Brändle and Elsener
Swiss Journal of Economics and Statistics (2024) 160:11
https://doi.org/10.1186/s41937-024-00128-z

Swiss Journal of Economics and Statistics

LITERATURE REVIEW

Open Access

Do fiscal rules matter? A survey of recent evidence

Thomas Brändle[1] and Marc Elsener[2*]

Abstract

Fiscal rules are argued to be important for sound and sustainable fiscal policies and have been increasingly adopted over the last 20 years. As increased fiscal pressure and fiscal risks urge countries to address the public debt legacy left by recent economic crises, fiscal rules come under greater scrutiny. To inform the debate on fiscal frameworks, this paper presents a comprehensive survey of the empirical literature on the impact of fiscal rules. In particular, we discuss the recent empirical literature that investigates the impact of fiscal rules on various elements related to fiscal performance and beyond. Our survey finds that fiscal rules are associated with improved fiscal performance as approximated by improved budget balances, lower debt and lower public spending volatility. Furthermore, empirical research finds that fiscal rules are related to more accurate budget forecasts and improved sovereign bond ratings. From a macroeconomic perspective, well-designed fiscal rules do not principally undermine public investment, do not increase pro-cyclicality in fiscal policy-making and can support fiscal consolidations. These results, however, also depend on the broader economic and institutional context. Moreover, there is emerging literature that links fiscal rules to macroeconomic and broader political outcomes, such as income inequality and political polarisation. We discuss methodological challenges related to identification and point to avenues for future research.

Keywords Fiscal rules, Independent fiscal institutions, Public debt, Fiscal policy, Fiscal sustainability

JEL Classification E61, E62, H1, H6

1 Introduction

To mitigate the economic consequences of the COVID-19 crisis, governments responded with policy packages of often unprecedented size, followed by countries' public debt soaring substantially. At the same time, it is evident that public debt varies across countries (Fig. 1).

Fiscal rules are considered a key institutional instrument for the conduct of sound and sustainable fiscal policies and eventually for the resilience of public finances (BIS, 2023). In particular, they are argued to discipline politicians' public spending behaviour, create confidence for economic agents and allow to build up fiscal buffers for economic shocks.

In response to the COVID-19 pandemic, countries adapted their fiscal frameworks, including the activation of escape clauses or the temporary suspension of fiscal rules (e.g. Davoodi et al., 2022a). With increased fiscal pressure and fiscal risks, fiscal frameworks come under greater scrutiny, as countries need to balance recovery efforts with the public debt legacy. In parallel, countries face spending pressures from structural challenges, such as ageing, health care, defence and the green transition.

A case in point is the debate on the recent reform of the EU fiscal framework that has been established around 25 years ago. A prominent example of fiscal rules at the national level is the German debt brake. Following the decision of the German Constitutional Court declaring void the retroactive reallocation of COVID-19 credits to

*Correspondence:
Marc Elsener
marc.elsener@efv.admin.ch
[1] Swiss Federal Department of Finance, Federal Finance Administration and University of Basel, Faculty of Business and Economics, Bundesgasse 3, 3003 Berne, Switzerland
[2] Swiss Federal Department of Finance, Federal Finance Administration, Bundesgasse 3, 3003 Berne, Switzerland

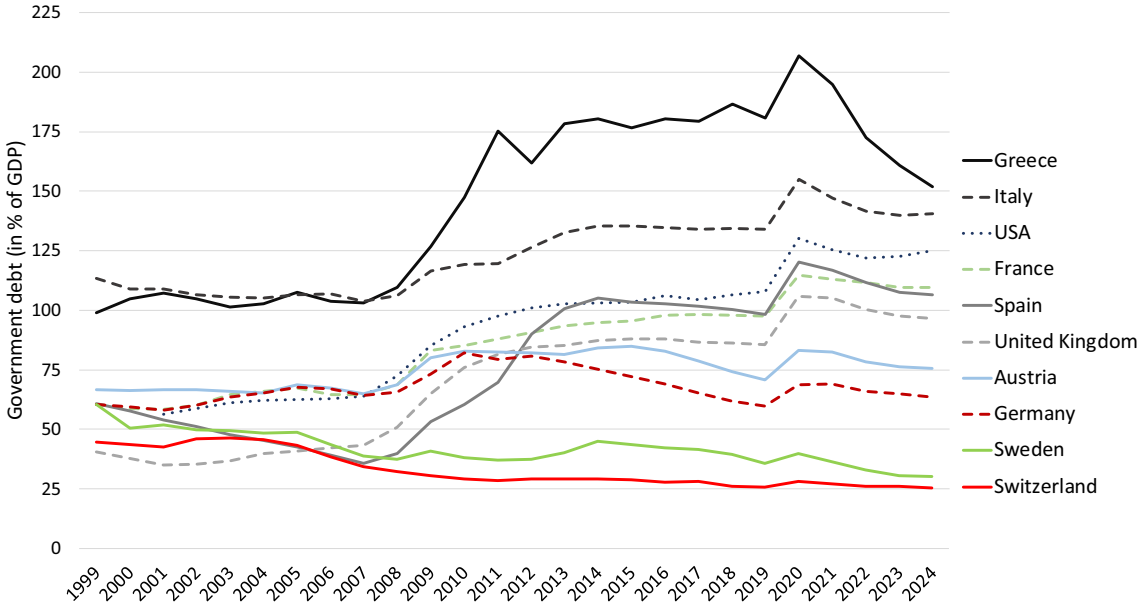

Fig. 1 Government debt in selected OECD countries, 1999–2024. *Source* OECD

the special-purpose funds end of 2023, there is a heated debate on whether the provisions of the debt brake can be reconciled with structural spending pressures for public infrastructure, decarbonisation and defence. Another example is the Swiss debt brake introduced more than 20 years ago. Notably, this fiscal rule was supported by a large majority of voters in a constitutional popular vote.

Over the past decades, a growing number of countries have introduced a rules-based framework for fiscal policy, totalling up to over 100 countries by 2021. This increasing number of countries with experience in conducting fiscal policy guided by fiscal rules and the policy challenges ahead invite a comprehensive assessment of the empirical evidence on their impacts.

To promote evidence-based policy-making, this review provides a comprehensive survey on the impact of fiscal rules on various dimensions of fiscal performance and broader macroeconomic and political outcomes, so far lacking in the literature. Earlier or more specific reviews are presented by Feld and Reuter (2017), by Burret and Feld (2014) with a focus on the subnational level in the USA and Switzerland, by Potrafke (2023), whose far reaching survey pays particular attention to the impact of fiscal rules on different levels of government for specific countries and by Blesse et al. (2023) on public investment.

The review includes primarily recent studies on fiscal rules at the national level, with a focus on advanced economies. For EU countries, this often coincides with evidence on the EU fiscal framework. We selectively refer to evidence from the subnational level. A case in point are Swiss cantons with a long tradition of fiscal rules and decentralised fiscal autonomy. With a view to policy advice, the review presents a non-technical discussion of the studies' key results. It points to the underlying data and highlights empirical methods as well as their limitations.

The review shows that the empirical literature on fiscal rules has become differentiated and has made substantial progress in underpinning the role of fiscal rules in shaping fiscal performance.

First, there is broad-based evidence that fiscal rules are associated with improved fiscal performance (e.g. Badinger & Reuter, 2017; Caselli & Reynaud, 2020; Fall et al., 2015). Second, there is clear-cut evidence that fiscal rules are related to more accurate budget forecasts, being important for fiscal planning and fiscal credibility (e.g. Luechinger & Schaltegger, 2013; Picchio & Santolini, 2020). Another strand of the literature provides evidence for the beneficial impact that fiscal rules have on sovereign bond ratings, being crucial for financial markets' assessments (e.g. Afonso & Jalles, 2019; Feld et al., 2017; Thornton & Vasilakis, 2017). Another line of empirical research suggests that fiscal rules do not principally hamper public investment. However, public investment can be put at risk, if the design of fiscal rules is overly rigid, especially during periods of fiscal consolidation (e.g. Delgado-Téllez et al., 2022; Ardanaz et al., 2021; Vinturis, 2023). Moreover, the evidence shows that fiscal rules do not increase pro-cyclicality in fiscal policy-making (e.g. Combes et al., 2017; Guerguil et al., 2017; Reuter et al., 2022) and can support fiscal adjustments (e.g. Chrysanthakopoulos & Tagkalakis, 2023; Gootjes & de Haan,

2022b). Evidence from large country samples suggests that the design of fiscal rules matters and the impact of fiscal rules depends on the economic and institutional context.

Extending the perspective to further elements of fiscal frameworks, there is a growing body of research on independent fiscal institutions (IFI). Empirical studies find that well-designed IFIs complement fiscal rules and are related to improved fiscal performance (e.g. Beetsma et al., 2019; Chrysanthakopoulos & Tagkalakis, 2022; Debrun & Kinda, 2017).

In light of the experiences with the global financial crisis, there is emerging work on the negative side effects that fiscal rules may have on inequality (Hartwig & Sturm, 2019) and political polarisation (Aaskoven, 2020). However, this research is in its infancy.

The empirical literature suggests that fiscal rules work as a commitment device and foster fiscal performance. Still, there is disagreement on whether fiscal rules have a causal effect on constraining fiscal policies. From a methodological perspective, a positive relationship between fiscal rules and fiscal performance does not necessarily imply causality. It may simply reflect the fact that governments, which are more concerned with sound fiscal policies and fiscal sustainability, are also more likely to introduce and implement fiscal rules. Or, it may also reflect that governments are more likely to implement rules when they expect them to be achievable, such as when the economy and public finances are already expected to naturally recover following a crisis.

In this context, Heinemann et al. (2018) provide a first meta-regression analysis covering 30 studies on the relationship between fiscal rules and fiscal performance. Their evidence points to a constraining effect of fiscal rules on budgetary aggregates. However, this result is weakened as their analysis reveals an upward bias if endogeneity concerns are not explicitly taken into account. In other words, empirical results tend to overestimate the impact of fiscal rules. Similar concerns matter when studying the interaction of fiscal rules with independent fiscal institutions and the quality of the broader institutional context. To mitigate these concerns, more recent empirical studies often use cutting-edge empirical methods to identify causality, including difference-in-differences, instrumental variables, quasi-natural experiments and propensity scores-matching.

A key question is which types of fiscal rules are most effective and in which institutional context. Asatryan et al. (2018) emphasise the importance of anchoring fiscal rules at the constitutional level to increase commitment. As to the type of fiscal rules, the evidence finds mostly budget balance rules and expenditure rules to be effective. Regarding the design, research suggests that well-designed fiscal rules improve fiscal performance, protect public investment and reduce the pro-cyclical bias in fiscal policy-making. Key design features involve a strong legal basis, binding enforcement and provisions that take into account the economic cycle and clearly define escape clauses for unforeseen events beyond government control. As to the institutional context, there is promising work on the interaction of fiscal rules and the broader institutional quality (e.g. Bergman & Hutchison, 2015; Bergman et al., 2016). Closely related, there is innovative research that studies the determinants of compliance with fiscal rules, highlighting the importance of political and economic factors (e.g. Reuter, 2019). Finally, empirical research initiated to analyse the relationship between fiscal rules and macroeconomic outcomes, such as economic growth, inflation and public-sector efficiency (e.g. Gründler & Potrafke, 2020; Combes et al., 2018; Christl et al., 2020).

The review informs the debate on resilient public finances in the aftermath of COVID-19. It indicates that there are good reasons to uphold well-designed fiscal rules even though there appear to be ever more areas for policy action instigating higher public spending. But while recent crises put fiscal rules to a test, they also provide an additional rationale for them: countries which have adhered to fiscal rules in the past benefit from lower public debt, as fiscal buffers enable them to respond to future crises more forcefully.

The paper is organised as follows: Section 2 sets the scene highlighting the deficit bias, the rationale for fiscal rules and trends in fiscal rules. Section 3 reviews the empirical evidence. Section 4 concludes.

2 Setting the scene

Public debt levels and dynamics are very heterogeneous across OECD countries. Jorda et al. (2016) and Mauro et al. (2015) study public debt over the very long term. Jorda et al. (2016) suggest that (financial) crises have been the most important driver of rising public debt. A recent study by Bernardini and Forni (2020) supports this reasoning as it is argued that financial crises tend to be followed by a large and prolonged increase in public debt than after other recessions. Exceptional economic crises, counter-cyclical fiscal policies and public investment peaks justify higher discretionary public spending and thus public debt. Still, there are political economy dynamics that help to explain differences in fiscal policies and public debt, most notably the deficit bias.

2.1 Deficit bias

Alongside the substantive debate about an appropriate fiscal policy, political economy considerations figure prominently among the explanations for why there is a

deficit bias in fiscal policies and why governments rarely deliver on counter-cyclical fiscal policies, especially in good times (for an overview, see Alesina & Passalaqua, 2016; Yared, 2019).

A first line of reasoning is presented by Buchanan and Tullock (1962) and Brennan and Buchanan (1980). They put forward the hypothesis of fiscal illusion to explain persistent government deficits. This hypothesis states that voters overvalue current spending relative to the cost of future taxation, thus violating the intertemporal budget constraint and giving rise to a deficit bias.

But even if voters put sufficient weight on the cost of future taxation, politicians may still face incentives to overspend. For example, due to short-term re-electoral incentives and by exploiting informational advantages on fiscal policy issues vis-à-vis the voters (e.g. Alesina & Tabellini, 1990; Brender & Drazen, 2005).

A second line of reasoning stresses the distortions stemming from distributive conflicts among competing interest groups, e.g. in countries with more political polarisation and fragmentation. In response to special interests, politicians may tend to spend excessively on targeted distributive purposes, neglecting the effect on the overall tax burden to be carried by all tax payers. The aggregate result is excessive spending that undermines fiscal sustainability and potentially diverts scarce public resources from their most efficient use. The underlying mechanism is dubbed the 'common pool' problem (von Hagen & Harden, 1994).

A bias towards running public deficits can also be explained by delayed fiscal adjustment. In the wake of a negative fiscal shock, political parties representing different electoral constituencies can be entrapped in a lasting conflict over how to distribute the costs of fiscal adjustment and thus delay needed economic policy reforms (Alesina & Drazen, 1991).

Finally, current generations can have an incentive to enjoy the benefit of public expenditures while passing on the tax burden to future generations. As the latter cannot vote, their voice is not heard. As a result, government deficits and debt become an instrument of intergenerational redistribution (Cukierman & Meltzer, 1986). These dynamics tend to matter more in ageing societies (Yared, 2019).

To address these dynamics inherent to budgetary decision-making, it is considered crucial to create incentives that induce governments to recognise the entire costs and benefits of public spending over the medium to long term. This is even more the case in a monetary union where coordination failures and moral hazard incentives may contribute to negative fiscal spillovers across countries. One way to do this is to set fiscal frameworks that limit the discretion of politicians and increase fiscally responsible decision-making.

2.2 Fiscal rules

In the economic policy debate, Kopits and Symansky (1998) identify various rationales for fiscal rules, including (i) fostering macroeconomic stability, (ii) supporting other financial policies, (iii) maintaining fiscal sustainability, (iv) avoiding negative spillovers within a currency union and (v) ensuring the credibility of government policies over time. Schaechter et al. (2012) underline fiscal responsibility and debt sustainability by arguing that fiscal rules aim to correct distorted incentives and control pressures to overspend in good times. According to Eyraud et al. (2018), fiscal rules contribute to a government's fiscal credibility in three possible ways: (i) by tying politicians' hands, (ii) by signalling commitment to fiscal responsibility, (iii) by crystallising political consensus on fiscal responsibility across political parties. Moreover, while crises also test the resilience of fiscal frameworks, they also provide an additional rationale for fiscal rules: countries benefit from a good track record of compliance with fiscal rules and sound public finances. It allows to build up fiscal buffers that enable to respond to large crises more forcefully (IMF, 2021).

While there are strong rationales for fiscal rules, resulting in a stronger role for the minister of finance and incentivising policy priority setting to achieve sound and sustainable fiscal policies over the medium term, rigid fiscal rules[1] are considered counter-productive. This may apply when economic policies improve the fiscal stance in the long term, even though they may entail short-term fiscal burden. This is particularly relevant in the case of fiscal rules that restrict productive public investments and thus hinder economic growth and improvements in the debt-to-GDP ratio in the medium term. Moreover, accommodating growth-friendly structural reforms with fiscal policy measures may conflict with strict fiscal rules. In other words, fiscal rules may reduce incentives to carry out structural reforms.

In theoretical models with a benevolent planner, fiscal rules may prevent the conduct of optimal fiscal policies. This is the case if rules limit policy flexibility, including (i) reducing the capacity to run counter-cyclical fiscal policies, (ii) inducing overly low levels of public-goods provision and public investment (Chari et al., 1994; Stockman, 2001), or (iii) giving rise to 'creative accounting' (Milesi-Ferretti, 2004; von Hagen & Wolff, 2006). In a recent theoretical contribution, Azzimonti et al. (2016), however,

[1] Rigid fiscal rules, as opposed to flexible ones, are understood as rules that do not provide any specific features to enhance flexibility (e.g. escape clauses or provisions taking into account counter-cyclicality), see also the brief discussion in Sects. 2.3 and 3.4.2 respectively.

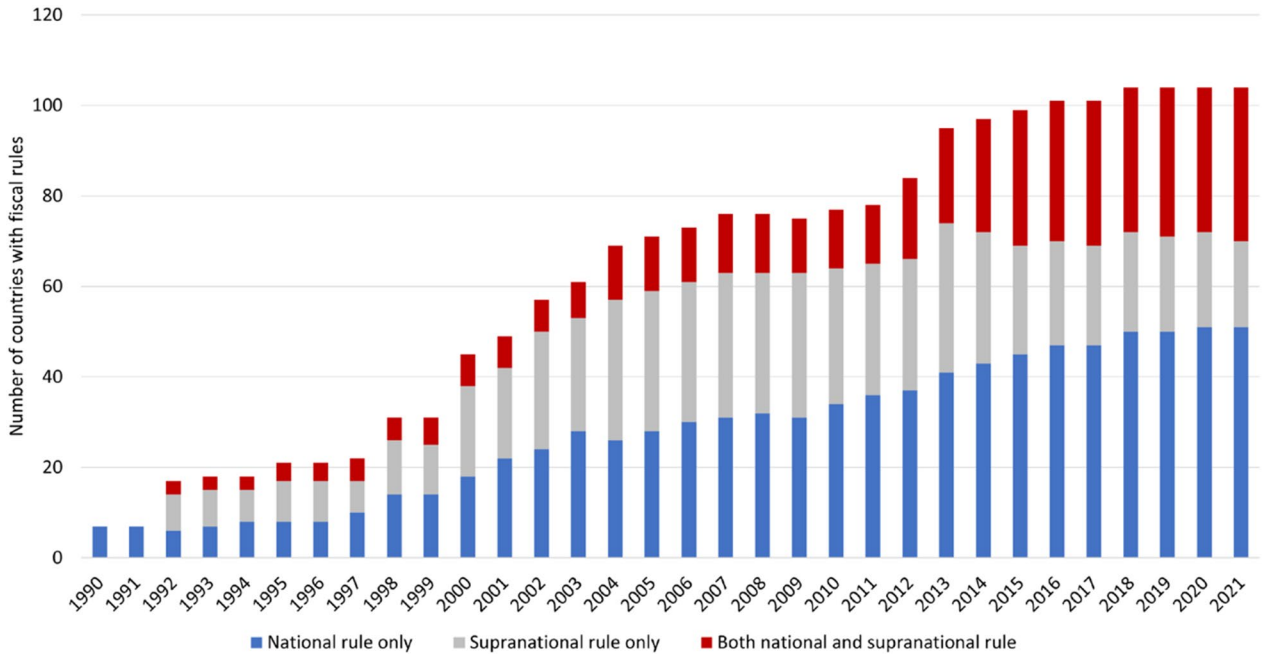

Fig. 2 Adoption of fiscal rules since 1990. *Source* IMF Fiscal Rules Dataset—1985–2021; Davoodi et al. (2022b). Notes: Number of countries with at least one fiscal rule. Fifty-three countries are subject to supranational rules that often complement national fiscal rules. These include 27 EU member states, 6 in Eastern Caribbean Currency Union (ECCU), 8 in West African Economic and Monetary Union (WAEMU), 6 in Central African Economic and Monetary Community (CEMAC), and 6 in East Africa Economic and Monetary Community

offer a more differentiated analysis of the costs (less responsive public good provision and higher volatility in tax rates) and benefits (lower debt permitting higher average levels of public goods and lower taxes) of imposing fiscal rules. Further recent theoretical studies discuss optimal design features of fiscal rules highlighting the trade-off between commitment and flexibility (e.g. Halac & Yared, 2014; Yared, 2019).

Overall, governments' decisions result from manifold constraints and incentives, including political economy mechanisms. Therefore, fiscal rules may increase welfare by serving as an institutional commitment device for sound and sustainable fiscal policies. This brief discussion shows that assessing the costs and benefits of fiscal rules is ultimately an empirical question.

2.3 Trends in fiscal rules

This section draws on the excellent work by the IMF (Davoodi et al., 2022a) and provides a brief idea on fiscal rules and how they evolve.

Since the late 1980s, a growing number of countries have introduced a rules-based framework for the conduct of fiscal policy, totalling up to over 100 countries by 2021 and led mostly by advanced economies (Fig. 2). The adoption of fiscal rules has been often driven by exogenous factors, such as financial crises, major shocks or phases of severe economic downturns, leading to abrupt rises of public debt and putting macroeconomic stability at risk. Much in the same way, the introduction of the supranational framework preparing for the European Economic and Monetary Union (EMU) came as an external impulse to adopt fiscal rules.

Over the last decades, fiscal rules evolved dynamically with regard to type (Box 1) and the number of fiscal rules used (Figs. 3 and 4). A frequent combination is a debt rule supported by an operational rule such as a budget balance rule or an expenditure rule. The increase in the number of fiscal rules used is also driven by EU countries that adopted national rules along with the commonly agreed EU fiscal framework.

Along with their expansion, the design of fiscal rules experienced a continuous refinement. In particular, the design has been progressively enriched to enhance flexibility (including escape clauses and cyclical adjustment components) and strengthen enforcement and monitoring of fiscal rules. The latter includes strengthening the legal basis and installing independent monitoring by IFIs (Fig. 5). Eyraud et al. (2018) define such rules as 'second-generation' fiscal rules. While multiple and refined rules may ensure greater fiscal discipline, they also increase

Box 1 Types of fiscal rules

According to the IMF, a fiscal rule is a provision (or a set of provisions) that imposes long-lasting constraints on fiscal policy. Fiscal rules typically set numerical or pre-defined quota targets on budgetary aggregates ("numerical"); they can also be extended by obliging governments to follow certain budgetary procedures. Four basic types can be distinguished:

Debt rules set an explicit ceiling for public debt, typically expressed in per cent of GDP, that serves as the objective of achieving convergence to a sustainable debt level. Debt rules are easy to communicate, but do not provide short-term guidance and are partially affected by factors beyond the control of governments (e.g. interest rates).

Budget balance rules constrain the budget aggregate that influences the debt ratio and are largely under government control. Such rules provide operational limits and can be specified as limits on the overall balance, primary balance, or structural or cyclically adjusted balance. Side rules for cyclical adjustment, however, tend to be difficult to communicate and to monitor.

Expenditure rules set limits on total or parts of government expenditures. They are relatively easy to operate and monitor, typically set in absolute terms or growth rates and refer to a specific time horizon. These rules are not linked directly to debt sustainability as they do not consider the revenue side. They can provide, however, an operational tool to trigger fiscal consolidation when accompanied by debt rules. Unless flanked with rules for cyclical adjustment, expenditure rules do not restrict the economic stabilisation function of fiscal policy in times of adverse shocks as they do not require adjustments to cyclical or discretionary reductions in tax revenues.

Revenue rules set ceilings on revenues and are aimed at boosting revenue collection and/or preventing an excessive tax burden. Most of these rules are not directly linked to public debt or spending. Setting ceilings or floors on revenues is challenging as revenues are highly cyclical.

Source: Taken from Davoodi et al. (2022a), Annex I

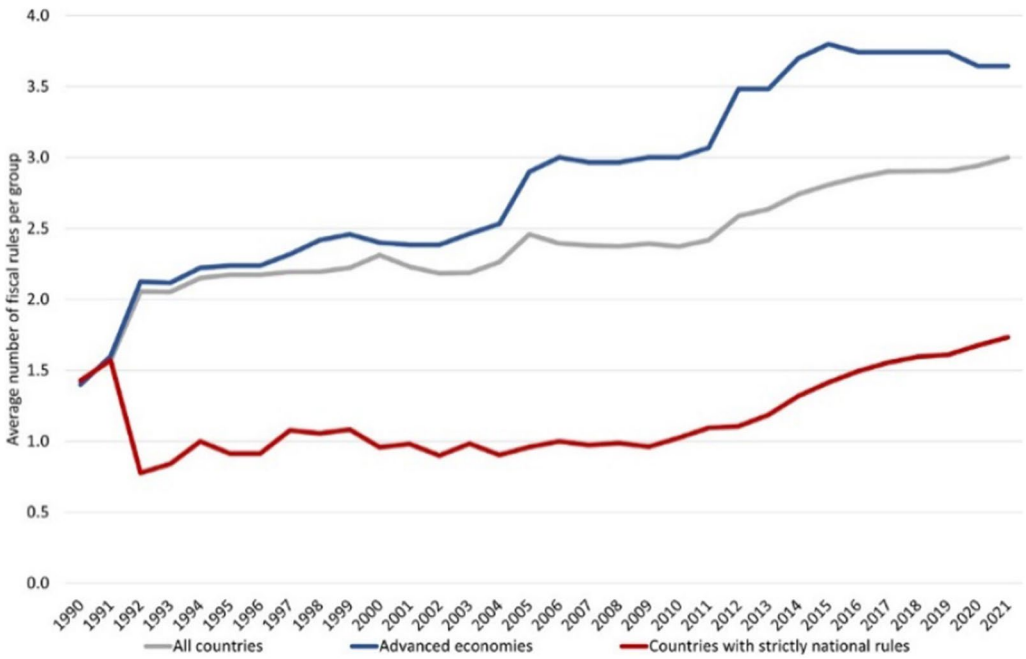

Fig. 3 Number of rules per country. Sources: IMF Fiscal Rules Dataset: 1985–2021; Davoodi et al. (2022b). Notes: According to the definition of the IMF, advanced economies include Andorra, Australia, Austria, Belgium, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxemburg, Macao, Malta, the Netherlands, New Zealand, Norway, Portugal, Puerto Rico, San Marino, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, UK and the USA

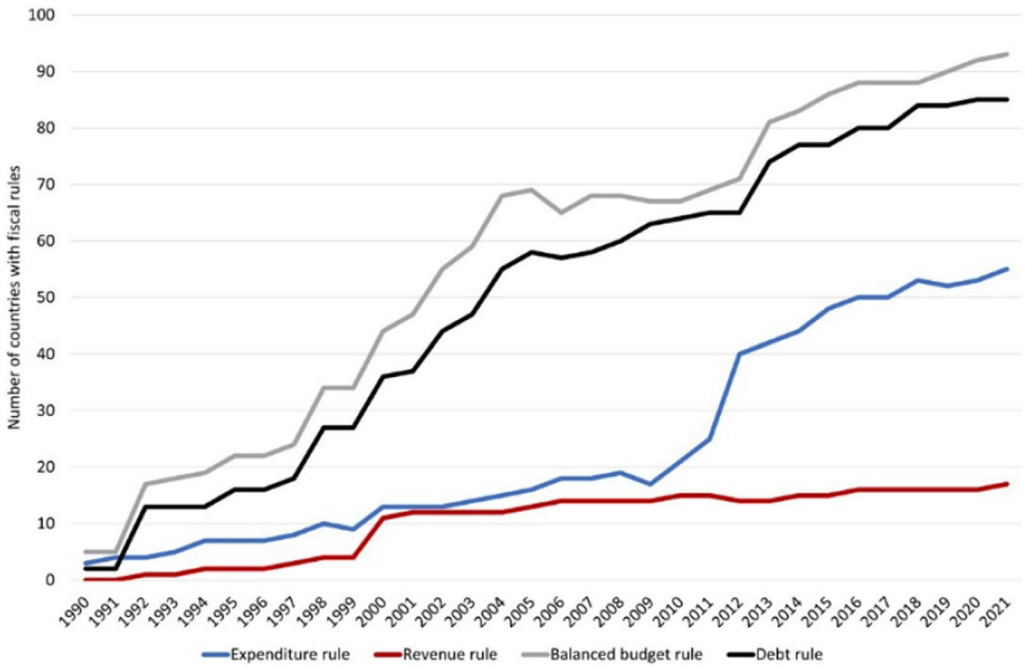

Fig. 4 Types of fiscal rules. Sources: IMF Fiscal Rules Dataset: 1985–2021; Davoodi et al. (2022b). Notes: See Fig. 3

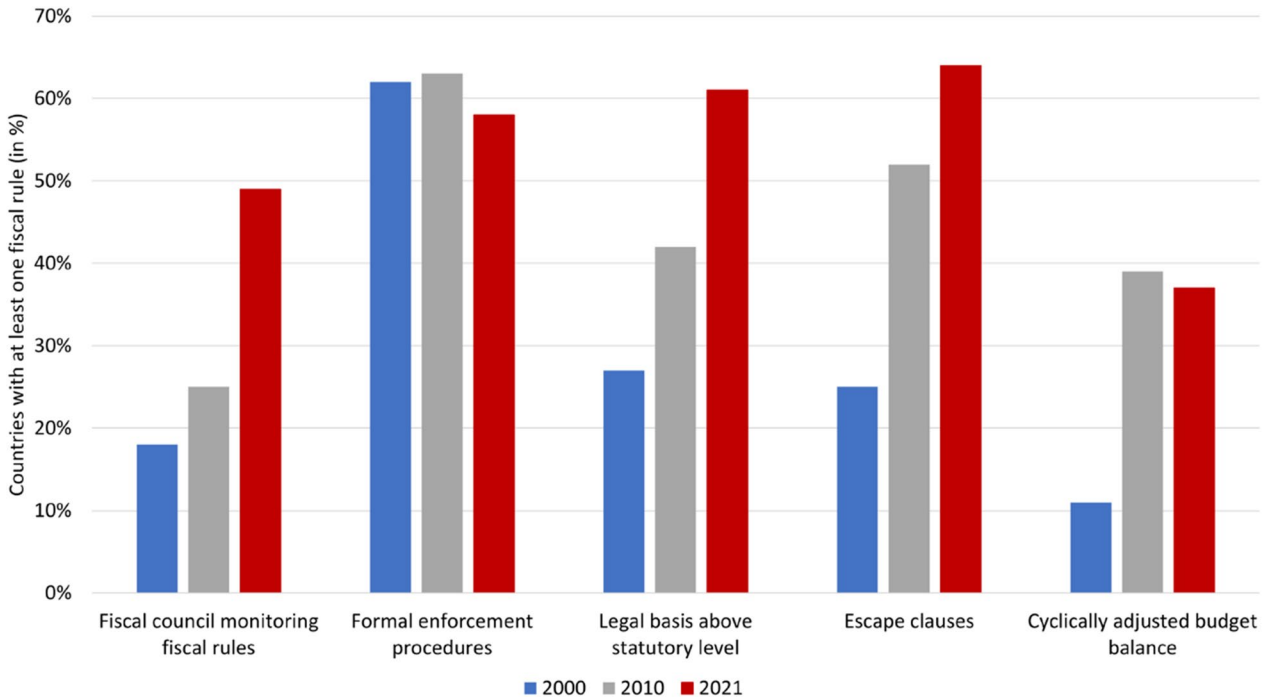

Fig. 5 Fiscal rules flexibility and enforcement characteristics, 2000–2021. Source: IMF Fiscal Rules Dataset: 1985–2021; Davoodi et al. (2022b).

Note: Per cent of total number of economies with at least one fiscal rule

complexity of the fiscal framework and thus complicate public communication and fiscal rules compliance.

3 Empirical evidence on fiscal rules

A rich empirical literature investigates the impact of fiscal rules. First, the focus is on surveying recent studies that investigate the relationship between fiscal rules and 'traditional' fiscal performance measures. Second, studies on related dimensions, including the impact of fiscal rules on budget forecasts and sovereign bond ratings, are discussed. Third, we review the studies on fiscal rules and public investment. Fourth, we survey empirical work that examines the relationship between fiscal rules and pro-cyclicality. Fifth, we provide an overview of the emerging literature on fiscal rules and fiscal consolidations. Sixth, we focus on the interaction of fiscal rules and independent fiscal institutions. Seventh, this section presents emerging evidence on fiscal rules and broader macroeconomic and political outcomes. The section concludes with a discussion of recent research on the compliance with fiscal rules. Table 1 in the Appendix presents an overview of the empirical studies.

3.1 Do fiscal rules improve 'traditional' fiscal performance measures?

A first comprehensive study is presented by Debrun et al. (2008). They exploit a sample of 25 EU countries for the period 1990–2005 using dynamic panel estimation methods. It is found that budget balance and debt rules contribute to limiting the budget deficit. The study acknowledges that fiscal outcomes and fiscal rules may be jointly determined by unobserved political factors. However, the authors argue that the evidence suggests that causality runs from fiscal rules to fiscal outcomes, and that rules that take into account the stabilisation function of fiscal policy are associated with less pro-cyclical policies.

For EU countries and the period 1990–2012, Nerlich and Reuter (2013) construct a new set of indicators for national fiscal institutions. These national fiscal institutions have been influenced by the EU fiscal framework. The authors use dummy variables instead of the composite indices often employed in the literature, which better allows to quantify the impact of changes in fiscal frameworks. Using a dynamic panel estimation approach, they find that the introduction of fiscal rules is related to lower public expenditures as well as to lower revenues. As the impact on revenues is smaller, the primary balance improves. This impact is stronger when fiscal rules are enacted in law or constitution and supported by independent fiscal institutions and effective medium-term expenditure frameworks. Fiscal rules have the strongest limiting impact on social spending, compensation of public employees, general public services and defence expenditures. While balanced budget rules affect most expenditure categories, the effect of debt rules is concentrated on specific categories. For expenditure rules, no statistically significant relationships are found.

Based on a panel of 30 OECD countries, Fall et al. (2015) find that fiscal rules are related to improved fiscal performance. In particular, a budget balance rule appears to have a positive and significant effect on the primary balance and a negative and significant effect on public spending. Expenditure rules are associated with lower expenditure volatility and higher public investment efficiency.

Focusing on expenditure rules, Cordes et al. (2015) present an analysis for 29 advanced and developing countries for the period 1985–2013. Using a dynamic panel estimation approach, the analysis shows that these rules are associated with better spending control, countercyclical fiscal policy and improved fiscal discipline. The authors also suggest that expenditure rules are associated with lower public expenditure volatility and higher public investment efficiency.[2]

Based on data from 74 countries from the years between 1985 and 2012, Badinger and Reuter (2017) also find that countries with more rigorous fiscal rules show a better budgetary balance, lower interest rate spread for bonds and lower GDP volatility. They address issues related to the measurement of the stringency of fiscal rules and endogeneity in a novel way: Identification of their effects is achieved by exploiting institutional variables (checks and balances, government fragmentation, inflation targeting) as determinants of fiscal rules in an instrumental variable estimation approach.

Asatryan et al. (2018) study whether constitutional-level fiscal rules—expected to be more binding—impact fiscal outcomes. They exploit historical data for a large set of countries dating back to the nineteenth century. In a first step, a synthetic control analysis for nine case study countries is presented. For each of these countries, the authors estimate the counterfactual levels of fiscal policy variables after introducing or lifting a balanced budget rule; that is, the fiscal outcomes in a hypothetical country with or without a corresponding rule.[3] In the majority of case studies, the synthetic control approach provides evidence

[2] Albuquerque (2011) studies whether fiscal institutions impact public spending volatility. For 23 EU countries, he provides first evidence for a negative impact of the quality of fiscal institutions as approximated by a fiscal delegation and a fiscal rule index on discretionary public spending volatility.

[3] The synthetic control method is based on the idea that a weighted average of countries in the control group can represent the properties of an affected country better than a single unaffected country alone. The counterfactual outcomes are compared to the actual fiscal variables.

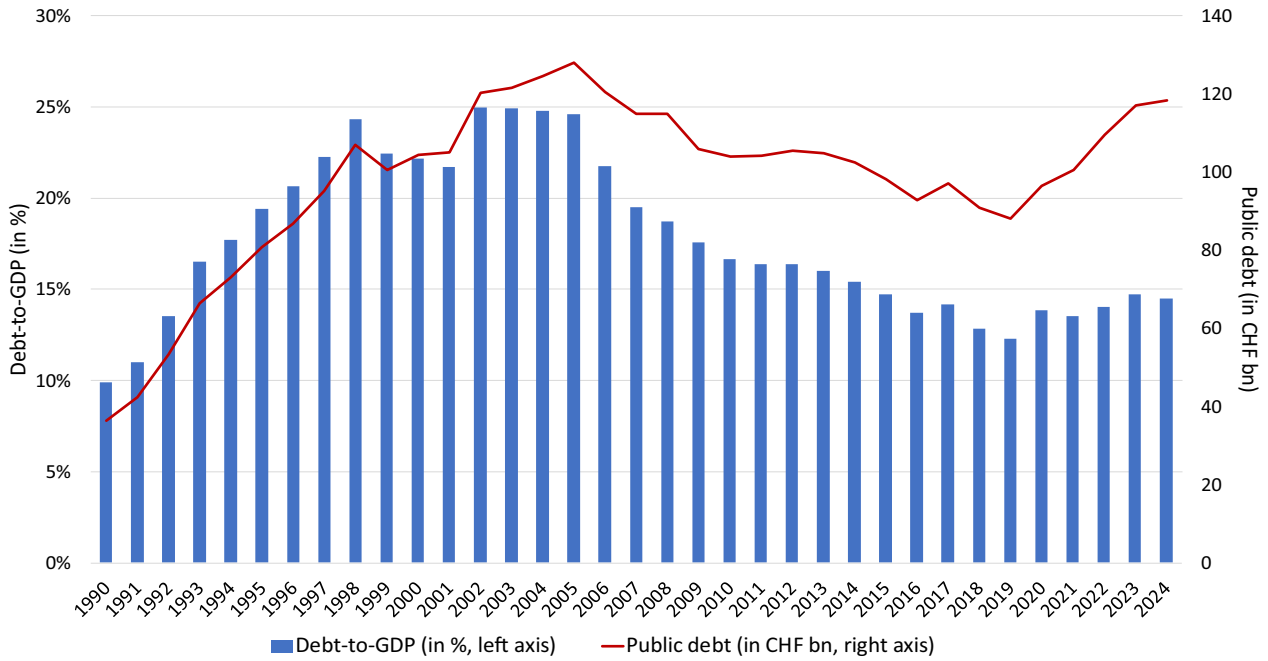

Fig. 6 Central government debt in Switzerland, 1990–2024. Source: Federal Finance Administration

that balanced budget rules constrain government debt and expenditures, but also highlight country-specific circumstances. For the introduction of the debt brake in Switzerland in 2003, the synthetic control analysis suggests that it leads to a large reduction of the debt-to-GDP ratio by about 30 percentage points. However, the adoption of the debt brake followed a period of increasing government debt, raising the issue of selection bias. Applying a difference-in-differences estimation approach, the authors find that the introduction of a constitutional balance budget rule leads to a lower probability of sovereign debt crisis. For their most preferred sample of 132 countries between 1945 and 2015, they find that the debt-to-GDP ratio decreases by around 11 percentage points on average with constitutional balance budget rules. Most of these consolidations are explained by decreasing expenditures rather than increasing tax revenues. No evidence is found for similar effects in the case of balance budget rules included in national legislation.

Salvi et al. (2020) evaluate the Swiss debt brake—being the blueprint for the German debt brake and also important when the reinforcement of the EU fiscal framework after the global financial crisis was designed. Based on data for the period of 1980–2010 and using a synthetic control group method, they find that the debt brake at the federal level decreased debt by 19.7 percentage points after seven years—an annual reduction of 2.5 percentage points on average—compared to its synthetic counterpart. No evidence is found for the decline in the federal debt ratio being due to debt relocation to the subnational level or reduction in general investment spending on the federal level.

Pfeil and Feld (2024) also apply a synthetic control method and study the impact of the Swiss debt brake for the period 1995–2007, referring to 23 OECD countries. The debt brake is found to improve the budget balance by about 3.6 percentage points of GDP on average on a post-intervention period covering five years. Concerning the debt ratio, no clear results emerge due to data restrictions. Figure 6 illustrates the development of central government debt in Switzerland before and after the introduction of the debt brake in 2003.[4]

Burret and Feld (2018a) investigate the effects of fiscal rules for the case of Swiss cantons, taking explicitly into account the fiscal rules' coverage.[5] First, based on data for 1980–2011, they find that fiscal rules are related to lower public deficits. This relationship is stronger the

[4] Jarck et al. (2022) present a discussion on the Swiss debt brake, including experiences and current challenges.

[5] As Switzerland has a long tradition in decentralised fiscal autonomy and fiscal institutions, there is important empirical research from the subnational level, e.g. Feld and Kirchgässner (2001), Schaltegger (2002), Feld and Kirchgässner (2008), Krogstrup and Wälti (2008) for early contributions. Kirchgässner (2013) offers a review on fiscal institutions at the cantonal level. Burret and Feld (2018b) study the vertical effects of cantonal fiscal rules on local public finances. There is further evidence on the subnational level, for instance, by Eliason and Lutz (2018) for the USA and Grembi et al. (2016) for Italy. Burret and Feld (2014) discuss the early evidence from the Swiss and US subnational levels.

Box 2 Measuring the strength of fiscal rules

The European Commission (EC) and the International Monetary Fund (IMF) have both build an index to operationalise and compare the strength of fiscal rules across countries and over time. They are relatively similar in their construction, both including four institutional criteria: (i) statutory or legal basis of fiscal rules; (ii) nature of the entity in charge of the monitoring of fiscal rules; (iii) correction mechanisms; and (iv) resilience of fiscal rules against shocks. Additionally, the EC includes a measure for setting or revising the rules. The EC index applies to EU member states, while the IMF index covers a broader range of countries.

The methodology assigns a strength score for each type of fiscal rule—namely expenditure rule, budget balance rule, revenue rule and debt rule based on indicators that affect the criteria above. Each indicator is standardised between 0 and 1, with weights assigned on each rule. If a country has multiple rules, the total score is a weighted sum of each rule, with declining weights assigned to each additional rule. The IMF index does not explicitly weight national and supranational rules differently, but rather by the level of government that the rules apply. The central government is assigned the highest weight. Moreover, the legal basis of the rules, which reflects the degree of supranational bindingness, might also affect the rules' weights. The EC index gives more weight to supranational rules that are part of the EU fiscal framework (including balanced budget and debt rules), since they have a higher legal basis than national rules. Despite differences in the underlying indices, these two indices are strongly correlated.

While these indices provide a means to compare the strength of fiscal rules among countries and over time, there are also important limitations. In particular, they do not capture all design issues and implementation challenges. For instance, they do not distinguish the differences of a sound debt anchor and a hard ceiling in the debt rule, or whether escape clauses are well designed.

Source: Davoodi et al. (2022a), Annex III

better the analysed budget position matches the variable targeted by the rules. Second, fiscal rules exhibit some unintended effects, i.e. a positive rather than a negative relationship with (unconstrained) public investment is found, while there is no evidence for evasion into funds and special financing. Third, cantonal fiscal rules dampen the fiscal deterioration during unexpected deficit shocks by more rapid fiscal adjustments. Fourth, political budget cycles depend on the institutional context, i.e. the timing of elections (early or late in the year), and tend to be mitigated by fiscal rules.[6]

Caselli and Reynaud (2020) study the effect of fiscal rules on fiscal balances in a panel of 142 countries for 1985–2015. Their instrumental variable approach exploits the geographical diffusion of fiscal rules across countries. The intuition is that reforms in neighbouring countries affect the adoption of domestic reforms through peer pressure and imitational effects. Fiscal rules in neighbouring countries capture an exogenous source of variation in domestic rules that does not directly impact the fiscal balance. They find that fiscal rules are related to lower deficits. This relationship disappears when endogeneity is taken into account. However, when considering an index of fiscal rules' design, well-designed rules have a significant positive impact on fiscal balances. The IMF fiscal rule index covers several dimensions (see Box 2). Moving from a relatively weakly designed fiscal rule to a better designed fiscal rule can increase the fiscal balance by 0.6% of GDP.

Bergman et al. (2016) innovatively contribute to the literature in adding the dimension of institutional quality. They assess whether national fiscal rules alone help to promote sustainable public finances or whether they must be supported by broader good governance. To this end, they use a dynamic panel estimation approach and focus on 27 EU countries for 1990–2012. They find that fiscal rules are effective in reducing structural primary deficits at all levels of government efficiency. Government efficiency is assessed using the World Bank 'efficiency of government bureaucracy' index. However, the effect is smaller as government efficiency increases. This finding indicates that fiscal rules and broader government efficiency are—above a certain threshold—institutional substitutes in terms of promoting fiscal sustainability. The analysis also suggests that balanced budget rules are the most effective fiscal rules. Other institutional features that enhance the effectiveness of fiscal rules are transparency and commitment to implementation of fiscal programmes.[7]

Overall, there is evidence finding that fiscal rules improve fiscal performance and reduce public spending volatility. Empirical research suggests that balanced budget rules and expenditure rules are more effective compared to debt or revenue rules alone, most likely because they are more operational and compatible with annual budgeting processes. Recent contributions emphasise that the effectiveness of fiscal rules depends on their design and the institutional context.

However, these results have to be interpreted with caution. From a methodological perspective, a positive relationship between fiscal rules and fiscal performance may

[6] There is some work that examines fiscal rules and electoral budget cycles. Ademmer and Dreher (2016) find for EU countries that fiscal institutions only help to limit the size of electoral budget cycles in weak media environments. Gootjes et al. (2021) exploit a panel of 77 countries and find that fiscal rules dampen electoral budget cycles. Bonfatti and Forni (2019) study fiscal rules and electoral budget cycles at the local level.

[7] Gootjes and de Haan (2022a) confirm the role of government efficiency and fiscal rules, but do not find evidence of complementarity.

not necessarily imply causality. It may simply reflect the fact that governments in countries with electorates that are more concerned with sound fiscal policies and long-term fiscal sustainability are also likely to introduce and implement fiscal rules.[8] Or, it may also reflect that governments are more likely to implement rules when they expect them to be achievable, such as when the economy and public finances are already expected to naturally recover following a crisis.

In this context, Heinemann et al. (2018) provide an important first meta-regression analysis on the relationship between fiscal rules and fiscal performance. Based on 30 studies published between 2004 and 2014, their evidence points to a constraining effect of fiscal rules on fiscal aggregates. With respect to the effect size, their meta-regression analysis points to a deficit reducing impact in the range of 1.2 to 1.5% of GDP if a fiscal rule is in place. However, this result is weakened as their study finds a bias if the potential endogeneity of fiscal rules is not explicitly taken into account. For instance, the use of instrumental variables or quasi-experimental designs leads to markedly lower levels of significance and a less constraining impact of fiscal rules. Furthermore, their analysis provides evidence for a publication bias, also reducing the precision of the constraining effects of fiscal rules. Thus, empirical results may present upper bound estimates and have to be interpreted with caution.

3.2 Do fiscal rules increase the accuracy of budget forecasts?

3.2.1 Rationale

Accurate public budgets are an important ingredient to increase the planning security of economic agents and to hold political decision-makers and the public administration accountable. For example, over-optimistic, inaccurate revenue forecasts may distort fiscal policy-making and result in the underprovision of public goods. Political economy considerations suggest that there are incentives for politicians to promise public expenditures that are higher than what will be delivered to please particular interest groups and, in parallel, to present overly optimistic public revenue forecasts to pretend to stick to fiscal discipline. In fact, empirical studies show that budget forecasts in many countries tend to be overly optimistic, often because estimates of economic growth are over-optimistic (Beetsma et al., 2009; Frankel & Schreger, 2013; Strauch et al., 2009).

Fiscal rules may create incentives for fiscal discipline. However, they may also create incentives to work around constraints by using 'creative accounting' and 'window-dressing'. von Hagen (2010) argues that fiscal rules could create incentives to be overly optimistic in budget projections in order to postpone politically sensitive decisions. However, without fiscal rules, finance ministers may strategically use over-pessimistic budget forecasts to reign in the spending ministers and the parliament. Fiscal rules lower these incentives (see also Luechinger & Schaltegger, 2013).

3.2.2 Empirical evidence

A particularly interesting study is presented by Luechinger and Schaltegger (2013). They study the differential effects of fiscal rules on projected and realised deficits. In their analysis of Swiss cantons over the period 1984–2005, they find that fiscal rules lower the probability of projected and realised deficits, with the former effect being twice as large. Since budget projections in Swiss cantons tend to be over-pessimistic on average, fiscal rules increase the probability of more accurate (less pessimistic) projections. Thus, fiscal rules seem to substitute for finance ministers' over-pessimistic projections intended to reign in other ministers and parliaments with stronger incentives to increase public spending.

Chatagny (2015) explores the relationship between the ideology of the finance minister and tax revenue forecast errors, and assesses how fiscal rules impact this relationship. Exploiting Swiss cantons over the period 1980–2007, the study uses a panel estimation approach. A rather counter-intuitive positive relationship between the ideology and tax revenue forecast errors is found in the sense that a more left-wing finance minister produces relatively more conservative budget forecasts. Interestingly, the empirical analysis shows a negative effect of the interaction between the finance minister's ideology and fiscal rules, highlighting that more stringent fiscal rules tend to reduce the positive effect of the ideology. These results suggest that left-wing finance ministers need to curb deficits relatively more in order to signal the same level of competence.

Picchio and Santolini (2020) study the impact of the domestic stability pact on the accuracy of budget forecasts at the local government level in Italy. They exploit a quasi-natural experiment set-up, i.e. the removal of the fiscal restraints on budget decisions for municipalities with fewer than 5000 inhabitants in 2001 and stricter budgetary restrictions and severe penalties for non-compliers in 2002. Using a difference-in-discontinuities approach, the authors find that relaxing fiscal rules has a sizeable causal impact on budget forecast errors, especially in 2002. For instance, revenue (expenditure) forecast errors for municipalities with fewer than 5000

[8] While there might be a preference for more fiscally responsible decision-making in jurisdictions, a temptation to overspend can remain. A fiscal rule is still a way to address this issue as it contributes to improve fiscal performance, but rather through a reinforcement of a pre-existing attitude.

inhabitants are 26% (22%) larger than those of municipalities just above the cut-off.

Mancini and Tommasino (2023) document that Italian public administrations systematically overestimate capital expenditures. Exploring unique data including budgetary figures (both planned and realised) for all Italian municipalities, the authors exploit a national reform introducing a spending limit on realised capital expenditures only for municipalities above a certain population threshold (5000 residents). Using a differences-in-discontinuities approach for the reform enacted in 2004, they show that municipalities subject to the capital-spending rule significantly reduced their over-optimism in expenditure projections: planned capital expenditures decrease more than actual ones. As explanation, the authors put forward that the capital-expenditure limit makes overly ambitious investment promises less credible and helps to bring spending plans in line with reality. Furthermore, they find that capital revenues are also overestimated, and that the forecast accuracy of these projected revenues improves due to the fiscal constraint. This is in line with political economy considerations. In particular, as there is less room to boost public expenditures, there are also fewer incentives to engage in window-dressing on the public revenue side.

Taken together, the emerging evidence finds that fiscal rules contribute to more accurate budgetary forecasts and thereby increase the reliability and credibility of fiscal policies.

3.3 Do fiscal rules affect sovereign bond ratings?

3.3.1 Rationale

Higher public deficits and debt deteriorate sovereign bond ratings. For instance, a study by Schuknecht et al. (2009) find that central government risk premia respond positively to debt and deficits for central governments in Europe and subnational governments in Germany, Spain and Canada. If fiscal rules are effective instruments for fiscal discipline and debt sustainability, rational investors should assess the sustainability and thus the credibility of a country's fiscal policy more positive if it has a fiscal rule and demand a lower compensation for the default risk of the sovereign bond than for a comparable country without any fiscal rules. Investors are also likely to perceive the adoption of fiscal rules as a signal of commitment to sounder macroeconomic policies and reforms more broadly. This should positively impact sovereign debt rating assessments and reduce bond spreads as an indicator of markets and liquidity risk.

3.3.2 Empirical evidence

Early evidence is mainly based on survey data from US states. It supports the view that tighter fiscal rules lower state bond interest rates (Poterba & Rueben, 1999; Poterba & Rueben, 2001; and Lowry & Alt, 2001).

An interesting contribution by Iara and Wolff (2014) studies the relationship between fiscal rules and risk premia for the initial eleven euro-area countries for 1999–2009. The authors use the European Commission's fiscal rule index (see Box 2). Applying a panel estimation approach, they do not find a significant effect of fiscal rules on risk spreads, but they do find a statistically significant impact if they interact the fiscal rule index with the general risk aversion of the market. Thus, fiscal rules appear to have a negative effect on bond spreads in a market environment where risk sensitivity is high.

Afonso and Guimarães (2015) assess whether numerical fiscal rules impact budget balances and sovereign yields. For a panel of 27 EU countries between 1990 and 2011, it is found that fiscal rules, approximated with the European Commission's and the IMF's fiscal rule index, reduce budget deficits, while countries with stricter fiscal rules experience lower sovereign bond yields.

In a follow-up paper, Afonso and Jalles (2019) assess the relationship between fiscal rules on sovereign bond spreads in more detail and for 34 advanced countries and 19 emerging market economies over the period 1980–2016. Their results show that the impact of fiscal rules on sovereign yield spreads is negative and statistically significant, at around 1.2–1.8 percentage points, implying lower government borrowing costs. This result stems essentially from the advanced economies subsample. Moreover, in times of recession, a fiscal rule is related to reduced government bond risk premia. Independent monitoring of compliance with fiscal rules also reduces sovereign spreads.

Thornton and Vasilakis (2017) present broader international evidence for fiscal rules and sovereign risk premia. They study a sample of 67 advanced and developing countries for the period 1985–2012 and rely on the IMF fiscal institutions dataset. Their results suggest that the adoption of fiscal rules reduces sovereign risk premia by 1.1–1.2% for debt rules and by 1.5–1.8% for budget balance rules of the international borrowing spread. They address self-selection of policy adoption by applying propensity score matching methods.

Feld et al. (2017) also relate fiscal frameworks to financial market ratings. They analyse the effects of a credible no-bailout policy and subnational fiscal rules on the risk premia of Swiss subnational government bonds in the period 1981–2007. The results suggest that a not fully credible no-bailout commitment can entail high costs for the potential guarantor. Strong balanced budget rules are related to reduced sovereign risk premia.

Sawadogo (2020) focuses on the role of fiscal rules in terms of improving financial markets access for

developing countries. Fiscal rules are argued to increase the government's credibility in conducting sound fiscal policies. They apply an entropy balancing method to construct a weighted synthetic group of countries to address the self-selection bias into a rules-based fiscal policy.[9] The adoption of fiscal rules is found to reduce sovereign bond spreads and to increase sovereign debt ratings in a sample of 36 countries covering the period 1993–2014. More specifically, fiscal rule adoption lowers bond spreads by up to 1.5% while it increases sovereign debt ranking by up to one grade. Regarding the types of fiscal rules, balanced budget rules and debt rules significantly improve access to financial markets, while expenditures rules appear to improve financial market access only in combination with multi-year expenditure ceilings.

A novel contribution that further differentiates the transmission channels of the impact of fiscal rules is presented by Hansen (2020). He argues that while fiscal frameworks are effective at improving governments fiscal balances, the financial markets discipline hypothesis is likely not the causal mechanism which disciplines governments' fiscal policies. Instead, he proposes that fiscal rules and fiscal transparency promote better budget balances because opponent political actors use fiscal frameworks as an instrument to constrain executive policy-making. For a sample of 69 countries for the period 1990–2008, he tests these competing hypotheses of why fiscal frameworks are effective—financial market discipline versus political competition. He finds that budget balances are increased not as a consequence of financial markets' ratings, but when the level of political competition and civil society engagement is sufficiently high. These results are robust to accounting for the possible selection bias of who adopts fiscal frameworks in the first place.[10]

Overall, fiscal rules improve sovereign bond ratings. In particular, the emerging evidence suggests that stricter rules are more effective and that the impact of fiscal rules is particularly relevant under uncertain market conditions.

[9] Entropy balancing has advantages as it combines matching and regression analysis. Entropy balancing consists of two steps. The first step requires computation of weights which are assigned to the control units (e.g. non-fiscal rule countries). In the second step, these weights are used in a regression analysis with the treatment variable (e.g. fiscal rule countries) as explanatory variable. Afterwards, fiscal rule countries and non-fiscal rule countries are balanced based on observable characteristics. Thus, the average difference in outcomes between fiscal rule countries and the 'closest' non-fiscal rule countries should be explained by the adoption of rules (see Hainmueller, 2012).

[10] In a related paper, Heinemann et al. (2014) find that the impact of fiscal rules on sovereign bonds in euro-area countries is less important once historical fiscal preferences for stability are taken into account.

3.4 Do fiscal rules undermine public investment?

3.4.1 Rationale

Investment is a key factor to economic growth; this also includes public investment, as it contributes to the expansion of the capital stock as a whole. Although there may be inherent risks of crowding-out effects or difficulties in meeting expectations on public investment efficiency, public capital, e.g. infrastructure, utilities, R&D or security, not only provides supply where markets are likely to fail, but it may also complement private sector investments leading to spillovers and inducing multiplier effects. Against this background, the decline of public investment as a share of GDP in most of the OECD countries over the last five decades (e.g. Ardanaz et al., 2021; Bom & Ligthart, 2014) raises concerns.

There is a debate on whether the adoption of fiscal rules is one of the drivers of this downtrend. Early studies indicate that inadequately designed fiscal rules may tempt strategic behaviour of governments (Dur et al., 1999), in particular, to favour short-term consumption over capital expenditure whose benefits materialise only much later (Blanchard & Giavazzi, 2004). Current generations may find little incentives to take on the entire tax burden for investments that benefit mostly future generations (Bom, 2019). As a result, current public investment is prone to fall below optimal levels. Turrini (2004) adds to the discussion arguing that the relationship between fiscal rules and public investment is more complex: As fiscal rules may prevent the accumulation of debt today, future governments are likely to have more fiscal space for public investment. The debate on whether public investment is unduly constrained by fiscal rules and should be protected was further spurred, when in the 2010s capital costs sunk to a long-time low and, at the same time, the need to address challenges like climate change, population ageing or public infrastructure became more salient.[11] Ultimately, it is an empirical question whether fiscal rules undermine public investment.

3.4.2 Empirical evidence

The presented analyses below follow different empirical approaches and, depending on design and institutional context, may refer to different definitions of 'public investment'. However, most commonly 'public investment' corresponds to 'gross fixed capital formation' or 'gross capital formation' as defined by the OECD.

An early study is presented by Perée and Välilä (2005). Based on a discussion on the arguments for and against

[11] A prominent case in point is the recent debate on the debt brake and public investment in Germany (e.g. Fuest et al., 2019; Feld et al., 2019; Hüther and Südekum, 2020; Wissenschaftlicher Beirat BMWK, 2023; Sachverständigenrat, 2024; Beznoska et al., 2024).

exempting public capital expenditure from fiscal rules, the analysis assesses the determinants of public investment, with a focus on the fiscal rules embodied in the Economic and Monetary Union (EMU). The authors estimate panel data and country-specific models for 14 EU countries for the period from 1970 to 2003. The evidence suggests that statistically significant determinants of public investment include aspects like national income and the budgetary situation. The empirical estimates do not suggest that there is a significant relationship between the deficit rule applied in the EMU and the decline in public investment. Rather, it seems that the downtrend in public investment was related to longer-term fiscal consolidation efforts in most countries well before the Maastricht Treaty was implemented.

Based on a panel of 22 OECD countries for 1960–2010, Dahan and Strawczinsky (2013) examine the influence of fiscal rules on the composition of government expenditure. They focus on the potential effects of fiscal rules in undermining social transfer spending. Regarding public investment, the authors find that the ratio between public investment spending and government consumption does not change in a significant way. The authors conclude that concerns regarding fiscal rules hampering public investment cannot be confirmed.

Afonso and Jalles (2015) investigate which macroeconomic and budgetary components drive both private and public investment, employing a panel data analysis based on data for 95 advanced and developing countries for the period 1970–2008. Among the various estimated correlations in search of determinants of capital expenditure, the authors find negative partial correlations for the overall EU fiscal rule index and the budget balance rule index for a panel on EU countries between 1990 and 2008. This result indicates that strong fiscal rules constrain government spending, but they also decrease public investment in EU countries.

Delgado-Téllez et al. (2022) explore two prominent explanations for the historically low public investment in developed countries, i.e. (i) the 'social dominance hypothesis', according to which increased social spending is crowding-out public investment, and (ii) fiscal rules force governments to reduce public investment. The analysis tests the validity of both explanations using two empirical approaches (panel data fixed-effect models; local projections as a more flexible alternative to VAR specifications) for a sample of 22 OECD countries comprising data from 1960 to 2015. The authors find both factors to be statistically significantly associated with the decrease in investment. First, social spending contributes to crowding-out of public investments and is interpreted as a structural driver. Second, fiscal rules are negatively related to public investment, specifically in periods of fiscal consolidation; flexibility clauses of fiscal rules tend to weaken this relationship, however. It is worth noting that the analysis speaks also for an additional disciplining influence by fiscal rules on the dynamics of social spending, which in return can reduce the crowding-out effects on investment.

Ardanaz et al. (2021) explain the shrinking public investment with both the policy-makers' preference to cut public investment rather than current expenditure in order to comply with fiscal rules and the structural crowding-out due to growing welfare spending. They focus on the design of fiscal rules regarding flexibility as a determinant of public investment during fiscal consolidation. Based on a dataset of 75 advanced and emerging economies for the period 1990–2018, the authors compare public investment under 'rigid' fiscal rules with 'flexible' ones (e.g. endowed with escape clauses to accommodate exogenous shocks, cyclically adjusted fiscal targets, different treatment for current spending vs. investment). Applying a panel fixed effects model, they find that in countries with either no or with a rigid fiscal rule, public investment is significantly reduced in episodes of fiscal adjustment. More precisely, a fiscal consolidation of at least 2 per cent of GDP is associated with an average 10 per cent reduction in public investment. This result also points to the pro-cyclical bias of rigid fiscal rules. However, this negative effect on public investment vanishes in countries with flexible rules, protecting public investment. They conclude that well-designed fiscal rules, including provisions for flexibility, are key for growth-friendly fiscal policies.

Wijsman and Crombez (2021) also study the relationship between fiscal rules and public investment. For 28 EU countries between 1997 and 2016, they focus on the impact of national fiscal rules, as approximated by the European Commission's fiscal rules strength index (FRSI; see Box 2). Using dynamic panel regressions and controlling for a rich set of economic and political determinants, they find evidence that fiscal rules decrease public investment. More specifically, a rise in the FRSI from the 25th to the 75th percentile entails a decrease of public investment by 0.16 per cent of GDP. In conclusion, the authors point to the discussion of a 'golden rule'[12] as a possible measure to protect public investment.

In her comprehensive study, Vinturis (2023) investigates how the adoption of fiscal rules shapes governments' spending, including both public consumption and

[12] The 'Golden Rule' is principally understood as a fiscal policy guideline, which states that a public budget should - over an economic cycle - borrow to the extent that it builds up assets. With regard to sound public finances, new debt should be taken on for (sustainable) investments, but not for current expenditure.

public investment. Based on a large panel of 185 countries over the period of 1985–2015 and applying entropy balancing to particularly address endogeneity and reverse causality, the adoption of fiscal rules is found to significantly reduce total public spending relative to comparable countries (being the control group) that did not adopt fiscal rules. However, while public consumption decreases under fiscal rules, public investment is not significantly affected. More specifically, with regard to the type of fiscal rule, debt rules and balanced budget rules, contrary to expenditure rules, significantly increase the ratio between public investment and public consumption. Summarising the multifaceted results, the author concludes that the adjustment of total public spending following the adoption of fiscal rules is not found to be echoed by a significant change in public investment.

A broadly similar picture is presented by Feld et al. (2021) for subnational jurisdictions in Switzerland between 2009 and 2018. Based on two panel datasets (cantons and larger municipalities), the study explores two issues: (i) the relationship between a cut in the key interest rate and the development of capital expenditure (using linear regression), and (ii) the influence of fiscal rules on public investment spending in a phase of low interest rates. Using a difference-in-differences design, a significantly negative correlation between capital cost and investment, specifically for public education and construction spending, is found. However, there is no indication that fiscal rules would constrain cantonal investments in response to the cut in interest rates. Indeed, the evidence suggests that cantons with stricter fiscal rules even tend to expand their investment. While no explanation is presented for this finding, it might be argued that strict fiscal rules provide more discipline in current consumption allowing more leeway for investments and overall capital costs are more favourable for jurisdictions with a stricter fiscal framework.

The recent study by Jürgens (2022) focuses on the impacts that fiscal rules have on the cyclicality of fiscal policies and on the influence that fiscal rules' flexibility features have on public investment. Analysing panel data for 23 EU countries over the period from 1985 to 2019, she finds that (i) public investment in the EU is pro-cyclical, especially in the downturn phase of a business cycle, and that (ii) 'rigid' fiscal rules without flexibility features seem to constrain public investment, specifically in economic downturns. Hence, her key policy conclusion is that fiscal rules should be endowed with adequate flexibility to reduce pro-cyclical effects and to safeguard growth-enhancing public investment.

Taken together, the empirical studies indicate that public investment is likely to be constrained in episodes of fiscal adjustment. As to the impact of fiscal rules, a mixed picture emerges. A majority of the reviewed studies suggests that rigid fiscal rules tend to undermine public investment, while well-designed fiscal rules with in-built flexibility do not undermine public investment. However, the flexibility provisions of fiscal rules should be carefully chosen in order to avoid diluting the fiscal rule with excessive discretion. The emerging picture is broadly in line with a recent review by Blesse et al. (2023) on the emerging empirical evidence regarding fiscal rules and public investment. The review by Blesse et al. (2023) covers studies on the national and subnational level, the latter evidence stemming primarily from Italy.

3.5 Do fiscal rules reduce pro-cyclicality?

3.5.1 Rationale

A primary objective of economic policy is to smooth out business cycle volatility, as larger variability in GDP growth comes at a high economic and social cost and ultimately weakens long-term economic growth. In the last decades of the twentieth century, a majority of economists were convinced that primarily monetary policy, supported by automatic stabilisers (e.g. unemployment benefits), is sufficient to stabilise the economy in downturns. However, the experience of the great recession and the pandemic showed that there is a role for discretionary fiscal policy, especially with interest rates close to zero.

In practice, however, the debate on the impact of fiscal policy on economic cycles is ambiguous. Pro-cyclical effects, i.e. expansionary policies in good times and restrictive policies in bad times, are likely as governments' action is subject to substantial uncertainty and governments may suffer from the deficit bias. Some empirical evidence tends to confirm pro-cyclicality (for a brief discussion, see, e.g. de Haan et al., 2023), while other empirical studies present evidence for the counter-cyclicality of fiscal policy (for a brief discussion, see, e.g. Combes et al., 2017).

Fiscal rules have been often blamed to force governments into pro-cyclical consolidation policies during downturns. Taking a closer look, however, fiscal rules are, on the one hand, expected to limit discretionary fiscal policy and thus reduce macroeconomic volatility and pro-cyclicality. On the other hand, fiscal rules may also limit the scope to carry out counter-cyclical fiscal policy and, consequently, aggravate output volatility and pro-cyclicality.

Assessing cyclicality and identifying the impact of fiscal rules is challenging, e.g. choosing the dependent and independent variables (say, the primary balance and the output gap), the use of real-time versus ex-post data, or the question of how to properly take into account explanatory factors, including fiscal rules (Golinelli & Momigliano, 2009). Apart from these technical issues, the level of

institutional quality is likely to play a key role in a country's capacity to implement sound fiscal policies in the first place (Calderón et al., 2012).

3.5.2 Empirical evidence

Early studies on EU fiscal rules did not find evidence for a pro-cyclical impact of fiscal rules during downturns, acknowledging though that there had not been many recessions during the sample period. Galí and Perotti (2003) find that after the signing of the Maastricht Treaty in 1992 fiscal policy in EU countries stopped being pro-cyclical. Manasse (2006) finds that fiscal rules reduce the degree of pro-cyclicality of fiscal policy. Debrun et al. (2008) associate budget balance rules and debt rules with higher pro-cyclicality, unless their design allows for correction for the economic cycle, while expenditure and revenue rules are rather found to go in the opposite direction.

Most recent studies on advanced economies suggest that well-designed fiscal rules can reduce pro-cyclicality of fiscal policies. Holm-Hadulla et al. (2012) present evidence that expenditure rules reduce the pro-cyclical reaction of public spending to unexpected changes in the output gap. Bénétrix and Lane (2013) find support for the Maastricht Treaty being associated with more counter-cyclical policies.

Sacchi and Salotti (2015) aim at understanding whether fiscal rules impact governments' ability to stabilise the economy via discretionary fiscal policy-making. For 21 OECD countries between 1985 and 2012, they use fixed effects and System-GMM estimators and find that the use of discretionary fiscal policy, particularly of government consumption, is related to higher output volatility. The authors find that once national fiscal rules are introduced, discretionary policy tends to become more output-stabilising. More precisely, output stability tends to increase with (stringent) fiscal rules. This result is found to be more relevant for balanced budgets rules rather than for revenue, expenditure or debt rules.

Nerlich and Reuter (2015) analyse the impact of fiscal rules on the so-called fiscal space, i.e. the room to manoeuvre for discretionary fiscal policy,[13] and how the interaction of fiscal rules and fiscal space determines the cyclicality of fiscal policy. Based on data for EU-27 between 1990 and 2014, they find that fiscal rules are strongly correlated with larger fiscal space, i.e. fiscal rules help to increase the room to manoeuvre for fiscal policy. In turn, the very same fiscal rules constrain excessive discretionary spending. Furthermore, they confirm that fiscal rules thus tend to curb pro-cyclicality from discretionary fiscal policy in an environment with fiscal space. The effect seems to be particularly strong for expenditure rules, less so for balanced budget rules and null for debt rules.

Combes et al. (2017) study how fiscal policy reacts to the business cycle, exploring a panel of 56 advanced, emerging and developing countries over the period 1990–2011. Overall, their results support the view that fiscal policy can be counter-cyclical, conditional, however, on the level of debt: the findings suggest that fiscal policy turns from counter-cyclical to pro-cyclical for higher public debt-to-GDP ratios (and vice versa), largely corresponding to the argument of 'fiscal space' by Nerlich and Reuter. Combes et al. (2017) show that the use of fiscal rules, although complex in a high debt environment, can support stabilisation in recessions and even help to restore counter-cyclical fiscal policy if appropriately designed. While expenditure or debt rules have no significant effect and escape clauses may even be harmful to stabilisation in a high debt context, deficit rules or a 'golden rule' for public investment seem to be more effective.

In the same vein, Guerguil et al. (2017) find that the design of fiscal rules is essential for their impact on pro-cyclicality. Based on a broad panel of 167 advanced and developing economies for the period 1990–2012, the study uses propensity scores-matching techniques to address endogeneity issues. The authors find that investment-friendly rules reduce the pro-cyclicality of overall government spending and investment spending. The effect appears stronger in bad times and when the rule is enacted at the national level. Escape clauses are found not to affect the cyclical stance of public spending. The results are mixed for expenditure rules and cyclically adjusted budget balance rules which are associated with counter-cyclical movements in overall public spending, but with pro-cyclical changes in investment spending. It is highlighted that structural factors like the country's development, past debt, government stability and legal enforcement or monitoring arrangements of fiscal rules influence the impact of fiscal rules on cyclicality.

Manescu and Bova (2020) examine the design, the effectiveness and the extent to which expenditure rules have been complied with in EU countries. Based on the European Commission's fiscal governance database, their estimates over the 1999–2016 period confirm that the magnitude of the pro-cyclical bias in fiscal policy is lower with expenditure rules. Moreover, the better the expenditure rule design in terms of legal base, independent monitoring and consequences

[13] Fiscal space is defined as the difference between the current debt level and the 'debt limit', the point beyond which debt becomes unsustainable and extraordinary efforts must be taken to prevent a country's default (Ghosh et al., 2013).

for non-compliance or coverage, the stronger the mitigating effect.

Larch et al. (2021) exploit a sample close to 40 EU and non-EU countries, using data up to 2017, with observations starting in the 1960s. They provide evidence that the volatility of output gap estimates is not a strong explanation for pro-cyclical fiscal policies. With the exception of large shocks, discretionary fiscal policies remain ill-timed from a macroeconomic stabilisation perspective. They also show that non-compliance with fiscal rules and the accumulation of government debt exacerbate pro-cyclical fiscal policy. In other words, increasing compliance with fiscal rules that involves limiting the increase in government debt or keeping a steady course of fiscal policy fosters counter-cyclical fiscal policies.

Still in this line of reasoning, yet with a slightly different focus, is the study by Reuter et al. (2022). They examine the effect of different types of fiscal rules on discretionary fiscal policy and thus on macroeconomic stability, employing a two-stage least square procedure. The empirical analysis for the EU-28 countries over the period of 1996–2015 shows that strong fiscal rules limit fiscal volatility, which, in turn, contributes to reduce output volatility. The effect can be observed for budget balance rules that set limits in cyclically adjusted terms and expenditure rules that restrict expenditure growth relative to potential GDP. These findings even hold in cases where fiscal rules are not always complied with, suggesting that rules may act as a benchmark. Eventually, the authors confirm the findings of the earlier studies by Fatás and Mihov (2006) who show that fiscal rules in US states, by constraining fiscal policy, reduce policy volatility and thus the fiscal source of business cycle volatility. Likewise, they sustain the results by Badinger and Reuter (2017) who highlight that strong legislative support or stringent enforcement procedures of fiscal rules matter.

Bergman and Hutchison (2015) extend previous work on fiscal rules and pro-cyclicality. They relate fiscal rules to the broader concept of government effectiveness and the idea that fiscal rules are more likely to work if applied within an effective institutional framework. More specifically, they look at fiscal rules with the prior that their effectiveness in mitigating pro-cyclical fiscal policy depends on the overall efficiency of government. They build an index to measure the strength of fiscal rules and interact it with the World Bank's efficiency of government bureaucracy index for a sample of 81 advanced, emerging and developing countries over the period between 1985 and 2012. Their empirical results suggest that, while government efficiency alone is not sufficient to reduce pro-cyclicality, the combination of fiscal rules and sufficiently high government efficiency provides an environment that fosters counter-cyclical policies. At the same time, they provide evidence indicating that fiscal rules are not effective when overall government efficiency is low.

Some of the recent studies conclude, however, that fiscal rules do not reduce pro-cyclicality or are not important for cyclicality. These studies mostly focus on emerging and developing economies and do not necessarily have fiscal rules as their primary topic. For instance, Furceri and Jalles (2018) find, based on a panel of 61 advanced and emerging economies over 1980–2014, that counter-cyclical fiscal policy is positively associated with the level of economic development, trade openness and government size, while fiscal rules play no significant role. Bova et al. (2018) focus on natural-resource-rich countries whose economies are specifically exposed to commodity price volatility (dataset of 48 non-renewable commodities exporting countries for 1970–2014). They find that fiscal policy tends to have a persistent pro-cyclical bias, while the adoption of fiscal rules does not reduce this bias. Instead, the quality of political institutions matters. In a study, based on a sample of 60 countries for 1980–2014, Jalles (2018) finds that counter-cyclical fiscal policy is larger in advanced economies and increasing over time, while fiscal rules, in particular debt rules, tend to reduce the degree of counter-cyclicality in fiscal policy.

The multifaceted empirical evidence suggests that fiscal rules can play a role in strengthening counter-cyclical fiscal policy and thus can foster macroeconomic stability. However, design features as well as the economic and institutional context appear to be crucial for the effectiveness of fiscal rules. In particular, design elements like the type of rule, its legal base, independent monitoring and investment-friendliness matter for supporting counter-cyclical policies.

3.6 Do fiscal rules impact fiscal consolidations?

3.6.1 Rationale

There is a large literature on the determinants of fiscal adjustments and their success. This literature suggests that the economic environment is an important driver (Hagen and Strauch, 2001; Mierau et al., 2007), also, political and institutional conditions, such as government fragmentation or the proximity of elections, may favour fiscal adjustments (Alesina et al., 2006; Mulas-Granados, 2003).

Fiscal rules, in turn, are expected to send clear and early signals about the need for fiscal adjustment. They may urge governments to undertake fiscal consolidations, as breaking the fiscal rule comes at a cost and can be punished, e.g. by the political opposition or by financial markets. At the same time, fiscal rules exert pressure on decision-makers to ensure a consistent implementation

of the consolidation programme. Empirical studies on their influence on fiscal consolidations have emerged only recently.

3.6.2 Empirical evidence

Chrysanthakopoulos and Tagkalakis (2023) study the impact that the design of fiscal institutions has on fiscal adjustments. They exploit a panel of 40 advanced economies over the period 1990–2020 and investigate the effect of various characteristics of fiscal institutions on (i) the probability of starting a fiscal adjustment and (ii) on the probability that the fiscal adjustment will be successful. Well-designed fiscal rules which incorporate both strict and flexible features increase the probability to initiate and to successfully conclude a fiscal adjustment. In more detail, a cyclically adjusted budget balance target, a well-specified escape clause, strict enforcement, a strong legal base and multi-annual spending limits are key design elements as they are positively related to the successful conclusion of an adjustment programme. Design elements indicating stricter fiscal rules lead to a more pronounced increase in the probability of success vis-à-vis fiscal rule design elements that provide flexibility.

Aaskoven and Wiese (2022) add to the emerging literature. For a sample of 19 OECD countries over the period 1967–2013, they study national and EU supranational fiscal rules. First, to identify fiscal consolidations, they employ a new method based on structural break testing of the cyclically adjusted budget balance. Second, instead of defining a certain amount of debt reduction to classify whether an adjustment is successful, they estimate the effect on the debt-to-GDP ratio. The results suggest that in the shorter run (1–3 years), the mere existence of national fiscal rules during fiscal consolidations is related to lower government debt. In the medium run (5 years), some indication that the 'Stability and Growth Pact' of the EU (SGP) might have had a positive effect on debt reduction during periods of fiscal consolidation is found. Furthermore, the authors find that both national and supranational fiscal rules become more effective at achieving sustained debt reduction during fiscal consolidations if they are embedded in a stronger national fiscal framework including a greater fiscal rule coverage, formal enforcement procedures as well as stronger fiscal councils.

Gootjes and de Haan (2022b) extend the literature by investigating whether fiscal rules in combination with fiscal transparency (i) reduce the cyclically adjusted primary budget balance, (ii) make a fiscal adjustment more likely and (iii) increase the probability of a successful fiscal adjustment, i.e. lead to a reduction of public debt. They analyse a panel of 73 countries over the 2003–2013 period. Based on a dynamic panel estimation, it is found that fiscal rules improve the budget balance only when the level of fiscal transparency is above a minimum threshold. As to fiscal adjustments, they follow the method by Wiese et al. (2018) to identify fiscal adjustments and their success, taking the volatility of fiscal policy into account, in contrast to one-size-fits-all measures. Their results suggest that fiscal rules make the occurrence and success of fiscal adjustments more likely but, again, only when the level of fiscal transparency is sufficiently high.

In a similar vein, Clements et al. (2023) examine the broader macroeconomic and political factors which impact fiscal adjustment episodes, including fiscal rules. They analyse a sample of more than 450 fiscal consolidation episodes in 185 advanced, emerging and developing countries between 1979 and 2019. The authors find that in advanced economies, fiscal adjustments seem more likely, when economic growth is weak, terms of trade and exchange rates are in decline and public debt to GDP is high, when a government is in office for a longer period, and when a fiscal rule is in place, in particular an expenditure or a budget balance rule. Conversely, in emerging and developing countries, consolidations are more likely when economic conditions are favourable and when governments operate with high margins of majority, while the absence of fiscal rules seems to raise the need for more frequent ad hoc consolidations.

The results from these first studies suggest that fiscal adjustments are more likely to be undertaken in the presence of fiscal rules. Moreover, a successful conclusion of an adjustment episode is more likely when there are well-designed fiscal rules in place and if further institutional elements, such as fiscal transparency is sufficient.

3.7 Independent fiscal institutions: Do they complement fiscal rules?

3.7.1 Rationale

Independent fiscal institutions (IFIs) form another element of fiscal frameworks and are set up to improve the transparency and oversight of fiscal policy. Recently, the establishment of IFIs has multiplied—often as part of the reinforcement of the EU Fiscal Framework (Fig. 7). The remit of these institutions varies across countries and often includes the assessments of budgetary plans, long-term sustainability and the evaluation or provision of macroeconomic and budgetary forecasts (Debrun et al., 2009; Hagemann, 2011; Kopits, 2011; von Trapp et al., 2016). IFIs also played a role in evaluating public support packages during COVID-19 (OECD, 2020).

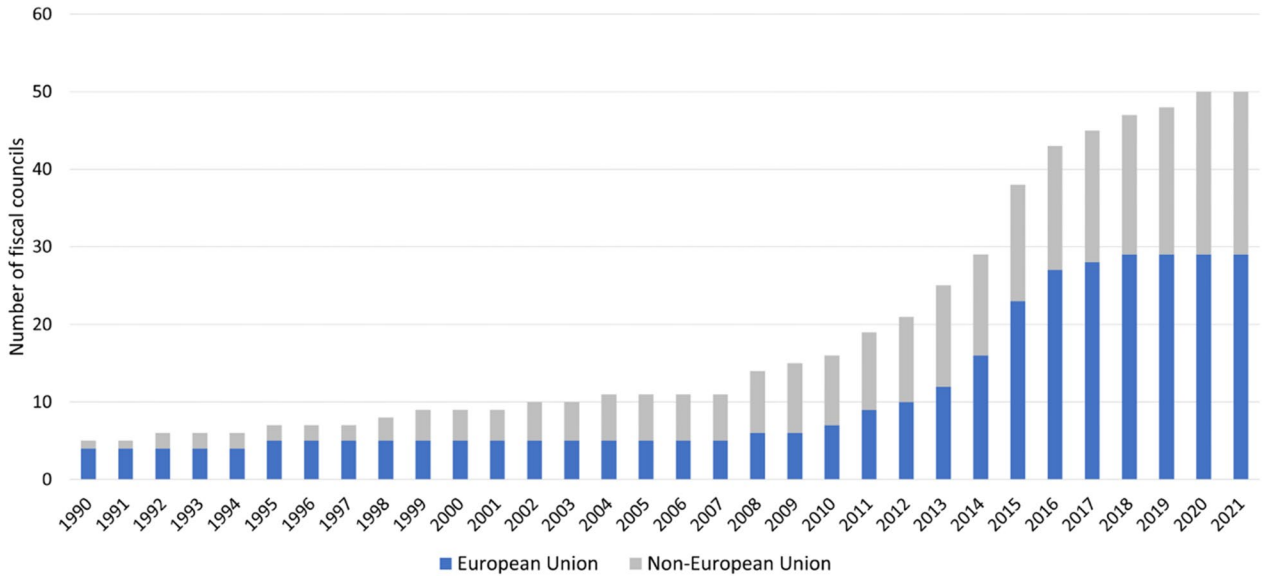

Fig. 7 Fiscal councils, 1990–2021. Source: IMF Fiscal Council dataset; Davoodi et al. (2022c)

IFIs can influence fiscal policy outcomes via two channels. The first is directly through their contributions to the budget process and the implementation of fiscal policy, whereas the second is an indirect consequence of their ability to inform the public about fiscal policy in a non-partisan manner (Debrun et al., 2013). This ability of IFIs to reduce informational asymmetries between voters and decision-makers has been studied theoretically (Beetsma & Debrun, 2016; Calmfors, 2015; Calmfors & Wren-Lewis, 2011; Kopits, 2011). These authors support the view that IFIs can reduce informational asymmetries by providing better information, more accurate forecasts or simply by encouraging fiscal discipline of politicians via raising reputational costs of undesirable fiscal policies. For example, Kopits (2011) emphasises four design pillars to ensure the impact of IFIs: (i) political ownership of the mandate and modus operandi; (ii) guarantees of operational independence; (iii) adequate staffing; and (iv) a remit focused on a non-partisan assessment of fiscal policy, the analysis of fiscal sustainability and the promotion of transparency.

Closely related to the preceding sections, the relationship between IFIs and fiscal rules is a key question. Should IFIs be seen as substitutes for fiscal rules, allowing policy to be more discretionary, or should they complement fiscal rules by monitoring them and by assessing conditions to activate escape clauses? This complementarity between fiscal rules and IFIs is even more important to help in the implementation of complex rules, for instance, in the case of the EU fiscal framework (Beetsma & Debrun, 2018). The emerging evidence points to the complementary view, i.e. IFIs complement the discipline-reinforcing role of fiscal rules.[14]

3.7.2 Empirical evidence

The paper by Debrun and Kumar (2008) is one of the first empirical analyses on the topic. Using data by the European Commission on IFIs at the national level, the authors construct indexes to characterise the legal set-up, mandate, independence and potential influence of IFIs on fiscal discipline. The results, obtained from an EU sample for the 1990–2004 period, lead the authors to conclude that fiscal rules are associated with better fiscal performance and that IFIs can influence fiscal outcomes by reinforcing compliance with fiscal rules. In particular, their results indicate that IFIs, particularly those with guarantees of independence, are associated with improved budget balances. While the empirical analysis is rigorous, the authors discuss the limitations of their approach such as reverse causality and the omitted variable bias. In particular, there is a possibility that omitted variables exert a joint influence on fiscal outcomes and institutions.

[14] Several authors (Calmfors, 2003; Gruen, 2001; Larch and Brändle, 2018; Wren-Lewis, 1996; Wyplosz, 2005) have suggested the delegation of selected macro dimensions of fiscal policy to an independent fiscal institution similar to the delegation of monetary policy decisions to independent central banks. However, there is a consensus that IFIs should have a purely advisory function as fiscal policy-making involves democratic decision-making with important (re-)distributional consequences.

Nerlich and Reuter (2013) build a novel dataset of fiscal frameworks (numerical fiscal rules, IFIs, and medium-term budgetary frameworks), covering 27 EU countries from 1990 to 2012. Based on a dynamic panel estimation, the results highlight the role of fiscal rules in improving the primary balance. They find that the positive effect on the primary balance can be further strengthened when fiscal rules are enacted in law or constitution and supported by independent fiscal councils and an effective medium-term budgeting framework.

Fall et al. (2015) study the design of debt targets. To this end, they also study the complementary role of fiscal rules and IFIs regarding fiscal performance. Based on a dataset of 30 OECD countries and a period of 20 years, their estimations find a disciplining effect of fiscal rules. Their estimations show that it is difficult to capture the effectiveness of IFIs. The impact of IFIs on the primary balance is not statistically significant in most of the specifications. However, IFIs limit spending when interacted with a budget balance rule.

The analysis by Debrun and Kinda (2017) comprises 58 advanced and emerging countries over the 1990–2011 period. In line with previous studies, they confirm that countries with strong fiscal rules tend to exhibit a better fiscal performance. Based on information on the mandate, tasks and institutional features of around 30 IFIs, the results suggest that the mere existence of IFIs does not grant better fiscal performance, but a positive association exists when certain characteristics of IFIs are present (namely independence, fiscal rule monitoring, forecasts production/assessment and media impact). They conclude that IFIs can enhance the effectiveness of fiscal rules. They also acknowledge the possibility of reversed causality in the sense that countries which are more concerned about fiscal discipline may have better fiscal rules and a fiscal council.

Beetsma et al. (2019) extend the work by Debrun and Kinda (2017). They aim at identifying the impact of IFIs on the quality of budget forecasts and the compliance with fiscal rules, the two most common remits of fiscal councils. Their focus is on the more homogeneous IFIs within the EU. The paper uses the 2016 IMF Fiscal Council Dataset and applies a panel fixed-effect approach that tries to address concerns about self-selection. Although causality remains an issue, their empirical analysis provides evidence, suggesting that the presence of an IFI is associated with more accurate and less optimistic budget forecasts as well as with greater compliance with fiscal rules.

Whether an IFI discourages governments from presenting overly optimistic macroeconomic and budget forecasts to ensure ex-ante compliance with fiscal rules and to justify ex-post deviations with 'unexpected' revenue shortfalls has also been addressed by earlier studies. Jonung and Larch (2006) show that forecast bias in the EU may be politically motivated and that forecasts by an independent authority, such as an independent fiscal council, would be preferable to forecasts provided by the Ministry of Finance. Frankel and Schreger (2013) find that official budget forecasts are over-optimistic, particularly in euro-area countries. They find that IFIs producing budget forecasts reduce the over-optimistic bias when countries do not comply with the 3% cap on budget deficits. In a same vein, Gilbert and de Jong (2017) present suggestive evidence that independent fiscal councils might help to reduce the optimism bias in budget forecasts caused by the 3% threshold of the Stability and Growth Pact (SGP) on the deficit ratios.

Martins and Correia (2020) analyse 28 EU countries for the period 1999–2016 using a dynamic panel estimation approach. They employ three definitions of IFIs from the European Commission, the IMF, and a narrower definition adapted from Calmfors and Wren-Lewis (2011). Their results suggest that IFIs (independent of the underlying definition) improve fiscal policy-making, e.g. fiscal policy being less pro-cyclical. They also investigate the complementarity between IFIs and other elements of fiscal frameworks. They find that fiscal rules are more important in improving the fiscal balance in countries with narrowly defined IFIs, while medium-term expenditure frameworks (MTEFs) appear to be more relevant in countries without IFIs. While their empirical approach appears interesting, the issue of clustering of institutional features arises, i.e. countries tend to cluster to a set of institutional features that reinforce each other, making causal inference difficult.

Căpraru et al. (2022) also study IFIs in the EU. Using a dynamic panel model approach, they find that IFIs contribute to improve the budget balance and to enhance fiscal rule compliance. IFIs appear to have these beneficial impacts primarily in countries with poorly designed fiscal responsibility norms. Their results suggest that IFIs play a larger role in countries where these institutions have been established already for some time alluding to the role of experience and reputation.

Finally, Chrysanthakopoulos and Tagkalakis (2022) extend the empirical literature by investigating the role that IFIs play for reducing pro-cyclicality. Based on a panel of 35 advanced economies over the period 1990–2020, they study the relationship between the design elements of fiscal councils and fiscal policy. Using dynamic panel estimations, they find that fiscal councils with enhanced remit, strong independence and accountability, and sufficient resources can mitigate pro-cyclicality. A

series of robustness checks suggests that the ability of fiscal councils to mitigate pro-cyclicality is particularly relevant in the EU and euro-area countries, in countries with weak governance and especially after the global financial crisis.[15]

Overall, empirical studies suggest that well-designed IFIs can complement fiscal rules and appear to promote sound fiscal policies. In particular, countries where IFIs tasked with assessing budget forecasts and monitoring fiscal rules are successful in delivering more accurate forecasts and better fiscal rule compliance. Design features such as appropriate resources, independence from politics, guaranteed and timely access to information and media visibility seem to contribute to the effectiveness of IFIs. In practice, however, many IFIs report problems with timely access to fiscal data and severe resource constraints (OECD, 2020).

While the emerging empirical studies have contributed to a better understanding of IFIs, the evidence on the effect of IFIs on fiscal performance is fairly limited. The limited temporal experience of IFIs makes it difficult to provide robust evidence. Besides data limitations, methodological challenges concerning measurement of effectiveness and the issues of reverse causality and institutional clustering remain. Put differently, the empirical results should be interpreted as robust conditional correlations rather than as causal relationships. Again, countries which are more concerned about fiscal discipline are also more inclined to establish an IFI.

3.8 Fiscal rules and macroeconomic outcomes

We discuss initial research that relates fiscal rules to macroeconomic outcomes, such as economic growth and inflation and how fiscal rules impact public-sector efficiency.

3.8.1 Fiscal rules and economic growth

Whether fiscal rules also impact longer-term economic growth is of increasing interest. Fiscal rules improving fiscal performance and borrowing costs may also translate into effects on economic growth. Yet, studies mainly concentrate on issues with an immediate link to fiscal rules like public investment or the cyclicality of government spending, which, in turn, can affect economic growth. There are only few studies that focus on the (complex) link between fiscal rules and economic growth.

Based on a sample of 25 EU countries from 1990 to 2008, Afonso and Jalles (2013) using GMM find that fiscal rules are positively related to economic growth, while stricter fiscal rules also mitigate adverse impacts on economic growth stemming from big governments. An empirical analysis based on historical data regarding the relationship of fiscal rules and GDP growth is presented by Gründler and Potrafke (2020). Their study relies on three samples—a historical sample for 54 countries between 1789 and 1950, a topical sample of 106 countries for the period 1985–2015 and a sample for subnational jurisdictions from 10 federal states for the period 1992–2012. Besides several approaches to address endogeneity, the authors use a dataset of worldwide experts' attitudes towards fiscal rules which serves as instrumental variable to capture a country's likelihood to introduce fiscal rules. Their analysis suggests that constitutional fiscal rules promote long-term economic growth.

3.8.2 Fiscal rules and inflation

While the interaction of fiscal and monetary policy for macroeconomic stability is a key topic, there is little empirical research on whether the institutional arrangements for the conduct of fiscal policy and monetary policy impact key outcomes of the other policy domain. For instance, fiscal policies that lead to unsustainable government debt can hinder or substantially complicate achieving price stability for central banks ("fiscal dominance"). If fiscal rules contribute to sound and sustainable policies, there might also be cross-effects of fiscal rules on inflation.

In this context, the study by Combes et al. (2018) provides important first insights. Referring to theoretical considerations about the interdependence between frameworks governing the conduct of fiscal policy and those shaping monetary policy, the authors examine three empirical questions: (i) does the adoption of inflation targeting influence fiscal performance, (ii) do fiscal rules affect inflation and (iii) has the combined adoption of inflation targeting and fiscal rules a greater effect than their individual influence? Based on a panel of 140 advanced and developing countries over the period 1990–2009, Combes et al. (2018) use GMM models and find that cross-effects and interactions between monetary and fiscal frameworks exist with regard to the outcomes in each policy. Specifically, the adoption of inflation targeting is associated with stronger fiscal performance. The adoption of fiscal rules is also disinflationary—in line with less pressure to monetise deficits or raise the inflation tax—but not statistically significant. The combined effect of inflation targeting and fiscal rules on inflation and fiscal balances tends to be stronger than with one arrangement alone; thereby,

[15] Chrysanthakopoulos and Tagkalakis (2023) also find that fiscal councils with enhanced powers, including enhanced remit, independence and accountability and enhanced tasks and instruments, increase the probability to initiate a fiscal adjustment.

strong fiscal rules appear to have a greater impact—directly on fiscal policy and via inflation targeting interactions on the inflation.

3.8.3 Fiscal rules and government efficiency

In several contributions, fiscal rules are found to work better in an environment of higher government efficiency (e.g. Bergman et al., 2016). However, the question of whether fiscal rules affect government efficiency in the first place has been addressed only very recently.

A primarily conceptual framework on the relationship between fiscal rules and government efficiency is presented by Barbier-Gauchard et al. (2023). In a first explorative analysis, their correlation analysis for 36 OECD countries over the period 2003–2015 indicates only a very weak positive association between the stringency of fiscal rules and government efficiency.

An initial empirical analysis has been undertaken by Christl et al. (2020) who investigate the determinants of public-sector efficiency, in particular the role of fiscal decentralisation and fiscal rules for 23 European countries over the period between 1995 and 2015. The study conceives public-sector efficiency as a ratio of public-sector performance (output)—defined as a composite of nine indices for key policy areas—and public expenditure (input). As main results, the authors find a positive effect of revenue decentralisation on input-oriented public-sector efficiency. Conversely, fiscal rules do not seem to affect government efficiency in general. Strict fiscal rules could even be detrimental to government efficiency if combined with high revenue decentralisation.

In another recent study, López-Herrera et al. (2023) argue that in times of growing spending pressure, it becomes increasingly important not only to tighten fiscal restraint but also to achieve greater spending efficiency. The authors further hypothesise that the impact of fiscal rules may be negative if the design focuses solely on reducing debt levels without considering their possible effects on efficiency. Based on a panel of 50 countries over the period 2016–2019, the analysis explores the relationship between the strength of the fiscal rules and different indicators for public spending efficiency. Based on a nonparametric approach, the analysis suggests that strict fiscal rules can contribute to efficiency gains in public-sector performance. However, the authors interpret the results with caution due to the short time period covered and methodological limits.

While these initial studies address key policy dimensions, the empirical evidence is yet sparse and heterogeneous. Empirically assessing the complex relationship between fiscal rules and macroeconomic outcomes proves challenging with regard to causality. This is particularly evident for fiscal rules and public-sector efficiency.

3.9 Fiscal rules, inequality and political polarisation

Research into the effects of fiscal rules has primarily focused on their fiscal impact. Possible unwanted side effects of fiscal rules are largely unexplored. For instance, governments attempting to abide by a fiscal rule might curb social expenditure. The paper by Nerlich and Reuter (2013) reports that fiscal rules have a negative impact on expenditures on social protection in the EU. In the same vein, Dahan and Strawczynski (2013) found negative effects of fiscal rules on the ratio of social transfers to government consumption in OECD countries. This, in turn, could increase income inequality and imply social costs. If fiscal rules crowd out social expenditures, it is crucial to ask whether they cause increasing inequality.

Hartwig and Sturm (2019) innovatively test this hypothesis with data from the Standardised World Income Inequality Database (SWIID) and a set of fiscal rules dummy variables for EU countries. The SWIID database contains information on market Gini coefficients (which measure inequality in a country before redistribution through taxes and transfers), net Gini coefficients (which measure inequality after redistribution, i.e. using disposable income measures) as well as 'redistribution' defined as the difference between market and net Gini coefficients. In the empirical analysis for 24 EU countries for the period 1975–2012, they find that after 'hard' fiscal rules have been in place for several years (i.e. expenditure or balanced budget rules that include sanctions and/or automatic correction mechanisms), redistribution declines, leading to an increase in inequality based on disposable income measures.

Combes et al. (2024) also study the impact of fiscal rules on inequality for developing countries. Analysing a panel of 84 developing countries for the period 1990–2015, propensity score matching estimations reveal that countries that adopted fiscal rules experience a decrease in their income inequality. The effect is robust to a wide set of alternative measurement and specifications. However, not all types of fiscal rules are alike: balanced budget rules and debt rules decrease income inequality. Conversely, expenditure rules tend to increase income inequality, probably because they directly constrain public spending, including transfers. Interestingly, key results deviate from the findings of

Hartwig and Sturm (2019). One possible explanation can be seen in the different country samples under study, in particular their different state of economic and institutional development.

Fiscal rules are often considered a tool to depoliticise fiscal policy and perhaps the political system more broadly by forcing political parties to adopt increasingly similar fiscal policy positions. However, it could be that exactly because fiscal rules are thought to constrain fiscal policy, and therefore potentially constrain redistribution, they should themselves be contested and lead to conflict about the prioritisation of scarce public resources. This conflict follows the traditional political left–right scale. Aaskoven (2020) explores whether fiscal rules cause political parties to adopt more similar ideological positions. Using party manifestos data from 185 elections in 32 OECD countries for 1985–2012, he finds little evidence that fiscal rules reduce the level of political polarisation between parties. At the same time, fiscal rules do neither seem to fuel political conflict nor increase political polarisation.

Taken together, the initial studies on the relationship between fiscal rules, inequality and political polarisation enrich the discussion towards a broader assessment of fiscal rules. These emerging lines of research are still evolving and further evidence is needed.

3.10 Compliance with fiscal rules

Political commitment to and ownership of fiscal rules matters (Wyplosz, 2012). Asatryan et al. (2018) emphasise the importance of anchoring fiscal rules at the constitutional level as the most binding commitment device. An example for strong political commitment, broad political acceptance and high fiscal rule compliance is the experience in Switzerland where citizens voted with a vast majority in favour of a debt brake within a system of fiscal federalism providing institutional checks for sound fiscal policies (for an overview, see Baur et al., 2013; Salvi et al., 2020). Another case in point is the experience from the EU fiscal framework, where political commitment and ownership are considered relatively weak and enforcement and consequently compliance with fiscal rules are moderate.

Research has started to investigate (non-)compliance with fiscal rules, i.e. how closely the fiscal aggregates considered match the targets defined by the fiscal rule. For instance, Reuter (2015) finds for eleven EU countries between 1992 and 2014 that only in half of the sample period countries actually complied with fiscal rules. He suggests that fiscal rules represent a sort of point of reference for sound fiscal policy, rather than effective and accurate constraints. Interestingly, the convergence towards numerical fiscal rules takes place from above and from below the defined fiscal constraint.

At the European level, Larch and Santacroce (2020) and Larch et al. (2023) document the moderate compliance with the key elements of the EU fiscal framework. Based on the fiscal rule compliance tracker by the Secretariat of the European Fiscal Board, they show that, on average, EU member states were compliant in just over half of the cases. Differences in member states' compliance are substantial and persistent, and compliance is pro-cyclical. Countries with a very high debt-to-GDP ratio are forced to step up efforts to comply with the deficit and debt rule especially when the cycle turns negative. However, their compliance decreases during upturns, when fiscal buffers should be rebuilt. Also focusing on the European fiscal framework, Caselli and Wingender (2021) identify the Maastricht treaty's 3 per cent deficit ceiling as a 'magnet' towards which government deficits converge. Their results suggest that the rule has an effect on deficits even if it is not complied with.

Extending this line of research work, Reuter (2019) innovatively studies the determinants of fiscal rules (non-)compliance at the national level for the member states of the EU-28 and the period 1995–2015. The empirical analysis suggests that, for instance, independent monitoring and enforcement bodies enshrined in the fiscal framework (like IFIs and courts) are associated with a higher probability of compliance: By contributing to budget transparency, they make violations visible and enable sanctions—institutional or by the markets—which increases the cost of non-compliance with fiscal rules for a government (Gootjes & de Haan, 2022b). Moreover, Delgado-Téllez et al. (2017) and Reuter (2019) show that non-compliance with fiscal rules is related to more fragmented governments and is more likely in election years.

Căpraru et al. (2024) innovatively relates the complexity of fiscal frameworks to compliance. Using a sample of 27 EU member states for the period 2000–2021, the authors show that fiscal rules contribute to fiscal compliance among the member states, but only up to a certain threshold. Beyond this threshold, a higher number of fiscal rules—both on national and supranational level—may undermine compliance and thereby reduce the rules' effectiveness.

Taken together, studying (non-)compliance with fiscal rules is a new line of research, key to inform the design of fiscal frameworks. This initial research identifies the 'magnet' effect, suggesting that fiscal rules not compiled with can still be effective. Moreover, institutional elements, political factors and fiscal rule complexity matter for compliance.

4 Concluding remarks

The literature has made substantial progress in underpinning the role of fiscal rules as a key element of institutional frameworks. This survey, first, shows that fiscal rules are positively related to fiscal performance. Second, fiscal rules contribute to more accurate budget forecasts and more favourable sovereign bond ratings. Third, the evidence suggests that fiscal rules do not principally undermine public investment, do not increase the pro-cyclicality bias in fiscal policy-making and do support fiscal consolidations. Moreover, there is promising work that studies the interaction of fiscal rules and the broader institutional context, highlighting that fiscal rules and government effectiveness can be considered as institutional complements or—beyond a certain threshold of institutional quality—as institutional substitutes. In a similar vein, there is emerging evidence on IFIs that appear to complement fiscal rules. Finally, there is initial work that relates fiscal work to macroeconomic outcomes and initial work on the negative side effects that fiscal rules may have on inequality and political polarisation.

A key question is which types of fiscal rules are most effective. Asatryan et al. (2018) emphasise the importance of anchoring fiscal rules at the constitutional level to increase credibility and consequently improve fiscal performance. As to the type of fiscal rules, the evidence finds mostly budget balance rules and expenditure rules to be effective. As to the design of fiscal rules, research suggests that well-designed fiscal rules improve fiscal performance, protect public investment from being undermined and reduce the pro-cyclical bias in fiscal policy-making. Key design features involve a strong legal basis, binding enforcement and provisions that take into account the economic cycle and clearly defined procedures for unforeseen events beyond government control.

Causality remains a concern in the analysis of fiscal rules, in particular, since governments in countries with electorates that are more concerned with sound fiscal policies and fiscal sustainability are also more likely to adopt and implement fiscal rules. Thus, empirical results may present upper bound estimates and have to be interpreted with caution. To mitigate these concerns, more recent empirical studies on fiscal rules use cutting-edge empirical methods, including difference-in-differences, instrumental variables, quasi-natural experiments and propensity scores-matching.

The literature review informs the debate on more resilient public finances in the aftermath of COVID-19, where fiscal frameworks are put to a test, as countries activated escape clauses or temporarily suspended their fiscal rules. A case in point is the recent reform of the EU fiscal framework. This discussion demonstrates the importance of (i) reducing complexity, while safeguarding flexibility to ensure counter-cyclical policies and (ii) strengthening the medium-term perspective to ensure debt sustainability (see, e.g. European Commission, 2021; Cuerpo et al., 2022). The review also informs the policy debate more generally: The empirical evidence indicates that there are good reasons to keep well-designed fiscal rules unchanged even though there appear to be ever more areas for policy action, including demands for more public spending.

There are several directions for future research. A first direction may look more closely at further elements of fiscal frameworks. Besides IFIs, promising initial work is presented on medium-term expenditure frameworks (Vlaicu et al., 2014) and accrual accounting (Christofzik, 2019; Dorn et al., 2021). A second direction towards a wider economic policy assessment of fiscal rules could study the link between fiscal rules and the composition of public spending, including the analysis of crowding-out effects (e.g. Dahan & Strawczynski, 2013) or the impact of fiscal rules on key public spending areas, such as health spending (e.g. Brändle & Colombier, 2016; Schakel et al., 2018). Finally, unintended effects of fiscal rules, such as creative accounting and the flight into extra budgets, deserve more attention by empirical research to complement the debate on the effectiveness of fiscal frameworks.

Appendix

See Table 1.

Table 1 Overview of selected empirical studies on the effectiveness of fiscal rules

Authors	Objective	Method	Data basis	Key results
Fiscal rules and traditional fiscal performance indicators				
Debrun et al. (2008)	Impact of fiscal rules on fiscal performance	Dynamic panel estimation methods (among others bias-corrected LSDV)	25 EU countries, 1990–2005	Budget balance and debt rules contribute to limiting the budget deficit. They argue that the evidence suggests that causality runs from fiscal rules to fiscal behaviour.
Nerlich and Reuter (2013)	Impact of fiscal framework elements (fiscal rules, IFIs, MTEF) on fiscal outcomes	Dynamic panel estimation approach (bias-corrected LSDV)	27 EU countries, 1990–2012 Datasets from the European Commission, the OECD, the IMF and an ESCB dataset on national fiscal frameworks	Fiscal rules are related to lower public expenditures and revenues, such that the primary balance improves. Fiscal rules have restrictive impact on social benefit spending, compensation of public employees, public services and defence expenditures.
Fall et al. (2015)	Design of debt targets and impact of fiscal frameworks on fiscal performance	Panel estimation approach	30 OECD countries, 20 years, OECD database and IMF fiscal institutions dataset	Fiscal rules are related to improved fiscal performance. IFIs appear to limit spending when interacted with a balanced budget rule.
Cordes et al. (2015)	Impact of expenditure rules on fiscal outcomes	Dynamic panel estimation approach (bias-corrected LSDV)	29 advanced and developing countries, 1985–2013, IMF fiscal institutions dataset	Expenditure rules are associated with spending control, counter-cyclical fiscal policy and improved fiscal discipline. Expenditure rules are associated with lower expenditure volatility and higher investment efficiency.
Badinger and Reuter (2017)	Impact of fiscal rules on fiscal outcomes (fiscal balance, sovereign bonds, GDP volatility)	Panel estimation approach, instrumental variable approach	74 countries, 1985–2012, IMF fiscal rule index	Countries with more rigorous fiscal rules show a better budgetary balance, lower interest rate spread for bonds and lower GDP volatility.
Asatryan et al. (2018)	Impact of constitutional-level fiscal rules on probability of sovereign debt crisis and fiscal performance	Difference-in-differences estimation approach and synthetic control method for case study countries	Between 58 and 132 countries, historical data back to nineteenth century, case studies from Brazil, Cape Verde, Chile, Gabon, Panama, and Peru, Rwanda, Switzerland, and Ukraine	Constitutional budget-balance rules lead to a reduced probability of sovereign debt crises and decreases in the debt-to-GDP ratio, most of these consolidations are explained by decreasing public expenditures.
Pfeil and Feld (2024)	Impact of Swiss debt brake on budgetary aggregates	Synthetic Control Method (SCM)	Swiss federal budget data; 1995–2007, 23 OECD countries	Swiss debt brake improves the budget balance by 3.6 percentage points on average on a post intervention period of 5 years. No clear results emerge for debt ratio due to data restriction.

Table 1 (continued)

Authors	Objective	Method	Data basis	Key results
Salvi et al. (2020)	Impact of Swiss debt brake on budgetary aggregates (extending study by Pfeil and Feld, 2018/2024)	Synthetic Control Method (SCM)	Swiss federal budget data; 1980–2010, 34 OECD countries	Swiss debt brake decreases debt by 19.7 percentage points after 7 years. No evidence is found for the decline in federal debt ratio being due to debt relocation to the subnational level or reduction in general investment spending on the federal level.
Burret and Feld (2018a)	Impact of fiscal rules on fiscal performance and potential side effects	Panel estimation approach	26 Swiss cantons, 1980–2011	Fiscal rules are related to lower public deficits. Fiscal rules are related to evasion into unconstrained accounts. Political budget cycles depend on the institutional context.
Caselli and Reynaud (2020)	Impact of fiscal rules on fiscal balances	Instrumental variable approach	142 countries, 1985–2015, IMF fiscal institutions dataset	Fiscal rules are related to lower deficits. This relationship disappears when endogeneity is taken into account. With an index of fiscal rules' design, well-designed rules improve fiscal balances.
Bergman et al. (2016)	National fiscal rules, government effectiveness and sustainable public finances	Panel estimation approach (GMM)	27 EU countries, 1990–2012, IMF dataset on fiscal institutions	Fiscal rules reduce structural primary deficits at all levels of government efficiency. Effect is smaller as government efficiency increases Balanced budget rules are the most effective rules.
Fiscal rules and budgetforecasts				
Luechinger and Schaltegger (2013)	Impact of fiscal rules on projected and realised deficits	Panel estimation approach controlling for unobserved country and time specific influences	26 Swiss cantons, 1984–2005	Fiscal rules lower the probability of projected and realised deficits with the former effect being twice as large. Fiscal rules increase the accuracy of projections.
Chatagny (2015)	Impact of finance minister ideology and fiscal rules on tax revenue predictions errors	Panel estimation approach controlling for unobserved country and time specific influences	26 Swiss cantons, 1980–2007	A more left-wing finance minister produces more conservative forecasts. Fiscal rules reduce the effect of ideology on revenue projection errors.
Picchio and Santolini (2020)	Impact of the domestic stability pact on the accuracy of budget forecasts	Difference-in-discontinuities	Database on local public finance by Italian Department of Territorial and Internal Affairs; 1991 census data "Atlante Statistico dei Communi" (Istat)	Relaxing fiscal rules has a sizeable causal impact on budget forecast errors, e.g. revenue (expenditure) forecast errors for municipalities with fewer than 5000 inhabitants are 26% (22%) larger than those of municipalities just above the cut-off.

Table 1 (continued)

Authors	Objective	Method	Data basis	Key results
Mancini and Tommasino (2023)	Impact of expenditure rule on expenditure forecasts at the local government level in Italy	Difference-in-discontinuities	Database on local public finance by Italian Department of Territorial and Internal Affairs; 1991 census data "Atlante Statistico dei Communi" (Istat)	Italian municipalities tend to systematically overestimate plans on capital expenditures. Municipalities subject to a newly enacted capital spending rule significantly reduce over-optimism in expenditure planning.
Fiscal rules and sovereign bond ratings				
Iara and Wolff (2014)	Relationship between numerical fiscal rules and risk premia	Panel estimation approach controlling for unobserved country and time specific influences	11 euro-area countries, 1999–2009, EC fiscal rule index	No significant effect of fiscal rules on risk spreads, significant impact if interacted with the market risk aversion.
Afonso and Guimarães (2015)	Impact of numerical fiscal rules on budget balances and sovereign yield	Panel estimation approach controlling for unobserved country and time specific influences	27 EU countries between 1990 and 2011, EC's and the IMF fiscal rule index	Fiscal rules are related to lower budget deficits. Countries with stricter fiscal rules experience lower sovereign bond yields.
Afonso and Jalles (2019)	Impact of fiscal rules on sovereign bond spreads	Panel estimation approach	34 advanced countries and 19 emerging market economies, 1980– 2016, IMF dataset on fiscal institutions	Impact of fiscal rules on sovereign yield spreads is negative, stemming essentially from advanced economies. In recessions, a fiscal rule is related to reduced bond risk premia. Independent monitoring of compliance reduces sovereign spreads.
Thornton and Vasilakis (2017)	Relationship between numerical fiscal rules and sovereign risk premia	Panel estimation approach, propensity score matching methods	67 advanced and developing countries, 1985–2012, IMF fiscal institutions dataset	Adoption of FRs is related to lower sovereign risk premia.
Feld et al. (2017)	Impact of fiscal frameworks on financial market ratings	Panel estimation approach	Swiss subnational government bonds, 1981–2007	A not fully credible no-bailout commitment can entail high costs for the potential guarantor.
Sawadogo (2020)	Exploring the role of fiscal rules in terms of improving access to financial markets for developing countries	Panel estimation approach including entropy balancing	36 developing countries, 1993–2014	Fiscal rules reduce sovereign bond spreads and increase sovereign debt ratings. Balanced budget rules and debt rules improve access to financial markets, while expenditures rules appear to improve financial market access only in combination with multi-year expenditure ceilings.
Hansen (2020)	Impact of transmission channels (financial market discipline vs. political competition) of fiscal rules	Panel estimation (GMM methods)	69 countries, 1990–2008, IMF and OBI fiscal transparency index, IMF fiscal rule index	Budget balances are improved not as a consequence of financial markets, but when the level of political competition and civil society engagement is high.

Table 1 (continued)

Authors	Objective	Method	Data basis	Key results
Fiscal rules and public investment				
Perée andVälilä (2005)	Assess determinants of public investment and to what extent fiscal deficit rules in EMU affect public investment	Panel estimation approach; country-specific models	14 EU countries, 1970–2003	Statistically significant determinants of public investment include level of GDP, budgetary situation and fiscal consolidation efforts, no significant relation between fiscal rules and public investment.
Dahan and Strawczinsky (2013)	Effects of fiscal rules on changes of both social transfers and public investment in relation to government consumption	Panel estimation approach/difference-in-differences	22 OECD countries, 1960–2010	Fiscal rules have a negative effect on social transfers unless strong commitment to social security coverage is enacted in law. Negative influence of fiscal rules on public investment cannot be confirmed.
Afonso and Jalles (2015)	Assess relevance of fiscal components for private and public investment	Panel estimation approach	95 developed and developing countries, 1970–2008/EU-countries 1990–2008	Interest payments and subsidies have a negative effect on private and public investment. Stronger (numerical) fiscal rules decrease public investment.
Delgado-Téllez et al. (2022)	Test the two classical hypotheses for declining public investment (crowding out by social spending; fiscal rules)	Panel regression and factor analysis; local projections	22 OECD countries, 1960–2015, OECD social expenditure database, AMECO and IMF databases	Social spending is interpreted as a structural driver for the observed crowding-out effects; fiscal rules are negatively related to public investment, specifically in periods of fiscal consolidation, whereby flexibility clauses of fiscal rules mitigate the effect.
Ardanaz et al. (2021)	Explain public investment during fiscal consolidations in relation to the design of fiscal rules	Panel estimation approach	75 advanced and emerging economies, 1990–2018	In countries with either no or with a rigid fiscal rule public investments are significantly reduced in episodes of fiscal adjustment, whereas the negative effect on public investment vanishes in countries with flexible fiscal rules.
Wijsman and Crombez (2021)	Assess the effects of national fiscal rules on public investment	Dynamic panel estimation approach by LSDVC and GMM	28 EU countries; 1997–2016, European Commission fiscal rules index	Fiscal rules decrease public investment: Significant negative coefficients of fiscal rules index in both models.
Vinturis (2023)	Assessing different fiscal rules (expenditure, debt, budget balance) on total public spending, decomposed in consumption, investment and ratio of both	Panel estimation approach including entropy balancing	185 countries, 1985–2015	Fiscal rules reduce public consumption and leave public investment unchanged. Only debt and balanced budget rules reduce total spending and increase investment-to-consumption ratio.

Table 1 (continued)

Authors	Objective	Method	Data basis	Key results
Feld et al. (2021)	(1) Relationship between a cut in the central bank interest rate and the development of capital expenditure; (2) influence of fiscal rules on investment spending under low interest rates	Two panel-based regression models/ difference-in-differences	26 cantons, 376 municipalities (> 5000 pop.), 2Federal Finance Administration 009–2018; Swiss	Negative correlation between capital cost and public investment for both panels. No evidence is found for fiscal rules constraining investment (or hampering expansion) after cut in interest rate. Cantons with stricter fiscal rules tend to expand their investments more.
Jürgens (2022)	Assess whether fiscal rules affect public investment with special regard to cyclicality and different types/features of fiscal rules	Panel estimation approach	23 EU countries, 1985–2019	Public investment in the country sample is pro-cyclical, specifically in downturns. Fiscal rules without flexibility features constrain public investment.
Fiscal rules and pro-cyclicality				
Sacchi and Salotti (2015)	Assess whether fiscal rules impact governments' ability to stabilize the economy via discretionary fiscal policy making	Fixed effects and System-GMM estimator	21 OECD countries, 1985–2012, IMF Fiscal institutions dataset	The use of discretionary fiscal policy, particularly of government consumption, is related to higher output volatility. With fiscal rules, discretionary policy tends to become more output-stabilising. Balanced budgets rules rather than for revenue, expenditure or debt rules seem to be more effective.
Nerlich and Reuter (2015)	Impact of fiscal rules on 'fiscal space' and how their impact determines cyclicality of fiscal policy	Panel estimation approach	EU-27 countries, 1990–2014	Fiscal rules are correlated with fiscal space, i.e. they help to create leeway for discretionary fiscal policy. Fiscal rules constrain excessive spending by discretionary fiscal policy and tend to curb pro-cyclical in discretionary fiscal policy.
Combes et al. (2017)	Assess the response of fiscal policy to the business cycle, especially in cases of high public debt	Panel estimation approach	56 advanced, emerging and developing economies, 1990–2011	Most fiscal rules enhance countercyclicality, conditional on the level of debt. In environment of high public debt-to-GDP ratios, fiscal policy turns pro-cyclical and is not curbed by most fiscal rules or even exacerbated (escape clauses!). Deficit rules and/or 'golden rules' for investment can help to mitigate such effects.

Table 1 (continued)

Authors	Objective	Method	Data basis	Key results
Guerguil et al. (2017)	Assess the impact of different types of flexible fiscal rules on the cyclicality with special regard to investment spending	Panel estimation approach including propensity scores-matching (PSM)	167 advanced and developing economies, 1990–2012	Investment-friendly rules reduce pro-cyclicality of overall spending and investment spending. Expenditure rules and cyclically-adjusted deficit rules contribute to counter-cyclical changes for overall spending, but have a pro-cyclical effect on investment spending.
Manescu and Bova (2020)	Fiscal rules' design and pro-cyclicality of fiscal policy	Panel estimation approach	28 EU countries, 1999–2016, EC's fiscal governance database	Pro-cyclical bias is lower with expenditure rules. Well-designed expenditure rules further reduce pro-cyclicality.
Bergman and Hutchison (2015)	Impact of fiscal rules and government effectiveness on pro-cyclical fiscal policy	Panel estimation approach (GMM)	81 countries, 1985–2012, World Bank indicators for government effectiveness, IMF dataset on fiscal institutions	Government efficiency alone is not sufficient to reduce pro-cyclicality, the combination of fiscal rules and high government efficiency fosters counter-cyclical policies.
Larch et al. (2021)	Fiscal rules and counter-cyclical fiscal policy	Dynamic panel estimation approach (including LSDV and GMM)	36 EU and non-EU countries, using data up to 2017, with observations starting earliest in the 1960s	Volatility of output gap estimates is not a convincing explanation for pro-cyclical policies. Fiscal rule non-compliance and public debt foster pro-cyclical fiscal policy.
Reuter et al. (2022)	Assessing the effect of national fiscal rules on the conduct of discretionary fiscal policy and thus on macroeconomic stability	Panel estimation with two-stage least squares approach	28 EU countries, 1996–2015	Strong fiscal rules limit fiscal volatility thus contributing to reduce macroeconomic volatility. The observation applies for budget balance rules and expenditure rules. The finding holds also in cases with reduced compliance to fiscal rules serving then as benchmark.
Fiscal rules and fiscal consolidations				
Chrysanthakopoulos and Tagkalakis (2023)	Impact of the fiscal institutions' design on fiscal adjustment	Panel estimation approach	40 advanced economies, 1990–2020	Well-designed fiscal rules which incorporate both strict and flexible features increase both the probability to initiate and to successfully conclude a fiscal adjustment. Key design elements are: a cyclically-adjusted budget balance target, a well specified escape clause, strict enforcement, strong legal base and multi-annual spending limits.

Table 1 (continued)

Authors	Objective	Method	Data basis	Key results
Aaskoven and Wiese (2022)	Impact of fiscal rules on fiscal adjustment	Random effects panel estimation, structural break point tests on cyclically adjusted primary budget balance	19 OECD countries, 1967–2013	In the shorter run (1–3 years) the mere existence of national fiscal rules during fiscal consolidations is related to lower government debt. In the medium run (5 years), some indication that the SGP might have had a positive effect on debt reduction during periods of fiscal consolidation is found. Both national and supranational fiscal rules become more effective during fiscal consolidations if they are embedded in stronger national fiscal framework (fiscal rule coverage, formal enforcement procedures as, stronger fiscal councils).
Gootjes and de Haan (2022b)	Do fiscal rules combined with fiscal transparency impact budget balance and make fiscal adjustment and its success more likely?	Dynamic panel estimation approach	73 advanced and developing economies, 2003–2013	Fiscal rules improve the budget balance only when the level of fiscal transparency exceeds a minimum threshold. As to fiscal adjustments, fiscal rules make the occurrence and success of fiscal adjustments more likely but, again, only when the level of fiscal transparency is sufficiently high.
Clements et al. (2023)	Reexamine for a broader sample of countries the relative contribution of economic and political elements identified by previous research	Panel and cross-section analyses; discrete choice models	185 countries, 1979–2019; 450 episodes of fiscal adjustment	In advanced economies, fiscal adjustments are more likely when growth rates are weak, terms of trade and exchange rates in decline, public debt to GDP is high, when government is in office for longer period, when fiscal rule is in place (esp. expenditure or budget balance rule). In emerging/developing economies, fiscal adjustments are more likely, when economic conditions are favourable, when governments have high margins of majority; absence of fiscal rules raises need for more adhoc adjustments.
Fiscal rules and independent fiscal institutions				
Debrun and Kumar (2008)	Impact of fiscal rules and IFIs on fiscal outcomes	Panel estimation approaches	EU-15 countries, 1990–2004, European Commission data	Fiscal rules are associated with higher fiscal performance. IFIs, with strong independence, are associated with-stronger budget balances.

Table 1 (continued)

Authors	Objective	Method	Data basis	Key results
Nerlich and Reuter (2013)	Impact of fiscal framework elements (fiscal rules, IFIs, MTEF) on fiscal outcomes	Dynamic panel estimation approach (bias-corrected LSDV)	27 EU countries, 1990–2012 Datasets from the EC, the OECD, the IMF and an ESCB dataset on national fiscal frameworks	Fiscal rules are related to an improved primary balance. Effect is strengthened when fiscal rules are enacted in law or constitution and supported by IFIs and effective MTEFs.
Fall et al. (2015)	Design of debt targets and impact of fiscal frameworks on fiscal performance	Panel estimation approach	30 OECD countries, period of 20 years, OECD database and IMF fiscal institutions dataset	Fiscal rules are related to an improved fiscal performance. Impact of IFIs on the primary balance is not significant. IFIs limit spending when interacted with a balanced budget rule.
Debrun and Kinda (2017)	Impact of IFIs on fiscal outcomes	Dynamic panel estimation approach (bias-corrected LSDV)	58 advanced and emerging countries over the 1990–2011, IMF dataset on IFIs	Fiscal rules are related to better fiscal performance. IFIs are related to improved fiscal performance when certain features of IFIs apply (independence, monitoring compliance, forecasting, media impact).
Beetsma et al. (2019)	Impact of IFIs on the quality of fiscal forecasts and fiscal rule compliance	Panel estimation controlling for unobserved country and time-specific influences	27 EU countries, 1995–2015, IMF dataset on IFIs (2016 vintage), OECD IFI database and EC data	IFIs are associated with more accurate and less optimistic budgetary forecasts. IFIs are related to greater fiscal rule compliance.
Martins and Correia (2020)	Impact of IFI on fiscal outcomes	Dynamic panel estimation approach (bias-corrected LSDV); Analysis of subcategories of IFIs and samples with/without IFIs	28 EU countries, 1999–2016; several data sets, including EC and IMF datasets on fiscal institutions	With IFIs, fiscal policy measures are less pro-cyclical and more concerned with debt sustainability.
Căpraru et al. (2022)	Fiscal implications and influence of IFIs on fiscal policy	Dynamic panel estimation approach	EU member countries, 2000–2019	IFIs contribute to improve the budget balance and enhance fiscal rule compliance, primarily in countries with poorly designed fiscal responsibility norms. IFIs play a larger role after operation for some time allowing them to build up experience and reputation.
Chrysanthakopoulos and Tagkalakis (2022)	Exploring the role of IFIs in reducing pro-cyclicality	Dynamic panel estimation approach	35 advanced economies, 1990–2020	Stronger fiscal councils can mitigate pro-cyclicality. The ability of fiscal councils to mitigate pro-cyclicality is particularly relevant in the EU and euro-area countries, in countries with weak governance and especially after the global financial crisis.

Table 1 (continued)

Authors	Objective	Method	Data basis	Key results
Fiscal rules and macroeconomic outcomes				
Afonso and Jalles (2013)	Assess relevance of fiscal rules for economic growth in EU	Panel estimation approach controlling for unobserved country and time specific influences (FE, GMM)	25 EU countries, 1990–2008, fiscal rules measured by 3 EU indices (overall rule, expenditure rule, budget balance/debt rule)	Fiscal rules in EU foster growth, while stricter fiscal rules mitigate the adverse impact on growth from big governments. More recent EU countries have benefitted from the implementation of fiscal rules.
Gründler and Potrafke (2020)	Examine how fiscal rules influence economic growth	Generalised difference-in differences, instrumental variable	Historical dataset on 54 countries, 1789–1950; up to 106 countries 1985–2015;206 subnational governments from 10 countries, 1992–2012	Fiscal rules adapted in constitutions promoted economic growth that hold for historical, modern and sub-national context. Issues on availability of data on fiscal rules, reverse causality and selection bias are addressed. IV-estimates suggest that constitutional fiscal rules promote long-term economic growth.
Combes et al. (2018)	Examine how inflation targeting and fiscal rules affect inflation and fiscal performance	Dynamic panel estimation approach controlling for unobserved country and time-specific influences	140 advanced and developing countries, 1990–2009	Significant cross-effects and interactions between monetary and fiscal frameworks seem to exist. Specifically, (i) the adoption of inflation targeting is associated with stronger fiscal performance, and (ii) the combined effect of inflation targeting and fiscal rules on inflation and fiscal balances tends to be greater than with one arrangement alone; strong fiscal rules appear to have a greater impact.
Christl et al. (2020)	In-depth analysis of the impact of fiscal decentralisation and fiscal rules on public-sector efficiency	Regression analysis including IV-approach	23 EU countries, 1995–2015, extended government efficiency index based on Afonso et al	Strong positive effect of revenue decentralisation on input-oriented public-sector efficiency. Fiscal rules in turn do not positively affect efficiency in general and couldbe detrimental if combined with high revenue decentralisation.
López-Herrera et al. (2023)	Explore possible links between fiscal rules and the overall efficiency of the public sector	Nonparametric conditional approach, marginal effects	50 advanced and emerging economies, 2016–2019, government efficiency index based on Afonso et al. (PSP)	The results suggest that the influence of fiscal rules on public sector efficiency scores is significant and negative, especially when fiscal rules are at an initial stage. Fiscal rules with a more stringent design can contribute to efficiency gains.

Table 1 (continued)

Authors	Objective	Method	Data basis	Key results
Fiscal rules, inequality and political polarisation				
Hartwig and Sturm (2019)	Impact of fiscal rules on redistribution and income inequality	Panel estimation approach controlling for unobserved country and time-specific influences	24 EU countries, 1975–2012, Standardized World Income Inequality Database and a new set of fiscal rules variables	Strict fiscal rules that have been in place for several years are related to a decrease in redistribution, leading to an increase in inequality based on disposable income.
Combes et al. (2024)	Impact of fiscal rules on inequality in developing countries	Propensity scores matching method (PSM)	84 developing countries, 1990–2015	Countries that adopted fiscal rules experience a significant decrease in their income inequality.
Aaskoven (2020)	Impact of fiscal rules on political polarisation of parties	Panel estimation approach controlling for unobserved country and time-specific influences	32 OECD countries, 1985–2012, party manifestos data from 185 elections, IMF fiscal institution database	No evidence that fiscal rules reduce the level of political polarisation between parties.
Compliance with fiscal rules				
Larch et al. (2023)	Analyse new dataset on numerical compliance with 4 main EU fiscal rules and assess role of key variables for compliance	Basic panel regression and correlation analyses	27 EU countries, 1998–2021, database on numerical compliance with EU fiscal rules	Compliance has been very mixed over time and across rules. Positive: better national fiscal rules and national governance are associated with better compliance. Critical: Compliance with the deficit rule is clearly procyclical and affects compliance with the rules correcting for the cycle.
Reuter (2019)	Identify determinants of compliance with national numerical fiscal rules, e.g. determinants like rule characteristics and their fiscal frameworks, their political, (socio-) economic and supranational environments)	Dynamic panel estimation approach controlling for unobserved country and time-specific influences	Sample of 51 national fiscal rules in 28 EU countries from 1995 to 2015	Compliance across all rules and countries is around 50%. Compliance with rules constraining stock (rather than flow) variables, set out in coalitional agreements, as well as rules covering larger parts of general government finances is significantly higher. Furthermore, independent monitoring and enforcement bodies turn out to be significantly associated with a higher probability of compliance.
Căpraru et al. (2024)	Examine non-linear relationship between number of fiscal rules and compliance with EU fiscal rules	Panel estimation approach controlling for unobserved country and time-specific influences	27 EU countries, 2000–2021	Fiscal rules contribute to fiscal compliance, but only up to a certain threshold. Beyond this, a higher number of fiscal rules—both on national and supranational level—may undermine compliance and thereby reduce the rules' effectiveness.

Acknowledgements
This paper benefitted from suggestions and support by Carsten Colombier and Benjamin Lerch. For helpful comments, we would also like to thank the handling co-editor of the Swiss Journal of Economics and Statistics and two referees, as well as Martin Baur, Peter Schwendener, Michael Schuler, Martin Larch, Claudio Borio and Damiano Sandri. The paper also benefitted from comments at the Federal Finance Administration Brown Bag Lunch, the Swiss Network on Public Economics Meeting in Fribourg, the Meeting of the Swiss Society of Economics and Statistics in Lucerne and the IMF Fiscal Affairs Department Seminar. This paper expresses the opinion of the authors.

Author contributions
All authors read and approved the final manuscript.

Funding
The authors declare that no external funding sources contributed to this article.

Availability of data and materials
Not applicable.

Declarations

Ethics approval and consent to participate
Not applicable.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

Received: 27 September 2023 Accepted: 12 July 2024
Published online: 13 September 2024

References

Aaskoven, L. (2020). Do fiscal rules reduce political polarization? *Comparative European Politics, 18*, 630–658.
Aaskoven, L., & Wiese, R. (2022). How fiscal rules matter for government debt reduction: Theory and evidence. *Cesifo Economic Studies, 68*, 414–433.
Ademmer, E., & Dreher, F. (2016). Constraining political budget cycles: Media strength and fiscal institutions. *Journal of Common Market Studies, 54*, 508–524.
Afonso, A., & Guimarães, A. (2015). The relevance of fiscal rules for fiscal and sovereign yield developments. *Applied Economics Letters, 22*(11), 920–924.
Afonso, A., & Jalles, J. (2013). Do fiscal rules matter for growth? *Applied Economic Letters, 20*(1), 34–40.
Afonso, A., & Jalles, J. (2015). How does fiscal policy affect investment? Evidence from a large panel. *International Journal of Finance and Economics, 20*, 310–327.
Afonso, A., & Jalles, J. (2019). Fiscal rules and government financing costs. *Fiscal Studies, 40*(1), 71–90.
Albuquerque, B. (2011). Fiscal institutions and public spending volatility in Europe. *Economic Modelling, 28*, 2544–2559.
Alesina, A. and A. Passalaqua (2016), "The Political Economy of Public Debt", in: Taylor, J. and H. Uhlig (eds.), *Handbook of Macroeconomics*, Vol. 2B (Amsterdam: Elsevier), pp. 2592–2652.
Alesina, A., Ardagna, S., & Trebbi, F. (2006). Who adjusts and when? The political economy of reforms. *IMF Staff Papers, 53*, 1–29.
Alesina, A., & Drazen, A. (1991). Why are stabilizations delayed? *American Economic Review, 81*, 1170–1177.
Alesina, A., & Tabellini, G. (1990). A positive theory of fiscal deficits and government debt. *Review of Economic Studies, 57*(3), 403–417.
Ardanaz, M., Cavallo, E., & Puig, J. (2021). Growth-friendly fiscal rules? Safeguarding public investment from budget cuts through fiscal rule design. *Journal of International Money and Finance, 111*, 102319.
Ardanaz, M., & Izquierdo, A. (2022). Current expenditure upswings in good times and public investment downswings in bad times? New evidence from developing countries. *Journal of Comparative Economics, 50*(1), 118–134.
Asatryan, Z., Castellón, C., & Stratmann, T. (2018). Balanced budget rules and fiscal outcomes: Evidence from historical constitutions. *Journal of Public Economics, 167*, 105–119.
Azzimonti, M., Battaglini, M., & Coate, S. (2016). The cost and benefits of balanced budget rules: Lessons from a political economy model of fiscal policy. *Journal of Public Economics, 136*, 45–61.
Badinger, H., & Reuter, W. (2017). The case for fiscal rules. *Economic Modelling, 60*, 334–343.
Barbier-Gauchard, A., Baret, K., & Debrun, X. (2023). Government efficiency and fiscal rules. In A. Afonso, J. T. Jalles, & A. Venâncio (Eds.), *Handbook on public sector efficiency*. Edward Elgar Publishing Ltd.
Baur, M., Bruchez, P., & Schlaffer, B. (2013). Institutions for crisis prevention: The case of Switzerland. *Global Policy, 4*(1), 10–21.
Beetsma, R. and X. Debrun (2016), "Fiscal councils: Rationale and effectiveness", CEPR Discussion Paper 11140, and IMF Working Paper No 16/86.
Beetsma, R., & Debrun, X. (2018). *Can independent fiscal councils be useful?* Centre for Economic Policy Research Press.
Beetsma, R., Debrun, X., Fang, X., Kim, Y., Lledó, V., Mbaye, S., & Zhang, X. (2019). Independent fiscal councils: Recent trends and performance. *European Journal of Political Economy, 57*, 53–69.
Beetsma, R., Giuliodori, M., & Wierts, P. (2009). Planning to cheat: EU fiscal policy in real time. *Economic Policy, 24*(60), 753–804.
Wissenschaftlicher Beirat beim Bundesministerium für Wirtschaft und Klimaschutz—BMWK (2023). "Finanzierung von Staatsaufgaben: Herausforderungen und Empfehlungen für eine nachhaltige Finanzpolitik", Berlin.
Bénétrix, A., & Lane, P. (2013). Fiscal cyclicality and EMU. *Journal of International Money and Finance, 34*, 164–176.
Bergman, U. M., & Hutchison, M. (2015). Economic stabilisation in the post-crisis world: Are fiscal rules the answer? *Journal of International Money and Finance, 2*, 82–101.
Bergman, U. M., Hutchison, M., & Hougaard Jensen, S. (2016). Promoting sustainable public finances in the European Union: The role of fiscal rules and government efficiency. *European Journal of Political Economy, 44*, 1–19.
Bernardini, M., & Forni, L. (2020). Private and public debt interlinkages in bad times. *Journal of International Money and Finance, 109*, 1–13.
Beznoska, M., T. Hentze, M. Hüther and B. Kauder (2024), "Schuldenbremse 2.0—Konzepte für tragfähige Fiskalregeln", IW-Policy Paper 4/2024, Institut der Deutschen Wirtschaft, Köln.
BIS (2023), Annual Report 2023, Chapter II, Bank for International Settlements, Basel.
Blanchard, O. and F. Giavazzi (2004), "Improving the SGP through a proper accounting of public investment", https://www.researchgate.net/publication/4841454
Blesse, S., F. Dorn and M. Lay (2023), "Do fiscal rules undermine public investments? A Review of Empirical Evidence", Leibniz Institute for Economic Research, University of Munich, Working Paper No. 393/2023.
Bom, P. R. D. (2019). Fiscal rules and the intergenerational welfare effects of public investment. *Economic Modelling, 81*, 455–470.
Bom, P. R. D., & Ligthart, J. E. (2014). Public infrastructure, output dynamics and balanced budget fiscal rules. *Journal of Economic Dynamics and Control, 40*, 334–354.
Bonfatti, A., & Forni, L. (2019). Fiscal rules to tame the political budget cycle: Evidence from Italian municipalities. *European Journal of Political Economy, 60*, 101800.
Bova, E., Medas, P., & Poghosyan, T. (2018). Macroeconomic stability in resource-rich countries: The role of fiscal policy. *Journal of Banking and Financial Economics, 1*(9), 103–122.
Brändle, T., & Colombier, C. (2016). What drives public health care expenditure growth? Evidence from Swiss cantons, 1970–2012. *Health Policy, 120*(9), 1051–1060.
Brender, A., & Drazen, A. (2005). Political budget cycles in new versus established democracies. *Journal of Monetary Economics, 52*(7), 1271–1295.
Brennan, G., & Buchanan, J. (1980). *The power to tax: Analytic foundations of a fiscal constitution*. Cambridge University Press.

Buchanan, J., & Tullock, G. (1962). *The calculus of consent: Logical foundations of constitutional democracy* (Vol. 3). University of Michigan Press.

Burret, H., & Feld, L. (2014). A note on budget rules and fiscal federalism. *Cesifo DICE Report, Ifo Institut- Leibniz-Institut Für Wirtschaftsforschung an der Universität München, 12*(1), 3–11.

Burret, H., & Feld, L. (2018a). (Un-)intended effects of fiscal rules. *European Journal of Political Economy, 52*, 166–191.

Burret, H., & Feld, L. (2018b). Vertical effects of fiscal rules: The Swiss experience. *International Tax and Public Finance, 25*, 673–721.

Calderón, C., Duncan, R., & Schmidt-Hebbel, K. (2012). Do good institutions promote counter-cyclical macroeconomic policies? *Oxford Bulletin of Economics and Statistics, 78*, 650–670.

Calmfors, L. (2015), "The roles of fiscal rules, fiscal councils and fiscal union in EU integration", IFN Working Paper 1076, Research Institute of Industrial Economics, Stockholm.

Calmfors, L. (2003). Fiscal policy to stabilize the domestic economy in the EMU. *Cesifo Economic Studies, 49*(3), 319–353.

Calmfors, L., & Wren-Lewis, S. (2011). What should fiscal councils do? *Economic Policy, 26*(68), 649–695.

Căpraru, B., Georgescu, G., & Sprincean, N. (2022). Do independent fiscal institutions cause better fiscal outcomes in the European Union? *Economic Systems, 46*, 100973.

Căpraru, B., Pappas, A., & Sprincean, N. (2024). Fiscal rules in the European Union: Less is more. *Journal of Common Market Studies, 2024*, 1–25.

Caselli, F., & Reynaud, J. (2020). Do fiscal rules cause better fiscal balances? A new instrumental variable strategy. *European Journal of Political Economy, 63*, 101873.

Caselli, F., & Wingender, P. (2021). Heterogenous effects of fiscal rules: The Maastricht fiscal criterion and the counterfactual distribution of government deficits. *European Economic Review, 136*(2021), 103748.

Chari, V., Christiano, L., & Kehoe, P. (1994). Optimal fiscal policy in a business cycle model. *Journal of Political Economy, 102*(4), 617–652.

Chatagny, F. (2015). Incentive effects of fiscal rules on the finance minister's behavior: Evidence from revenue projections in Swiss Cantons. *European Journal of Political Economy, 39*, 184–200.

Christl, M., Köppl-Turyna, M., & Kucsera, D. (2020). Determinants of public-sector efficiency: Decentralization and fiscal rules. *Kyklos, 73*(2), 253–290.

Christofzik, D. (2019). Does accrual accounting alter fiscal policy decisions? Evidence from Germany. *European Journal of Political Economy, 60*, 101805.

Chrysanthakopoulos, C., & Tagkalakis, A. (2022). Do fiscal councils reduce fiscal policy volatility? *Applied Economic Letters*. https://doi.org/10.1080/13504851.2022.2130142

Chrysanthakopoulos, C., & Tagkalakis, A. (2023). The effects of fiscal institutions on fiscal adjustment. *Journal of International Money and Finance, 134*, 102853.

Clements, B., Gupta, S., Jalles, J., & Mylonas, V. (2023). Why do governments cut their deficits? *European Journal of Political Economy*. https://doi.org/10.1016/j.ejpoleco.2023.102498

Combes, J.-L., Debrun, X., Minea, A., Sawadogo, P., & Vinturis, C. (2024). On the side effects of fiscal policy: Fiscal rules and income inequality. *European Journal of Political Economy*. https://doi.org/10.1016/j.ejpoleco.2024.102534

Combes, J.-L., Debrun, X., Minea, A., & Tapsoba, R. (2018). Inflation targeting, fiscal rules and the policy mix: Cross effects and interactions. *Economic Journal, 128*(615), 2755–2784.

Combes, J.-L., Minea, A., & Sow, M. (2017). Is fiscal policy always counter- (pro-) cyclical? The role of public debt and fiscal rules. *Economic Modelling, 65*, 138–146.

European Commission (2021), Report on Public Finances in EMU 2020, European Economy, Institutional paper No. 147, European Commission, Brussels.

Cordes, T. et al. (2015), "Expenditure rules: Effective tools for sound fiscal policy?" IMF Working Papers, No. WP/15/29, International Monetary Fund, Washington DC.

Cuerpo, C., Regling, K., Beetsma, R., Matheiu, C., Sterdyniak, H., Barnes, S., Alcidi, C., Corti, F., & Gros, D. (2022). Redesigning EU fiscal rules after Covid-19. *Forum in Intereconomics, 57*(1), 4–33.

Cukierman, A., & Meltzer, A. (1986). A positive theory of discretionary policy, the cost of democratic government and the benefits of a constitution. *Economic Inquiry, 24*, 367–388.

Dahan, M., & Strawczynski, M. (2013). Fiscal rules and the composition of government expenditures in OECD countries. *Journal of Policy Analysis and Management, 32*, 484–504.

Davoodi, H.R., P. Elger, A. Fotiou, D. Garcia-Macia, X. Han, A. Lagerborg, W.R. Lam and P. Medas (2022a), "Fiscal rules and fiscal councils—Recent trends and performance during the COVIS-19 pandemic", International Monetary Fund, Working Paper 22/11.

Davoodi, H. R., Elger, P., Fotiou, A., Garcia-Macia, D., Han, X., Lagerborg, A., Lam, W. R., Medas, P., & Pillai, S. (2022b). *"IMF fiscal rules dataset, The 2021 update*. International Monetary Fund.

Davoodi, H. R., Elger, P., Fotiou, A., Garcia-Macia, D., Han, X., Lagerborg, A., Lam, W. R., Medas, P., & Pillai, S. (2022c). *IMF fiscal council dataset: The 2021 update*. International Monetary Fund.

Debrun, X. and M. Kumar (2008), "Fiscal rules, fiscal councils and all that: Commitment devices, signaling tools or smokescreens?" In Fiscal Policy: Current Issues and Challenges, proceedings of the 9th Banca d'Italia Workshop on Public Finance, June 2008, Rome: Banca d'Italia.

Debrun, X., Hauner, D., & Kumar, M. (2009). Independent fiscal agencies. *Journal of Economic Surveys, 23*, 44–81.

Debrun, X., & Kinda, T. (2017). Strengthening post-crisis fiscal credibility: Fiscal councils on the rise—A new dataset. *Fiscal Studies, 38*, 667–700.

Debrun, X., Kinda, T., Curristine, T., Eyraud, L., Harris, J., & Seiwald, J. (2013). *"The functions and impact of fiscal councils", IMF Policy Paper*. International Monetary Fund.

Debrun, X., Moulin, L., Turrini, A., Ayuso-i-Casals, J., & Kumar, M. S. (2008). Tied to the mast? National fiscal rules in the European Union. *Economic Policy, 23*, 297–362.

Delgado-Téllez, M., V. D. Lledo and J.J. Pérez (2017), "On the determinants of fiscal non-compliance: An empirical analysis of Spain's regions", IMF Working Papers 17/5, Washington DC.

Delgado-Téllez, M., Gordo, E., Katarinyuk, I., & Perez, J. I. (2022). The decline in public investment: 'social dominance' or too rigid fiscal rules? *Applied Economics, 54*(10), 1123–1136.

Dorn, F., Gaebler, S., & Roesel, F. (2021). Ineffective fiscal rules? The effect of public sector accounting standards on budgets, efficiency, and accountability. *Public Choice, 186*, 387–412.

Dur, A. J., Peletier, B. D., & Swank, O. H. (1999). Voting on the budget deficit: Comment. *American Economic Review, 89*(5), 1377–1381.

ElBerry, N., & Goeminne, S. (2021). Fiscal transparency, fiscal forecasting and budget credibility in developing countries. *Journal of Forecasting, 40*, 144–161.

Eliason, P., & Lutz, B. (2018). Can fiscal rules constrain the size of government? An analysis of the "crown jewel" of tax and expenditure limitations. *Journal of Public Economics, 166*, 115–144.

Eyraud, L., Debrun, M. X., Hodge, A., Lledo, V. D., & Pattillo, M. C. A. (2018). *Second-Generation Fiscal Rules: Balancing Simplicity, Flexibility, and Enforceability*. International Monetary Fund.

Fall, F., D. Bloch, J.M. Fournier and P. Hoeller (2015), "Prudent debt targets and fiscal frameworks", OECD Economic Policy Paper No. 15, OECD Publishing, Paris.

Fatás, A., & Mihov, I. (2006). The macroeconomic effects of fiscal rules in the US states. *Journal of Public Economics, 90*(1–2), 101–117.

Feld, L. and G. Kirchgässner (2008), "On the effectiveness of debt brakes: the Swiss experience", In: Neck., R. and Sturm J.E. (eds): *Sustainability of public debt*, MIT Press, pp: 233–255.

Feld, L., C. A. Schaltegger, P. Weber, P., L. Zell, Y. Bury and S. Zetzmann (2021), "Öffentliche Investitionen und Fiskalregeln im Tiefzinsumfeld", *Grundlagen für die Wirtschaftspolitik,* Nr. 28, Staatssekretariat für Wirtschaft SECO, Bern, Schweiz.

Feld, L. P., Kalb, A., Moessinger, M.-D., & Osterloh, S. (2017). Sovereign bond market reactions to no-bailout clauses and fiscal rules—The Swiss experience. *Journal of International Money and Finance, 70*, 319–343.

Feld, L., & Kirchgässner, G. (2001). The political economy of direct legislation: Direct democracy and local decision-making. *Economic Policy, 16*(33), 330–367.

Feld, L. P., & Reuter, W. (2017). Wirken Fiskalregeln? Eine Übersicht über neuere empirische Befunde. *Wirtschaftspolitische Blätter, 2*(2017), 179–192.

Feld, L. P., Reuter, W. H., & Yeter, M. (2019). Öffentliche Investitionen: Die Schuldenbremse ist nicht das Problem. *Perspektiven der Wirtschaftspolitik, 20*(4), 292–303. https://doi.org/10.1515/pwp-2020-0002

Franek, S., & Postula, M. (2020). Does eurozone membership strengthen the significance of fiscal instruments? *Annals of Economics and Finance, 21*(1), 131–151.
Frankel, J., & Schreger, J. (2013). Over-optimistic official forecasts in the Eurozone and fiscal rules. *Review of World Economics, 149*, 247–272.
Fuest, C., Gründler, K., & Potrafke, N. (2019). "Schuldenbremse—Investitionshemmnis oder Vorbild für Europa? *Wirtschaftsdienst, 99*(5), 307–329.
Furceri, D., & Jalles, J. T. (2018). Determinants and effects of fiscal countercyclicality. *Ensayos Sobre Política Económica, 35*(86), 137–151.
Galí, J., & Perotti, R. (2003). Fiscal policy and monetary integration in Europe. *Economic Policy, 18*(34), 533–572.
Gaspar, V., S. Gupta and C. Mulas-Granados (2017), "Fiscal watchdogs and sound fiscal policy: Is the barking loud enough to tame politicians?" In: Gaspar, V; Gupta, S; Mulas-Granados (eds.): Fiscal politics, International Monetary Fund, Washington DC.
Gilbert, N. D., & de Jong, J. F. M. (2017). Do European fiscal rules induce a bias in fiscal forecasts? Evidence from the Stability and Growth Pact. *Public Choice, 170*, 1–32.
Golinelli, R., & Momigliano, S. (2009). The cyclical reaction of fiscal policies in the euro area: The role of modelling choices and data vintages. *Fiscal Studies, 30*(1), 39–72.
Gootjes, B., & de Haan, J. (2022a). Procyclicality of fiscal policy in European Union countries. *Journal of International Money and Finance, 120*, 102276.
Gootjes, B., & de Haan, J. (2022b). Do fiscal rules need budget transparency to be effective? *European Journal of Political Economy, 75*, 102210.
Gootjes, B., & de HaanJong A-Pin, J. R. (2021). Do fiscal rules constrain political budget cycles. *Public Choice, 188*, 1–30.
Gosh, A., Kim, J., Mendoza, E., Ostry, J., & Qureshi, M. (2013). Fiscal Fatigue, Fiscal Space and Debt Sustainability in Advanced Economies. *The Economic Journal, 123*(566), 4–30.
Grembi, V., Nannicini, T., & Troiano, U. (2016). Do fiscal rules matter? *American Economic Journal: Applied Economics, 8*(3), 1–30.
Gruen, N. (2001). Greater independence for fiscal institutions. *Journal on Budgeting, 1*(1), 89–115.
Gründler, K. and N. Potrafke (2020), «Fiscal Rules: Historical, Modern, and Sub-National Growth Effects", *CESifo Working Papers*, 8305 2020, May 2020.
Guerguil, M., Mandon, P., & Tapsoba, R. (2017). Flexible fiscal rules and countercyclical fiscal policy. *Journal of Macroeconomics, 52*, 189–220.
de Haan, J. and B. Gootjes (2023), "What makes discretionary counter-cyclical fiscal policy so difficult? An analysis of 32 OECD countries", *CESifo Economic Studies*, Vol. 69 No. 1.
Hagemann, R. (2011). (2011), "How can fiscal councils strengthen fiscal performance?" *OECD Journal: Economic Studies, 1*, 1–24.
Hainmueller, J. (2012). Entropy balancing for causal effects: A multivariate reweighting method to produce balanced samples in observational studies. *Political Analysis, 20*, 25–46.
Halac, M., & Yared, P. (2014). Fiscal rules and discretion under persistent shocks. *Econometrica, 82*, 1557–1614.
Hansen, D. (2020). The effectiveness of fiscal institutions: International financial flogging or domestic constraint? *European Journal of Political Economy, 63*, 101879.
Hartwig, J., & Sturm, J. (2019). Do fiscal rules breed inequality? First evidence for the EU. *Economics Bulletin, 39*(2), 1508–1515.
Heinemann, F., Moessinger, M., & Yeter, M. (2018). Do fiscal rules constrain fiscal policy? A meta-regression-analysis. *European Journal of Political Economy, 51*, 69–92.
Heinemann, F., Osterloh, S., & Kalb, A. (2014). Sovereign risk premia: The link between fiscal rules and stability culture. *Journal of International Money and Finance, 41*, 110–127.
Holm-Hadulla, F., Hauptmeier, S., & Rother, P. (2012). The impact of expenditure rules on budgetary discipline over the cycle. *Applied Economics, 44*(25), 3287–3296.
Hüther, M., & Südekum, J. (2020). Die Schuldenbremse nach der Corona-Krise. *Wirtschaftsdienst, 100*(10), 746–752.
Iara, A., & Wolff, G. (2014). Rules and risk in the euro area. *European Journal of Political Economy, 34*, 222–236.
IMF. (2021). *Fiscal Monitor: Strengthening the Credibility of Public Finances*. International Monetary Fund.
Jalles, J. T. (2018). Fiscal rules and fiscal counter-cyclicality. *Economic Letters, 170*, 159–162.
Jarck, J., Salvi, M., & Schaltegger, C. A. (2022). Die Schuldenbremse: Erfahrungen und Herausforderungen aus einer Schweizer Perspektive. *Perspektiven der Wirtschaftspolitik, 23*(4), 252–270.
Jonung, L., & Larch, M. (2006). Improving fiscal policy in the EU: The case for independent forecasts. *Economic Policy, 21*, 491–534.
Jordà, O., Schularick, M., & Taylor, A. M. (2016). Sovereigns versus Banks: Credit, Crises and Consequences. *Journal of the European Economic Association, 14*(1), 45–79.
Jürgens, E. (2022), "The effects of fiscal rules on public investment over the cycle", Forum for Macroeconomics and Macroeconomic Policies, Working Paper No. 84.
Kirchgässner, G. (2013). Fiscal institutions at the cantonal level in Switzerland. *Swiss Journal of Economics and Statistics, 149*, 139–166.
Kopits, G. (2011). Independent fiscal institutions: Developing good practices. *OECD Journal on Budgeting, 11*(3), 1–18.
Kopits, M. G., & Symansky, M. S. A. (1998). *Fiscal policy rules*. International Monetary Fund.
Krogstrup, S., & Wälti, S. (2008). Do fiscal rules cause budgetary outcomes? *Public Choice, 136*(1–2), 123–138.
Larch, M., & Brändle, T. (2018). Independent fiscal councils: Neglected siblings of independent central banks? An EU perspective. *Journal of Common Market Studies, 56*(2), 267–283.
Larch, M., Malzubris, J., & Santacroce, S. (2023). Numerical compliance with EU fiscal rules: Facts and figures from a new database. *Intereconomics, 58*(1), 32–42.
Larch, M., Orseau, E., & van der Wielen, W. (2021). Do EU fiscal rules support or hinder counter-cyclical fiscal policy? *Journal of International Money and Finance, 112*, 102328.
Larch, M., & Santacroce, S. (2020). *Numerical compliance with EU fiscal rules: The Compliance Database of the Secretariat of the European Fiscal Board*. European Fiscal Board.
López-Herrera, C., Cordero, J.M., Pedraja-Chaparro, F. & Polo, C. (2023). "Fiscal rules and their influence on public sector efficiency", Munich Personal RePEc Archive Paper No. 119018.
Lowry, R., & Alt, J. (2001). A visible hand? Bond markets, political parties, balanced budget laws, and state government debt. *Economics and Politics, 13*, 49–72.
Luechinger, S., & Schaltegger, C. (2013). Fiscal rules, budget deficits and budget projections. *International Tax and Public Finance, 20*, 785–807.
Manasse, P. (2006), "Procyclical fiscal policy: Shocks, rules, and institutions—A view from MARS", IMF Working Paper No 06/27, International Monetary Fund, Washington DC.
Mancini, A. L., & Tommasino, P. (2023). Fiscal rules and the reliability of public investment plans: Evidence form local governments. *European Journal of Political Economy, 79*, 102415.
Manescu, C. and E. Bova (2020), "National expenditure rules in the EU: An analysis of effectiveness and compliance", European Economy Discussion Paper No. 124, European Commission, Brussels.
Martins, P., & Correia, L. (2020). Fiscal institutions: different classifications and their effectiveness. *Eurasian Economic Review*. https://doi.org/10.1007/s40822-020-00155-0
Mauro, P., Romeu, R., Binder, C., & Zaman, A. (2015). A modern history of fiscal prudence and profligacy. *Journal of Monetary Economics, 76*, 55–70.
Mierau, J. O., Jong-A-Pin, R., & de Haan, J. (2007). Do political variables affect fiscal policy adjustment decisions? New empirical evidence. *Public Choice, 133*, 297–319.
Milesi-Ferretti, G. (2004). Good, bad or ugly? On the effects of fiscal rules with creative accounting. *Journal of Public Economics, 88*(1), 377–394.
Mulas-Granados, C. (2003). The political and economic determinants of budgetary consolidation in Europe. *European Political Economy Review, 1*(1), 015–039.
Nerlich, C. and W. Reuter (2013), "The design of national fiscal frameworks and their budgetary impact", Working Paper Series 1588, European Central Bank, Frankfurt.
Nerlich, C. and W. Reuter (2015), "Fiscal rules, fiscal space and procyclical fiscal policy", Working Paper Series 1872, European Central Bank, Frankfurt.

OECD. (2020). *"Independent Fiscal Institutions: Promoting Fiscal Transparency and Accountability During the COVID-19 Pandemic", Special Issue of the OECD Tracking Coronavirus (COVID-19)*. OECD Publishing.
Perée, E. and T. Välilä (2005), "Fiscal rules and public investment", Economic and Financial Report, No. 2005/02, European Investment Bank (EIB).
Pfeil, C. F., & Feld, L. P. (2024). Does the Swiss debt brake induce sound federal finances? A synthetic control analysis. *Public Finance Review, 52*(1), 3–41.
Picchio, M. & Santolini, R. (2020). Fiscal rules and budget forecast errors of Italian municipalities. *European Journal of Political Economy, 64*, 101921.
Poterba, J. (1994). State responses to fiscal crises: The effects of budgetary institutions and politics. *Journal of Political Economy, 102*(4), 799–821.
Poterba, J., & Rueben, K. (1999). State fiscal institutions and the U.S. municipal bond market. In J. M. Poterba & J. von Hagen (Eds.), *Fiscal institutions and fiscal performance* (pp. 181–208). University of Chicago Press.
Poterba, J., & Rueben, K. (2001). Fiscal news, state budget rules, and tax-exempt bond yields. *Journal of Urban Economics, 50*, 537–562.
Potrafke, N. (2023), "The economic consequences of fiscal rules", CESifo Working Papers, 10765 2023, November 2023.
Reuter, W. (2015). National numerical fiscal rules: Not complied with, but still effective? *European Journal of Political Economy, 39*, 67–81.
Reuter, W. (2019). When and why do countries break their national fiscal rules? *European Journal of Political Economy, 57*, 125–141.
Reuter, W., Tkačevs, O., & Vilerts, K. (2022). Fiscal rules and volatility: The role of stabilising properties and compliance. *Empirica, 49*, 21–52.
Sacchi, A., & Salotti, S. (2015). The impact of national fiscal rules on the stabilization function of fiscal policy. *European Journal of Political Economy, 37*, 1–20.
Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung—SVR (2024), "Die Schulden-bremse nach dem BVerfG-Urteil: Flexibilität erhöhen—Stabilität wahren", Policy Brief 1/2024, Wiesbaden.
Salvi, M., Schaltegger, C. A., & Schmid, L. (2020). Fiscal rules cause lower debt: Evidence from Switzerland's federal debt containment rule. *Kyklos, 73*(4), 605–642.
Sawadogo, P. (2020). Can fiscal rules improve financial market access for developing countries? *Journal of Macroeconomics, 65*, 103214.
Schaechter, A., Kinda, T., Budina, N. T., & Weber, A. (2012). *Fiscal rules in response to the crisis-toward the "next-generation" rules: A new dataset*. International Monetary Fund.
Schakel, H. C., Wu, E. H., & Jeurissen, P. (2018). Fiscal rules, powerful levers for controlling the health budget? Evidence from 32 OECD countries. *BMC Public Health, 18*, 300.
Schaltegger, C. A. (2002). Budgetregeln und ihre Wirkung auf die öffentlichen Haushalte: Empirische Ergebnisse aus den US-Bundesstaaten und den Schweizer Kantonen. *Schmollers Jahrbuch, 122*, 369–413.
Schuknecht, L., von Hagen, J., & Wolswijk, G. (2009). Government risk premiums in the bond market: EMU and Canada. *European Journal of Political Economy, 25*, 371–384.
Stockman, R. (2001). Balanced-budget rules: Welfare loss and optimal policies. *Review of Economic Dynamics, 4*(2), 438–459.
Strauch, R., Mark, H., & von Hagen, J. (2009). How forms of fiscal governance affect fiscal performance. In M. Hallerberg, S. Rolf, & J. von Hagen (Eds.), *Fiscal governance in Europe*. Cambridge University Press.
Thornton, J., & Vasilakis, C. (2017). The impact of fiscal rules on sovereign risk premia: International evidence. *Finance Research Letters, 20*, 63–67.
Turrini, A. (2004). "Public investment and the EU fiscal framework", European Commission Economic Papers No 202, Brussels.
Vinturis, C. (2023). How do fiscal rules shape governments' spending behavior? *Economic Inquiry, 61*(2), 322–341.
Vlaicu, R., Verhoeven, M., Grigoli, F., & Mills, Z. (2014). Multiyear budgets and fiscal performance: Panel data evidence. *Journal of Public Economics, 111*, 79–95.
von Hagen, J. (2010). Sticking to fiscal plans: The role of institutions. *Public Choice, 144*(3), 487–503.
von Hagen, J., & Harden, I. (1994). National budget processes and fiscal performance. *European Economy Reports and Studies, 3*, 311–408.
von Hagen, J., & Wolff, G. (2006). What do deficits tell us about debt? Empirical evidence on creative accounting with fiscal rules in the EU. *Journal of Banking and Finance, 30*(12), 3259–3279.
von Hagen, & Strauch, R. R. (2001). Fiscal consolidations: Quality, economic conditions, and success. *Public Choice, 109*, 327–346.
von Trapp, L., Lienert, I., & Wehner, J. (2016). Principles for independent fiscal institutions and case studies. *OECD Journal on Budgeting, 15*(2), 9–24.
Wiese, R. R., Jong-A-Pin, R., & de Haan, J. (2018). Can successful fiscal adjustments only be achieved by spending cuts? *European Journal of Political Economy, 54*, 145–166.
Wijsman, S., & Crombez, C. (2021). Do fiscal rules decrease public investment? Evidence from European panel data. *European Journal of Economics and Economic Policies: Intervention, 18*(1), 55–76.
Wren-Lewis, L. (1996). Avoiding fiscal fudge more openness on fiscal policy would boost labour's credibility. *New Economy, 3*, 128–132.
Wyplosz, C. (2012), "Fiscal rules: Theoretical issues and historical experiences", NBER Working Paper No. 17884, National Bureau of Economic Research.
Wyplosz, C. (2005). Fiscal policy: Institutions versus rules. *National Institute Economic Review, 191*, 64–78.
Yared, P. (2019). Rising government debt: Causes and solutions fort a decades-old trend. *Journal of Economic Perspectives, 33*(2), 115–140.

Publisher's Note