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The Disciplining Impact of Local Fiscal Rules in the EU

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ABSTRACT

Although research highlights the discipline-enhancing effect of fiscal rules at the national level, little is known about their impact on local budgets. We employ a dynamic fiscal reaction function within an LSDVC framework to explore the relevance of different local fiscal rules in the EU using a panel dataset of 26 European countries over a 26-year period (1997–2022). Our findings suggest that debt rules and expenditure rules have a positive relation with budget discipline on the local level. Thus, the mere existence of a DR is less relevant compared to its strength. Consequently, rule design should receive greater attention.

1 | Introduction

For decades, numerical fiscal rules have been a regular topic of discussion in the context of strengthening fiscal frameworks at both national and supranational levels, especially during economic or financial crises. Following the COVID-19 pandemic and Russia's war against Ukraine, governments launched various fiscal programs to support their economies. Additionally, investments in “green” energy and environmental protection to address climate change require significant public funding. As fiscal rules inherently create a trade-off between preventing government overspending and maintaining flexibility to react to external shocks, they are currently under scrutiny in many countries. Central governments often apply fiscal rules to address what Rodden describes as one of the “most formidable challenges facing multi-tiered systems of government: fiscal indiscipline among subnational governments” (Rodden 2002, p. 670). Numerical fiscal rules aim to constrain the fiscal policies of lower level governments to ensure that municipalities, counties, provinces, etc. remain on a sound financial path (Lledó and Pereira 2015). In 2022, only 9.6 percent of all national fiscal rules in the European Union (EU) were exclusively dedicated to central governments (European Commission 2024b). In contrast, 24.6 percent of existing rules restricted the fiscal autonomy of local governments, and 55.3 percent applied to the general government but may have

included specific provisions for local governments. Thus, it seems reasonable to conclude that local governments in the EU are subject to a dense web of numerical fiscal rules. Figure 1.

According to the European Commission's Fiscal Rule Strength Index (FRSI), over the past two decades, numerical fiscal rules have increased not only in numbers but also in institutional strength (European Commission 2024b). The four most relevant types of rules constrain deficits, borrowing and debt, expenditure, and revenue (Turley et al. 2021).¹ The most common rule type at the local level is the so-called balanced budget rule (henceforth: BBR, see Figure 2).

The impact of fiscal rules has been analyzed across various layers of government. Numerous publications focus on supranational, national and subnational fiscal regulations. Potrafke (2025) as well as Heinemann et al. (2018) provide detailed analyses of this literature. However, existing empirical research, particularly on local government regulation, often focuses on individual countries. The primary reason is the lack of consistent and comparable data on local fiscal rules within the European Union, due to the multitude of institutional arrangements (for a qualitative overview, see Geißler et al. 2019). The only exception is the European Commission's FRSI, which also includes data for the local level. As a consequence of this data limitation, relatively little cross-country empirical work on subnational fiscal regulation has been conducted in recent years (e.g. Kotia and Lledó 2016;

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Summary

- We analyze the impact of local fiscal rules on local budgets in the EU.
- We explore the relevance of different kinds of fiscal rules over a 26-year period.
- We find that debt and expenditure rules are positively related to the local budget balance.
- Thus, we identify the debt rule's strength to be the driving factor for its success.
- We conclude that debt rules are most important for budget discipline and that rule design should receive greater attention.

Foremny 2014; Plekhanov and Singh 2006; De Biase and Dougherty 2022). Most studies do not disentangle the relevance of different rule types; instead, they focus on type-overarching drivers of fiscal discipline. In our study, we focus on the importance of different types of numerical fiscal rules for which the FRSI database provides evaluations of rule strength. Specifically, we examine how distinct fiscal rules interact with the aggregate local government primary balances. Moreover, we do not integrate local and regional governments to a summarizing sub-national level but concentrate exclusively on local government budgets. We also account for the fiscal interactions between local and higher levels of government. Finally, we investigate whether the strength of rule implementation— concerning regulatory embeddedness, monitoring, enforcement, and flexibility— affects the rules' impact on fiscal discipline.

To identify the potential relation of fiscal rules and local governments' budgetary discipline, we estimate a dynamic fiscal

reaction function in the tradition of Debrun et al. (2008), using the European Commission's Fiscal Rule Strength Index (FRSI) for rules imposed on local governments as dependent variable. We apply this approach to a sample of 26 EU member states over a period of 26 years (1997–2022). This analysis is conducted within a least square dummy variable correction (LSDVC) framework with time and country fixed effects. Our approach differs from a strand of empirical literature in this field that uses General Method of Moment (GMM) models to address the diverse risks of endogeneity (e.g. Kotia and Lledó (2016). Using an LSDVC model reflects a trade-off between the objective of accounting for multiple sources of endogeneity and the competing aim of specifying a model that is appropriate given the limited size of our dataset, which is restricted to the number of EU member states. Including all relevant explanatory variables would lead to the well-known GMM problem of instrument proliferation (Roodman 2009). This is why we made the constrained choice to use an LSDVC model, which at least accounts for Nickell's bias (Nickell 1981; Bruno 2005). We address the risk of undetected endogeneity by adding an event study analysis as well as presenting further arguments and empirical tests.

Our results show a robust positive relation between the DR and the ER and the aggregate local level primary balance. By estimating the fiscal reaction function in two specifications, first with a rule dummy and second with the Fiscal Rules Strength Index, we show that the level of institutional implementation is crucial, while the mere existence of a rule is not in every case positively correlated with the local primary balance. Other rules, such as the balanced budget rule (BBR) and the revenue rule (RR), appear to have minor relevance for the local primary balance. The results are robust against different model specifications and estimation techniques. In sum, our findings

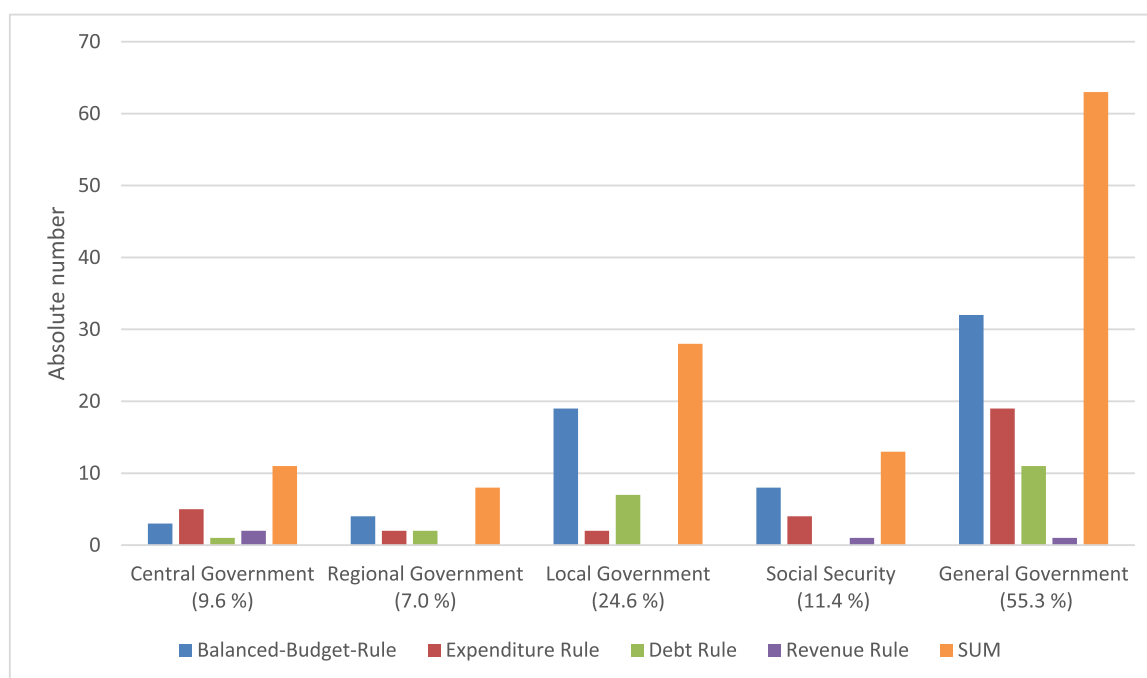


FIGURE 1 | Fiscal rules in EU member countries. *Note:* Number and relative shares of numerical fiscal rules in European Union member countries in the year 2022 according to government level (taken from: European Commission2024b). Since one rule can apply to more than one government level, the sum of relative shares exceeds 100.

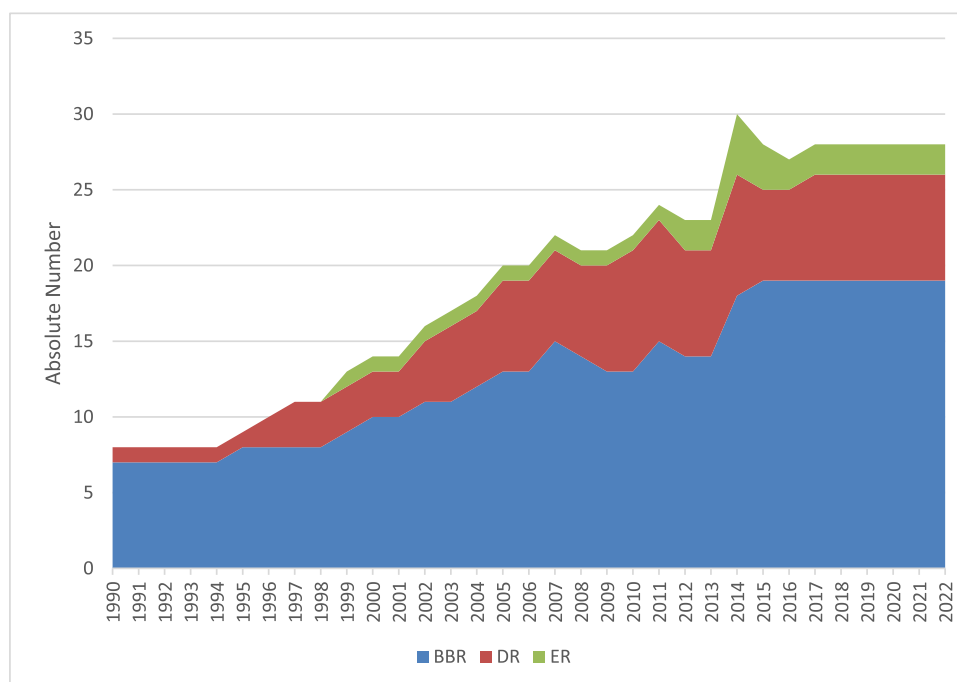


FIGURE 2 | Local fiscal rules: Evolution by time. *Note:* Development of the number of different fiscal rules for the local level over time (1990–2022) for all 26 sample countries. (Data: European Commission Fiscal Rules Strength Index).

indicate that a well-institutionalized debt or expenditure rule for local level governments can serve as an effective tool to mitigate the local government deficit bias. The contribution of our paper is not an econometric one. What we add to existing literature is the detailed investigation of different rule types on the local level and their relevance for fiscal outcomes in the group of EU member states.

In Section 2, we provide a theoretical exploration on the deficit bias and its origins, laying the foundation for the necessity of fiscal regulation. We also discuss existing empirical literature and derive our hypotheses. Section 3 outlines the institutional background and presents descriptive statistics regarding local level fiscal regulation within the European Union. In Section 4, we explain the data, model, and estimation strategy before presenting and discussing our results in Sections 5 and 6. Finally, Section 7 concludes.

2 | Theory, Literature and Hypotheses

For various reasons, governments have incentives to run excessive budget deficits and accumulate a suboptimal level of debt (Buchanan and Wagner 1977). Opportunistic governments are primarily interested in being re-elected (Nordhaus 1975). Consequently, they are tempted to boost the economy or increase transfers just before elections, both financed with debt, and thus causing political business cycles (Alesina and Perotti 1994; Persson and Tabellini 1997). This strategy does not solely work if voters are myopic but also under rational expectations as long as there are (temporary) information asymmetries between voters and the government (Rogoff and Sibert 1988). Furthermore, fragmented governments have incentives to accumulate higher debt. Coalition partners come up with spending proposals benefitting their respective constituency. Since the costs are equally shared among all coalition

partners, they are not fully internalized, leading to a common pool problem (Roubini and Sachs 1989).

To mitigate governments' incentives to run excessive budget deficits, societies might implement fiscal rules. Still, it must be considered that fiscal rules trade off the benefits of sound fiscal policy and the benefits of a more flexible reaction to external shocks (Potrafke 2025). As a result, politicians might find ways to circumvent these rules while formally complying with them, potentially undermining their disciplining effect. Thus, not only the mere existence of fiscal rules but also their institutional design and the level of compliance might be crucial for their success.

The theory of the deficit bias among politicians and governments at the local level is often associated with a soft budget constraint (Kotia and Lledó 2016). A soft budget constraint arises when a higher-level governments' commitment not to step in and provide bailout becomes ineffective, leading local level governments to form bailout expectations (Kornai 1986; Kornai et al. 2003; Baskaran 2017). The theoretical foundations of the soft budget constraint are also attributed to common pool problems and moral hazard (Ter-Minassian 2007; Kotia and Lledó 2016). Moral hazard among politicians is presumed to arise due to expectation of future bailouts, while common pool issues occur because local governments typically receive a significant portion of their funding as conditional or unconditional transfers from the central government. These transfers come from a common pool, preventing local governments from fully internalizing the cost of their public expenditure and potentially leading to excessive spending and borrowing (Hallerberg and von Hagen 1999). As a result, a higher vertical fiscal imbalance (VFI), a common indicator of substantial central-to-local transfers, is expected to lower the primary balance, i.e. to soften the local budget constraints and, consequently, to mitigate the impact of this local fiscal rule. There is abundant empirical research analyzing the potential impact of fiscal rules at all levels of government. The meta-

regression analysis by Heinemann et al. (2018) and the literature review by Potrafke (2025) provide a comprehensive overview of the scholarly discussion. Given its importance, the academic interest in (subnational) fiscal rules is unsurprising, with research focusing on themes such as their relation to the electoral budget cycle, expenditure growth and composition, budgetary sustainability, fiscal discipline, and sovereign default risks. Most recently, for example, Căpraru et al. (2025) examined the effect of fiscal rules and independent fiscal institutions on sovereign default risks in 24 EU member states. Employing a GMM estimator their results indicate that fiscal rules are effective in mitigating these risks. Gomez-Gonzalez et al. (2022) study the effect of fiscal rule implementation on sovereign default risk for 62 countries including emerging and developed ones. Their result also show that fiscal rules significantly reduce sovereign risk. Asatryan et al. (2018) examine the effects of balance budget rules (BBRs) in 132 countries over the period 1945–2015. The authors focus on national level rules implemented in constitutions and find strong evidence that the existence of these rules reduces the probability of a sovereign debt crisis. Thus, studies analyzing the impact of fiscal rules on sovereign default risks focus—like these three studies—on national or supranational fiscal rules, not on subnational ones.² As this paper's focus is on local fiscal rules, we will now provide some examples of related literature. Empirical publications on subnational fiscal rules can be grouped, e.g. based on their regional focus. On the one hand, there are few cross-sectional studies analyzing aggregate subnational government budget data for a set of countries. Vammalle and Bambalaite (2021), for instance, examine subnational fiscal rules in OECD countries based on the 2019 OECD survey on fiscal rules.

On the other hand, there are single country studies relying on either local government microdata or also aggregate data for states within federal systems. The relaxation of the Italian Domestic Stability Pact (DSP) in 2005, for example, which primarily imposed budget deficit limits as a fiscal rule for municipalities with more than 5000 inhabitants, led to three studies exploiting the population threshold effect through quasi-experimental identification strategies. Grembi et al. (2016) find that relaxing fiscal rules triggers deficits and lowers taxes. Bonfatti and Forni (2019) report lower capital spending prior to elections after the reform, while Venturini (2020) observes changes in the municipal expenditure composition due to the 2005 reform. Focusing on the United States, Eliason and Lutz (2018) study local governments in the US-State Colorado. Using a synthetic control approach with local fiscal data aggregated at the state level, they find no evidence that fiscal rules alter budget outcomes. However, the situation appears different for municipal default risk in US history. Findings by Dove (2016) indicate that debt limits and convincing no-bailout clauses (hard budget constraints) effectively reduced the risk of local government defaults. According to Brooks et al. (2016), self-imposed institutional constraints may effectively limit municipal revenue growth in the US. Implementing panel regressions on local government budget data, Mullins (2004) as well as Mullins and Joyce (1996) provide evidence suggesting that tax and expenditure rules for local governments lead to revenue recompositions.³

Most of these studies focus on the impact of the mere existence of fiscal rules, few focus on specific types of fiscal rules and the impact of their institutional design. Potrafke (2025) has also

stressed this aspect by noting that the (theoretical) literature on welfare implications of fiscal rules does not yet fully address the different effects of various rule types. Ter-Minassian (2007) was among the first to focus on rule design and to outline a number of necessary conditions to ensure the effectiveness of fiscal rules. In addition to a robust legal foundation and a clear definition of institutional responsibilities, essential elements include transparent accounting, firm enforcement mechanism and sanctions as well as a broad societal support extending beyond governments and parliaments. Turley et al. (2021) extend this list by adding design features such as scope of coverage, time horizon, and flexibility with respect to economic cycle, inflation, or shocks including escape clauses. Halac and Yared (2022) study the implementation of fiscal rules under limited enforcement in a theoretical model. They find that the design and enforcement of penalties are crucial, provided the penalties exceed the expected benefits of violating the rule. Beyond sanctions, fiscal councils might play an important role in implementing fiscal rules.⁴

Early empirical work on fiscal rule design includes Plekhanov and Singh (2006). Using a sample of 43 countries spanning the period 1982–2000, they employ a two-stage instrumental variable (IV) approach to analyze which institutional designs of borrowing constraints prevent large subnational deficits. The authors conclude that the specific framework is less relevant compared to other characteristics of multi-level fiscal relations, such as the existence of bailouts or a history of bailout, the degree of VFIs, or the quality of fiscal reporting. Plekhanov and Singh's classification of fiscal rules is based on dummy variables indicating the mode of implementation (self-imposed, centrally imposed, etc.).⁵ Beetsma and Debrun (2018), as editors, offer an excellent overview of the theory and evidence on independent fiscal councils. According to Wyplosz (2018), fiscal rules and fiscal councils are strongly complementary and work best when implemented together. This is reflected in the global increase in fiscal rules that began of the early 1990s, closely followed by a rise in fiscal councils.⁶ Reuter (2019) identifies independent monitoring and enforcement bodies as determinants of compliance with various fiscal rules types. Thus, he analyzes national fiscal rules in the EU, not subnational ones. Ardanaz et al. (2024) show that a strong institutional framework increases the probability of compliance with fiscal rules analyzing developing countries.

In this work, we want to explore how variations in the design of various fiscal rules on local level in the EU are related to budgetary outcomes. For this purpose, we use the FRSI, which captures not only the mere existence but also the institutional design of fiscal rules. Three empirical publications closely related to our paper use the FRSI (or variations thereof) for subnational governments to estimate its impact on fiscal discipline. Kotia and Lledó (2016) implement a first difference GMM framework and present results indicating that subnational fiscal rules enhance fiscal discipline, although this effect diminishes at high levels of VFIs. In other words, the more subnational governments depend on transfers from higher-level governments, the weaker the disciplining effect of numerical fiscal rules becomes. Foremny (2014) presents findings based on a two-stage least-squares approach and dynamic panel estimation. These results indicate that fiscal rules reduce deficits only in unitary countries. In federal countries, where local and

regional governments have greater legal autonomy, rule-based frameworks appear less effective. The author constructs an FRSI-based measure by aggregating the EC's index values for all subnational fiscal rules that could affect the budget balance. More recently, De Biase and Dougherty (2022) utilized the FRSI for European subnational governments to analyze the impact of balanced budget rules, debt rules, and expenditure rules on a broad range of fiscal variables using a standard two-way fixed effects regression. Consistent with previous findings, the results suggest that BBRs are effective in improving budget balances, while debt rules are beneficial for reducing the debt-to-GDP ratio.⁷

Based on the theoretical literature, we conclude that fiscal rules could help mitigate the deficit bias and, thereby, enhance welfare. Over the last decades, several empirical studies have analyzed the effects of fiscal rules on subnational and local governments, with diverse findings. As Heinemann et al. (2018) highlight, empirical evidence suggests that numerical fiscal rules have a discipline-enhancing effect. Our work expands the empirical literature on the impact of numerical fiscal rules at the local level within the EU. It differs from the most closely related studies by Foremny (2014) as well as Kotia and Lledó (2016) in avoiding higher aggregation of the complex FRSI values and by covering a much longer period. Furthermore, it differs from De Biase and Dougherty (2022), who combine state and local governments and focus on other dependent budget variables. By maintaining the FRSI for specific rule types at the local (rather than subnational) level, we isolate the effects of different fiscal rules such as BBR, DR, and ER on municipalities, cities, etc. Furthermore, our analysis goes beyond the impact of the existence of a fiscal rule but also addresses the relevance of its institutional implementation.

Based on the reviewed literature we derive the following research hypotheses:

H1. *The local primary balance improves (i.e. shows a higher surplus or a lower deficit) when fiscal rules exist at the local level.*

H2. *The relation of a numerical fiscal rule and the local primary balance becomes stronger with the strength of its institutional implementation.*

3 | Institutional Setting and Descriptive Statistics

Across Europe, there are different forms of local governmental units such as counties, municipalities, cities, boroughs, etc. which typically provide a wide range of services to their residents (Eurostat 2023). In 2023, more than one-third of the European Union total of 95,098 local governments were located in France, followed by Germany with nearly 11,000 local governments (Eurostat 2024) (see Table A.1). In comparison, Denmark for example currently has only close to 100 local governments. This results in a significant variation in the average size of a jurisdiction. While in Greece, the average local jurisdiction counts only around 1,700 residents, in Denmark and the Netherlands, more than 50,000 people form the average municipality or city. Additionally, the administrative structure of the local level exhibits individual characteristics in each country (for an overview, see Geißler et al. 2019). For example, the French local government system consists of four different tiers (regions, departments, Établissements Publics de

Coopération Intercommunales, and municipalities), whereas the German system has only two tiers (counties/independent cities at the county level and municipalities).

In terms of fiscal relevance, local governments in some EU member countries play a more important role than in others. Scandinavian countries, in particular, enjoy a high level of fiscal decentralization (Geißler et al. 2021). In Denmark, for example, around 62% of general government expenditures of 2019 occurred at the subnational level (European Committee of the Regions 2020). In contrast, only 28% of public revenues were collected by Danish municipalities and regions. Although these shares differ widely across the continent (in Portugal, for example, the expenditure versus revenue ratios were 15% versus 9% in 2019), this illustrates that local governments are usually highly dependent on funding from higher levels. With this come intergovernmental fiscal relations and the requirement of regulation, which commonly is understood as system of fiscal rules, monitoring procedures, enforcement instruments, and structure/capacity of regulators (Geißler et al. 2021). Together, these aim to limit the financial autonomy of local governments. European countries exhibit significant variation in their highly individual institutional solutions to local government fiscal regulation (see, for example, Turley et al. 2021, or Geißler and Wegrich 2021). Comparative research has shown, however, that local governments in continental European and Nordic countries enjoy higher degrees of financial autonomy than they do in Anglo-Saxon or Eastern/South-Eastern European countries (Ladner et al. 2021).

In most European countries, fiscal rules exist at the local level. According to the definition by Kopitz and Symansky (1998), a fiscal rule is a permanent constraint on fiscal policy, expressed in terms of a summary indicator of fiscal performance such as the budget deficit, debt, or other measures. Similarly, Turley et al. (2021, p. 24) define a fiscal rule as “predetermined numerical limit on budgetary aggregates or summary indicators”, which is a “long-lasting institutional constraint on budget policymakers’ decision-making discretion, aimed at promoting overall fiscal discipline and ensuring sustainable public finances.”

In its FRSI Database, the European Commission (European Commission 2010) broadly distinguishes four types of numerical fiscal rules: balanced budget rules (BBR), debt rules (DR), expenditure rules (ER), and revenue rules (RR). The European Commission aggregates several institutional features of these rules at the respective government levels to into a single country index, the FRSI (for the method, see Section 3, below). The FRSI Database offers nationwide aggregated indices on specific local fiscal rules for each country, it does not provide information on intra-country variance.

According to the European Commission's FRSI, in 2022, only 9.6% of all national fiscal rules in the European Union (EU) were solely dedicated to the central government (European Commission 2024a). In contrast, 24.6% of existing rules restricted the fiscal freedom of the local level and 55.3% referred to the general government but might also have included specific local government breakdowns. In 2022, the by far most prevalent rule type on the local level was the BBR, followed by DRs and ERs. Revenue rules were not implemented. The adoption of multiple fiscal rules has become increasingly common. For

example, the combination of debt and balanced budget rules is by far the most popular rule combination for local governments (De Biase and Dougherty 2022).

Over time, the number of fiscal rules at the local level for which the FRSI database evaluates rule strength has clearly increased (Figure 2). This reflects the growing importance of fiscal rules as a tool to counteract the deficit bias. In our sample of 26 EU member states, the number of numerical fiscal rules increased from 8 in 1990 to 28 in 2022. The number of BBRs alone has nearly tripled during this period. The numbers of DRs and ERs also increased but remained at lower levels. Previous research has highlighted that for both the general and the subnational levels not only has the number of numerical fiscal rules within the European Union increased over time, but so has the level of institutional implementation (De Biase and Dougherty 2022).

In most cases, the local government does not establish the fiscal rules for its jurisdiction. To illustrate this, Table 1 shows the level of the BBR statutory base of a sub-sample of countries included in this study. The information is derived from Geißler et al. (2019). The table indicates that, in each country, it was either the national or the state level, but not the local level itself, that introduced the respective local BBR.

The European Commission's FRSI is a highly aggregated composite indicator based on the characteristics of fiscal rules (European Commission 2024b). The indicator aggregates (1) the statutory base of the rule (constitution, legal act, coalition agreement, political commitment), (2) the room for setting or revising objectives, (3a-3d) the body and type of monitoring, (4) correction mechanisms in case of deviation, and (5) resilience to shocks or events outside the control of the government. The composite FRSI is calculated for each existing rule by aggregating assigned scores for each criterion. A rule-overarching national FRSI is obtained by aggregating the rule-specific index values by country. Since the base information for the FRSI is gathered from national high-level experts,⁸ it is not clear whether the annual index value reacts to changing intra-country variation in federal states like Austria or Germany, where the rules are determined at the state level (see Table 1). However, it is possible and likely that the experts reconsider

their general evaluation when the rules in one or more states change. To account for this potential weakness in the data, we add a re-estimation of our baseline models for a set of countries from which we dropped the federal states Germany, Austria, and Belgium. One major shortcoming of the FRSI database is that it reports rule strength only for those rules, which have been in effect in the years 2015/16 and thereafter. If a country had a rule in earlier years that was abolished prior to 2015/16, it is only reported qualitatively and not included in the calculation of rule strength. This means that the main empirical analysis of fiscal rule strength in our paper covers only those rules for which the European Commission provides a distinct FRSI in the database. To cover the remaining rules, too, we build additional rule dummies.

In our work, we employ the FRSI for single rules applicable at the local level as an explanatory variable of interest (we include pure local government rules as well as general government rules that also account for the local level) rather than the FRSI version that combines all existing rules into one aggregate value. Here, we follow the recent work of Park and Kim (2025). The maximum value assigned to a numerical fiscal rule within the EC FRSI database across all government levels between 1990 and 2022 was 9.23, indicating the maximum level of institutional implementation concerning the above-mentioned criteria; the minimum positive value was 1.17. However, the variable used in our estimation covers the local level. Here, the sample maximum over the entire period of analysis is 8.6 and the minimum positive value is 1.17.

The average rule strengths of the BBR and the DR imposed on local-level governments only show considerable variation within the period of interest (1997-2022). The average rule strength for local government BBRs varies around a level of five and has been rising since 2015 with a particularly strong increase after 2020 (Figure 3). This development indicates a correlation with the financial turmoil related to the COVID-19 pandemic. The average rule strength for debt rules is also increasing over time, with a particularly strong and stable jump to a higher level in 2014. This may be seen as an indication that post-crisis EU fiscal regulation like the Six Pack of 2011 was channeled down to local governments.

Figures 4 and 5 depict the country-wise development of the most prevalent rule type (BBR) and the dependent variable of our analysis, the local-level primary balance aggregated at the national level. Figure 4 shows that there is a BBR in each country. The depicted FRSI values incorporate all direct local government rules as well as weighted existing general government BBRs (see Methodology).

4 | Empirical Identification Strategy

Initial evidence of a positive relationship between the introduction of a fiscal rule and improvements in the primary balance can be observed in the cases of Poland, Sweden, and Spain. In Poland, local primary deficits prevailed in most years prior to the introduction of debt rules in 2014. Immediately after the implementation of these rules — that apply at both the local and national level — there were surpluses in three consecutive years (European Commission 2024a; Geißler et al. 2019). In Sweden, the national government introduced a

TABLE 1 | Level of statutory base of the BBR in 12 sample countries.

Country	Level of statutory base for local BBRs
Austria	State Law (Bundesländer)
Belgium	National Municipal Law
Finland	National Law
France	National Law
Germany	State Law (Bundesländer)
Ireland	National Law
Italy	National Law
Netherlands	National Law
Poland	National Law
Portugal	National Law
Spain	National Law
Sweden	National Law

Source: Geißler et al. (2019).

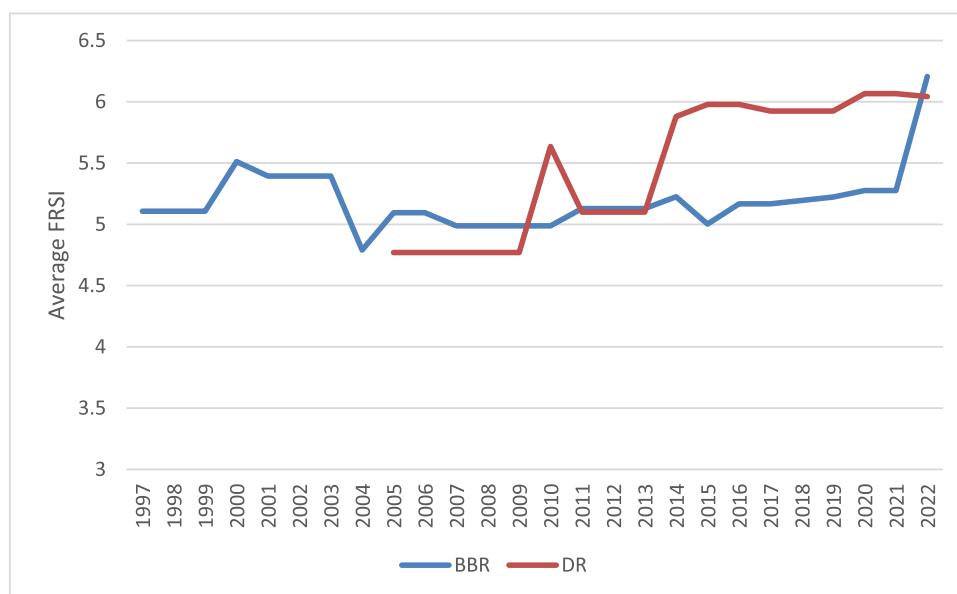


FIGURE 3 | Development of local government rule strength. *Note:* Average rule strength over all local government rules of a certain type in 27 EU member countries (Data: European Commission Fiscal Rules Strength Index).

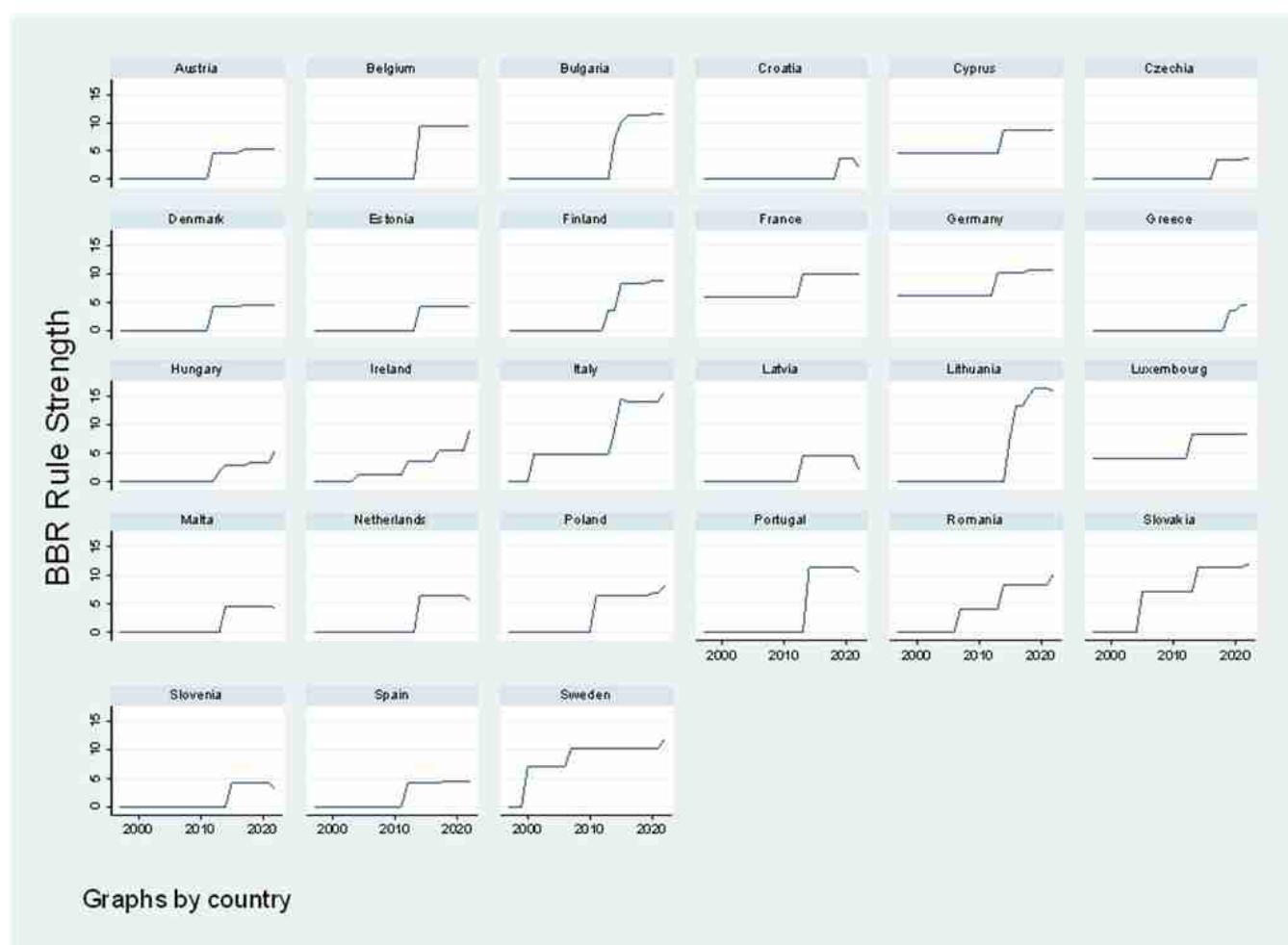


FIGURE 4 | The balanced budget rule strength over time. *Note:* Development of the balanced budget rule strength over time (1997–2022) in the EU 27 by country (Data: European Commission Fiscal Rules Strength Index.).



FIGURE 5 | The local level primary balance over time. *Note:* Development of the local level primary balance as percentage of GDP over time (1997–2022) in the EU 27 by country (Data: Eurostat Government Finance Database.).

so-called “debt anchor” as well as a budget balance rule in 2019 covering all public finances. The local primary balance has been positive since then — contrary to most preceding years (European Commission 2024a; Swedish Ministry of Finance 2017). The clearest impact of fiscal rules can be observed in Spain. In 2012, three rules were introduced simultaneously: a budget balance rule, a debt rule, and an expenditure rule (Geißler et al. 2019, p. 200). While the primary balance had been predominantly negative in the years prior to their adoption, significant surpluses have been recorded every year since then, up to 2021. Only in 2022 did it turn slightly negative (European Commission 2024a).

Since these examples appear to support our hypothesis that the impact of a numerical fiscal rule on the local primary balance increases with the strength of its institutional enforcement, we estimate this relationship in the following using a dynamic fiscal reaction function in the tradition of Bohn (1998), Debrun et al. (2008), and Kotia and Lledó (2016). Debrun et al. point out that the most natural way to assess the impact of numerical rules on fiscal discipline is to implement the respective fiscal rule into a fiscal reaction function — which can be interpreted as a model of fiscal behavior — and check whether the estimated coefficient is meaningful and significant. In this spirit, we formulate the following baseline model:

$$y_{it} = \alpha + \beta_1 y_{it-1} + \beta_2 bbr_{it} + \beta_3 dr_{it} + \beta_4 er_{it} + \beta_5 rr_{it} + \gamma X_{it} + \eta_i + \rho_t + \epsilon_{it} \quad (1)$$

$$i = 1, \dots, N; t = 1, \dots, T$$

The model describes the response of the sum of local governments' primary balances⁹ y of country i in year t as a percentage of national GDP to its own one-period lagged values y_{it-1} as well as to further independent variables. Integrating y_{it-1} accounts for the persistent behavior of the primary balance (Kotia and Lledó 2016; Vanneste and Goeminne 2020) and enables consistency in estimating other parameters of interest (Bond 2002). Further independent variables are strength levels of balanced budget rules (BBR FRSI) bbr_{it} , debt rules (DR FRSI) dr_{it} , expenditure rules (ER FRSI) er_{it} and revenue rules (RR FRSI) rr_{it} . The indices comprise aggregate values of local government and general government rules. Aggregation was done according to the following two-step procedure, exemplified with the BBR:

Step 1: In case there were two overlapping BBRs (either for local governments or the general government), we ranked these within the respective government level in terms of their index strength. The rule with the higher index value was ranked 1, the

rule with the lower index value was ranked 2. For each country, we aggregate both rules by calculating:

$$BBR_{local\ gov.,weighted} = \left[Value_{BBR1} * \frac{1}{(rank =) 1} \right] + \left[Value_{BBR2} * \frac{1}{(rank =) 2} \right]$$

$$BBR_{general\ gov.,weighted} = \left[Value_{BBR1} * \frac{1}{(rank =) 1} \right] + \left[Value_{BBR2} * \frac{1}{(rank =) 2} \right]$$

If there was only one BBR for a certain country, no aggregation was necessary, and the index was taken as provided by the European Commission.

Step 2: The results from step 1 were aggregated for each country. General government rules were always ranked 2, local government rules were ranked 1. Whenever there is a BBR for the general government and no BBR for the local government, the general government BBR entered the BBR_FRSI for the respective country with the weight $\frac{1}{2}$ (0.5). If there were both, a local government BBR and a general government BBR, the aggregation formula was as follows:

$$BBR_{country\ i,weighted} = \left[Value_{BBR_LG} * \frac{1}{(rank =) 1} \right] + \left[Value_{BBR_GG} * \frac{1}{(rank =) 2} \right]$$

This approach takes into consideration that a general government fiscal rule may have some impact but a potentially weaker impact on the local government than a direct local government rule. This is a valid assumption since general government fiscal rules require a certain aggregate fiscal outcome of the general government, which allows single levels of government to deviate as long as the other government levels compensate for this deviation.

Coming back to the baseline specification, X_{it} is a vector of control variables. This vector comprises the output gap accounting for cyclical fluctuations and the share of the population older than 65, which proxies the local governments' spending needs, a variable that proxies the level of fiscal decentralization (share of local government expenditure in general government expenditure) and an election dummy for the national parliament.¹⁰

The country fixed effects η_i account for unobserved time-invariant characteristics of the country which may impact the local primary balance and the time fixed effects ρ_t cover unobserved macro-developments like common shocks affecting all countries simultaneously. A prominent example for the latter is the global financial crisis. Accounting for fixed effects in the dynamic fiscal reaction function may push the estimates closer to a causal interpretation.

To assess the robustness of the results, we manipulate the baseline specification in several ways. First, we estimate it with one fiscal rule at a time. Moreover, we add further control

variables. This set comprises commonly used political indicators: the Herfindahl Index to account for political fragmentation and an ideology indicator, both for the national parliament.¹¹ In addition, we add a measure for Vertical Fiscal Imbalances (VFI)¹² and we analyze the effect of institutional quality, incorporating measures for (1) control of corruption, (2) government effectiveness, (3) political stability, (4) regulatory quality, (5) rule of law as well as (6) voice and accountability.¹³ Kotia and Lledó (2016) use the Herfindahl Index and the election dummy in a similar empirical setting as external instruments in a first-difference GMM specification for the subcentral government. Since our dataset does not allow for the consistent estimation of a GMM model because the number of instruments exceeds the number of countries in each specification, we estimate a bias-corrected Least Squares Dummy Variable (LSDVC) model and add these variables as additional controls to the baseline model in order to evaluate if and how the coefficients of interest react. Moreover, we re-estimate the baseline specifications with a limited sample in which we drop the federal states Germany, Austria, and Belgium from the set of countries.

To disentangle the effect of institutional implementation of a BBR from its mere existence on the local level, we estimate the LSDVC baseline model by applying two different notions of the fiscal rules variables bbr_{it} , dr_{it} , er_{it} , rr_{it} :

$$rule_{it} = \begin{cases} rule_{it,FRSI} = FRSI \\ rule_{it,dummy} = 0/1 \end{cases}$$

Whereas $rule_{it,FRSI}$ is the rule-specific FRSI (BBR, DR, ER, RR) as explained in the previous section, $bbr_{it,dummy}$ is a dummy variable which takes the value 1 if there is a BBR strength index in a given year and 0 otherwise. Hence, the latter only displays unit values of existence. Consequently, the coefficient of this dummy measures the impact of the pure existence of a BBR irrespective of rule strength variation.

Concerning our testable hypotheses, H1 hinges on significant β_{2-5} . H2 is testable by comparing the β_{2-5} coefficients of the baseline model with the β_{2-5} coefficients of the additional specification with $rule_{it,dummy}$ instead of $rule_{it,FRSI}$.

To overcome the above-mentioned general limitation of the fiscal rule database, namely that fiscal rules that had been in place up to the years 2015/16 are only reported qualitatively in the FRSI database, we suggest additional rule dummies. They turn from 0 to 1 not only in years in which the fiscal rules database provides a positive FRSI but – in addition – also in those previous years in which a fiscal rule existed which is, however, not included in the fiscal rule strength index. We make further use of these dummies by estimating two event studies (see below).

Our fully balanced panel dataset comprises annual data for 26 countries and a period from 1997 to 2022. This is similar to Kotia and Lledó (2016); their dataset, however, only covers a period up to 2012. However, having a dataset with more post-financial crisis years, like ours, is a specific advantage since it can be reasonably assumed that new, crisis-induced regulation, such as the EU Fiscal Compact of 2012, took some years to find its way into local-level regulation within the member states.¹⁴ For the estimation of the fiscal reaction function, we estimate

our model with the LSDVC approach similar to Kotia and Lledó (2016), which is appropriate for datasets with small N (Bruno 2005). In order to overcome the small sample bias and the inconsistency introduced by the lagged dependent variable we make use of Nickell's bias correction for the LSDV estimator (Nickell 1981; Bruno 2005). LSDVC is an alternative approach to GMM estimation for dynamic panel-data models with strictly exogenous regressors. The best results in terms of initializing bias correction at a rate of $O(1/T)$ came from the Arellano and Bond (1991) estimator. For inference, we used a bootstrap with 1000 repetitions in order to estimate the variance-covariance matrix. Through this procedure, we were able to rule out the bias resulting from the dynamic nature of our panel regression model in relation to the implementation of fixed effects as well as the small panel.

However, the issue of endogeneity of our fiscal rule indicator may still prevail. On the one hand, it might suffer from reversed causality arising whenever high primary deficits at the local level incentivize local governments to tighten fiscal rules autonomously. Conversely, it is also conceivable that fiscally conservative local governments may adopt fiscal rules as a symbol of their existing policy orientation. In this case, primary balances would improve over time even in the absence of stricter rules. In both scenarios, local fiscal preferences — that remain unobserved — would be omitted from the estimations, potentially resulting in reverse causality. However, since a large proportion of fiscal rules affecting local governments are not enacted at the local level but rather at the national or regional level, this issue is likely of limited relevance.

On the other hand, simultaneity bias could be another source of endogeneity. This problem is at least partly mitigated by the fact that many countries had already introduced subnational fiscal rules prior to the period under consideration, meaning that local primary balances could not have directly influenced the adoption of such rules. This argument is also made by Plekhanov and Singh (2006).

Several empirical studies (e.g. Kotia and Lledó 2016, and Foremny 2014) apply instrumental variable estimation. Kotia and Lledó make use of external instruments drawn from the central government level. They assume in accordance with Foremny that since in Europe the decision for local-level fiscal rules is made at the central government level, political characteristics at the national level may be used to proxy the center's fiscal attitudes towards general government fiscal discipline.

We do not use political variables as external instruments because we have doubts concerning their validity. In addition, the endogeneity issue of local government fiscal rules might even be of less relevance as long as the central level implements them. Bonfatti and Forni (2019) state that the mere fact that the central government enforces the municipal fiscal rule reduces the institutional endogeneity problem (although it does not rule out the risk of omitted variable bias). As shown above, it was either the national or the state level but not the local level, which introduced the respective BBR (see Table 1).

To deal with the remaining potential endogeneity problem, we re-estimate the reaction function with a one-year lagged dependent variable meaning that we analyze the relation between last year's local level primary balance and this year's fiscal rule strength and controls. This is based on the

assumption that a regulatory reaction to a high local level deficit will – most likely – not appear simultaneously but in the following year because statistical offices cannot determine aggregate budget balances before the end of each budget year and, moreover, regulatory changes at the national level usually take time. From this perspective, significant results for the rule strength variable of interest could then be interpreted as a reverse causality channel from last year's primary balance to this year's rule strength because an effect of this year's rule strength on last year's primary balance is simply not possible. In addition, we add two event studies following Callaway and Sant Anna (2021) as robustness checks covering those rules for which we identified a robust relation to budgetary discipline in the dynamic panel estimation. The estimation accounts for staggered treatment adoption across units. The model identifies treatment effects by comparing treated units to a control group of countries that are not yet or never treated. We present group-time average treatment effects which are pooled across units with the same number of periods since treatment, allowing us to trace dynamic treatment effects over time. Aggregation is based on weighted averages of group-time ATT estimates.

5 | Results

The LSDVC estimation of our baseline model with rule dummies (see Models 1 to 5 in Table 2) yields significant coefficients for the ER_{Dummy} , the output gap, expenditure decentralization and the election dummy with the local level primary balance as the dependent variable (see Table 2). In hypothesis one (H1) we state that the pure existence of a local fiscal rule has a mitigating effect on the aggregate local government primary balance. This seems to be only the case for ERs. This result holds when we re-estimate models 1-5 using the extended set of dummy variables, which capture not only the years in which a rule has a positive FRSI value but also those which were abolished prior to 2015/16 and are therefore not reflected in the FRSI database but only reported qualitatively (see Table A.4 in the Appendix).¹⁵

Estimating our baseline model with the FRSI yields significant coefficients for the DR_{FRSI} , ER_{FRSI} , the output gap, expenditure decentralization, and the election dummy, with the local level primary balance as the dependent variable (see Table 3). Hypothesis two (H2) states that higher fiscal rule strength for the different existing rule types is positively related to the aggregate local government primary balance. As the results of Model 6, 8, and 9 show, this can be claimed for the DR and the ER, which have positive and significant coefficients, meaning that a higher strength level of the rule is related to a higher level of the primary balance (i.e. higher surplus or lower deficit). Neither the most common rule type, the BBR, nor revenue rules (which exist for the general government only) show significant coefficients.

By comparing the β_2 of Models 1 to 5, in which the rule is just a dummy variable, with the β_2 of Models 6 to 10, in which the rule reflects the FRSI for local governments (see Tables 2 and 3), it becomes obvious that it is the institutional implementation that counts for DRs. The non-significant DR coefficients in Models 1 and 3 suggest that it is not sufficient to have a rule that is not enforced or is only weakly enforced. This result is in line

TABLE 2 | Estimates with rule dummies and local level primary balance (dep. var.).

Prim. Bal./GDP	(1)	(2)	(3)	(4)	(5)
Y_{t-1}	0.463*** (0.040)	0.474*** (0.036)	0.476*** (0.036)	0.472*** (0.036)	0.479*** (0.036)
BBRDummy	0.040 (0.045)	0.059 (0.043)			
DRDummy	0.029 (0.044)		0.050 (0.042)		
ERDummy	0.122** (0.053)			0.123** (0.048)	
RRDummy	−0.124 (0.134)				−0.012 (0.126)
Output Gap	−0.010** (0.005)	−0.012** (0.005)	−0.011** (0.005)	−0.010** (0.005)	−0.011** (0.005)
Pop. over 65	0.022 (0.017)	0.021 (0.017)	0.020 (0.017)	0.024 (0.017)	0.025 (0.017)
Expend. Dec.	−0.872** (0.350)	−0.742** (0.341)	−0.737** (0.342)	−0.864** (0.343)	−0.749** (0.343)
Elect.	−0.051** (0.025)	−0.050** (0.025)	−0.049** (0.025)	−0.050** (0.025)	−0.050** (0.025)
Obs.	650	650	650	650	650

Table 2: LSDVC-Estimates with rule existence dummy for all fiscal rules. Variance-covariance matrix and inference based on bootstrap (1000 rep.). Correction of the bias is at the rate 0 (1/T). Bias correction initialization was conducted by the Arellano and Bond (1991) First difference GMM estimator. Standard errors in parentheses.

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

TABLE 3 | Estimates with FRSI and local level primary balance (dep. var.).

Prim. Bal./GDP	(6)	(7)	(8)	(9)	(10)
Y_{t-1}	0.461*** (0.036)	0.479*** (0.036)	0.464*** (0.036)	0.474*** (0.036)	0.480*** (0.036)
BBR_{FRSI}	−0.0005 (0.006)	0.003 (0.006)			
DR_{FRSI}	0.012* (0.007)		0.014** (0.006)		
ER_{FRSI}	0.017* (0.009)			0.020** (0.009)	
RR_{FRSI}	−0.004 (0.048)				0.008 (0.047)
Output Gap	−0.010** (0.005)	−0.011** (0.005)	−0.011** (0.005)	−0.010** (0.005)	−0.011** (0.005)
Pop. over 65	0.020 (0.018)	0.025 (0.017)	0.016 (0.017)	0.027 (0.017)	0.024 (0.017)
Expend. Dec.	−0.910** (0.351)	−0.773** (0.345)	−0.847** (0.345)	−0.840** (0.341)	−0.744** (0.343)
Elect.	−0.051** (0.025)	−0.050** (0.025)	−0.050** (0.025)	−0.051** (0.024)	−0.050** (0.025)
Obs.	650	650	650	650	650

Table 3: LSDVC-Estimates with FRSI for BBR, DR, ER and RR. Variance-covariance matrix and inference based on bootstrap (1000 rep.). Correction of the bias is at the rate 0 (1/T). Bias correction initialization was conducted by the Arellano and Bond (1991) First difference GMM estimator.

Standard errors in parentheses.

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

with previous findings and sheds some light on rules that are part of the national regulatory system but are not linked to monitoring and sanctioning mechanisms (Asatryan et al. 2018; Kopitz and Symansky 1998).

The story is somewhat more complicated with expenditure rules, for which the coefficient is significant irrespective of whether it refers to the dummy version or the FRSI of the variable. The conclusion we draw from this is that for expenditure rules, which are usually expenditure limits, institutional implementation is nonetheless relevant, but even the mere existence of such rules relates positively to the budget balance. Compared to local government debt rules, expenditure rules are less common, however. This brings us to our first central finding: For the local governments in our sample of 26 EU member countries, the DR and the ER correlate with fiscal discipline, whereas other rule types do not. This might furthermore indicate that the results of empirical studies applying a FRSI aggregation of different rule types may be driven by these two rules.

A general strategy to support the robustness of more sophisticated dynamic panel estimators, such as LSDVC or

GMM, is to present upper and lower bounds for key parameters and benchmark one's findings against these bounds (Bond 2002).

First, we evaluate the bounds for the lagged dependent variable following Roodman (2009), who shows that a naïve pooled OLS regression tends to yield an upward-biased estimate, while a standard fixed effects (FE) regression is subject to Nickell bias and therefore tends to be downward-biased. These estimates can be interpreted as upper and lower bounds for the true coefficient. In our case, the OLS estimate for the lagged dependent variable is 0.512, and the FE estimate is 0.433. As shown in Table 3, our LSDVC estimate is 0.463, which lies between the bounds, providing reassurance about its plausibility.

Second, we follow Angrist and Pischke (2009) to check the robustness of our main results of interest — the significant point estimates for DR_{FRSI} and ER_{FRSI} — under alternative identifying assumptions. As they point out, fixed effects and lagged dependent variable models exhibit a bracketing property: when treatment effects are positive, FE-only models typically yield upward-biased estimates, while LDV-only models tend to yield downward-biased estimates. In our application, the

FE-only model yields an upper-bound coefficient of 0.0319 for DR_{FRSI} and 0.220 for ER_{FRSI} , while the LDV-only model yields lower-bound coefficients of 0.0028 for DR_{FRSI} and 0.010 for ER_{FRSI} . Our baseline LSDVC model (Table 3) produces significant point estimates of 0.012 for DR_{FRSI} and 0.017 for ER_{FRSI} , both of which lie within the respective bounds, again reinforcing the robustness of our findings.

The empirical results related to hypothesis two are robust over a broad set of different specifications (see Table A.5 in the Appendix, Models 11–13). In Model 11, we add the Vfi to the baseline specification, which produces a highly significant and negative coefficient. The estimators for the debt and expenditure rules remain significant in this new setting. In specifications 12 and 13, we gradually add the central level policy variables (the Herfindahl Index (HHI) for political fragmentation and two ideology dummies for the central government) to our baseline specification and arrive at similar results for debt rules. The coefficient for the expenditure rule turns insignificant when adding the HHI and the ideology dummy.

Among the control variables, both the coefficients of expenditure decentralization and election years are significant. Their negative signs mean that the primary balance is lower in election years, as well as with higher levels of expenditure decentralization.

In the Models 14 to 18 in Table A.6 in the Appendix we add several measures of institutional quality to the baseline specification. The main results remain robust and two out of five measures yield positive and significant point estimates. The primary balance is significantly related to a country's percentile rank in the variables "Control of Corruption" as well as "Voice and Accountability". This means that a positive development of a country in these two variables (reflected by a higher percentile rank) is related to lower aggregate local government deficits or higher surpluses respectively.

To further test the robustness of these results and, what might be even more important, to get a more precise understanding of the endogeneity that may bias our LSDVC results, we additionally re-estimated the five models of Table 2 with a lagged dependent variable (meaning that the dynamic right-hand side term is now included in its second lag). With this approach, we want to check whether the strength of a fiscal rule reacts to last year's level of the deficit and, therefore, the reversed causality channel is something to worry about. As Table A.7 in the Appendix shows, the coefficient for the ER turns insignificant, but the DR coefficient remains robust. This is a sign that reverse causality plays no role for ER, but it might be at play for. However, it remains questionable whether this channel also works in the very year when debt levels increase, as governmental processes to draft and introduce new or better-enforced rules take their time. Bonfatti and Forni (2019) who claim that central government enforcement of local fiscal rules reduces the endogeneity problem, back the usage of the LSDVC framework and further support this conclusion.

Finally, we re-estimated the baseline specifications without the federal countries of Germany, Austria, and Belgium. As Table A.8 shows, our results remain unchanged. Consequently, the federal structure of a country seems to have no influence on the relation of local fiscal rules and budgetary discipline.

In addition, the estimation of two event studies for the DR and the ER using the Callaway and Sant'Anna (2021) estimator supports our general finding (see Figures 6 and 7). Implementing a difference-in-difference setup with the help of the extended rule dummies shows a positive and significant reaction of the primary balance (measured annually at the country level) to a newly implemented debt rule in years 2 and 3 as well 15 to 17 after rule implementation. In terms of expenditure rules, positive and significant reactions appear in years 1, 10 and 13 to 17.

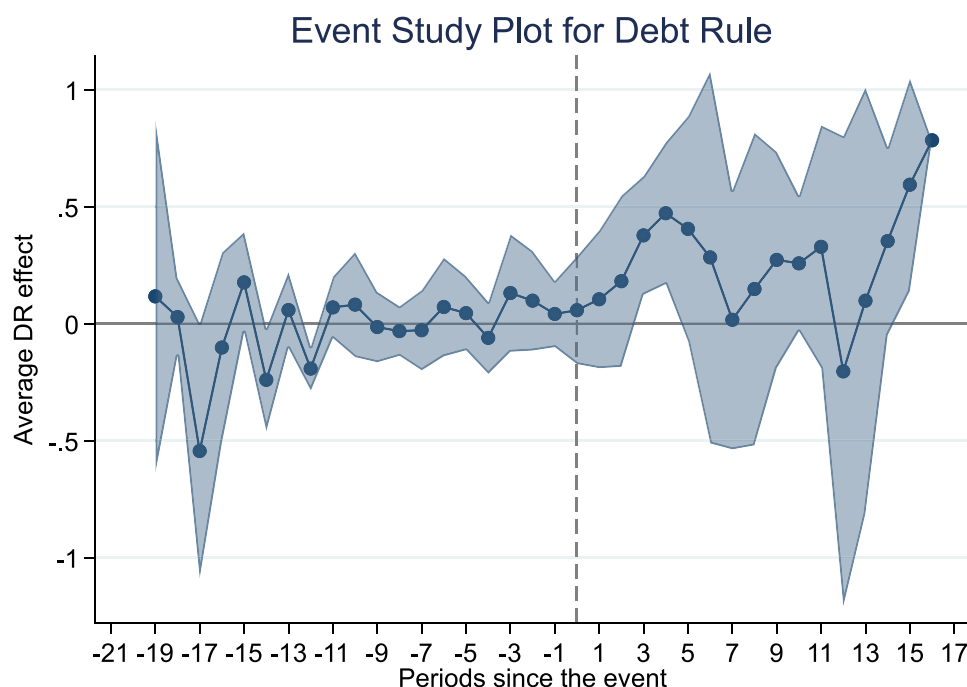


FIGURE 6 | Robustness check—Event Study for Debt rule. *Note:* Event study based on Callaway and Sant'Anna (2021) using the extended debt rule dummy as treatment variable. Confidence Intervals: 90 Percent.

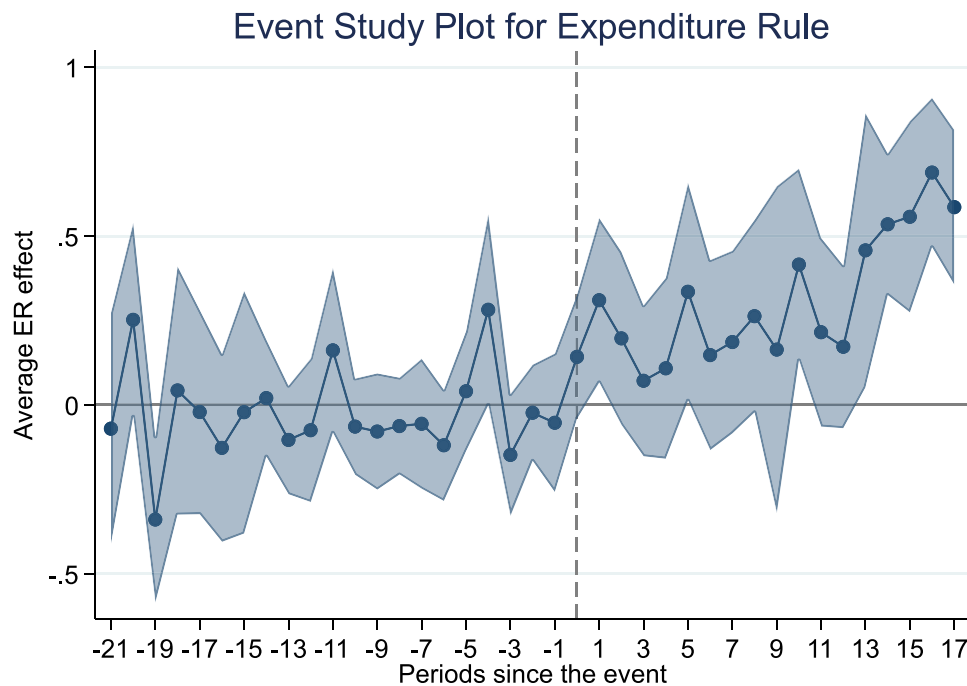


FIGURE 7 | Robustness check—Event Study for Expenditure rule. *Note:* Event study based on Callaway and Sant’Anna (2021) using the extended expenditure rule dummy as treatment variable. Confidence Intervals: 90 Percent.

6 | Discussion of Results

Central governments impose numerical fiscal rules on sub-national governments in order to reduce their deficit bias. Usually, they constrain municipal, county, and/or provincial fiscal policy by implementing limitations on their ability to run deficits, take on debt, spend, or raise money. Previous empirical literature has provided ample evidence of the disciplining effect of these rules on (local government) finances. Our findings corroborate this literature and add the perspective of different rule types. We show that debt and expenditure rules are positively related to the aggregate local government primary balance of a country. In both cases, institutional implementation is relevant. For debt rules, however, empirical variation in rule strength plays a stronger role in explaining the level of the primary balance—once we replace the variation with a constant 0/1 dummy, the impact vanishes. Compared to that, expenditure rules seem to have an effect irrespective of the variation in strength. We explain this result by the debt-rule inherent risk of soft budget constraints due to local government bailout expectations, which require increasing rule strength (e.g. more convincing no bailout clauses) to become binding. The relevance of the expenditure rule corroborates recent findings by Park and Kim (2025) at the federal government level.

The positive relations of these two rule types and local primary balances are consistent with theoretical considerations. Following the political economy arguments on political business cycles, the common pool problem, and the strategic use of debt by the incumbent, one should expect that debt rules, as well as expenditure rules, mitigate these incentives for a deficit bias. We expect from numerical limits for public debt or debt service that they promote fiscal sustainability. As Ter-Minassian (2007) points out, this argument might be challenged for subnational governments as long as there are bailout expectations. These

bailout expectations might vanish under a strong and credible fiscal rule implementation. Therefore, our finding that the strength of the debt rule is essential for its success is well in line with the theoretical predictions. Since the bailout argument is not valid for expenditure rules, our result that ERs have a positive relation to fiscal discipline irrespective of their implementation design is also consistent with theoretical considerations. Regarding the results for the two control variables, expenditure decentralization and national election years, we observe a lower aggregate local government surplus or a higher aggregate deficit in years when national elections take place. This is well in line with theoretical predictions (opportunistic business cycles) and empirical research, which shows that incumbent politicians tend to show their competence in election years by benefiting their electorate with additional expenditure programs (see e.g. Persson and Tabellini 1997; Jochimsen and Nuscheler 2011; Bonfatti and Forni 2019). Additionally, higher levels of the local government share of public service provision are related to a deteriorating primary balance, which may be attributed to so-called unfunded mandates (Plekhanov and Singh 2006). This means the assignment of new tasks without appropriate funding.

In addition, the negative and highly significant result for the VfI is in line with theoretical considerations: higher transfers are related to lower levels of fiscal discipline, meaning higher deficits/lower surpluses, due to common pool reasons. Moreover, the negative coefficient of the VfI provides an empirical argument against the assumption of simultaneity bias, i.e. we do not see a potential simultaneous impact of higher-level transfers to local governments, as the VfI and the primary balance are not increasing simultaneously.

An aggregate strength index provides only limited insight into the underlying institutional design of a rule, i.e. without a clear link to specific design elements, it may not be possible to derive

actionable policy recommendations. Park and Kim (2025) disentangle implementation components for the EU central government level. Examining the local level and—again—the above mentioned three sample countries Poland, Sweden, and Spain, where a clear link between fiscal rule implementation and the primary balance can be observed, reveals that certain elements of the FRSI seem to play a more important role than others. Most strikingly is that for all relevant rules in the sample countries the FRSI criterion 2 has the highest value (3) whereas across all rules the values range between 0 and 3. Criterion 2 measures the room for setting or revising rule objectives; the highest value of 3 indicates that the defined target of the rule “cannot be changed or temporarily suspended by the government except in well-defined situations (i.e. escape clauses)” (European Commission 2024b). Also noteworthy are the relatively high scores for criteria 3a, 3c (both related to monitoring) and 4 (correction mechanism). All relevant rules in the sample countries are monitored either by an independent authority, the court of auditors and/or parliament and not solely by a ministry or not at all (3a). This is also true for the monitoring of the correction mechanism (3c). The latter is—in these sample cases—always triggered automatically or there are pre-determined rules governing the nature and/or timeline of the correction (4). Furthermore, these sample rules score highly on criterion 1, i.e. they have a constitutional or at least a legal foundation. Thus, this is also true for the majority of fiscal rules in the database (European Commission 2024b). To sum up our observations: a solid legal foundation, a rule target that cannot be suspended by government except in well-defined circumstances, monitoring by independent institutions, and pre-defined rules in case of deviation from the fiscal rules seem to play a more important role in improving the local primary balance than other elements of the FRSI. This is well in line with the literature. Potrafke (2025) stresses that strict rules are more effective than weakly enforced rules, and Reuter (2019) identifies independent monitoring and enforcement bodies to be significantly linked to a higher probability of compliance with fiscal rules in the EU.

7 | Conclusion

Although fiscal rules have become increasingly popular in many European countries over the past decades, there remains a gap in the cross-country empirical literature aimed at isolating the effect of these rules on local fiscal discipline. While previous publications in this field usually operate with a rule-overarching notion of rule strength for subnational governments, we add the perspective of distinct rule types and focus specifically on local-level governments.

We estimate a dynamic fiscal reaction function within an LSDVC framework and find that expenditure rules are positively related to the budget balance regardless of their variation in strength. The mere existence of a debt rule, however, is insufficient. Here, the rule's strength is necessary for its success. We find a robust and positive coefficient for the debt rule strength on the aggregate local level primary balance. The results for expenditure rule strength are also positive but somewhat less robust when additional control variables are included. Coefficients for balanced budget and revenue rule strength remain insignificant. This leads us to conclude that, in terms of fostering fiscal discipline at the local level, the debt rule is a central and effective tool. Additionally, we find that an

increasing share of higher-level transfers to local governments (as measured by the vertical fiscal imbalance) is significantly linked to deteriorating local budget balances. The main results of our analysis are supported by several robustness checks. As most local fiscal rules are established by central governments, the endogeneity problem is likely minor in our framework, which focuses on local budgets and excludes cases where rules and fiscal outcomes are determined at the same level.

Although our findings are consistent with previous results, our major contributions to the existing literature are first, the central relevance of distinct rule types; second, the importance of proper implementation of debt rules, and, third, the narrow focus on local (instead of subnational) governments. Based on these new core results, the following policy recommendations emerge: If governments want to strengthen fiscal discipline, they should not only focus on the national or regional level but also on the local level. Furthermore, as debt and expenditure rules seem to be superior to other fiscal rules in supporting fiscal discipline, they should be implemented as a higher priority. This is especially relevant, since we do not find any effect of the most prevalent rule type in the EU, namely balanced budget rules. Finally, future research should focus in more depth on the local government impact of different components of rule strength, such as the independency of monitoring authorities, frequency of monitoring, or strength of correction mechanisms.

Instead of fiscal rules, market mechanisms can also strengthen fiscal discipline at the local level. In the US, for example, local government entities, such as municipalities, have the option to declare bankruptcy, i.e., to seek protection from their creditors under chapter 9 of the US bankruptcy code. However, so far, almost all EU member countries have decided against such a possibility. Therefore, fiscal rules and their implementation remain the best choice to promote local fiscal discipline in the EU.

Endnotes

¹ For a detailed typology of fiscal rules, see Table 2 in the Appendix.

² The studies of Von Hagen (2006), Debrun et al. (2008), Hallerberg et al. (2009), and Hallerberg et al. (2007), focus on the central or general government, too. Rodden et al. (2003) provide a collection of case studies.

³ Several other single country studies focus on the impact of fiscal rules in Switzerland (Salvi et al. (2020), Burret and Feld (2018a, 2018b), Feld et al (2017) and Christl et al (2002)).

⁴ Ulloa-Suárez (2023) stresses the importance of fiscal councils for rule compliance. Jochimsen and Lehmann (2017) stress the importance of independent fiscal institutions, too. They analyze their influence on the biasedness of tax projections.

⁵ Earlier empirical publications of Von Hagen and Eichengreen (1996), Fornasari et al. (2010), Jin and Zou (2002) use dummies for the presence of controls and therefore do not account for variation over time (Plekhanov and Singh 2006).

⁶ Also Jochimsen and Lehmann (2017) stress the importance of independent fiscal institutions. They analyse their influence on the biasedness of tax projections.

⁷ Park and Kim (2025) use the FRSI for federal fiscal rule types to evaluate the impact on government debt in EU countries. Their

findings identify expenditure rules as the only relevant rule type with significant impact.

⁸The rules are based upon responses by representatives from the Ministries of Finance in each Member State. The replies are reviewed by these representatives every year and updated when changes occur. These replies are checked by representatives from the Directorate-General of Economic and Financial Affairs (European Commission 2024b).

⁹We decided to use the primary balance as dependent variable since we regard it as central fiscal variable, which is built upon upstream variables like local government revenue and expenditure. In addition, it is linked to government debt since negative primary balances lead to higher debt levels.

¹⁰Data stems from the European Commission's Fiscal Rule Database, Eurostat and the OECD Fiscal Decentralization Database. For summary statistics of all employed variables, see Table 3 in the Appendix.

¹¹Expenditure decentralization is based on data from Eurostat Government Finance Statistics and the political economy variables come from the Database of Political Institutions, provided by the Inter-American Development Bank.

¹²The impact of the vertical fiscal imbalances on the primary balance at the local level can be regarded as stylized fact within the field of multilevel fiscal relations stating that rising VFIs are associated with a deteriorating primary balance. Von Hagen and Eichengreen (1996) show that fiscal restrictions are indeed most often found in countries with high levels of VFIs. Following Kotia and Lledó (2016) as well as Eyraud and Lusinyan (2013) we calculate the national VFIs for our sample as the share of subnational spending not financed through own revenues.

¹³Data source: World Bank, World Wide Governance Indicators of institutional quality (percentile ranks). „Voice and Accountability“ captures perceptions of the extent to which citizens can use their basic democratic rights.

¹⁴The most important data sources for this study are the European Commission's Fiscal Rule Strength dataset and the Eurostat Government Finance Statistics.

¹⁵In Model 2 of Table A.4 in the Appendix, also the point estimate for the extended BBR_Dummy turns significant. Since this result can not be corroborated by any other estimation, we consider it as not robust.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.

PBAF_Appendix_rev2.