 Procyclicality

Both original rules of the SGP, the headline deficit and the limit to the debt to GDP ratio, are still present today and exhibit most likely the highest level of public perception among the rules and provisions in the SGP. However, both rules act pro-cyclical. In cases of cyclical upswings and GDP growth, increased spending or larger revenue cuts become feasible within the limits set by both rules. Fiscal policy would be allowed to exert an expansionary impulse despite an already increasing capacity utilisation instead of setting incentives to leave enough space towards the limits set by the rules. As a consequence, governments would have to conduct large fiscal adjustments during economic downturns. In response to this pro-cyclical behaviour of the original set of rules, a structural deficit rule has been introduced in 2005 which takes contemporaneous cyclical conditions explicitly into account. However, procedures for the cyclical adjustment are prone to errors; especially in real time (see Section 2.1). A reformed framework for European fiscal rules should therefore ideally entail no restrictions on automatic stabilisers and use measures which are less susceptible to errors in real-time estimations.

An alternative approach to cyclical adjustment while achieving both goals may be taken in the context of an expenditure rule. The general idea involves the deduction of components of expenditures which are sensitive to the cyclical position. After netting out these cyclical components, the remaining residual should not be sensitive to the cycle, therefore posing a suited fiscal aggregate to be targeted by a reformed fiscal rule. Besides the property of not restricting automatic stabilisers, performing a cyclical adjustment in such a way should be susceptible to errors from real-time estimations to a much lesser degree. Especially in case of expenditures, errors in real time are relatively small as in most cases these components are budgetary items under direct control of the executive government.

Whether this actually holds can be formally tested by estimating elasticities with respect to the cyclical position of revenues, expenditures and their sub-categories. Based on these estimates, the set of components to be deducted can be formally determined. In order to do so, we follow Price et al. (2014) and estimate elasticities using a generalised least squares approach fitted for panel data according to specification (1). The regressions are implemented in first differences and for each country and expenditure or revenue category individually so that time-invariant country-specific effects are controlled for and individual elasticities are obtained. Standard errors are corrected for first order autocorrelation in the residuals (Girouard and André, 2005).

$$\Delta \ln \left(\frac{\text{fiscal aggregate}_{i,t}}{\text{potential GDP}_{i,t}} \right) = \alpha_0 + \alpha_1 \Delta \ln \left(\frac{\text{GDP}_{i,t}}{\text{potential GDP}_{i,t}} \right) + \epsilon_{i,t} \quad (1)$$

Estimates are conducted using annual data for the EU-28 and covering the period between 1990 and 2016. Data for general government expenditures and revenues as well

as their main aggregates is obtained from the Eurostat database. In case of analyses for expenditure sub-categories, we rely on data from Eurostat following the Classification of Functions of Government (COFOG). This classification contains ten main aggregates. However, in order to estimate individual elasticities for expenditure categories such as unemployment, old age and survivors, we excluded these categories from the respective main aggregate and subsumed the remaining categories in the new variable "other social protection". This apportionment allows us to account for country specific differences in the classification of unemployment expenditures in other categories. Data on GDP, potential GDP, the output gap, GDP deflator, unemployment, secondary and primary expenditure is obtained from the AMECO database. All variables are deflated using the GDP deflator.

In order to test for the robustness of our results, specification (1) is also estimated in levels. Furthermore, each specification is estimated using a pooled sample rather than country-specific samples. In these cases, estimations are implemented using both, generalised least squares as well as fixed effects models. The detailed estimation results can be found in the Appendix.

To improve readability, Table 3 only reports the share of countries within the EU-28 exhibiting a statistically significant coefficient (5% level or stronger) in the respective category. This is separately done for all four general sets of estimations we run; expenditures, revenues, expenditures following COFOG, as well as using real-time data for the output gap. An increasing share reported in the table indicates an increasing systematic correlation of the respective category with the business cycle across countries. The results have to be interpreted with caution as they are based on quite a short sample of years and even within those years, varying institutional settings could change the link with the business cycle.

The results point to a much stronger link between the business cycle and revenues compared to expenditures. The share of countries exhibiting a statistically significant correlation with the business cycle and the respective category is considerably higher in nearly all categories of revenues. As a consequence, focusing on expenditures to follow the alternative approach for cyclical adjustment as described above would be more efficient. With respect to the explicit expenditure component that should be excluded from aggregate expenditures, the results using COFOG only point to a systematic correlation across countries in case of unemployment expenditures. This suggests an exclusion of cyclical unemployment expenditures from the spending aggregate in order to come as close as possible to a non-cyclical expenditure aggregate. In addition to the set of deductible items, we suggest to exclude interest expenditure from the targeted fiscal aggregate as well, in order to isolate the discretionary component as much as possible.

Table 3: Share of countries with respective expenditures or revenues sensitive to the business cycle

Expenditures					
National accounts			COFOG data		
	Model			Model	
	Baseline	Level-based		Baseline	Level-based
Total expenditure	25%	29%	General Public Services	14%	21%
Intermediate consumption	21%	14%	Economic Affairs	11%	21%
Gross capital formation	11%	21%	Health	18%	18%
Compensation of employees	21%	18%	Education	14%	21%
Subsidies	25%	25%	Other main categories	29%	21%
Interest	29%	18%	Unemployment	68%	57%
Other social benefits	57%	54%	Old age	25%	32%
Social transfers in kind	11%	7%	Survivors	25%	29%
			Other sub-categories of social protection	25%	32%
Revenues					
	Model			Model	
	Baseline	Level-based		Baseline	Level-based
Total revenue	82%	79%			
Taxes on production and imports	82%	71%			
Property income	7%	14%			
Current taxes on wealth	71%	68%			
Net social contrib.	39%	25%			
Other current transfers	4%	7%			
Capital transfers	14%	11%			

Notes: Detailed estimation results can be found in the Appendix. Results are obtained running country-specific generalised least square estimations based on Equation 1. Reported figures in this table indicate the share of countries reporting a statistically significant (5% level or stronger) reaction to the cycle in the respective category in expenditures or revenues.

2.3 Exemptions and Sanctions

Since its introduction in 1997, the SGP contains two exemption clauses in the corrective arm allowing the non-adherence to European fiscal rules in cases of so-called unusual events and severe economic downturns (European Union 1997, Council Regulation 1467/97). In 2005, the reforms of the SGP drastically extended the set of circumstances justifying deviations from the newly established medium-term budgetary objective against which the fiscal policy of member states would be assessed in the preventive arm. Most prominently, these involved exemptions for public investment, major structural as well as pension reforms (European Union 2005, Council Regulation 1055/2005). Beyond these purpose-specific exemptions, the European Commission has also been granted the option to appraise deviations from budgetary targets as small and temporary, preventing the start of formal procedures during which member states would have to take effective action in correcting these deviations and, ultimately, preventing the imposition of sanctions.

Flexibility in the application of the SGP has been increased further in 2015 following the introduction of adjustment paths towards the medium-term budgetary objective conditional on the economic situation of a member state and updated specifications for investment and the structural reform clause (European Commission 2015, COM(2015)

12 final). In sum, these amendments to the SGP substantially increased the margin for discretion of the European Commission and reduced the transparency of the application of the SGP drastically. This is especially evident in the context of the exemptions for investment and structural reforms. While their economic rationale is to prevent reluctance to necessary reforms due to their fiscal costs, their inclusion into the SGP comes at the expense of imprecise definitions of key dimensions hereby permitting the circumvention of fiscal rules.

Exemptions for investment and structural reforms are usually justified with their expected positive effect on the growth rate of potential GDP. However, this positive effect may not easily or credibly be forecast. Beyond that, no precise definition of investment covered by the exemption exists and may involve investments not necessarily limited to those foreseen by the European Fund for Strategic Investments. Expectations of positive contributions to GDP growth and the forecast of fiscal costs by the respective member state, however, are decisive for the application and granting of the exemption by the European Commission. Therefore, exemptions may also be granted for planned but not yet implemented reforms. Aggravating these problems, no ex-post evaluation of reforms is conducted by the European Commission. Hence, there is no sanctioning of repealed reforms for which an exemption was initially granted (Deutsche Bundesbank, 2017).

Despite these concerns, the allowed temporary deviation from the adjustment path or the medium-term budgetary objective itself is substantial. Providing adherence to the 3% deficit rule with some safety margin which is not explicitly defined, the deviation may amount up to 0.5% of GDP in case of both, the exemptions for structural reforms as well as investments (European Commission, 2018). Both exemptions may only be granted once during a period of adjustment towards the medium-term budgetary objective. If both are granted, the hereby justified cumulative deviation may amount up to 0.75% of GDP.

The exemption for pension reforms, in contrast, does not exhibit a numerical cap. The warranted deviation in this case is equal to the estimated direct incremental impact on the budget balance of the respective country (European Commission, 2018). When applying for this exemption, a member state has to prepare an estimation of the cost of the reform and provide it to Eurostat. In the years following the implementation of the reform, the member state has to include estimations of its incremental costs in its stability and convergence programmes.

Besides these (numerical) limits to the application of the purpose-specific exemptions, their combination with exemptions for unusual events such as the influx of refugees or combatting terrorism may lead to even larger deviations from the medium-term budgetary objective being assessed as compliant with the provisions of the SGP. For instance, this has been the case for Italy in 2016 (Deutsche Bundesbank, 2017). Overall, the process of applying and granting exemptions in the context of the SGP is very opaque. There is no uniform commenting on this aspect in the assessments of the stability and convergence

programmes, effectively precluding the public and the media from easily tracking the process of granting exemptions. In combination with the partly imprecise definition of key dimensions such as investments, these exemptions have rather been misused to prevent European fiscal rules from becoming binding or triggering the imposition of sanctions than serving their initial economic rationale.

While sanctions have been strengthened and extended since the inception of the SGP, they never posed a credible threat to member states. This is simply because the violations were only rarely declared as non-temporary with the help of the multitude of exemptions. Furthermore, there is also non-negligible flexibility in the imposition of sanctions itself. First and foremost, the European Commission has to qualify a deviation within the preventive arm as significant. If this is not the case, no sanction will be triggered, despite numerical non-adherence. If however a deviation is considered as significant, the European Commission may impose a sanction on the member state of placing an interest bearing deposit of 0% to 0.2% of GDP to the EU. Thus, the sanction may effectively be zero despite a formal recognition of a violation of the provisions of the SGP. If the member state continues to be non-compliant, an excessive deficit procedure may be triggered and the deposit may be transformed to non-interest bearing which is negligible if the deposit was equal to 0% of GDP in the first place. Basically the same problems persist in case of the corrective arm and the discretion in declaring that no effective action has been taken and the possibility for the European Council to impose a sanction of 0% of GDP. For instance, the latter has been the case for Belgium in 2013 and for Spain and Portugal in 2016 (Deutsche Bundesbank, 2017). In fact, so far no financial sanctions have been effectively imposed. The same applies to the option for suspension of access to EU funds. The case of non-financial sanctions such as the possibility of member states to prosecute each other at the European Court of Justice is as disillusioning as the case for financial sanctions, as again no member state exercised this right so far, likely due to the time inconsistency that accompanies it.

Against this background, we collected information from past assessments of the stability and convergence programmes about the application and granting of exemptions for the respective contemporaneous universe of member states since 1999. Based on this information we compiled our own panel data set. Figure 4 depicts the exemptions granted within the SGP since 2012 (left panel) as well as their average and median size (right panel). Evident from the left panel, the most frequent use of exemptions in the recent past occurred in 2016 during which exemptions have been granted 18 times. In terms of type, exemptions for small deviations have been most frequently followed by exemptions with respect to the influx of refugees and investment. Considering the size of the granted exemption, member states seem to exploit the full leeway or nearly all of it with median and average grant sizes equal or close to 0.5% of GDP.

Application of the exemption clauses in the SGP since 2012¹

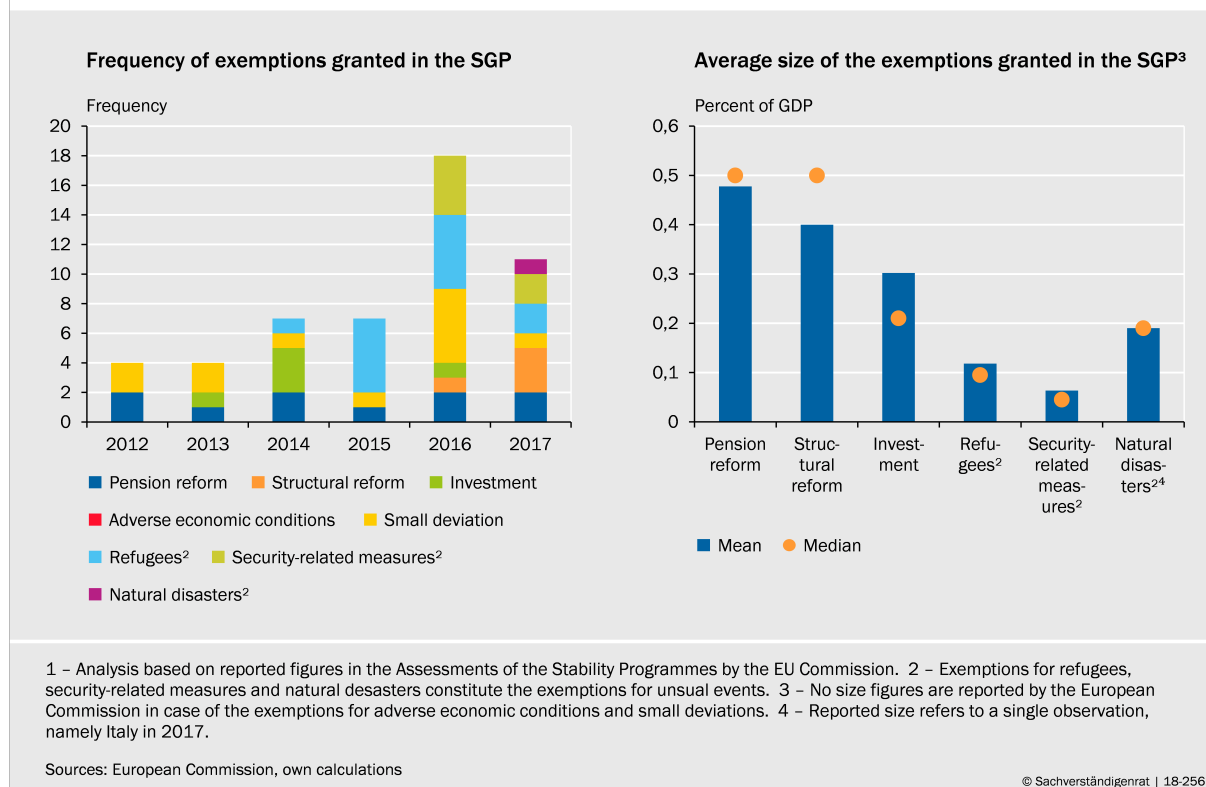


Figure 4: Application of exemptions in the SGP since 2012

3 Elements of a reformed framework

The shortcomings of the current fiscal framework as summarised in Section 2 have encouraged several proposals for a simplification of the European fiscal rules. More detailed recent proposals include the contributions by Andrle et al. (2015), Claeys et al. (2016), Bénassy-Quéré et al. (2018), and Darvas et al. (2018). They have in common that they suggest to replace the system of fiscal rules by an expenditure rule, sometimes supplemented by a debt-reduction target. In contrast to these proposals, we stress the importance of maintaining the structural balanced budget rule as a medium-term target. Our proposal, therefore, combines a long-term debt limit with the obligation to avoid excessive structural deficits in the medium-term and operationalises these goals by an annual growth ceiling on nominal expenditures. An increase in political costs of non-compliance is achieved by simplifying the framework, among others by introducing a multi-purpose adjustment account and by reducing the number of exemptions and escape clauses substantially, and reducing discretion in the imposition of sanctions.

3.1 Basic structure

The general observation guiding our proposal is that levels of public debt below a certain threshold are necessary to ensure fiscal sustainability, while sovereignty in fiscal policy remains with member states' governments (German Council of Economic Experts, 2017).

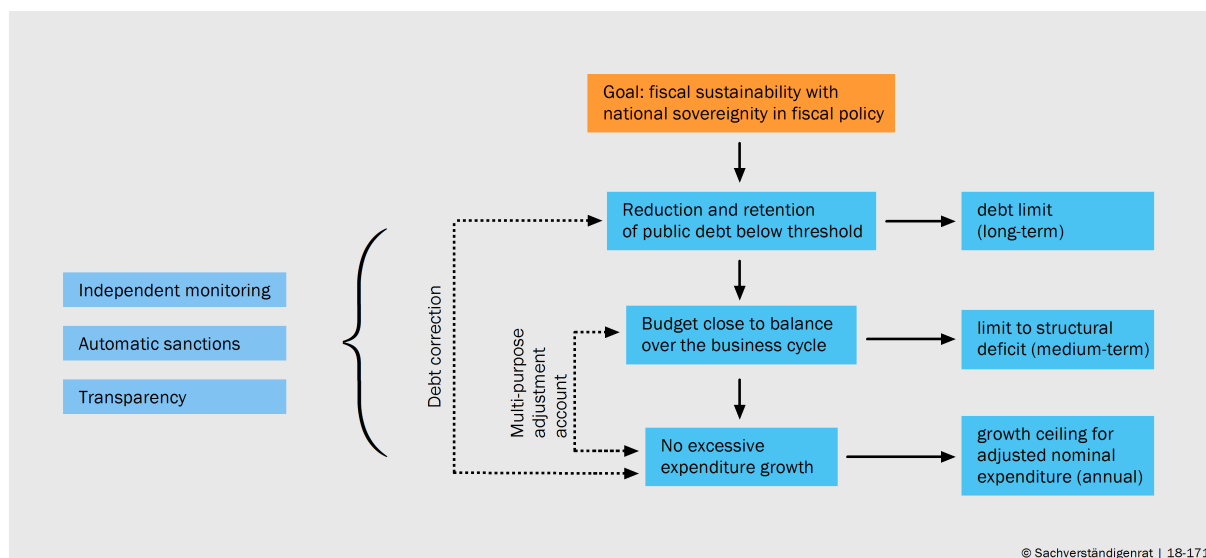


Figure 5: Key elements of our proposal

The proposal therefore involves a long-term debt limit. For instance, this can be the 60% threshold in the SGP. Our framework supports and requires a reduction as well as perpetuation of public debt below this threshold (see Figure 5).

The structural balance rule, as specified in the Fiscal Compact, has a clear theoretical rationale. It prevents the debt ratio from increasing over the business cycle. The general government budget is appraised to be balanced if the structural deficit does not exceed 0.5% of GDP, or 1% of GDP if the debt ratio is significantly below 60% of GDP; and if risks to long-term fiscal sustainability are assessed to be low. The shortcomings of this kind of fiscal rule have been studied extensively (see Section 2.1). However, instead of abandoning this rule, we stress its importance as a medium-term target.

In our proposal for a refocused European fiscal rule framework, the annual operational rule is an expenditure rule. The existing expenditure rule in the SGP may serve as a starting reference, albeit with some necessary modifications. In its current form, it is complex and relies on fiscal terms without a precise definition. The link to the long-term debt limit is established via a debt-correction factor to ensure a faster reduction towards the threshold. A multi-purpose adjustment account, which in contrast to other proposals is a central element of our framework, ensures compliance with the structural deficit rule in the medium term by capturing deviations from the rule, with the requirement to offset them within a certain period of time.

A drastic reduction in exemptions and escape clauses as well as in the multitude of rules to a single fiscal anchor lead to more transparency which in turn should increase the political costs of non-compliance. Furthermore, the framework would be consistent with the existing national rules introduced via the Fiscal Compact by maintaining the structural balance rule.

3.2 Fiscal target and benchmark

An expenditure rule requires nominal expenditure growth to be kept below a certain benchmark value. Three key specifications are necessary to construct such a rule: (i) the fiscal aggregate which should be targeted by the rule, (ii) the benchmark against which the growth rate of expenditures will be evaluated, (iii) adjustments for measures taken at the revenue side. To ensure consistency with our medium-term and long-term limit, we add two additional elements: a multi-purpose adjustment account and a debt-correction factor (see Figure 6).

In the existing expenditure rule of the SGP, several items, such as investments or EU co-financed expenditures are deductible from aggregate government expenditures. While these items are exempt from the rule, these provisions increase complexity as they lack a clear definition and may allow the circumvention of the rule. Nevertheless, some deductions are justified, e.g., to ensure that automatic stabilisers are not constrained by the fiscal rule. For instance, this involves expenditures for cyclical unemployment (see Section 2.1). Additionally, interest expenditures should be excluded as they cannot be controlled by the government in the short run. However, a well-calibrated fiscal rule that is complied with induces a reduction in the debt to GDP ratio leading to lower interest expenditures as well. We propose to limit the deductible items to these two components.

The benchmark value for the growth rate of nominal expenditure could be set based on the nominal growth of potential GDP. The existing expenditure rule in the SGP, for example, relies on the 10-year-average of the growth rate of potential GDP and the forecast GDP deflator constituting the benchmark. In contrast, Claeys et al. (2016) propose to substitute the GDP deflator by the central bank's inflation target. Additionally, in our proposal, the benchmark should be adjusted by a constant such that it corresponds to the allowed limit of the structural balance. According to the Fiscal Compact, the budget has to be close to balance over the business cycle. This is the case, if the structural deficit does not exceed 0.5% of GDP, or 1% of GDP if the debt ratio is significantly below 60%; and if risks to long-term fiscal sustainability are assessed to be low.

To allow flexibility and to ensure compatibility with the preferred size of the public sector in the member states, adjustments are necessary for discretionary policy measures taken on the revenue side. This ensures that the ratio of public expenditures to GDP remains the decision of the respective electorate. However, this also means that additional expenditures exceeding the limit set by the rule need to be financed by additional revenues. To account for that, our proposed rule allows for additional expenditures equivalent to the revenue effect of discretionary tax measures. In order to do so, the revenue effects of these measures have to be estimated. Since these estimates are prone to considerable uncertainty, we account for potential imprecisions stemming from these estimates in our multi-purpose adjustment account.

Despite the consideration of discretionary revenue measures in the current expendi-

Elements of a reformed expenditure rule

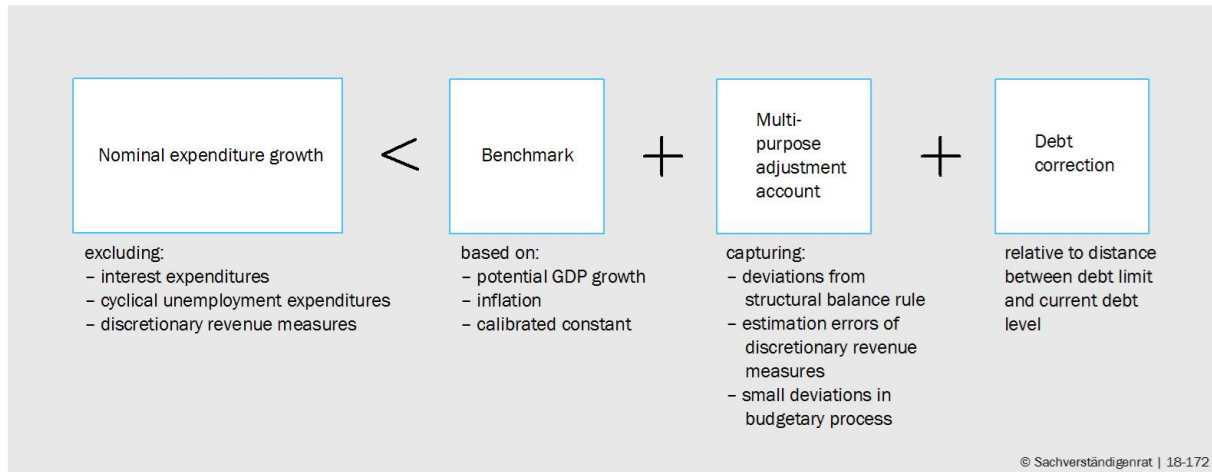


Figure 6: Operational rule

ture rule of the SGP, there is no uniform method of estimation applied across member states. Therefore, a consistent methodology including a unique definition of discretionary measures across member states would be desirable (Eyraud and Wu, 2015). A clean ex-post evaluation of the revenue effects is challenging. As we still keep the structural rule as a medium-term limit, the uncertainty is, however, less of a concern, compared to an expenditure rule in isolation. The same holds for other deductible items. Our correction mechanism via the adjustment account at least ensures compliance with the structural deficit rule in the medium-term.

3.3 Debt correction

Public debt ratios in the member states are still high. To make the EU more resistant to crises, it is advisable to reduce public debt ratios, in particular, in view of the low-interest-rate environment currently backing public finances (German Council of Economic Experts, 2017). To operationalise a long-term debt limit, the expenditure rule could entail a markdown relative to the difference between present debt levels and the long-term limit preset by the rule (Andrle et al., 2015; Claeys et al., 2016; Bénassy-Quéré et al., 2018; Darvas et al., 2018). In our simulations of potential pathes for debt and deficits in Figure 7, we consider a debt limit of 60 % and a symmetric debt correction of $1/75$ and $1/50$ as well as a situation without debt correction. The symmetric design grants countries with a lower debt to GDP ratio additional freedom as this would also further relax the structural deficit rule. However, this would not apply to any country in the near future given the current debt to GDP ratios.

Figure 7 plots potential pathes for debt ratios and deficits for different starting points of debt ratios, debt correction factors, and different growth rates of nominal GDP. In all calculations, we apply the current structural deficit rule from the Fiscal Compact. It sets the lowest limit for the structural deficit at 0.5% of GDP in general, and at 1% of GDP

Simulation of debt-to-GDP ratios and budget balances for different assumptions¹

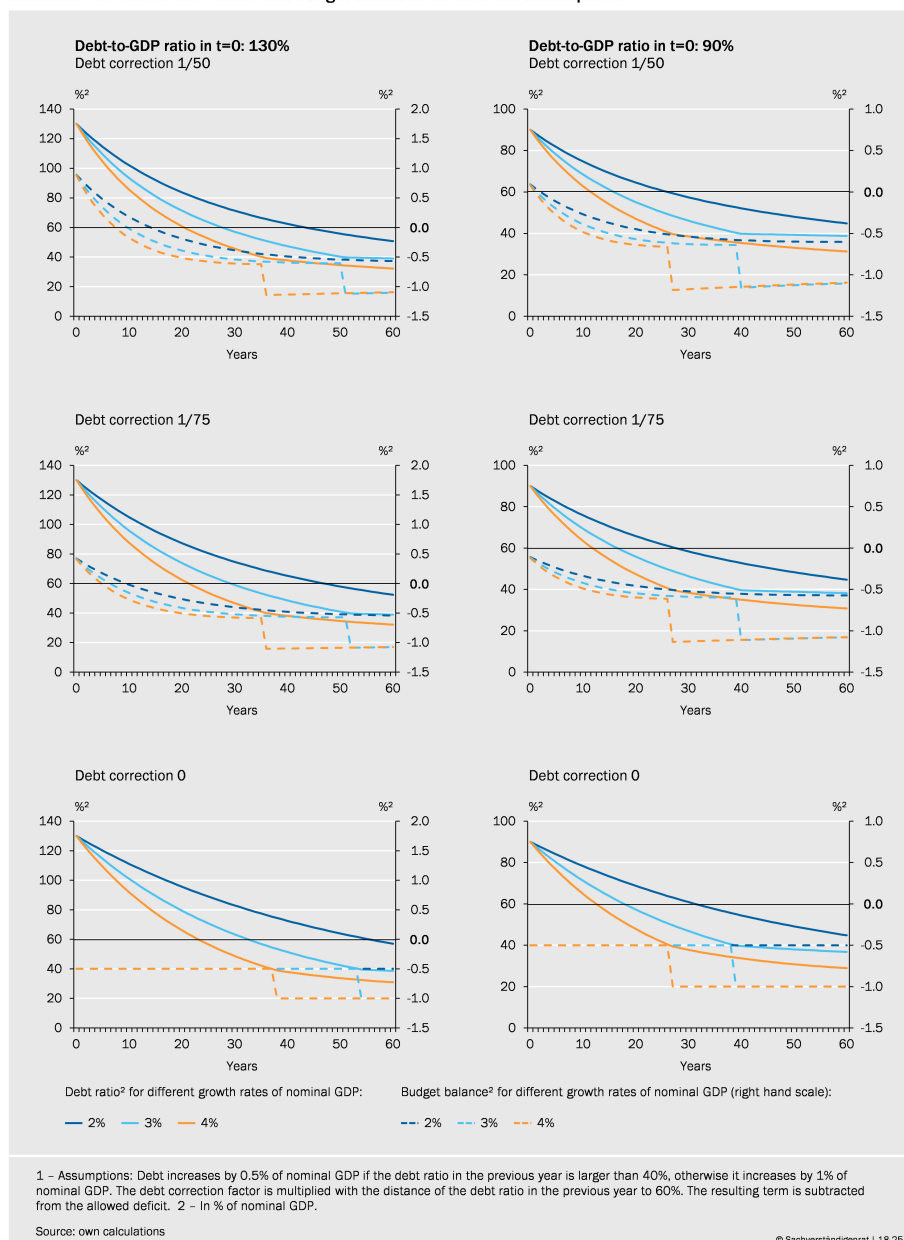


Figure 7: Simulation of debt and deficit paths

if public debt is significantly below 60% of GDP. We assume that this increased scope applies if the debt ratio is below 40% of GDP. This results in a kink for the maximum deficit allowed under this rule. In this simplified representation, we abstract from cyclical fluctuations.

The structural balance rule with a structural deficit ceiling of 0.5% of GDP puts the debt to GDP ratio on a downward path during normal times. However, a debt-correction factor increases the speed of adjustment. Without a debt-correction factor, reaching the 60% limit would take a long time for countries with high legacy debt. For example, even when assuming a 3% growth rate for nominal GDP, it would take 34 years to reach the 60% limit in the case of Italy's debt of more than 130%. With a debt correction of 1/50 and a growth rate of 3%, countries with a debt ratio equivalent to Italy would reach this

level after 29 years. This would require structural surpluses in the earlier years. Based on the above assumptions, the debt ratio would stabilise at 34% in the very long run.

3.4 Multi-purpose adjustment account

In the context of our proposal, an adjustment account is necessary for several reasons. While other proposals only intend to correct expenditure overruns, we see a need for additional corrections. Our multi-purpose adjustment account captures small deviations that occur during the budgetary process, and deviations caused by forecasting or measurement errors. In particular, the impact of discretionary revenue measures are difficult to forecast. In a multi-purpose adjustment account, the actual development of revenues could be monitored, and any deviations of observed developments from forecasts could also be collected.

Deviations from the structural balance based on its real-time estimate should also be captured. These deviations can be positive in cases of compliance with the rule extending the fiscal leeway under our expenditure rule or negative in cases of non-adherence further limiting public expenditures. These deviations, in general, should be balanced over the medium-term while preventing a pro-cyclical fiscal policy. In subsequent years, revisions of the real-time estimates of past structural balances can occur and should be captured by the multi-purpose account as they might offset past deviations. This procedure would substantially mitigate the impact of real-time estimation errors, retain a balanced budget over the cycle as the medium-term benchmark and make the relevant calculations more transparent. The annual additions to the adjustment account would be dissipated over the medium-term, e.g., five to ten years, such that no larger positive or negative accumulations would be possible. One could also introduce a limit for positive additions in exceptionally good years to balance the escape clause of the rules for exceptionally bad years. In case the adjustment account is not balanced, this could trigger an excessive deficit procedure.

Figure 8 documents the evolvement of the multi-purpose adjustment account over time based on real-time data on the structural balance, revenues from discretionary tax measures as well as their revisions in later years. For the purpose of illustration, the term length of the multi-purpose adjustment account is set to five years covering the time period from 2013 to 2017 for the four largest countries in the European monetary union. The blue bars depict the position of member states relative to the structural budget balance rule. Positive values capture violations in the amount exceeding the assumed deficit threshold of 0.5% of GDP. Negative values, respectively, capture cases of adherence to the rule in the amount of undercutting the deficit provision. As is evident from the figure, both the relative position to the threshold as well as the size of the deviation are very heterogeneous across countries.

Since these entries are based on the respective real-time estimate of the annual structural balance, their subsequent revisions from $t+1$ to $t+4$ are captured by the multi-

Recording of entries in the multi-purpose adjustment account

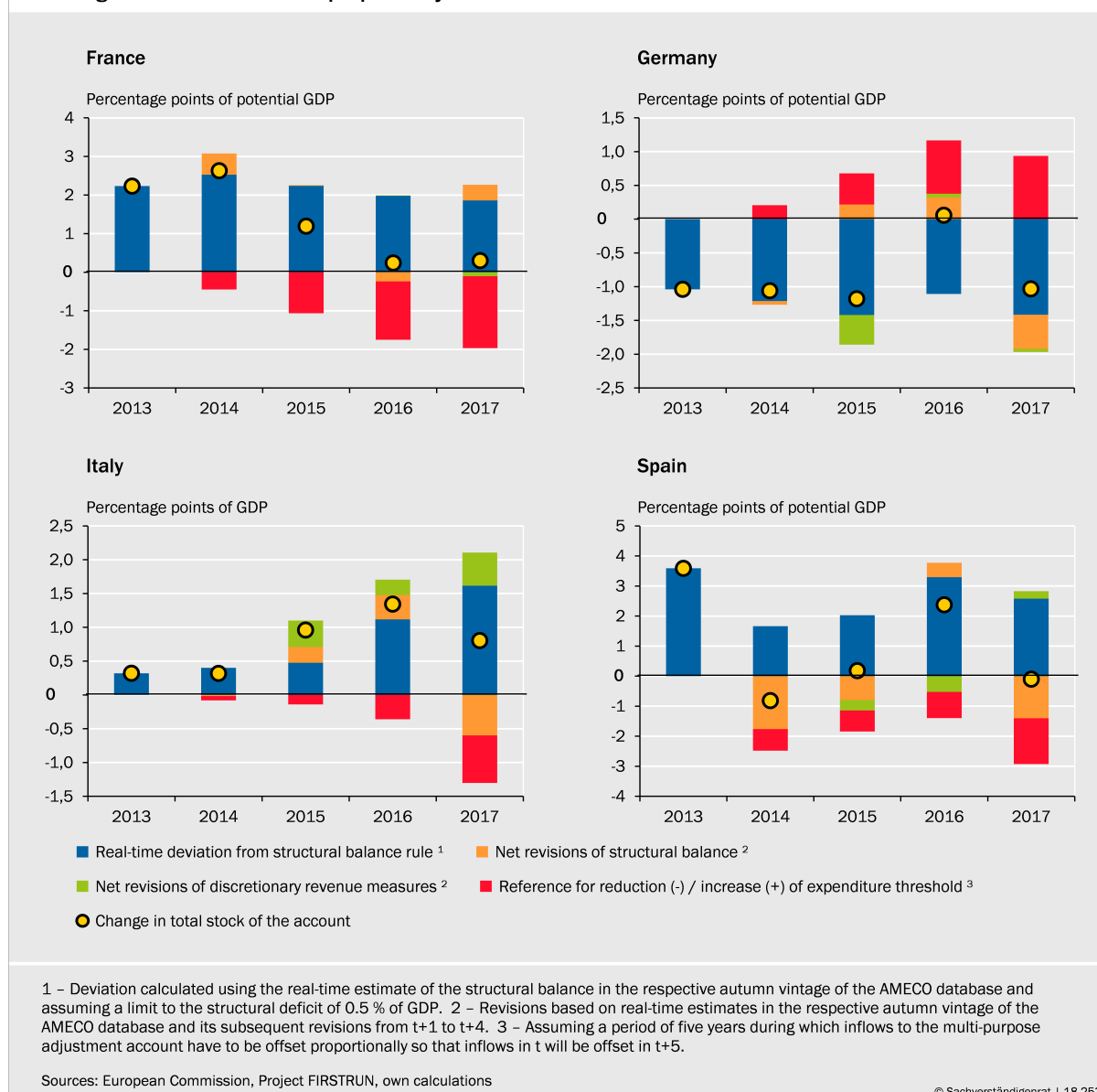


Figure 8: Simplified representation of entries in the control account

purpose adjustment account as well. The net effect from these revisions is captured by the orange bars. As revisions can be both positive or negative and can involve several years of structural deficits being revised, only their net effect enters the account. The same mechanism applies to the revisions of discretionary revenues measures and is captured by the green bars.

Following the assumption of a five year term length, annual inflows to the multi-purpose adjustment account have to be balanced within five years. Assuming a proportional balancing, the red bars capture the amount which serves as a reference for a further extension (positive values) or restriction (negative values) of the limit of the expenditure rule.

3.5 Exemptions and escape clauses

A key role in the enforcement of rules can be assigned to voters and the media. Against this background, transparency can foster political consequences which may exert an even stronger incentive to adhere to the provisions of fiscal rules than legal sanction mechanisms. In order to extend visibility, fiscal decisions by the government should be possible to follow in real time in order to assess them relative to the provisions of fiscal rules. Otherwise the political costs of non-compliance might be rather small exerting limited incentives for compliance. In this regard, the current framework is very opaque as the multitude of exemptions and escape clauses alongside the discretion granted to the European Commission renders it impossible to follow rule compliance in real time and unambiguously (see Section 2.1).

A focus on a single operational rule, as proposed in our case, would already enhance political accountability. Another important measure in this regard is the reduction of exemptions and escape clauses. This is the case, as their application in the current framework is based on subjective and often non-transparent decisions increasing probability of being used for the circumvention of the fiscal rules. In our view, however, two escape clauses are still necessary: An escape clause for natural disasters and another for exceptionally severe economic crises. The decision, whether a crisis is severe should be based on a specific set of economic indicators, e.g., a dramatic increase in unemployment or other indicators which have been proven to be useful in assessing recessions. Furthermore, this should reduce the current discretion of the European Commission in granting these exemptions.

3.6 Independent monitoring, quasi-automatic sanctions, and transparency

The assessment of these escape clauses should rather be performed by independent monitoring institutions. Such institutions also have the purpose and responsibility to point out worrying developments. Especially the recently introduced national fiscal councils have considerable potential for increasing transparency and the accountability of governments. However, when comparing their mandate, endowment with executive rights and their factual independence, they differ substantially. Also the fiscal council at the European level, the European Fiscal Board (EFB), would need essential adjustments before it should be allocated additional tasks. Especially the independence from the European Commission would need to be ensured, which would also require an increase in the size of the staff and financial resources (Asatryan et al., 2017). Therefore, in the current state it would be unsuitable to move monitoring or even enforcement to the national or supranational fiscal councils, as proposed, e.g., by Bénassy-Quéré et al. (2018). Furthermore, a full delegation of monitoring and enforcement to technical experts is problematic, as democratic

accountability is essential for the acceptance of fiscal rules. While the political body of the EU in charge of enforcing the European rules, the Council, fulfills this role, it was impaired in the enforcement by time inconsistency and peer pressure. One way to address this problem, is to have democratically legitimised rules with smaller discretionary aspects and larger automatism.

Sanctions would need to be more automatic and better suited to increase political costs. To date, there has been no true imposition of financial sanction under the current framework. One reason might be that sanctions are at the discretion of the Council or a political European Commission rendering decisions on sanctions time inconsistent. Current regulations in that respect are specified especially in one of the six-pack regulations (Regulation (EU) No 1173/2011). The Treaty of Maastricht only mentions interest-bearing deposits but does not specifically regulate how deposits or fines should be designed or imposed. One way to make sanctions more credible would therefore involve more automatic sanctions. Those could be introduced without treaty change but through a new EU regulation. In this regulation, the size and design of sanctions should be explicitly predetermined, such that they would not be at the discretion of the European Commission anymore. This would prevent cases like Spain and Portugal in 2016 when a violation of the rules was declared but the sanctions were set to zero. In addition, the role of independent fiscal councils could be significantly upgraded by voluntarily binding the judgement of the political European Commission about compliance with a rule to the verdict of, e.g., a reformed European Fiscal Board. As foreseen today, the European Council would still vote on the final imposition of sanctions based on a reversed qualified majority. However, cases in which fines are set to zero should be effectively ruled out by this. Various ex-ante provisions could additionally enhance compliance with fiscal rules, e.g., a requirement to comply with fiscal rules could be associated with a precautionary credit line or the debt restructuring mechanism of the European Stability Mechanism.

4 Conclusions

The European fiscal framework is currently characterised by key shortcomings. Especially, the fact that the SGP has been overburdened with new rules and exemption clauses resulted in a complex fiscal framework. This precluded the public and the media from exerting an effective oversight. In combination, this significantly lowered the ability of European fiscal rules to confine the debt bias present in fiscal policy.

Against this background, we propose a new fiscal framework which would unite the European fiscal rules and set stronger incentives to comply with the rules, hereby, promoting more sustainable and crisis resilient public finances. Specifically, our proposal does not require a complete restructuring of the European fiscal framework but rather suggests a refocusing based on many elements which are already in place but need a cautious modification. Essential to our proposal is the merger of all three short, medium and

long-term goals for public budgets into one operational rule. This rule should ideally target expenditures, as in relative terms, this budgetary item is to the largest extent under direct control of the executive government. The long-term goal of bringing debt ratios down below certain thresholds is achieved by including a debt correction factor into the operational rule. The consideration of structurally balanced budgets in the medium-term is achieved via a multi-purpose adjustment account. Besides capturing violations of the structural balance target, this account would also incorporate estimation errors in key figures in the real-time calculation of the structural balance as well as estimates of revenues from discretionary tax measures.

Reducing the number of exemptions and escape clauses significantly to just two cases involving severe economic crises and natural disasters will further contribute to increased simplicity and transparency relative to the status quo. Overall, these refinements should strengthen European fiscal rules and support their contribution to more sustainable public finances. As many of the additions made to the SGP in the past are part of various EU regulations and not of the treaties, implementation of our proposal should be achievable without the need for treaty changes. Rules which might become obsolete by our proposal may be maintained but enforced only through their effect within our framework.

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A Appendix

Table A.1: Baseline Model (EU 28) - Expenditures

Country	Total gen. gov. exp.	Interm. consumpt.	Gross capital formation	Compens. of employees	Subsidies	Interest	Other soc. benefits	Soc. transf. in kind
<i>AUT</i>	−0.555 [0.33]*	−0.426 [0.67]	0.472 [1.36]	−0.185 [0.20]	−0.310 [1.08]	0.241 [0.73]	−0.507 [0.22]**	0.355 [0.29]
<i>BEL</i>	−0.894 [0.39]**	−1.554 [0.51]***	0.511 [1.12]	−0.549 [0.20]***	−0.413 [1.40]	0.182 [0.60]	−0.898 [0.24]***	−0.763 [0.38]**
<i>BGR</i>	−0.115 [0.92]	0.218 [0.79]	−0.322 [2.87]	0.023 [0.89]	1.156 [2.08]	1.561 [2.65]	−1.107 [0.58]*	0.820 [7.70]
<i>CYP</i>	−0.416 [0.54]	0.498 [1.39]	1.938 [1.54]	−0.130 [0.46]	2.752 [3.77]	−1.330 [1.51]	0.140 [0.45]	5.262 [4.81]
<i>CZE</i>	−0.161 [0.50]	0.134 [0.53]	0.155 [2.03]	0.171 [0.39]	−1.636 [1.08]	−2.314 [1.21]*	−0.047 [0.28]	−1.163 [0.34]***
<i>DEU</i>	−0.275 [0.36]	−0.156 [0.25]	−0.384 [0.44]	−0.163 [0.10]	−3.002 [0.65]***	0.874 [0.49]*	−0.605 [0.16]***	−0.247 [0.18]
<i>DNK</i>	−0.732 [0.20]***	−0.664 [0.29]**	1.252 [0.69]*	−0.733 [0.15]***	−1.595 [0.57]***	−2.896 [1.04]***	−0.741 [0.26]***	−0.228 [0.22]
<i>ESP</i>	−0.573 [0.28]**	0.307 [0.44]	1.821 [1.84]	−0.084 [0.35]	1.330 [0.92]	−1.738 [1.13]	−1.380 [0.27]***	0.114 [0.56]
<i>EST</i>	−0.117 [0.19]	0.169 [0.17]	1.115 [0.62]*	−0.238 [0.15]	0.784 [0.81]	0.445 [0.85]	−0.793 [0.12]***	−0.327 [0.43]
<i>FIN</i>	−0.397 [0.13]***	−0.168 [0.20]	0.230 [0.47]	−0.291 [0.18]	−0.269 [0.48]	−0.221 [0.95]	−0.891 [0.21]***	−0.104 [0.27]
<i>FRA</i>	−0.595 [0.11]***	−1.373 [0.46]***	0.396 [0.70]	−0.378 [0.14]***	−2.255 [1.06]**	1.798 [0.90]**	−0.656 [0.12]***	−0.377 [0.17]**
<i>GBR</i>	−0.391 [0.34]	−0.847 [0.47]*	−0.751 [1.41]	−0.410 [0.31]	1.183 [1.50]	6.467 [1.52]***	−1.619 [0.36]***	−0.162 [0.55]
<i>GRC</i>	0.286 [0.33]	2.492 [0.36]***	4.040 [1.62]**	0.770 [0.27]***	−11.396 [5.15]**	−0.565 [1.05]	0.356 [0.27]	0.089 [0.71]
<i>HRV</i>	0.366 [0.36]	0.856 [0.53]	1.546 [1.68]	0.167 [0.25]	0.808 [0.89]	−1.213 [0.52]**	−0.297 [0.53]	−0.815 [0.71]
<i>HUN</i>	1.047 [0.38]***	−0.380 [0.41]	3.484 [2.70]	0.895 [0.38]**	2.856 [1.28]**	−1.600 [0.80]**	0.484 [0.27]*	1.662 [0.93]*
<i>IRL</i>	−1.242 [1.20]	−0.504 [0.64]	2.512 [1.39]*	−0.309 [0.61]	−1.179 [1.10]	−0.697 [1.21]	−0.943 [0.80]	−0.463 [0.71]
<i>ITA</i>	−0.144 [0.20]	−0.066 [0.28]	−0.886 [1.11]	0.181 [0.32]	−0.957 [1.15]	1.984 [0.96]**	−0.381 [0.14]***	0.122 [0.40]
<i>LTU</i>	0.078 [0.29]	0.679 [0.40]*	2.006 [0.61]***	−0.052 [0.28]	1.320 [0.75]*	−1.526 [0.84]*	−0.801 [0.32]**	0.610 [0.65]
<i>LUX</i>	−0.517 [0.24]**	−0.672 [0.34]**	−1.100 [0.92]	−0.299 [0.19]	−0.352 [0.60]	0.380 [0.85]	−0.670 [0.22]***	−0.368 [0.34]
<i>LVA</i>	−0.125 [0.24]	0.402 [0.35]	2.155 [0.87]**	0.402 [0.28]	−0.395 [1.27]	−4.521 [0.91]***	−1.864 [0.35]***	−0.088 [0.57]
<i>MLT</i>	0.953 [0.49]*	0.941 [0.88]	4.073 [2.83]	−0.163 [0.55]	7.305 [2.75]***	1.426 [0.86]*	−0.348 [0.35]	0.335 [1.18]
<i>NLD</i>	−0.556 [0.48]	−0.796 [0.33]**	−0.064 [0.61]	−0.564 [0.19]***	−1.150 [1.04]	0.472 [0.66]	−0.646 [0.24]***	−0.169 [0.63]
<i>POL</i>	0.280 [0.50]	0.511 [0.33]	2.991 [2.49]	−0.041 [0.33]	5.379 [1.60]***	−0.782 [1.57]	−0.461 [0.37]	−0.447 [1.72]
<i>PRT</i>	0.146 [0.56]	0.511 [0.57]	4.801 [2.73]*	0.594 [0.65]	0.791 [1.77]	−0.772 [1.61]	−1.113 [0.34]***	−1.216 [0.70]*
<i>ROU</i>	0.382 [0.26]	−0.450 [0.76]	2.932 [1.82]	1.310 [0.79]*	2.138 [1.25]*	−7.404 [1.44]***	−0.309 [0.40]	2.980 [2.74]
<i>SVK</i>	−0.637 [0.48]	−0.059 [0.79]	1.213 [1.86]	−0.167 [0.32]	0.763 [1.92]	−1.503 [0.87]*	−0.492 [0.34]	1.175 [0.71]
<i>SVN</i>	−0.597 [0.37]	0.225 [0.30]	0.403 [1.05]	0.055 [0.23]	−0.929 [1.25]	0.126 [0.75]	−0.053 [0.16]	−0.187 [0.29]
<i>SWE</i>	0.052 [0.15]	−0.062 [0.24]	0.087 [0.39]	0.113 [0.19]	0.203 [0.58]	1.883 [1.31]	−0.395 [0.19]**	−0.068 [0.48]
<i>Pooled</i>	−0.135 [0.08]*	0.227 [0.10]**	1.370 [0.27]***	0.067 [0.07]	−0.044 [0.35]	−0.849 [0.23]	−0.722 [0.07]***	0.285 [0.27]
<i>Pooled</i>	−0.135 [0.08]	0.226 [0.16]	1.370 [0.27]***	0.037 [0.11]	0.066 [0.58]	−1.379 [0.59]	−0.793 [0.14]***	0.307 [0.23]

Notes: Results are obtained based on country-specific estimations of Equation 1. Reported coefficients correspond to individual estimations for the respective category of expenditures or revenues using time series data on the output gap of the respective country. While country-specific estimations are implemented using generalised least squares, estimates for the pooled sample are extended by fixed effects estimations. Standard errors are corrected for first-order autocorrelation in residuals. In case of the fixed effects estimations, standard errors are clustered at the country-level. The sample is unbalanced and sample size varies across countries: AUT: 21, BEL: 21, BGR: 21, CYP: 18, CZE: 19, DEU: 21, DNK: 21, ESP: 21, EST: 21, FIN: 27, FRA: 27, GBR: 26, GRC: 21, HRV: 15, HUN: 19, IRL: 21, ITA: 21, LTU: 19, LUX: 21, LVA: 19, MLT: 21, NLD: 21, POL: 21, PRT: 21, ROU: 21, SVK: 19, SVN: 18, SWE: 21.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.2: Baseline Model (EU 28) - Revenues

Country	Total general gov. revenue	Taxes on production and imports	Property income	Current taxes on wealth etc.	Net social contrib.	Other current transfers	Capital transfers
<i>AUT</i>	0.654 [0.21]***	0.486 [0.20]**	-2.328 [1.89]	1.888 [0.77]**	0.340 [0.15]**	-0.392 [3.73]	-5.371 [5.23]
<i>BEL</i>	0.935 [0.19]***	1.332 [0.30]***	0.290 [2.53]	1.822 [0.44]***	-0.046 [0.22]	-1.836 [2.29]	1.932 [2.44]
<i>BGR</i>	0.803 [0.58]	1.849 [0.72]**	3.775 [1.96]*	1.860 [1.20]	0.068 [0.50]	-1.898 [2.22]	1.864 [5.06]
<i>CYP</i>	1.694 [0.39]***	2.501 [0.70]***	-0.811 [3.53]	1.909 [1.33]	0.842 [0.57]	0.844 [1.20]	-8.421 [9.22]
<i>CZE</i>	0.913 [0.35]***	0.541 [0.44]	1.236 [1.88]	1.860 [0.53]***	1.405 [0.19]***	-3.317 [2.22]	-2.908 [8.03]
<i>DEU</i>	0.714 [0.17]***	0.637 [0.24]***	2.206 [1.59]	1.767 [0.48]***	0.186 [0.13]	-1.158 [0.65]*	0.395 [0.93]
<i>DNK</i>	1.123 [0.24]***	1.115 [0.34]***	3.304 [1.99]*	1.031 [0.45]**	1.300 [1.42]	-0.297 [1.23]	9.580 [6.35]
<i>ESP</i>	1.352 [0.44]***	2.262 [0.93]**	-1.130 [1.87]	1.908 [0.80]**	0.831 [0.12]***	-1.046 [1.02]	23.185 [10.39]**
<i>EST</i>	0.382 [0.15]***	0.780 [0.21]***	1.144 [1.12]	0.675 [0.38]*	0.260 [0.13]**	0.365 [0.93]	-1.869 [1.64]
<i>FIN</i>	0.788 [0.14]***	0.802 [0.20]***	0.631 [0.92]	1.810 [0.26]***	0.258 [0.24]	-2.324 [1.63]	0.395 [0.95]
<i>FRA</i>	0.795 [0.18]***	0.532 [0.25]**	1.834 [1.77]	3.359 [0.76]***	-0.177 [0.34]	-0.344 [1.16]	-1.468 [6.69]
<i>GBR</i>	1.680 [0.31]***	1.619 [0.40]***	3.991 [3.10]	1.945 [0.50]***	0.839 [0.26]***	0.121 [5.06]	8.521 [5.84]
<i>GRC</i>	0.451 [0.28]	0.959 [0.40]**	0.206 [1.46]	-0.368 [0.64]	0.789 [0.18]***	-2.238 [1.46]	-0.679 [2.49]
<i>HRV</i>	1.109 [0.37]***	1.363 [0.28]***	0.258 [3.27]	1.170 [0.94]	0.753 [0.30]**	6.144 [5.27]	1.774 [20.67]
<i>HUN</i>	0.502 [0.32]	0.136 [0.43]	-2.232 [2.54]	-0.342 [0.78]	1.407 [0.47]***	-2.495 [1.89]	-3.019 [5.77]
<i>IRL</i>	1.408 [0.52]***	1.805 [0.59]***	0.171 [1.43]	1.638 [0.52]***	0.202 [0.66]	6.913 [2.72]**	6.682 [2.29]***
<i>ITA</i>	0.573 [0.25]**	1.206 [0.76]	2.117 [1.79]	1.350 [0.58]**	0.221 [0.57]	-1.274 [0.70]*	-19.709 [6.25]***
<i>LTU</i>	0.810 [0.11]***	0.998 [0.15]***	0.233 [1.31]	2.488 [0.45]***	-0.236 [0.22]	0.770 [1.26]	-3.358 [3.91]
<i>LUX</i>	0.571 [0.16]***	1.281 [0.33]***	3.168 [0.94]***	0.444 [0.33]	-0.033 [0.19]	-1.650 [1.43]	-0.928 [1.42]
<i>LVA</i>	0.810 [0.18]***	1.112 [0.27]***	-2.758 [0.74]***	1.797 [0.18]***	0.408 [0.17]**	1.836 [2.00]	0.491 [3.03]
<i>MLT</i>	0.825 [0.41]**	0.921 [0.57]	0.223 [1.55]	1.165 [0.91]	0.288 [0.37]	0.413 [3.91]	4.024 [8.78]
<i>NLD</i>	1.273 [0.21]***	1.516 [0.32]***	1.008 [2.40]	1.479 [0.55]***	1.402 [0.61]**	-1.101 [1.06]	0.711 [1.60]
<i>POL</i>	1.266 [0.47]***	1.694 [0.49]***	-2.274 [3.69]	3.483 [1.26]***	0.228 [0.58]	-7.925 [5.32]	19.444 [22.46]
<i>PRT</i>	0.792 [0.33]**	1.577 [0.57]***	-3.876 [2.89]	2.107 [1.05]**	0.477 [0.34]	-3.170 [2.78]	-7.501 [3.75]**
<i>ROU</i>	0.589 [0.34]*	0.242 [0.60]	1.075 [1.14]	1.600 [0.61]***	0.390 [0.59]	-0.238 [2.62]	-2.859 [10.25]
<i>SVK</i>	0.591 [0.32]*	0.967 [0.36]***	-1.642 [2.45]	2.134 [0.52]***	0.476 [0.28]*	-4.828 [3.43]	-6.730 [5.57]
<i>SVN</i>	0.738 [0.09]***	1.009 [0.22]***	0.292 [1.28]	1.728 [0.20]***	0.424 [0.12]***	0.212 [1.06]	-3.026 [3.89]
<i>SWE</i>	0.885 [0.18]***	0.678 [0.30]**	1.383 [0.99]	1.384 [0.37]***	0.214 [1.00]	0.293 [1.28]	-2.718 [4.14]
<i>Pooled</i>	0.763 [0.05]***	1.029 [0.08]***	0.313 [0.34]	1.540 [0.11]***	0.341 [0.08]***	-0.346 [0.41]	-0.897 [1.05]
<i>GLS</i>	0.788 [0.07]***	1.028 [0.09]***	0.296 [0.44]	1.595 [0.22]***	0.316 [0.09]***	-0.227 [0.49]	-1.230 [1.01]

Notes: Results are obtained based on country-specific estimations of Equation 1. Reported coefficients correspond to individual estimations for the respective category of expenditures or revenues using time series data on the output gap of the respective country. While country-specific estimations are implemented using generalised least squares, estimates for the pooled sample are extended by fixed effects estimations. Standard errors are corrected for first-order autocorrelation in residuals. In case of the fixed effects estimations, standard errors are clustered at the country-level. The sample is unbalanced and sample size varies across countries: AUT: 21, BEL: 21, BGR: 21, CYP: 18, CZE: 19, DEU: 21, DNK: 21, ESP: 21, EST: 21, FIN: 27, FRA: 27, GBR: 26, GRC: 21, HRV: 15, HUN: 19, IRL: 21, ITA: 21, LTU: 19, LUX: 21, LVA: 19, MLT: 21, NLD: 21, POL: 21, PRT: 21, ROU: 21, SVK: 19, SVN: 18, SWE: 21. Sample size in case of pooled estimates: N=565.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.3: Baseline Model (EU 28) - COFOG Data

Country	General publ. services	Economic affairs	Health	Education	Other main categories	Unemployment	Old age	Survivors	Other sub-categ. of soc. protect.
<i>AUT</i>	-0.188 [0.48]	-2.933 [2.09]	0.265 [0.24]	-0.134 [0.30]	0.497 [1.02]	-3.338 [0.92]***	-0.193 [0.17]	-0.029 [0.14]	-0.415 [0.41]
<i>BEL</i>	-0.355 [0.46]	-0.704 [2.06]	-1.111 [0.52]**	-0.800 [0.22]***	0.164 [0.46]	-2.938 [0.85]***	-0.359 [0.23]	-0.660 [0.15]***	-1.268 [0.37]***
<i>CYP</i>	0.504 [0.54]	-4.347 [3.41]	-0.281 [0.66]	0.158 [0.57]	-0.265 [0.72]	-5.128 [1.09]***	-0.007 [0.52]	-0.283 [0.48]	0.450 [0.64]
<i>CZE</i>	-0.326 [1.23]	-0.706 [1.56]	-0.237 [0.29]	0.241 [0.57]	0.870 [0.55]	-6.916 [1.49]***	0.328 [0.33]	0.030 [0.62]	-0.242 [0.65]
<i>DEU</i>	0.683 [0.31]**	-1.679 [3.22]	-0.185 [0.25]	-0.136 [0.23]	-0.536 [0.24]**	-3.482 [1.02]***	-0.119 [0.09]	0.033 [0.13]	-0.136 [0.34]
<i>DNK</i>	-0.929 [0.77]	-0.856 [0.67]	-0.580 [0.26]**	-0.904 [0.30]***	-0.221 [0.31]	-1.657 [0.80]**	-0.334 [0.24]	-0.999 [0.89]	-0.698 [0.20]***
<i>ESP</i>	-1.667 [0.53]***	-0.680 [1.31]	-0.131 [0.44]	0.171 [0.39]	0.739 [0.61]	-5.916 [1.09]***	-0.637 [0.23]***	-0.471 [0.28]*	0.123 [0.43]
<i>EST</i>	0.653 [0.38]*	-0.051 [0.42]	-0.009 [0.20]	0.144 [0.17]	0.561 [0.42]	-5.476 [0.89]***	-0.599 [0.13]***	-0.483 [0.88]	-0.417 [0.25]*
<i>FIN</i>	-0.393 [0.36]	-0.583 [0.52]	-0.326 [0.26]	-0.304 [0.15]**	-0.329 [0.27]	-1.825 [0.46]***	-0.399 [0.23]*	-0.508 [0.18]***	-0.207 [0.37]
<i>FRA</i>	0.357 [0.52]	-1.473 [0.79]*	-0.301 [0.26]	-0.318 [0.24]	-0.996 [0.42]**	-2.873 [0.77]***	-0.158 [0.24]	-0.553 [0.28]**	-0.593 [0.32]*
<i>GBR</i>	2.267 [1.38]	-1.666 [2.74]	-1.058 [0.30]***	-0.271 [0.63]	-1.010 [0.80]	-6.526 [1.94]***	-0.803 [0.29]***	-7.540 [2.17]***	-1.193 [0.43]***
<i>GRC</i>	1.095 [0.59]*	-2.264 [2.12]	0.655 [0.61]	-0.032 [0.36]	1.607 [0.69]**	-0.079 [1.31]	0.456 [0.31]	0.232 [0.38]	1.567 [0.46]***
<i>HRV</i>	0.549 [0.80]	1.045 [1.08]	0.245 [0.91]	-0.035 [0.39]	1.631 [0.72]**	-0.433 [0.74]	-0.183 [0.51]	-0.102 [0.52]	-0.875 [1.07]
<i>HUN</i>	-0.336 [0.78]	3.222 [1.55]**	0.975 [0.65]	1.289 [0.69]*	1.888 [0.64]***	1.598 [1.53]	1.015 [0.71]	0.393 [0.46]	-0.016 [0.87]
<i>IRL</i>	-0.543 [0.96]	-1.182 [4.40]	-0.859 [0.66]	0.331 [0.69]	0.911 [0.87]	-0.741 [0.85]	-3.327 [1.95]*	-1.261 [1.04]	-0.935 [1.13]
<i>ITA</i>	0.739 [0.62]	-0.908 [1.78]	0.346 [0.32]	0.120 [0.33]	-0.432 [0.54]	-4.821 [0.77]***	0.171 [0.13]	-0.302 [0.12]**	-0.768 [0.51]
<i>LTU</i>	0.026 [1.53]	1.351 [0.99]	0.040 [0.43]	-0.181 [0.29]	0.860 [0.43]**	-2.640 [1.15]**	-0.247 [0.34]	-0.380 [0.33]	-1.119 [0.54]**
<i>LUX</i>	0.337 [0.56]	-0.841 [0.88]	-0.892 [0.34]***	-0.405 [0.34]	-0.785 [0.33]**	-2.109 [1.04]**	-0.503 [0.24]**	1.874 [4.47]	-0.424 [0.24]*
<i>LVA</i>	0.279 [0.25]	-1.114 [0.51]**	0.795 [0.41]*	0.476 [0.31]	1.813 [0.29]***	-5.440 [0.97]***	-1.477 [0.21]***	-1.062 [0.15]***	-1.070 [0.31]***
<i>MLT</i>	0.148 [1.04]	5.106 [1.92]***	1.773 [0.46]***	0.173 [0.51]	1.298 [1.22]	0.785 [3.27]	-0.993 [0.34]***	-0.726 [0.44]*	0.921 [0.61]
<i>NLD</i>	0.766 [0.52]	-1.337 [1.15]	-0.208 [0.78]	-0.318 [0.22]	-0.646 [1.86]	-6.934 [1.16]***	-0.535 [0.31]*	-0.941 [0.91]	0.206 [0.33]
<i>POL</i>	-0.107 [0.87]	3.672 [2.33]	0.611 [1.24]	0.191 [0.47]	0.846 [1.01]	0.347 [2.40]	-1.073 [0.54]**	0.028 [0.82]	-0.761 [1.32]
<i>PRT</i>	-1.877 [1.07]*	3.914 [3.45]	-0.399 [0.55]	0.819 [0.79]	1.416 [0.84]*	-7.331 [1.58]***	-0.779 [0.41]*	-3.224 [1.56]**	-0.027 [0.82]
<i>ROU</i>	-1.924 [1.26]	1.498 [1.00]	-0.334 [1.06]	2.349 [0.82]***	1.548 [0.85]*	-0.709 [1.40]	-0.604 [0.54]	-0.676 [0.71]	-0.359 [0.95]
<i>SVK</i>	-2.639 [1.03]**	-0.874 [1.18]	0.821 [0.61]	-0.377 [0.56]	-0.688 [0.69]	-10.273 [1.03]***	0.033 [0.38]	-0.012 [0.41]	-1.140 [0.37]***
<i>SVN</i>	0.160 [0.57]	-2.576 [2.16]	-0.048 [0.21]	-0.040 [0.26]	0.233 [0.43]	-5.729 [1.24]***	-0.195 [0.26]	2.487 [2.86]	-0.004 [0.27]
<i>SWE</i>	0.978 [0.47]**	-0.312 [0.63]	-0.203 [0.17]	0.029 [0.28]	-0.044 [0.42]	-1.531 [1.31]	-0.264 [0.45]	-0.545 [0.38]	-0.116 [0.58]
<i>Pooled</i>	0.031 [0.17]	-0.326 [0.33]	0.057 [0.10]	0.198 [0.08]**	0.613 [0.13]***	-3.605 [0.26]***	-0.521 [0.11]***	-0.298 [0.33]	-0.465 [0.11]***
<i>Pooled</i>	-0.094 [0.22]	-0.099 [0.38]	0.087 [0.13]	0.171 [0.19]	0.613 [0.20]***	-3.839 [0.56]***	-0.527 [0.16]***	-0.576 [0.19]***	-0.419 [0.16]**

Notes: Results are obtained based on country-specific estimations of Equation 1. Reported coefficients correspond to individual estimations for the respective category of expenditures or revenues using time series data on the output gap of the respective country. While country-specific estimations are implemented using generalised least squares, estimates for the pooled sample are extended by fixed effects estimations. Standard errors are corrected for first-order autocorrelation in residuals. In case of the fixed effects estimations, standard errors are clustered at the country-level. The sample is unbalanced and sample size varies across countries: AUT: 21, BEL: 21, CYP: 18, CZE: 19, DEU: 21, DNK: 21, ESP: 21, EST: 21, FIN: 26, FRA: 21, GBR: 21, GRC: 21, HRV: 15, HUN: 19, IRL: 21, ITA: 21, LTU: 19, LUX: 21, LVA: 19, MLT: 21, NLD: 21, POL: 21, PRT: 21, ROU: 21, SVK: 19, SVN: 17, SWE: 21. Sample size in case of pooled estimates: N=549.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.