

# Dynamic Effects of Fiscal Rules: Do Initial Conditions Matter?

Antonio Fatás\*, Bram Gootjes\*\* and Joseph Mawejje\*\*

**Abstract:** Fiscal rules have been shown to support fiscal discipline by improving government budget balances and restraining the growth of debt. However, questions remain about what enhances their effectiveness and how certain conditions help to build the credibility needed for their survival and success. Using data from 108 countries between 1984 and 2012, this paper studies the dynamic effects of fiscal rule adoption. It shows that although fiscal rules generally improve the primary balance, their effects depend on the time horizon under consideration and the context of adoption. In advanced economies and countries with strong political institutions, the effects strengthen over time. Conversely, in emerging markets and developing economies—especially those with weaker institutions—their impact tends to fade as time passes. The findings highlight the critical role of economic conditions and consensus building at the time of adoption. Specifically, fiscal rules introduced in times of economic hardship or under highly concentrated political power are often less effective in the medium term.

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\* INSEAD, CEPR, and ABFER. \*\* World Bank, USA

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# 1. Introduction

Over the last decades, fiscal sustainability concerns have intensified across the globe because of increasing government debt levels in both advanced and developing economies (Kose et al. 2021). At the same time, fiscal policy has gained prominence as a tool for macroeconomic stabilization, particularly in response to large global shocks, when monetary policy alone proves insufficient to counter recessions. However, to deploy fiscal policy effectively during downturns, governments must maintain adequate fiscal space to respond without compromising the long-term sustainability of public finances.

To promote fiscal policies that ensure sustainability while allowing their stabilization role, numerous countries have implemented fiscal rules. These rules impose constraints on fiscal policy by setting specific limits on budgetary aggregates (Schaechter et al. 2012). Early rules primarily focused on either the government's fiscal balance or the extent of its debt accumulation. In recent times, a growing number of countries have also adopted expenditure rules.<sup>1</sup> While fiscal rules were first adopted predominantly by advanced economies, developing countries have rapidly followed suit in the past few decades (Caselli et al. 2022; Acalin et al. 2025). Today, 122 countries have fiscal rules in place, making them the *de facto benchmark* for fiscal policy worldwide.

There is ample evidence in the academic literature highlighting the benefits of fiscal rules. Earlier studies have shown that fiscal rules can lower fiscal deficits (Debrun et al. 2008; Caselli and Reynaud 2020), curtail the accumulation of public debt (Azzimonti, Battaglini, and Coate 2016; Strong 2023), diminish sovereign bond spreads (Iara and Wolff 2014), and constrain political budget cycles (Gootjes, de Haan, and Jong-A-Pin 2021). However, the impact of fiscal rules is not uniformly positive, as it varies among different objectives and across countries (Bova et al. 2014; Ardanaz and Izquierdo 2022). For instance, the effectiveness of fiscal rules is often shaped by country-specific factors, including the amount of budget transparency provided by the government and quality of political and financial institutions (Beetsma et al. 2019; Gootjes and De Haan 2022a). Design features such as the flexibility embedded within the rules or a strong statutory basis have also been shown to foster fiscal discipline and mitigate fiscal procyclicality more effectively (Guerguil, Mandon, and Tapsoba 2017; Asatryan, Castellón, and Stratmann 2018).

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<sup>1</sup> While some countries have also adopted revenue rules, this trend is less pronounced.

Therefore, well-designed fiscal rules, supported by strong governance and institutions, are essential for ensuring effective fiscal discipline.

While the literature on fiscal rules is vast, certain aspects key to their effectiveness have not received sufficient attention. In particular, we have limited understanding of how the effects of fiscal rules develop over time.<sup>2</sup> Most studies estimate the average effects of fiscal rules, sometimes accounting for specific factors that may influence their effectiveness. However, this approach implicitly assumes that these effects remain constant in both the short and medium-to-long term—an assumption that is unlikely to hold. Fiscal governance reforms typically take time to consolidate, and their durability may weaken if political support proves fragile. Strong institutions can reinforce rules by building credibility and ensuring their longevity, whereas weak support may confine their impact to short- or medium-term gains, if any.

Fiscal rules are also adopted in highly diverse economic and political settings. Over time, those conditions often shift, potentially weakening the motivation of governments to stick to the rule's constraint(s). The effectiveness of fiscal rules is therefore likely shaped not only by country-specific institutional settings but also by the circumstances at the time of adoption—factors that offer valuable insights into how these factors shape medium-to-long term outcomes.

The notion that initial conditions might influence the long-term success of fiscal rules can be inferred from the broader literature on economic reform. Several studies show that the origin of economic reforms, along with the political and economic conditions at the time of adoption, play a crucial role for their success (Rodrik 1996; Duval, Furceri, and Miethe 2021; Alesina et al. 2024; IMF 2024). The same logic can be applied to the environment in which fiscal rules are implemented. The effects of rules introduced during economic downturns may evolve differently compared to those implemented in more stable times, as it may be more difficult to establish legitimacy early on when fiscal rules must placate immediate pressures and lack the groundwork for durable outcomes. Likewise, fiscal

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<sup>2</sup> There are some studies that have looked at the dynamic effects of fiscal rules on fiscal policy, but they typically have a narrow focus. Afonso and Jalles (2019) study how the effects of fiscal rules on sovereign yield spreads evolve over the years. Apeti et al. (2024) examine the effect of fiscal rule adoption on the share of borrowing in foreign currency. Chrysanthakopoulos and Tagkalakis 2024 also examine the dynamic effects of fiscal rules. However, due to their model specification, their focus is primarily on the level-shift effects of fiscal rules (i.e., the difference between having a rule and not having one) over the medium term, rather than on the adoption process itself.

rules adopted in a political climate of strong consensus may yield different effects than those established with limited political support. In their early survey of fiscal rules, Kopits and Symansky (1998) emphasized the importance of commitment and linked the effectiveness of these rules to the context in which they are introduced. However, empirical research has largely overlooked this aspect in subsequent studies.<sup>3</sup>

In this paper, we examine the dynamic effects of fiscal rule adoption on fiscal policy over a ten-year horizon, thus focusing not only on the short-term impact but also on how these effects evolve and stabilize over time. We consider a large sample that includes 116 countries and covers both advanced and emerging market and developing economies (EMDEs). Our analysis considers 58 cases of fiscal rule adoption occurring between 1984 to 2015. We address two key questions: (i) how does the government budget evolve following the adoption of fiscal rules?, and (ii) do initial conditions influence the subsequent effectiveness of fiscal rules?

Our primary contribution to the literature lies in the systematic examination of the dynamic effects of the adoption of fiscal rules. While existing research recognizes the positive effects of fiscal rules and the importance of the economic and political contexts, we refine these findings by uncovering patterns that become visible only when the dynamics of rule implementation are considered. In particular, we offer novel insights into the importance of conditions at the time of adoption—such as the state of the economy or the degree of parliamentary control—demonstrating that fiscal rules are more likely to deliver lasting benefits when adopted in some circumstances while struggling in others.

We estimate local projection (LP) regressions over a ten-year horizon. The outcome variable is the cyclically adjusted primary balance (CAPB), which filters out cyclical fluctuations in fiscal variables and isolates improvements in the budget beyond those driven by economic conditions. We model fiscal rule adoption as a treatment effect, following the logic of difference-in-difference (DiD) event studies. To address concerns of policy endogeneity, we implement a two-stage procedure: in the first stage, we

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<sup>3</sup> Our approach is linked to a strand of the literature that has shown that certain economic and political conditions lead to fiscal rule adoption (Debrun and Kumar 2007; Elbadawi, Schmidt-Hebbel, and Soto 2015; Altunbaş and Thornton 2017; Badinger and Reuter 2017).

estimate the likelihood of having a fiscal rule in place; in the second, we use these estimates as weights in the LP regressions.

Our results show that the adoption of fiscal rules has a positive effect on the CAPB that gradually builds over time. Over a ten-year horizon, the CAPB has improved by about 1.0% of trend GDP. The dynamic effects are stronger in advanced economies, while for EMDEs, we find evidence of positive short- to medium-term effects that tend to die out over time. Further analysis shows institutional strength explains these differences across country groups: stronger political institutions support the effectiveness of fiscal rules, while in countries with weaker institutions, fiscal rules only lead to short-term improvements in the government budget.

In addition, we find that fiscal rules adopted during periods of economic weakness typically fail to generate measurable effects compared with the counterfactual of no adoption. This suggests that fiscal rule adoption is more effective when initial tailwinds facilitate the early buildup of credibility and is in line with the view that rule adoption is more likely to foster long-term fiscal discipline when it is motivated by choice and not distress or compulsion. Moreover, fiscal rules adoption is more effective when the distribution of seats between government and opposition parties is more balanced. This signals the importance of achieving broad consensus for effective implementation—a condition less binding when the government hold a dominant majority.

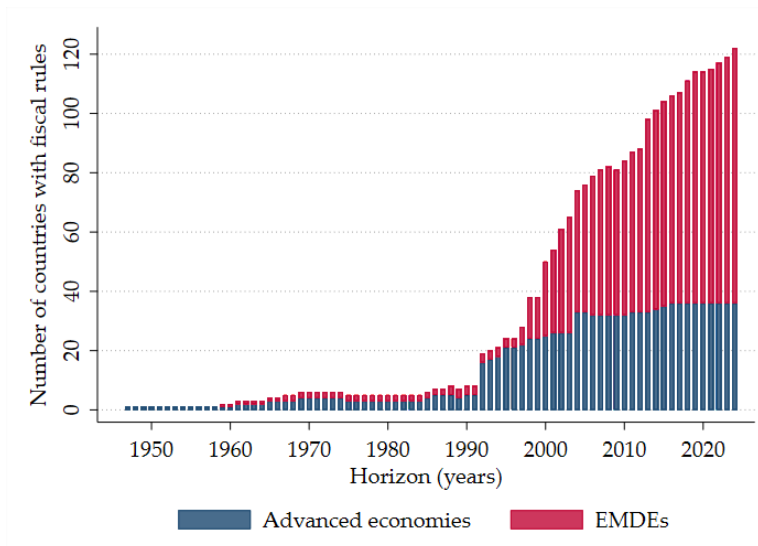
These results remain robust when we condition the model on situations where fiscal rule effectiveness is more likely, notably in the presence of strong institutions. They also hold after controlling for a range of features of fiscal rules—such as their design or characteristics of the countries that adopt them—and are consistent across a range of alternative model specifications that test the validity of the LP estimates and formally account for the Nickell Bias and heterogenous treatment effects. Taken together, the evidence suggests that while strong institutions matter, they are not sufficient on their own: the context of adoption is equally critical.

The paper is structured as follows. Section 2 provides a detailed review of the academic literature. Section 3 introduces the econometric methodology. Section 4 presents the baseline estimates of the dynamic responses of the CAPB to the introduction of fiscal rules and how they vary across different contexts. Section 5 focuses on how initial conditions matter for these dynamic responses. Section 6 discusses how the design of fiscal rules matters for effectiveness. Section 7 concludes.

## 2. Literature review

Fiscal rules have been in place for decades, but their widespread adoption occurred in an era where many countries had witnessed a worsening of fiscal sustainability. Japan was the first country (on record) to adopt a fiscal rule at the federal level, doing so in 1947. Over the following decades, other countries such as Malaysia (1959), the Netherlands (1961), Singapore (1965), Indonesia (1967), and Germany (1969) took similar action. There is no doubt, however, that the numerical constraints enshrined in the *Maastricht Treaty* of 1992, which laid the foundation for the creation of the Economic and Monetary Union (EMU), served as a catalyst for the global adoption of such rules ([Figure 1](#)). Given that the European Union (EU) comprises a group of advanced economies accounting for a large share of the global GDP, their adoption of fiscal rules represented both an experiment and a potential model for other countries to follow. It also generated a vigorous academic debate, yielding valuable insights on the effectiveness and optimal design of fiscal rules (Debrun et al. 2008; Hallerberg, Strauch, and Von Hagen 2007).

Figure 1: Adoption timeline of fiscal rules



Source: International Monetary Fund; Kopits and Symansky (1998).

The academic literature posits the origin of fiscal rules on the need to foster fiscal discipline and ensure debt remains on a sustainable path (Wyplosz 2013; Kopits and Symansky 1998). Accordingly, most fiscal rules take the form of numerical constraints on debt, fiscal balances, or budget components (Caselli et al. 2022). Beyond debt

sustainability, fiscal discipline can also be understood more broadly. For example, fiscal rules may require governments to build buffers during times of economic expansion to be used for fiscal stimulus efforts during recessions. This type of discipline supports fiscal policies that optimize macroeconomic stabilization and helps reduce excessive fiscal policy volatility and procyclicality, both of which have been widely documented across many countries (Fatás and Mihov, 2003). The literature also tackles the issue of potential negative side effects of fiscal rules, such as how the same constraints that promote savings in good times could limit fiscal stimulus during periods of slow growth (Fatás and Mihov, 2010).

With a focus on US states, much of the earlier empirical literature on the effect of budgetary constraints found that fiscal rules provide discipline, reduce volatility, and improve the countercyclicality of fiscal policy (Alesina and Bayoumi 1996; Bohn and Inman 1996; Fatás and Mihov 2006). As more countries began adopting fiscal rules—in particular, EU countries in the runup to the launch of the euro and the creation of the EMU—similar studies were conducted at the country level.<sup>4</sup> For instance, research demonstrates strong evidence that fiscal rules across EU member states have successfully reduced fiscal procyclicality (Debrun et al. 2008; Larch, Orseau, and Van Der Wielen 2021; Gootjes and De Haan 2022b).<sup>5</sup>

In the EMU context, Debrun and Kumar (2009) make use of both case-study methodologies and panel regressions to show the disciplining effects of fiscal rules on the primary balance and public debt. However, they caution that some of these effects may be influenced by endogeneity: for example, rules may have been adopted by fiscally conservative governments that would have been disciplined even in the absence of a rule. Endogeneity can also work in the opposite direction, where fiscal rules are adopted by governments struggling to implement sound fiscal policy, making them more likely to fail in enforcing the rules effectively.

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<sup>4</sup> Caselli et al. (2022) provide a good summary of recent trends in adoption of fiscal rules.

<sup>5</sup> Others have a different view, arguing that while, in theory, the EU fiscal rules (with cyclically adjusted targets, flexibility clauses, and the option to enter an excessive deficit procedure) permit large-scale fiscal stabilization during recessions, in practice, these rules resulted in pro-cyclical tightening in most EU countries during the euro crisis of 2010–2013 (Claeys, Darvas, and Leandro 2016). Additionally, while fiscal procyclicality in advanced economies, such as the EU countries, has diminished over time, research has identified an asymmetry between good and bad times. Specifically, fiscal rules tend to be more effective in promoting countercyclicality during downturns (Eyraud et al. 2018; Gootjes and de Haan 2022b).

As more countries have adopted fiscal rules in the past few decades, research has increasingly provided evidence supporting their disciplining effect across a broad range of countries. Heinemann, Moessinger, and Yeter (2018) present a meta-regression analysis of 30 studies from the preceding decade. Their findings largely support the view that fiscal rules have a restraining effect on excessive policies, with a more significant impact on budget deficits than on government debt or expenditures. Like in many studies in this field of literature, the authors acknowledge the possibility of an endogeneity bias. This issue is sometimes addressed using instrumental variable (IV) analysis. For example, Caselli and Reynaud (2020), tackle causality by using an instrument based on the logic that the adoption of fiscal rules is influenced by their diffusion among neighboring countries. Their paper focuses on the budget balance and presents evidence of the effects of fiscal rules once the design of specific rules is considered.

The improvements in fiscal policy across a wide sample of countries can partly be attributed to the dual role of fiscal rules.<sup>6</sup> Beyond serving as a commitment device that constrains government actions and curtails discretionary fiscal measures, fiscal rules also act as a signaling mechanism. By explicitly communicating the government's fiscal intentions and strategies to the public and financial markets, fiscal rules bolster transparency and credibility in fiscal policy (Debrun and Kumar, 2007). This signaling effect has tangible benefits: fiscal rules have been demonstrated to improve market access for both advanced and developing economies by reducing sovereign risk premia and borrowing costs (Sawadogo 2020; Iara and Wolff 2014).<sup>7</sup>

With a larger sample of countries, recent empirical studies have also been able to explore a broader set of issues related to fiscal rules, extending their analysis beyond direct measures of fiscal sustainability. For instance, fiscal rules have been shown to influence the patterns and composition of government spending by, for example, protecting investment and increasing the ratio of public investment to government consumption

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<sup>6</sup> Compliance to the numerical constraints of the rules has also been identified as a crucial factor for effectiveness, as demonstrated by Cordes et al. (2015) for the case of expenditures rules. However, as a counterpoint, Reuter (2015) suggests that fiscal rules, even with limited compliance, are effective because they act as "benchmarks".

<sup>7</sup> Of course, beyond their signaling effects, fiscal rules also enhance the corrective role of financial markets in shaping fiscal policy. Kelemen and Teo (2014) argue that fiscal rules serve as a lens through which financial markets can discern sound fiscal policies from fiscal profligacy. This transparency enables markets to coordinate their responses, such as imposing discipline on governments by demanding higher interest rates when fiscal policies stray from prudent benchmarks.

(Vinturis 2023).<sup>8</sup> There is also evidence that fiscal rules can improve government efficiency (Barbier-Gauchard, Baret, and Debrun 2023). Additionally, fiscal rules can reduce the vulnerability to sudden stops (Buda 2024) and impact private domestic investment (Sawadogo 2024), with stronger effects in developing economies.

While fiscal rules are generally regarded as effective, evidence of their impact across EMDEs remains mixed. Much of the discussion here has centered on fiscal procyclicality, a notable challenge in the developing world (Gavin and Perotti 1997; Kaminsky, Reinhart and Végh 2004). On the one hand, studies have shown that fiscal rules help reduce fiscal procyclicality in the case of developing, low-income, and resource-rich countries (Céspedes and Velasco 2014; Bergman and Hutchison 2020; Mawejje and Odhiambo 2024). However, several other studies have found weaker to no evidence of this. For instance, Ardanaz and Izquierdo (2022) observe that fiscal rules have little impact on mitigating procyclical fiscal policy behavior in developing countries. Similarly, Bova, Carcenac, and Guerguil (2014) report limited effects of fiscal rules on procyclicality in emerging markets, and Bova, Medas, and Poghosyan (2016) find no evidence that the adoption of fiscal rules in resource-rich countries reduced the procyclicality bias in a significant way. Rather, the quality of political institutions emerges as a crucial factor in alleviating the procyclical nature of fiscal policy across these studies.

Studies comparing different types of rules—such as deficit, expenditure, or debt rules—or examining their design have also found mixed results. For example, Guerguil, Mandon, and Tapsoba (2017) show that rules are linked to a small reduction in fiscal procyclicality, though not all rules produce the same results. Deficit rules appear to have a strong effect, while flexible rules, especially those designed to shield investment, seem to be more successful. Ardanaz et al. (2021) find similar results, showing that flexibility in fiscal rules can create a growth-friendly environment by protecting investment from falling during episodes of fiscal consolidation. Likewise, the literature finds that some features of second-generation rules, such as cyclically adjusted targets and stronger enforcement arrangements, help with mitigating the procyclicality bias (Bova, Carcenac, and Guerguil 2014; Eyraud et al. 2018).

Despite the vast empirical literature on the effects of fiscal rules, an area that remains understudied is the dynamic effects of these rules and how initial conditions shape their

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<sup>8</sup> There is, however, evidence that they might also reduce the ratio of social transfers to government consumption (Dahan and Strawczynski 2013).

effectiveness. Only a few studies have looked at how the effects of fiscal rules develop over time. Afonso and Jalles (2019) explore the dynamic effects of fiscal rule adoption, focusing on sovereign bond spreads. Their findings indicate that, in the initial years following the implementation of a rule, sovereign spreads decrease by approximately 1.2–1.8 percentage points, indicating lower government borrowing costs. However, this improvement is mainly driven by advanced economies, with no statistically significant impacts in the case of EMDEs. Apeti et al. (2024) offer another examination of the dynamic effects of fiscal rules, highlighting their impact on reducing borrowing in foreign currency. Specifically, they show that fiscal rule adoption is associated with a reduction in foreign currency borrowing of between 1 and 1.9 percentage points.<sup>9</sup>

A related strand of the literature has studied the factors influencing the adoption of fiscal rules (IMF 2009; Hallerberg and Scartascini 2015; Elbadawi, Schmidt-Hebbel, and Soto 2015, Altunbaş and Thornton 2017; Badinger and Reuter 2017). These studies have found that the political landscape can be an important factor for adopting fiscal rules. Similarly, economic conditions may play a key role: higher levels of debt or an economic crisis might affect the likelihood that a fiscal rule is adopted. However, these studies do not examine how these factors influence the subsequent impact of the rules. In this paper, we analyze how the economic and political environments prevailing at the time of fiscal rule adoption shape their medium-term effectiveness. We consider some of the conditions that can be seen as determinants influencing the adoption of fiscal rules, while others are more incidental (i.e. reflecting the specific environment at the time of adoption).

### **3. Data and methodology**

To investigate the dynamic effects of fiscal rule adoption, we focus on the response of the primary balance, which is standard in the literature since the seminal work of Bohn (1998) on fiscal reaction functions. The primary balance excludes interest payments from the budget, which are largely outside the control of the incumbent government and do not reflect fiscal policies implemented in the current period. However, since we want to get as close as possible to the discretionary (dynamic) response of fiscal policy to rule

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<sup>9</sup> Chrysanthakopoulos and Tagkalakis (2024) present another recent study on the dynamic effects of fiscal rules, but their analysis uses a methodology that restricts the type of effects that can be measured (see Section 4). Surprisingly, their findings show that fiscal rules lead to lower primary balances in the medium term, and they associate this counterintuitive result to possible lower interest payments associated with the increased credibility of governments.

adoption, it is important to strip out any possible dynamics generated by cyclical conditions. For that reason, the results presented in this paper will show the response of the cyclically adjusted primary balance (CAPB).<sup>10</sup> As official data for the CAPB is not available for many countries, particularly EMDEs, we follow the method of Fedelino et al. (2009) to filter out cyclical components of government expenditures and revenues (we present this methodology in [Appendix 1](#)).

We examine the response of the CAPB over a ten-year period following the introduction of fiscal rules. This timeframe allows us to observe both the immediate and medium-term effects of introducing fiscal rules. Differences could arise, among other things, due to changing conditions that initially supported the adoption of the rules, potentially weakening commitment over time.

Our sample includes 116 countries, also incorporating countries that never adopted fiscal rules as control units. Since fiscal rule data are available through 2024 and we examine the CAPB response over a ten-year horizon, we restrict rule adoptions to those occurring up to 2015. This ensures that post-adoption dynamics can be traced for a full decade while also accounting for potential future adoptions. The analysis starts in 1984, reflecting the earliest availability of all relevant data. Data on fiscal rules comes from the IMF's Fiscal Rules dataset (Alonso et al. 2025). Data on primary balances, as well as other data on macroeconomic variables is sourced from the IMF's October 2025 World Economic Outlook (WEO) database.

To estimate the response of the CAPB after the adoption of fiscal rules, we employ the LP approach following Jordà (2005). LPs are commonly used in the literature to estimate the dynamic effects of macroeconomic shocks and policy reforms to relevant economic variables.<sup>11</sup> We use the following specification:

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<sup>10</sup> Results for the unadjusted primary balance are qualitatively similar and available upon request.

<sup>11</sup> Jordà and Taylor (2025) provide a review of the methodology and examples of its use in the literature. In the literature on fiscal rules, local projections have been used to estimate the effect of *fiscal rule adoption* on sovereign spreads (Afonso and Jalles 2019) and government borrowing in foreign currency (Apeti et al. 2024). Moreover, research has used local projections to estimate the medium-term effects of the *presence of fiscal rules* on the government budget balance (Chrysanthakopoulos and Tagkalakis 2024), the response of budgets to recessions (Caselli et al 2022), and how fiscal consolidation episodes impact public investment growth in countries with fiscal rules (Ardanaz et al. 2021).

$$\Delta_h f_{i,t+h} = \varphi^h FR_{it} + \sum_{j=-s, j \neq 0}^h \omega_j^h FR_{it+j} + \sum_{k=1}^K \beta_k^h \mathbf{X}_{k,it} + \mu_i + \tau_t^h + \varepsilon_{it+h}; \quad h = 0, 1, \dots, H, \quad (1)$$

where  $\Delta_h f_{i,t+h} \equiv f_{i,t+h} - f_{i,t-1}$  represents the cumulative change in the CAPB (as a % of trend GDP) from time  $t-1$  to  $t+h$ , with fiscal rule adoption occurring in year  $t$ . As we track the response of the CAPB for the first ten years after fiscal rule adoption,  $H$  is set to 9. We only include countries with at least ten observations per projection horizon  $h$ , ensuring a theoretical rolling window of at least twenty observations of the CAPB.<sup>12</sup>  $\mu_i$  and  $\tau_t$  control for country- and time-fixed effects (for each projection of the CAPB, time-fixed effects are included with leads equal to  $h$ ), respectively, and  $\varepsilon_{it+h}$  is the error term.

We include two lags of the CAPB in  $\mathbf{X}_{k,it}$ , with an additional lag to address serial correlation in the regression residuals (Montiel Olea and Plagborg-Møller 2021). Lag-augmented LPs are asymptotically valid across both stationary and non-stationary data, even at long horizons that are a non-negligible fraction of the sample size. This provides a key advantage over standard panel vector autoregressions (VARs). Furthermore, lag augmentation eliminates the need to correct standard errors for serial correlation in the regression residuals.<sup>13</sup>

Following Afonso and Jalles (2019), we set our fiscal rules indicator ( $FR_{it}$ ) equal to one in the year a fiscal rule is introduced and zero otherwise, modeling rule adoption as a treatment effect akin to that in standard DiD event studies.<sup>14</sup> We assume that the effect of

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<sup>12</sup> The actual window may be smaller in some cases, as we exclude countries that exhibit highly volatile fiscal policy and filter out episodes of primary balance booms and busts. We omit countries with a standard deviation of the primary balance of 10 or higher, resulting in the exclusion of Kuwait and Saudi Arabia from the sample. We also identify years of extreme fluctuations—‘booms’ and ‘busts’—as those in which the change in the CAPB falls beyond the lower (1<sup>st</sup>) and upper (99<sup>th</sup>) tails of the distribution. We remove observations for the three years after if the boom (bust) in the primary balance relative to the year before stays above (below) the outlier threshold. In total, this leads to the omission of 43 observations of the primary balance across 22 countries. Results that include extreme fiscal volatility and episodes of primary balance booms and busts are consistent with the baseline but appear more volatile.

<sup>13</sup> We opt for clustered standard errors to deal with potential heteroskedasticity in our analysis over Driscoll-Kraay standard errors (Driscoll and Kraay, 1998) for two main reasons. First, the global wave of fiscal rule adoption occurred gradually over time (see [Figure 1](#)), mitigating concerns about cross-sectional dependence in the response of the primary balance to fiscal rule adoption. Second, Driscoll-Kraay standard errors require large  $T$ , which is not the case in our dataset. Nonetheless, our results—which are available upon request—remain robust when using Driscoll-Kraay standard errors.

<sup>14</sup> If, alternatively, the rule indicator was set to one for all years that a fiscal rule was in place, as in Chrysanthakopoulos and Tagkalakis (2024), the local projections would capture the level effects of the

fiscal rule adoption stabilizes after ten years, such that the established impact of fiscal rules influences the level but not the dynamics of the CAPB. This rationale is also applied by Dube et al. (2025) in examining the effect of democratization on output.

Endogeneity concerns around fiscal rules are commonly discussed in the literature (Heinemann et al., 2018).<sup>15</sup> As a way of dealing with potential endogeneity of treatments, Jordà and Taylor (2016) propose a ‘doubly robust’ estimator, combining inverse probability weighting (IPW) with a regression model to estimate the impulse responses—denoted as augmented inverse probability weighting (AIPW). In the first stage, propensity scores are calculated to estimate the probability of being treated. We estimate a probit model that assesses the likelihood of having a fiscal rule in place. The model incorporates all control variables that are included in  $X_{k,it}$  (more details on this later). Figure OA.2 in Online Appendix provides smooth kernel density estimates of the propensity score distribution for countries with and without fiscal rules. It shows significant overlap in the estimated probabilities for country-year observations with and without fiscal rules, indicating that the first-stage model is well-specified.

In the second stage, weights are assigned based on these propensity scores: observations with fiscal rules are weighted by the inverse of the probability score ( $w = 1/p$ ), while observations without rules are weighted by the inverse of one minus the probability score ( $w = 1/(1-p)$ ). This weighting scheme ensures that treated observations with low propensity scores and control observations with high scores are given greater weight in the regression (see de Haan and Wiese 2022 for a similar application of LP-AIPW).

For the LP-AIPW regression to yield an unbiased estimate of the average treatment effect on the treated (ATT), several adjustments are required. First, to control for the initial impact of rule adoption on the CAPB, we include four lags of the fiscal rule indicator.

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*presence of fiscal rules* over the medium-term. This would then be capturing how having a rule today influences the government budget over the next  $h$  years—and not the dynamic effects of *fiscal rule adoption* on medium-term fiscal policy. Our dummy does not capture potential small modifications of the rule that happens over time, as this are not recorded in the IMF fiscal rules database. Our impulse responses show the average response of the introduction of rules without distinguishing whether minor adjustments were introduced in later years.

<sup>15</sup> To address endogeneity concerns, the literature often employs instrumental variable (IV) analysis. However, identifying good instruments for fiscal rules is challenging. Some studies have used promising approaches, such as fiscal rule adoption by neighboring countries (Caselli and Reynaud, 2020) or other macroeconomic policies in place (Gootjes and de Haan, 2022b). For our analysis, however, these instruments do not adequately capture the precise timing of fiscal rule adoption, which limits their suitability for our purposes (recall that good instruments need to be relevant and valid).

Second, future adoptions of (initial) fiscal rules (i.e., between year  $t+1$  and  $t+h$ ) can bias the results due to overlapping forecast horizons (Teulings and Zubanov 2014). In such cases, part of the true effect of fiscal rule adoption on the CAPB would be absorbed by the fixed effects, generating a downward bias in the estimated coefficients. To address this, we include nine leads of the fiscal rule indicator to account for future adoptions.<sup>16</sup>

In addition, we perform a set of validity tests to assess whether the estimates can be interpreted causally. First, two standard DiD identification assumptions must hold: (i) no (conditional) anticipation and (ii) (conditional) parallel trends. In plain terms, for causal inference of the effect of fiscal rule adoption, governments should not alter fiscal behavior in anticipation of future adoption (e.g., pre-emptive budget tightening), and in the absence of adoption, outcomes in treated and untreated units should evolve similarly. We assess these conditions by testing for pre-trends over horizons  $-8$  to  $-4$  (the inclusion of lagged dependent variables prevents testing at horizons  $-3$  to  $-1$ ) and by conducting placebo tests where rule adoption is artificially shifted backward by one to two years.

A further concern arises from recent literature on heterogeneous treatment effects. This literature indicates that with staggered treatment and treatment effects occurring gradually over time, the standard DiD event-study design may be flawed (Goodman-Bacon 2021; Callaway and Sant'Anna 2021; Sun and Abraham 2021; Dube et al. 2025). Even under the assumption of parallel trends and no anticipation, treatment effects can be contaminated because previously treated units are used as comparisons for newly treated units as if they were untreated.<sup>17</sup> Dube et al. (2025) address this issue by introducing a flexible 'clean control' condition, where control units consist of countries that never received treatment or have not yet received it. We test the relevance of this issue by restricting the sample to comparisons between newly adopted fiscal rules and untreated country-year observations, excluding units with already established rules.

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<sup>16</sup> In the leads-and-lags structure of the rule indicator, we consider all instances of rule adoption, not only the initial set of rules. Moreover, we include a separate variable to capture the effects of subsequent rule adoptions. Including a variable that captures the presence of fiscal rules—but setting it to zero in the first year of adoption—yields similar results as to including second time adoptions in the leads-and-lags structure. Moreover, differentiating between rule frameworks that remained unchanged within their first ten years and those that were amended yields similar outcomes (results are available on request).

<sup>17</sup> In our set-up, countries that adopted fiscal rules earlier in the sample (or prior to entering the sample) are included in the control group for countries newly adopting fiscal rules. As a result, the impact of fiscal rule adoption on fiscal performance might be biased, as the estimator might fail to distinguish dynamic causal effects from time trends in the context of staggered adoption.

Finally, we account for potential dynamic panel bias. Mei, Sheng, and Shi (2023) demonstrate that the fixed effects estimator in the local projections model may suffer from the presence of the Nickell bias (Nickell 1981), even when lagged dependent variables are omitted from the model. To eliminate asymptotic bias and restore standard statistical inference, they propose the use of a split-panel jackknife (SPJ) estimator following Dhaene and Jochmans (2015) and Chudik et al., (2018), which we also test for robustness.

Due to data availability constraints in the control variables, some instances of fiscal rule adoption that occurred between 1984 and 2015 do not enter the econometric analysis. In total, the analysis comprises 58 cases of fiscal rule adoption.<sup>18</sup> Each case represents the implementation of one or more fiscal rules in a context where no such rule existed in the previous year. Our analysis thus focuses on cases of newly (re-) installed fiscal rules, excluding subsequent adoptions or amendments. Later adoptions are instead treated as secondary treatment effects within the control set.<sup>19</sup>

To account for other factors that might influence the trajectory of the CAPB, the vector  $X_{k,it}$  contains several control variables. First, we control for the broader macroeconomic environment. We include the lagged public debt-to-GDP ratio (in levels and in square terms) to capture the responsiveness of fiscal policy to debt sustainability challenges. Additionally, we control for real GDP growth, inflation, and the current account balance (all lagged by one period to address endogeneity concerns).

Second, we consider the politico-institutional environment. Amongst others, we incorporate a variable that considers the presence of an election year to account for the potential existence of political budget cycles. Moreover, we control for the strength of political institutions. However, since no single variable fully captures this concept, we employ Principal Component Analysis (PCA) and take first principal component to

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<sup>18</sup> We made minor adjustments to the timing of fiscal rule adoption in cases where the underlying laws provide conflicting evidence on the dates of adoption or abandonment (Armenia, Georgia, Paraguay, Serbia, and Viet Nam). Further details are available upon request.

<sup>19</sup> We assume that the CAPB does not respond the same to later changes to the fiscal rule framework, as the response is conditional on the initial adoption of the rule(s). Therefore, investigating the impact of later rule adoptions (or subsequent rule modifications) would require focusing on countries with an existing rule, while also controlling for the time since the rule was first adopted. Accounting for fiscal rule intensity—such as the number or design of the initial rules—adds further complexity to the analysis. As such, we exclude later changes from the shock indicator to achieve a clearer understanding of the implications of rule adoption for countries. For an in-depth discussion of second treatment effects and their empirical implications, see de Chaisemartin and D’Haultfœuille (2023).

construct a summary measure. We use data from the International Country Risk Guide (ICRG) database, incorporating variables on the regulatory quality of the government, the preservation of the rule of law, the level of democratic accountability, and the control of corruption. The PCA and the outcomes are described in more detail in Online Appendix.

In addition to the quality of political institutions, we include variables that control the effect of other macroeconomic policy frameworks on fiscal policy. Specifically, we incorporate measures that account for the presence of an inflation targeting regime, the prevailing exchange rate regime, the extent of capital account openness, and the presence of an independent fiscal council. We also account for financial market development, which proxies for a country's capacity to finance debt, and add a dummy for participation in the Heavily Indebted Poor Countries (HIPC) initiative. Detailed definitions and data sources for all variables are provided in [Table A1](#) in [Appendix 1](#).

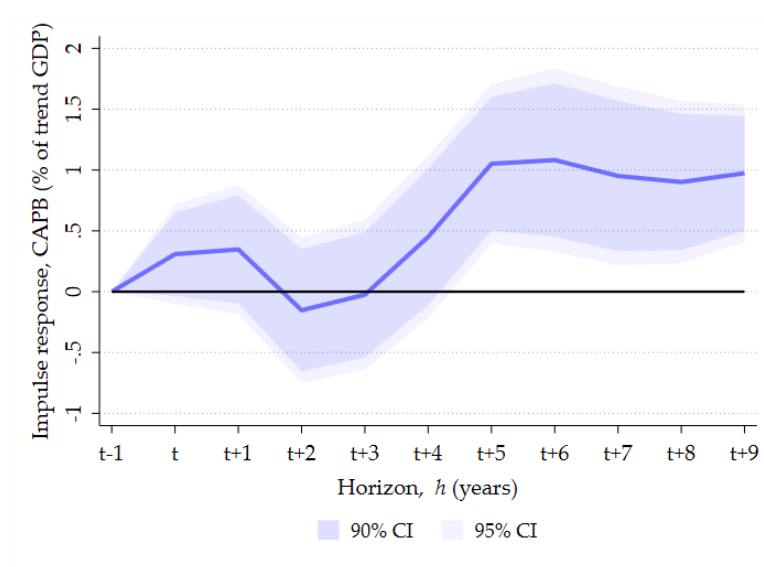
## 4. The dynamic effects of fiscal rule adoption

In this section, we examine the evolution of the CAPB following the introduction of one or more fiscal rules. We first assess the speed with which fiscal rules begin to affect the CAPB and the durability of these effects. After establishing the time profile, we study how different country characteristics and the context in which fiscal rules were adopted influence the outcomes.

### 4.1. Baseline results

[Figure 2](#) shows the response of the primary balance following the adoption of fiscal rules, along with the corresponding confidence intervals. The results indicate that fiscal rule adoption promotes fiscal discipline. The impact on the CAPB builds gradually, with no significant change observed in the first years relative to the counterfactual of no rule adoption. Five years after adoption, fiscal rules lead to a significant improvement in the CAPB of 1.1% of trend GDP. The effects are persistent: a decade after adoption, the CAPB remains 1.0% of trend GDP higher compared to the year before adoption. These long-horizon estimates align closely with the “average” effects typically reported in panel studies (cf. Caselli and Reynaud 2020).

Figure 2: Dynamic effects of fiscal rule adoption



*Notes:* The figure presents the impulse response function of the CAPB to the adoption of a fiscal rule, with the rule(s) adopted at year  $t$  (i.e.,  $h = 0$ ). The blue line shows the cumulative improvement in the CAPB  $h$  years after fiscal rule adoption, compared to the counterfactual scenario of no adoption. The shaded blue area represents the corresponding confidence intervals. The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Results presented in Online Appendix support the validity of the LP-AIPW estimates. Pre-treatment dynamics are statistically indistinguishable from zero (Figure OA.3), suggesting that absent fiscal rule adoption, treated and control units would have followed a similar path. Placebo tests further confirm robustness: shifting the timing of adoption backwards produces no effects, indicating the absence of anticipation effects and ruling out that factors other than the actual adoption drive the results (Figure OA.4). In addition, applying the clean control condition proposed by Dube et al. (2025) yields similar outcomes (Figure OA.5). Finally, estimates obtained with the SPJ estimator closely align with the baseline, indicating that our results are not affected by Nickell bias (Figure OA.6). Overall, these tests demonstrate that our findings are robust across model specifications and sample adjustments, reinforcing causal interpretation of the results.

## 4.2. Country context

Past studies highlight that the effectiveness of fiscal rules depends on specific country characteristics, with evidence showing that they are generally less effective in developing economies (Bova, Carcenac, and Guerguil 2014; Ardanaz and Izquierdo 2022). Building

on the baseline results, we break down the reaction of the CAPB to the adoption of fiscal rules based on whether a country is classified as an advanced economy or as an EMDE.<sup>20</sup>

We follow the approach of Jordà and Taylor (2025) and estimate the model across a set of data bins, allowing for state-dependent responses. Let  $D_{t-r}$  represent a binary indicator capturing the state variable at time  $t - r$ , where  $r > 0$  denotes the period prior to the adoption of fiscal rules. We can then estimate the local projections as follows:

$$\Delta_h f_{i,t} = \varphi^{hz} FR_{it} + \sum_{j=-s, j \neq 0}^h \omega_j^{hz} FR_{it+j} + \sum_{k=1}^K \beta_k^{hz} X_{k,it} + \mu_i + \tau_t^{hz} + \varepsilon_{it+h};$$

$$D_{t-r} = z \in \{0,1\}, \quad r > 0, \quad h = 0, 1, \dots, H. \quad (2)$$

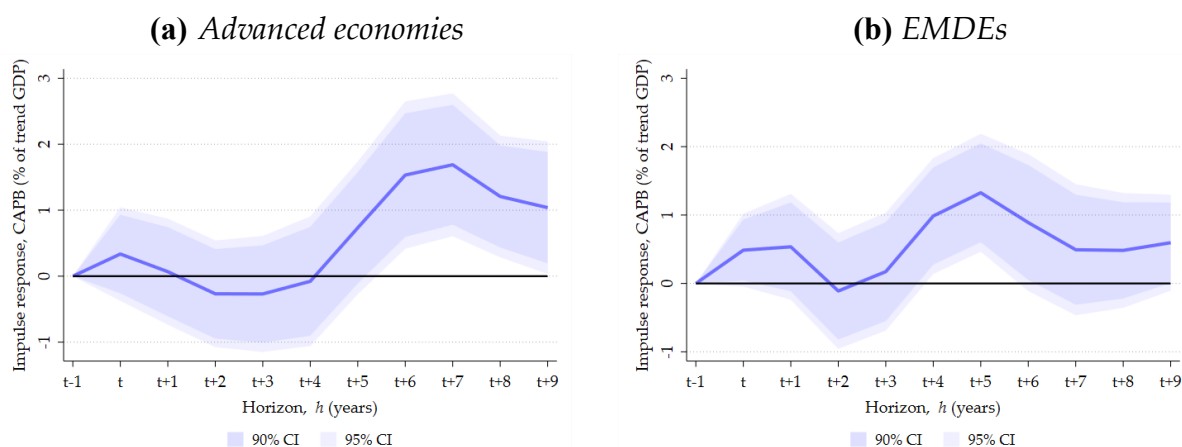
Here,  $\varphi^{hz}$  captures the response of the primary balance to the adoption of fiscal rules in regime  $z = 0,1$  for different values of the horizon  $h$ . Hence, we capture the average response to fiscal rules adoption, conditional on the current regime and controlling for relevant factors, while accounting for all possible future trajectories, including any future shifts in the state variable (Jordà and Taylor 2024).

[Figure 3](#) distinguishes the effects of fiscal rule adoption across advanced economies and EMDEs. In line with the literature, we find that fiscal rules in advanced economies have a significant and lasting impact on the budget (Debrun and Kumar 2009). On average, the effect becomes visible six years after adoption, but once established, it endures: by the end of the ten-year horizon, fiscal rules raised the CAPB by 1.0% of trend GDP. This delayed impact can be traced back to the gradual implementation of supranational frameworks, most notably within the EU. For example, while several EU countries signed the Maastricht Treaty in 1992, the preventive arm of the Stability and Growth Pact came into effect in 1998, followed by the corrective arm in 1999. Supporting evidence in the appendix confirms this pattern: supranational rules typically take more than six years to show measurable effects, while national rules improve the budget as early as the fourth year (see [Figure A1](#) in [Appendix 2](#)).

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<sup>20</sup> We apply the classification criteria used in World Bank (2024) to distinguish between advanced economies and EMDEs.

Figure 3: Impulse responses: advanced economies vs. EMDEs



Notes: See notes [Figure 2](#). We apply the classification criteria used in World Bank (2024) to distinguish between advanced economies and EMDEs. The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

[Figure 3](#), panel (b), shows a different response of the budget in EMDEs. The effect of rule adoption becomes significant after four years, with an increase of the CAPB of about 1.3% of trend GDP peaking in the following year. However, unlike in advanced economies, the effects diminish substantially in subsequent years, becoming insignificant as time passes. This insignificant result at the end of the horizon is consistent with parts of the literature that report mixed outcomes of fiscal rules in EMDEs. However, the results add nuance: fiscal rule adoption in these economies is not entirely ineffective, but the absence of durable gains underscores the challenge of achieving lasting fiscal discipline.<sup>21</sup>

### 4.3. Institutional environment

Why do fiscal rules in EMDEs tend to lose traction over the medium term? A likely reason is that in these countries, they are often introduced without the necessary support of a well-established fiscal governance framework, a history of fiscal discipline, or strong political commitment to full implementation (Brändle and Elsener 2024; IMF 2009). The literature highlights the critical role of political institutions in shaping both a country's ability and willingness to adopt sound fiscal policies (Frankel et al. 2013; Bergman and

<sup>21</sup> In our analysis, when we look at subsamples, the resulting impulse responses display noticeably wider confidence bands. Consequently, although point estimates across the two groups appear different at certain horizons, some of these differences might not be statistically significant given the larger uncertainty bands.

Hutchison 2015).<sup>22</sup> While the factors that led to the adoption of fiscal rules may drive initial improvements, weaker political institutions—combined with limited experience managing fiscal policy—can undermine the long-term effectiveness of fiscal rules.

To test this hypothesis, we construct a state variable that differentiates countries with relatively weak political institutions from those with relatively strong ones, using a median split of the political institutions index in the set of controls (note that since institutional strength can evolve over time, countries may transition between the “weak” and “strong” categories). The results presented in [Figure 4](#) strongly support the importance of political institutions for fiscal rule effectiveness. Rule adoption has a clear and lasting impact on the CAPB in EMDEs with strong institutions.<sup>23</sup> The effect peaks in five years after adoption at a relatively high level before stabilizing at approximately 1.0% of trend GDP, comparable with the improvements observed across advanced economies. In contrast, rules adopted in EMDEs with weaker institutions generate only short-lived gains in the year of adoption, which quickly fade and never regain statistical significance relative to the counterfactual of no rule adoption.

Overall, these results confirm that fiscal rules do not operate in a vacuum. In EMDEs, rule adoption can have a sizeable and lasting impact on the budget, provided it is supported by a strong institutional environment. Anecdotal country experiences underscore this dynamic. In Latin America, Colombia and Chile illustrate how institutional quality shapes the effectiveness of fiscal rules. Chile’s success has been supported by its prior experience with strong governance frameworks, while weaker institutional foundations have limited Colombia’s ability to achieve similar outcomes (Céspedes et al. 2014; Barreix and Corrales 2019). This observation is also consistent with the experiences of Nigeria and Botswana. Nigeria adopted fiscal rules in 2007 to de-link public expenditures from oil revenue earnings and for macroeconomic stabilization purposes. However, saddled with weak institutions, performance has been mixed despite initial gains (Okonjo-Iweala

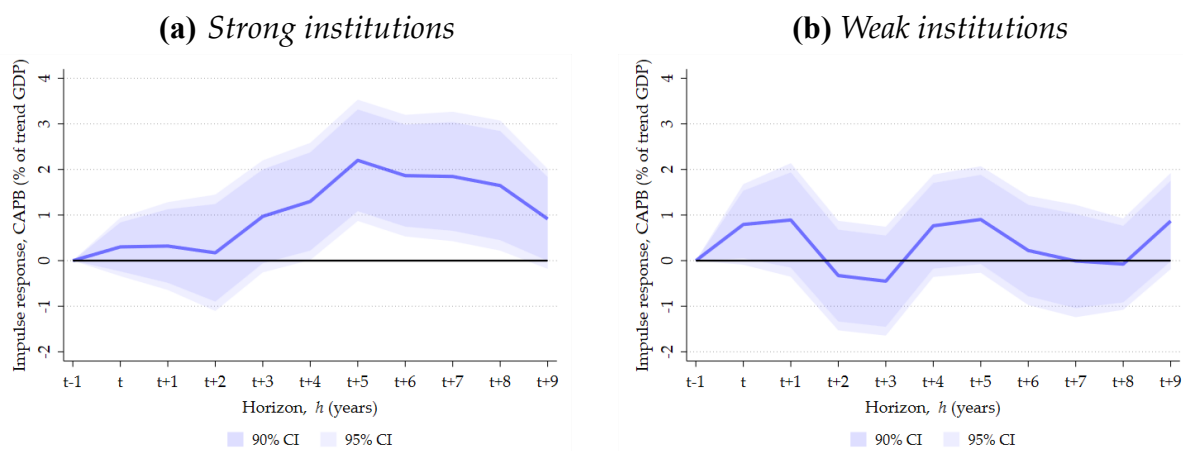
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<sup>22</sup> Gootjes and de Haan (2022b) find that political institutions and fiscal rules act as substitutes in promoting fiscal sustainability. However, these studies are based on EU countries, where institutional quality is stronger, and fiscal transparency tends to be higher. When the sample is expanded to include both advanced and developing economies, the evidence in the literature largely supports the view that stronger political institutions enhance the effectiveness of fiscal rules.

<sup>23</sup> Since all advanced economies have relatively strong political institutions, we focus on EMDEs here. Results are similar when we differentiate countries with relatively weak political institutions from those with relatively strong ones (i.e., including advanced economies). Results are available on request.

and Osafo-Kwaako 2007; World Bank 2022). By contrast, the experience of Botswana, which adopted rules in 2003 to anchor long-term fiscal sustainability in the context of expected decline of diamond revenues, has been more successful on account of the country’s relatively high institutional strength (Apeti, Basdevant, and Salins 2023).

Figure 4: Impulse responses of EMDEs: strong vs. weak institutional settings



Notes: See notes [Figure 2](#). Countries distinguished based on the sample median of the institutional strength index (see Online Appendix for details). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Similar patterns emerge when we consider other factors shaping the structural context in which fiscal rules operate. For instance, when distinguishing countries by their reliance on commodity exports—where heavy dependence often coincides with weaker institutions—we observe comparable dynamics (see [Figure A2](#) in [Appendix 2](#)). Once we account for institutional strength, however, we find that commodity exporters with stronger institutions experience lasting benefits from fiscal rules. Comparable exercises based on economic size or market conditions yield similar patterns, though less pronounced. Moreover, they do not provide a structural explanation for differential effectiveness of fiscal rules. Finally, distinguishing EMDEs with an IMF program from those without—signaling greater macroeconomic stability and stronger debt-financing capacity—produces no meaningful differences in outcomes of fiscal rules. These results are reported in Figure OA.7 in Online Appendix.

## 5. Fiscal rule effectiveness and conditions at the time of adoption

We have demonstrated that the effects of fiscal rule adoption unfold gradually and vary across contexts. In some settings, rule adoptions deliver persistent improvements in the

budget, while in others their impact tends to diminish after several years. Beyond the role of political institutions, the durability of fiscal rule effects likely also depends on the motives behind adoption and the economic and political conditions prevailing at the time. Governments rarely document their motives explicitly, but the surrounding context often provides a clear signal of why rules are introduced. These conditions—ranging from supportive to highly adverse—may also shape whether fiscal rules take root or falter. Our next hypothesis is therefore that differences in effectiveness may not only stem from institutional quality but also from adoption environment.

We draw inspiration of studies that have examined the drivers of fiscal rules (IMF 2009; Hallerberg and Scartascini 2015; Elbadawi, Schmidt-Hebbel, and Soto 2015; Badinger and Reuter 2017; Altunbaş and Thornton 2017). This literature finds that economic, fiscal, or political conditions influence adoption patterns and may therefore also influence subsequent rule performance. But those conditions also tend to evolve over time. As they do, governments’ commitment to comply with the rules may weaken, meaning the very factors that drive adoption can ultimately explain successful or unsuccessful outcomes.

### 5.1. State of the economy

We begin by studying how economic conditions might affect the response to adopting fiscal rules. Introducing rules during periods of economic weakness may generate a sense of urgency that helps galvanize policy action (Kopits and Symansky, 1998). However, it can also create immediate pressure for the rules to deliver visible results. When these improvements fail to materialize quickly, credibility of the rules can erode rapidly.<sup>24</sup>

To measure the state of the economy, we follow a similar approach as in Auerbach and Gorodnichenko (2012), Ghassibe ans Zanetti (2022), and Alesina et al. (2024):

$$F(z_{it}) = \frac{e^{-\omega z_{it}}}{1 + e^{-\omega z_{it}}}. \quad (3)$$

In this equation,  $z$  serves as an indicator of the state of the economy, normalized to have zero mean and unit variance at the country level.<sup>25</sup> Normalizing at the country level

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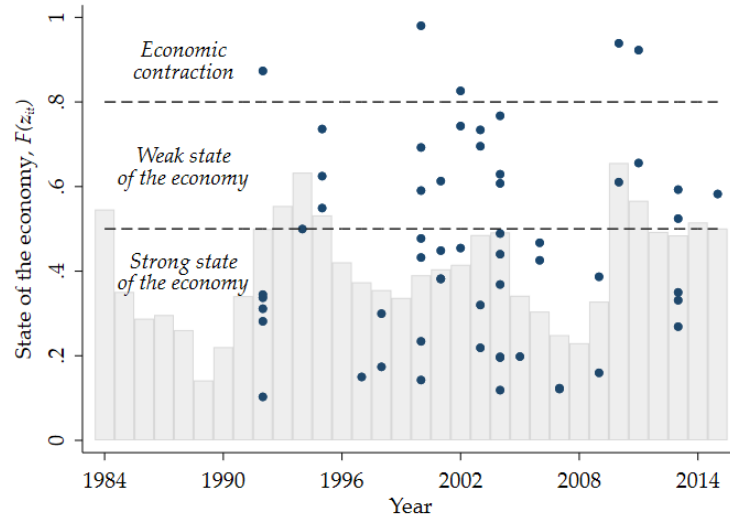
<sup>24</sup> This outcome would not be uncommon, given the inherently political nature of fiscal policy and the tendency to delay large adjustments (Alesina and Drazen, 1991; Gootjes, 2025).

<sup>25</sup> Our approach slightly differs from Auerbach and Gorodnichenko (2012) and Alesina et al. (2024) as we consider a three-year window, and we account for variations in growth patterns across countries.

ensures that differences in long-term growth performance across countries are taken into account. We employ a weighted average of real GDP growth over the past three years.<sup>26</sup> The weighting function  $F(z_{it})$  ranges between 0 and 1, which can be interpreted as the probability of being in a given state of the economy. In line with Auerbach and Gorodnichenko (2012) and Alesina et al. (2024), we set  $\omega = 1.5$ .<sup>27</sup> This ensures that the economy spends approximately 20% of the time in a recessionary regime (i.e.,  $F(z_{it}) > 0.8$ ), in line with business cycle patterns across advanced economies and emerging markets.

[Figure 5](#) illustrates the distribution of fiscal rule adoption across the state of the economy. Fiscal rules are more likely to be implemented during periods of relative economic stability or growth. Still, a notable proportion of adoptions occurred under weaker conditions. Specifically, 23 out of 58 fiscal rules were adopted in weak economic states, with 5 of them occurring amid outright economic contraction. For example, following a severe economic crisis, Colombia introduced fiscal rules in 2000 as part of an IMF program. Similarly, the United States implemented fiscal rules in 2011 after experiencing the credit crunch that led to the global financial crisis of 2008-09.

Figure 5: Fiscal rule adoption and the state of the economy



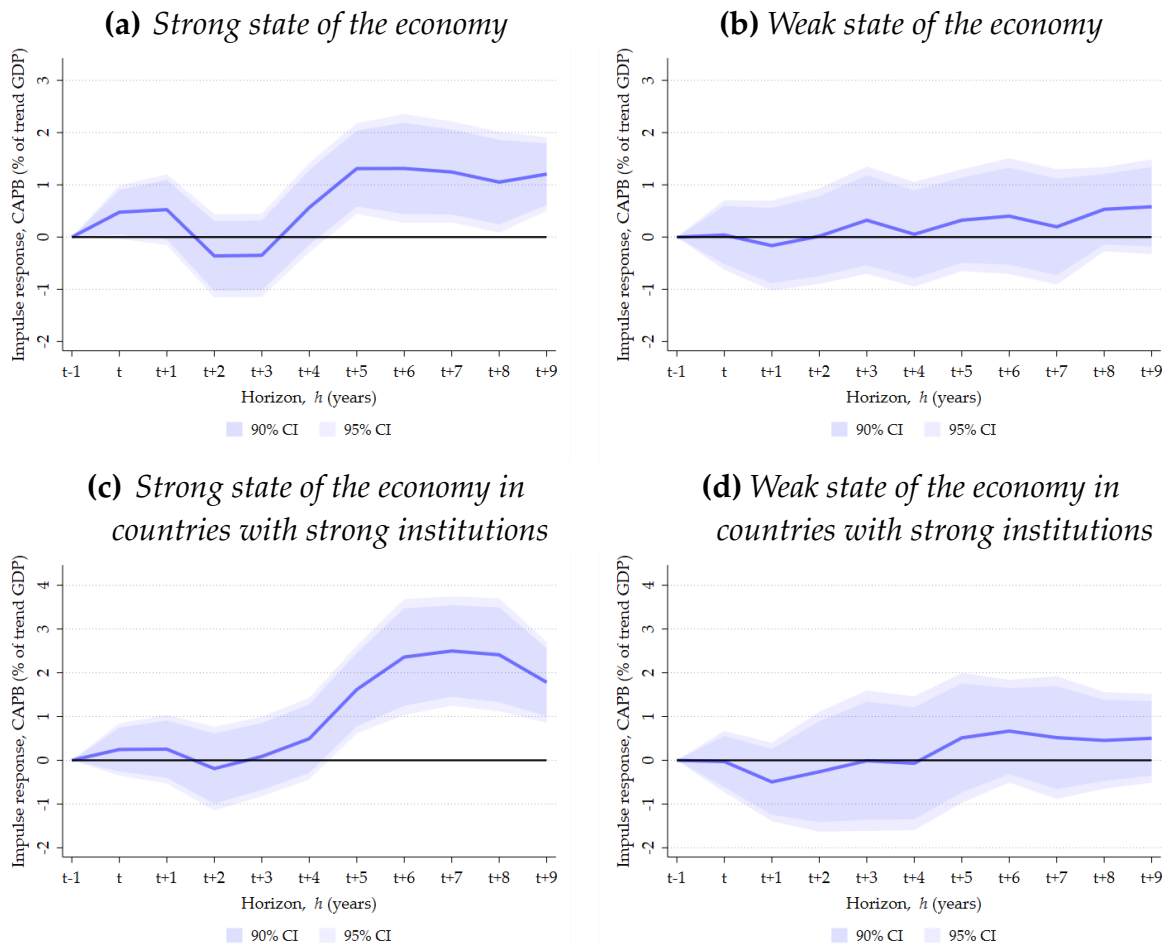
Notes: The figure displays 58 cases of fiscal rule adoption between 1984 and 2015 that enter our analysis, with each blue dot representing a country-specific case. The horizontal lines indicate the economic state classifications; the gray vertical bars show the annual median.

<sup>26</sup> The findings remained consistent when we use real GDP per capita growth or when we use the unweighted average of real GDP growth over the preceding three years. Results are available upon request.

<sup>27</sup> We obtain similar results for different values of  $\omega$  (available upon request).

Next, we investigate the dynamic effects of fiscal rule adoption under different states of the economy. We create a binary indicator to differentiate responses, classifying the state of the economy as strong ( $F(z_{it}) < 0.5$ ) or weak ( $F(z_{it}) \geq 0.5$ ). [Figure 6](#), panels (a) and (b), show the results. We observe that fiscal rules introduced under strong economic conditions lead to a very similar budgetary improvement relative to the baseline, leading to an increase in the CAPB at approximately 1.2% of GDP after a decade.<sup>28</sup> In contrast, rules introduced during weaker economic conditions do not deliver statistically significant improvements relative to the “no rule-adoption” scenario under similar economic circumstances.

**Figure 6: Impulse responses conditional on the state of the economy**



*Notes:* See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,188 and 2,197.

<sup>28</sup> These findings are consistent with the results of Bordon, Ebeke and Shirono (2016), who find that structural product market reforms have stronger effects in a growth-friendly environment.

A plausible explanation for any diminished effects of rule adoption is that establishing credibility in the initial years is critical for long-term success (Kopits and Symansky 1998). When rules are adopted under adverse economic conditions, they can be driven by immediate macroeconomic pressures rather than by broad consensus around long-term fiscal discipline. Also, they may lack careful preparation. Although economic hardship can temporarily align political interests, such unity often dissipates once conditions improve, eroding the initial momentum behind the rules. As a result, their credibility may be weaker from the outset. In Argentina, for example, the Fiscal Solvency Law (1999) was passed during a period of economic distress and shrinking political support. Lacking institutional backing, the fiscal rules never gained traction (Artana et al. 2021).

If this hypothesis is correct, it might be the case that countries with strong institutions can overcome the difficulties in establishing credibility when adopting fiscal rules during weak states of the economy. However, panels (c) and (d) of [Figure 6](#) show that similar patterns persist regardless of institutional strength. In other words, strong institutions alone do not offset the disadvantages of adopting a rule in a weak economic environment. Overall, the evidence suggests that the *timing* of adoption can be important for rule effectiveness, as it shapes the ability to build credibility early and may signal the motivations underlying adoption. Specifically, fiscal rules are more likely to be adopted as a proactive measure under favorable economic conditions, consistent with the notion of "making hay while the sun shines," tend to be more effective. By contrast, when fiscal rules are adopted as a reactive measure during times of economic weakness—consistent with the notion of 'never waste a good crisis'—they tend to yield weaker outcomes.

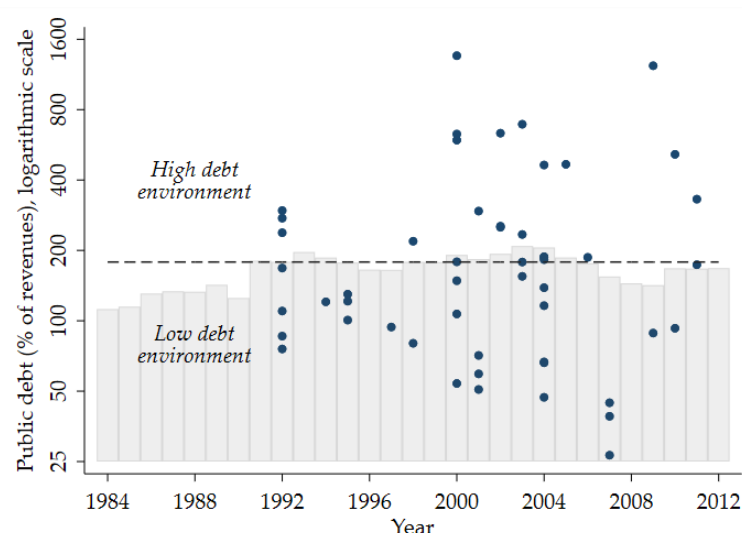
## 5.2. Debt levels

When fiscal sustainability pressures are high, adopting fiscal rules can provide crucial policy guidance. The literature on fiscal rule determinants has shown that rules are more likely to be adopted in times of high debt (Hallerberg and Scartascini 2015; Altunbaş and Thornton 2017). IMF (2009) argues that fiscal rules may be more credible if rule introduction is preceded by significant fiscal consolidation. Indeed, if fiscal pressures are already acute, the rules may struggle to mitigate the fiscal strain effectively. For example, not all rules have been effective in high-debt environments (Combes et al., 2017).

To assess the debt position at the time of rule adoption, we use the lagged government debt-to-revenues ratio, sourced from the World Economic Outlook (WEO), October

2025.<sup>29</sup> [Figure 7](#) shows the distribution of fiscal rule adoptions across different debt regimes. Using the median of 173% as the cutoff, countries are classified into low- and high-debt regimes. The results suggest that fiscal rules are not adopted solely in response to acute debt stress. In fact, of all adoptions under consideration, 28 occurred in high-debt regimes and 30 in low-debt regimes. Two extreme cases stand out: Guinea-Bissau in 2000 and Liberia in 2009, with debt-to-revenue ratios of 1,233% and 1,361%, respectively.<sup>30</sup> Other examples of fiscal rules adopted under high-debt scenarios include Greece in 1992 (296%), India in 2004 (356%), and the United States in 2011 (331%).

Figure 7: Fiscal rule adoption and the debt environment



Notes: See notes [Figure 5](#). The dashed horizontal line reflects the sample median of the government debt-to-revenue ratio (on a logarithmic scale). The gray vertical show the annual median of the government debt-to-revenue ratio (on a logarithmic scale).

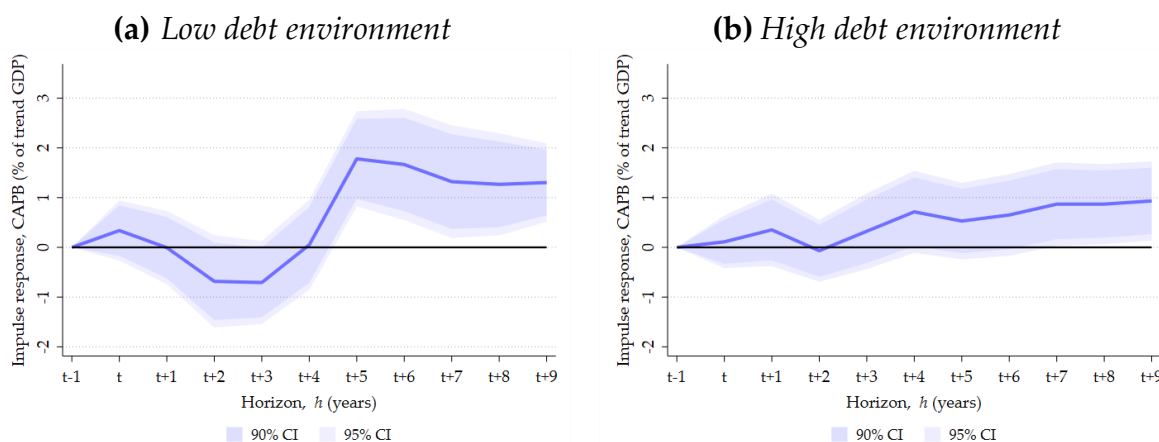
[Figure 8](#) shows similar fiscal responses to rule adoption across both debt regimes. The only notable differences are that the point estimates for low-indebted countries reach statistical significance slightly earlier and suggest a somewhat larger gain over the medium term compared to high-indebted countries (1.3% vs. 0.9% of trend GDP, respectively). Overall, these results suggest that the level of indebtedness does not materially change the effectiveness of fiscal rule adoption relative to the counterfactual of no rule adoption at comparable debt levels. Rather, fiscal rules help countries safeguard

<sup>29</sup> We obtain similar results when we use the debt-to-GDP ratio (available on request).

<sup>30</sup> Both Guinea-Bissau and Liberia adopted fiscal rules in the context of the HIPC Initiative, reaching decision points in 2000 and 2008, respectively (IMF 2010a, b).

against future fiscal challenges in low-debt regimes, while in high-debt environments they support fiscal discipline and can put countries on a more sustainable debt trajectory.

Figure 8: Impulse responses conditional on debt regime



Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,200 and 2,209.

### 5.3. Political landscape

A central theme in the literature on economic reforms is the importance of the political environment. While there is no consensus on the effects of political conditions on reforms (see Duval, Furceri and Miethe 2021 for a recent survey), one element that consistently emerges as a critical factor is the “use of consultation, communication and mitigating strategies” (IMF 2024, p. 67). In the context of fiscal rules, Kopits and Symansky (1998) discuss the importance of thorough preparation before their implementation.

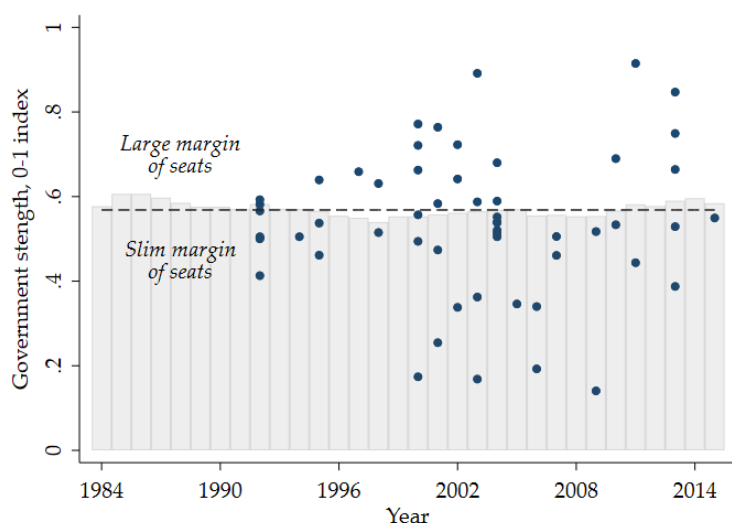
Building on these insights, our next step is to explore how the political environment at the time of implementation influences the results. We focus on the extent to which governments must build broad coalitions to advance policy, proxied by their level of strength in parliament. Stronger governments may find it easier to implement laws, including fiscal rules. However, a high margin of seats may also reduce the incentive to cultivate wide support. Instead, governments with less control over parliament may face greater resistance during rule preparation but, in doing so, are more compelled to engage in wider consultation and consensus-building. This process, though slower, can garner broad-based support and more durable political commitment to the fiscal rules.

We measure government strength using the margin of seats held by the ruling party or coalition within parliament, drawing data from the Database of Political Institutions

(DPI) 2020 (Scartascini et al. 2021). The median margin of parliamentary seats across the sample is 56 percent. Accordingly, country-year observations are classified as having either a slim margin (below median) or a large margin (above median).<sup>31</sup>

[Figure 9](#) shows that more countries adopted fiscal rules when parliamentary control was relatively slim, with 35 out of 56 cases (data on parliamentary seat margins for Côte d'Ivoire and Lithuania are unavailable in the year of adoption). This suggests that while a strong majority may make the passage of fiscal rules easier, it does not necessarily lead to more frequent adoptions. In part, this may reflect the characteristics of countries that tend to adopt fiscal rules—typically those with more fragmented political landscapes, where such frameworks help contain pressures stemming from dispersed fiscal decision-making (Badinger and Reuter 2017). A closer look, however, shows no consistent relationship between the type of countries that introduce fiscal rules and the degree of parliamentary control: across EMDEs and advanced economies alike, as well as among countries with both strong and weak political institutions, fiscal rules were more often adopted during periods of narrow parliamentary control.

**Figure 9:** Fiscal rule adoption and the political conditions

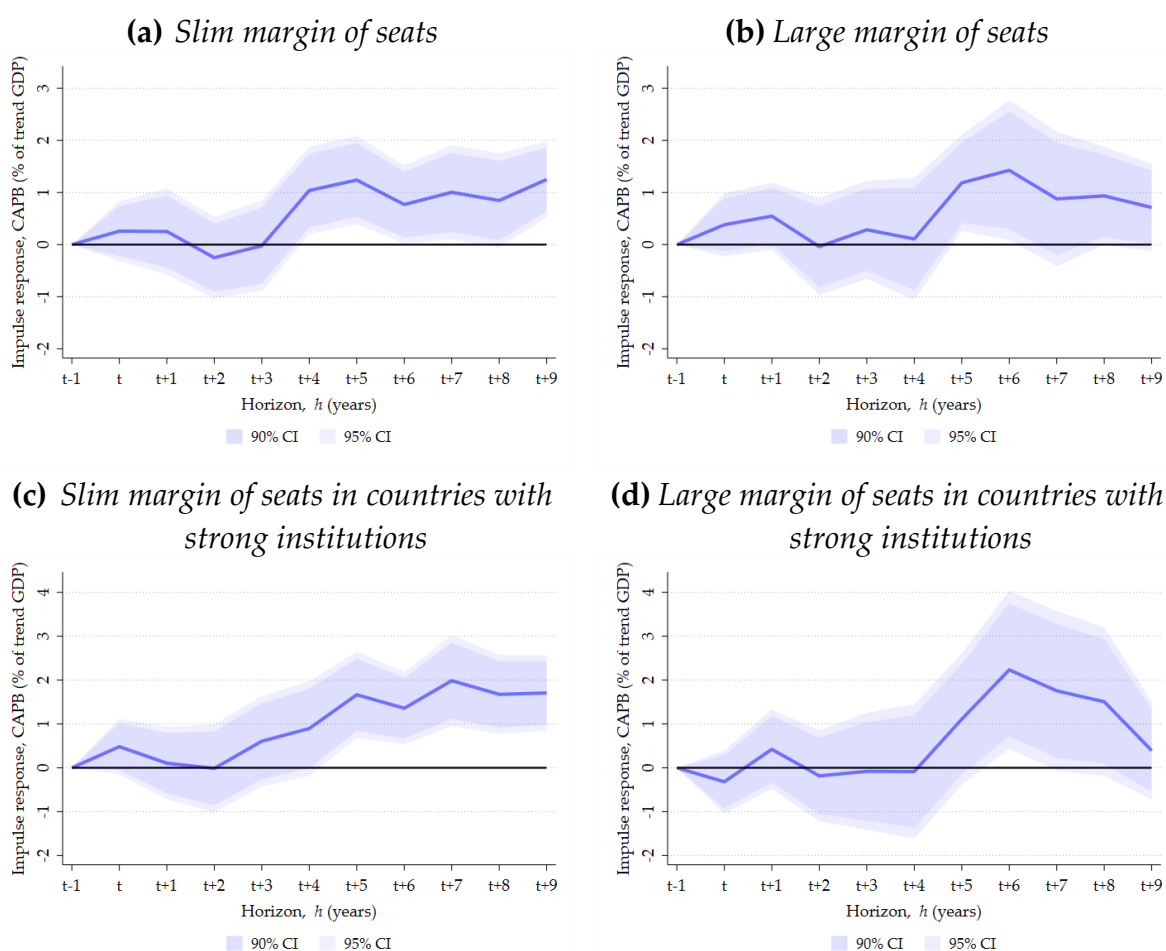


*Notes:* See notes [Figure 5](#). 56 cases of fiscal rule adoption are included. Rule adoptions of Côte d'Ivoire (2000) and Lithuania (2004) are omitted due to missing observations for the margin of seats held by government. The dashed horizontal line shows the sample median; the gray vertical bars show the annual median.

<sup>31</sup> Constructing a binary (0-1) index of relative government strength based on the normalized seat margin at the country level produces similar outcomes.

Figure 10 presents the dynamics effects of fiscal rules depending on whether countries had a relatively slim or large margin of parliamentary seats at the point of adoption. The figure demonstrates clear differences. Although in both groups rule adoption leads to improvements in the CAPB that arise after four to five years, the gains in countries with slim majorities persist—remaining significant and stabilizing at about 1.3% of trend GDP. By contrast, the benefits of rules adopted by governments with large parliamentary margins are short-lived, as the effects quickly lose significance in the years that follow. This pattern holds even among countries with strong institutions, underscoring the robustness of the result. Overall, the findings suggest that fiscal rules adopted in political environments conducive to consensus building yield more durable fiscal improvements.

Figure 10: Impulse responses conditional on political conditions



Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 56 cases of fiscal rule adoption. The number of observations included in each regression ranges between 1,718 and 1,726.

Historical examples corroborate that building long-lasting commitment supported by conducive political conditions has been central to the successful implementation of fiscal rules. As an example, Jamaica adopted a fiscal rule in 2014 that sought to address the country's chronic fiscal challenges. The fiscal rules were instrumental in helping Jamaica reduce its debt stock from a peak of 144% of GDP in 2012 to about 69% in 2025. This was possible in part because Jamaica forged partnerships that built and sustained consensus for fiscal adjustment, while credibly monitoring and reporting on the government's adherence to its fiscal rules and the progress of the overall economic reform program (Arslanalp, Eichengreen, and Henry 2024).

## **6. Fiscal rule design and its connections to initial conditions**

Section 5 examined how initial conditions shape the effectiveness of fiscal rules. To test the robustness of these results, we now turn to their interaction with rule design, which the literature identifies as a critical factor in driving effectiveness (Guerguil, Mandon, and Tapsoba 2017; Caselli and Reynaud 2020; Gootjes, de Haan, and Jong-A-Pin 2021). We first examine whether the characteristics and design of fiscal rules are related to improved fiscal discipline. Next, we check the interaction between the environment in which rules are adopted and eventual design choices. A possible channel is that initial conditions influence the type of rules chosen, thereby mediating their effectiveness.

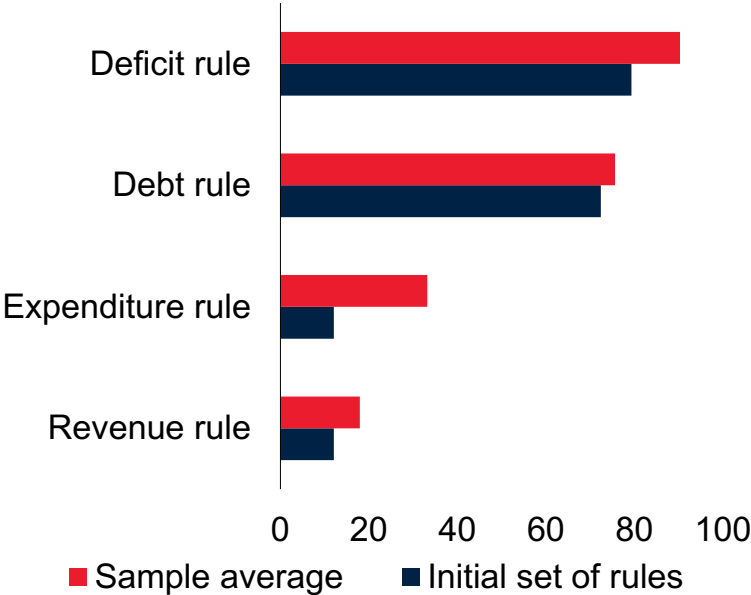
In our analysis we focus on a set of key characteristics of fiscal rules that vary across countries and that have been shown to have significant effects on fiscal discipline: the fiscal variable targeted by the rule, the statutory nature of the rule, and a variety of design features studied in the literature and included in the IMF database on fiscal rules. Some caution is warranted, however. Rule design exhibits limited cross-country variation, as many countries adopt similar rule types with comparable features, and design choices are often made simultaneously rather than gradually. This makes it difficult to (causally) disentangle the effects of specific rule types or features.

### **6.1 Type of fiscal rule**

We start by examining whether the type of fiscal rule matters for effective rule adoption. As show in [Figure 11](#), most initial rule adoptions targeted either the government budget deficit or public debt (79% and 72%, respectively)—and in many cases, both. Expenditure and revenue rules were far less often part of the initial set of rules, each included in only

12% of cases. As we only have limited data points of expenditure and revenues rules as part of the initial frameworks, the role of these rules is therefore not considered further.

Figure 11: Types of fiscal rules (%)

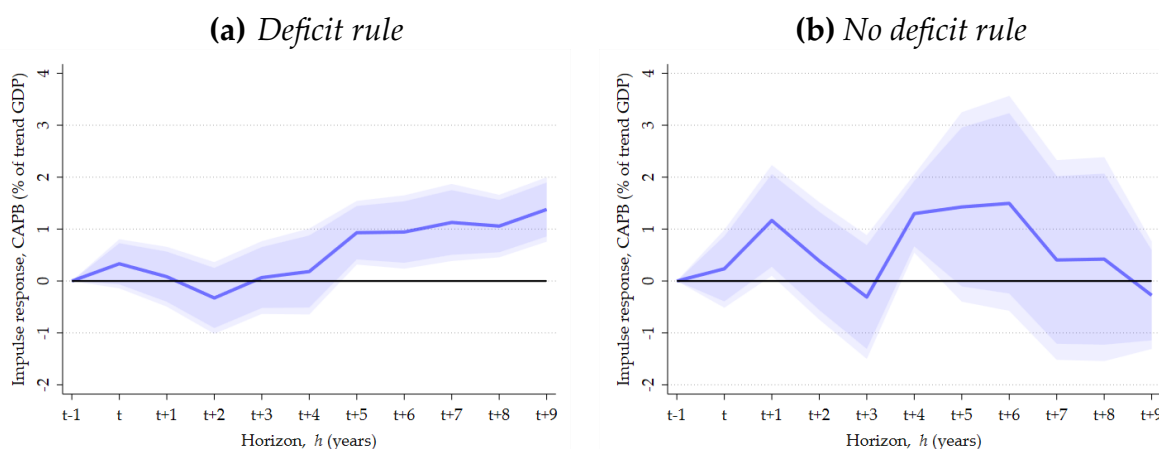


Notes: Results are based on the rules that enter the sample. The initial set covers 58 cases included in the analysis. These results differ slightly from those obtained when considering all potential rule adoptions. The sample average is calculated over a broader set of rules, as it also includes fiscal frameworks established before countries entered the sample. These additional cases, however, do not drive the observed differences.

Figure 12 shows that deficit rules appear to be key for ensuring durable effects of fiscal rule adoption. Instead, the absence of deficit rules only produces temporary gains in the budget. We even find that such rules may help governments overcome institutional challenges: with weaker institutions, the inclusion of a deficit rule still appears to have a positive effect on the CAPB, though the gains emerge later and with greater uncertainty (Figure A3 in Appendix 2). Institutional quality, therefore, remains a critical factor.

Extending the analysis to initial conditions in which deficit rules are introduced reveals no clear evidence that they can offset the influence of an unfavorable adoption context (Figure A3 in Appendix 2). Finally, debt rules are found to play a more limited role: their absence does not preclude durable improvements in fiscal performance, provided that political institutions are strong (see Figure OA.8 in Online Appendix).

Figure 12: Impulse responses of deficit rules



Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

We have also studied whether the type of rule can be a channel through which initial conditions matter. For instance, is it possible that when the economy is strong countries will adopt fiscal rules that are inherently better suited to enforce discipline? Our results suggest that this is not the case. Descriptive statistics show no systematic differences in adoption patterns of the variables targeted by the rules, suggesting that other factors must be behind these effects (see Figure OA.9 in Online Appendix).

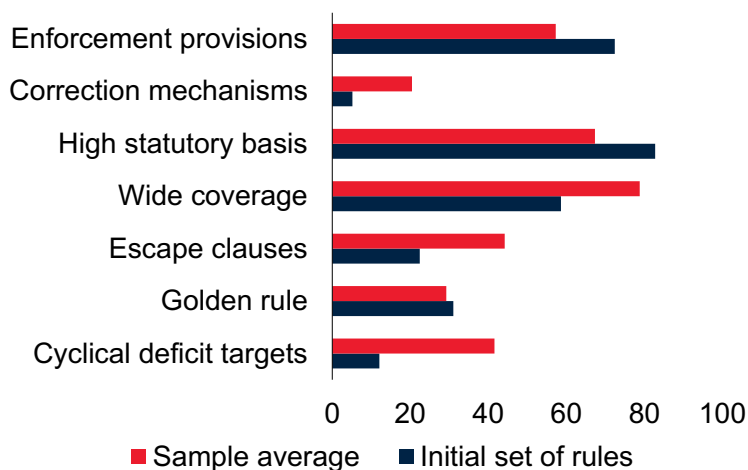
## 6.2 Design features

Beyond rule type, the role of specific design features may also potentially explain some of our results. [Figure 13](#) compares the presence of various design features at the time of first adoption and across the sample average. We observe that initial rules tend to be more strict and less flexible than later frameworks. This pattern reflects not only the characteristics of rules added in subsequent rounds but also the gradual evolution of existing frameworks.

Overall, individual design features appear to play only a marginal role in shaping the effects of fiscal rule adoption. We ignore design features with limited coverage for initial rule frameworks—such as correction mechanisms, escape clauses, and cyclically adjusted targets—from further analysis. The results indicate that rules with broader institutional coverage (i.e., applying to the general government) are associated with gradual and lasting fiscal improvements, although strong political institutions remain a key enabling factor ([Figure 14](#)). Instead, rules that apply only to the central government yield larger

medium-term effects, but the gains of adoption fade over time and become statistically insignificant toward the end of the horizon. However, the large (but imprecise) coefficients over the medium term warrant caution in interpreting these results.

Figure 13: Design elements of fiscal rules (%)



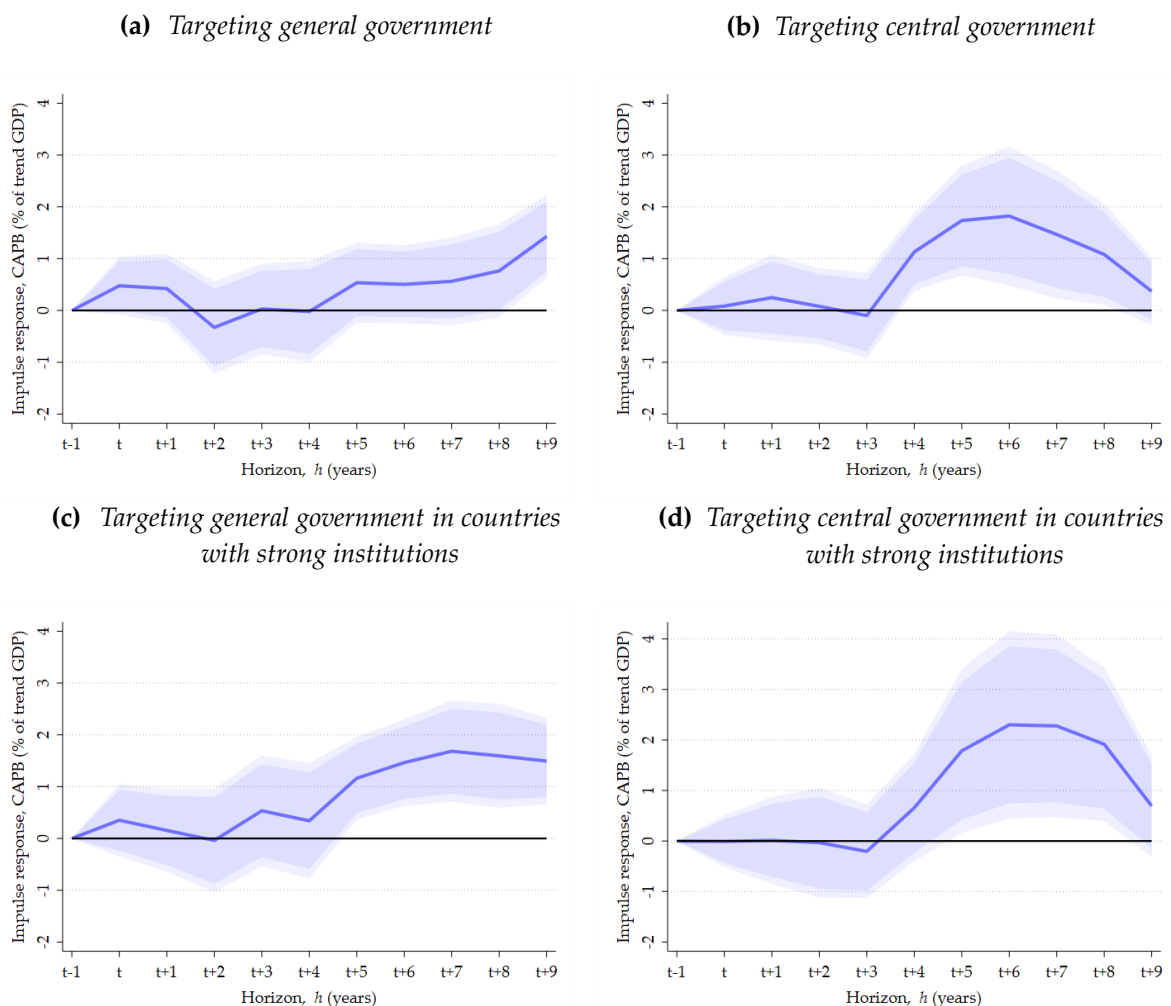
Notes: See notes [Figure 11](#).

Other design features—such as the inclusion of enforcement provisions and the statutory basis of fiscal rules—display similar but less decisive patterns, particularly once institutional strength is considered (Figures OA.10 and OA.11 in Online Appendix). The same applies to the inclusion or exclusion of priority spending items from numerical constraints (i.e., “golden rules”) (Figure OA.12 in Online Appendix). At first glance, design appears to matter: countries that incorporated golden rules into their initial frameworks show no discernible fiscal gains, consistent with the idea that allowing deviations for priority spending may ultimately facilitate higher deficits. However, this effect disappears entirely once institutional quality is taken into account.

When testing whether design features mediate the influence of initial conditions on fiscal rule effectiveness, we find only one systematic difference: countries with stronger political institutions are less likely to include golden rules, which may partly explain the earlier results (Figure OA.13 in Online Appendix). Other design elements show no consistent variation across institutional settings, nor do we find evidence that countries systematically adopt more favorable rule designs under more conducive economic or political conditions. Taken together, our findings align with previous studies that suggest that certain design features coincide with stronger fiscal discipline. However, we show

that once institutional strength is accounted for, their marginal contributions largely—and in some cases entirely—disappears.

Figure 14: Impulse responses of strict enforcement



Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

## 7. Conclusions

An increasing number of countries have adopted fiscal rules to ensure fiscal sustainability and constrain suboptimal macroeconomic stabilization policies. This trend stems from two factors: rising government debt levels requiring more disciplined fiscal governance frameworks, and the fact that as more countries adopted these rules, they have become the *de facto benchmark* for fiscal policy.

Our paper fills a gap in the literature by exploring how the effects of fiscal rules develop over time and how the durability of these effects depends on the conditions under which the rules are adopted. Using a large sample of 116 countries, the results confirm that fiscal rule adoption has a positive effect on the CAPB, though it takes time to materialize. Moreover, we find distinct patterns across different country types. In advanced economies, the medium-term effects of fiscal rules are substantially greater than the short-term effects. In contrast, for EMDEs, we find a positive short- to medium-term impact, but the effects typically diminish as time passes. Ultimately, we show that the strength of political institutions largely drives the fiscal response to rule adoption.

Examining the conditions under which fiscal rules are adopted, we find three key insights. *First*, fiscal rules adopted in environments conducive to building credibility early on tend to have lasting effects. The results show that initial conditions—such as prosperous economic times—yield significant and sustained benefits for fiscal policy, aptly capturing the idea of “making hay while the sun shines.” Instead, rules adopted during periods of economic hardship—reflecting the notion of “never waste a good crisis”—tend to be less successful. While economic challenges can encourage policymakers and political parties to temporarily set aside individual interests, these interests often resurface as conditions improve, undermining the initial momentum of the rules. Credibility, meanwhile, builds slowly, and when tangible gains fail to materialize early, that process can quickly be cut short.

*Second*, we find evidence that fiscal rules adopted in an environment characterized by greater consensus building are more likely to result in lasting fiscal discipline. Governments with relatively large parliamentary majorities may find it easier to implement laws and change governance structures, but they also face weaker incentives to build broad-based support for policy change. In contrast, governments with narrower control over parliament must rely more heavily on consensus-building, which strengthens commitment and enhances the durability of fiscal rules.

*Third*, we find that sound rule design enhances effectiveness. In particular, the inclusion of a deficit rule proves critical and can even partially offset the challenges of rule adoption in weaker institutional environments. Other rule types and individual design features also correlate with stronger fiscal discipline, but these relationships weaken once broader contextual factors—especially institutional quality—are considered. Therefore, the evidence suggests that the institutional environment and the conditions prevailing at the

time of adoption are ultimately more decisive in determining whether fiscal rules deliver lasting benefits. In short, good design matters, but it is no silver bullet.

Overall, the outcomes suggest that fiscal rules are more likely to deliver durable gains when they are adopted in a supportive environment—characterized by strong institutional settings, favorable economic conditions, and a political landscape more prone to consensus. Such environments are more likely to foster broad-based political support and prioritize long-term fiscal discipline over short-term crisis management, ultimately enhancing the credibility and effectiveness of fiscal rules. This insight is straightforward yet ever so crucial: fiscal rules are frequently adopted under conditions that are less conducive to achieving lasting effects.

## Appendix 1: Constructing cyclically adjusted primary balances

Fiscal outcomes reflect both discretionary policy actions and automatic responses to economic conditions. On the one hand, discretionary measures stem from deliberate fiscal policy decisions. On the other hand, automatic effects arise from economic fluctuations—such as stronger economic activity, which tends to boost revenues and improve fiscal ratios—as well as the operation of automatic stabilizers embedded in fiscal frameworks. Since the latter lies outside the government’s direct control, the literature typically focuses on changes in fiscal indicators attributable to discretionary policy decisions by focusing on changes in the cyclically adjusted primary balance (CAPB).

The rationale for using the CAPB in analysis of fiscal policy is that it is a cleaner measure than the fiscal balance of a government’s discretionary fiscal stance and its response to debt sustainability concerns (Bohn 1998). The primary balance excludes interest payments, which are largely beyond the control of the current government and do not reflect contemporaneous fiscal policy decisions. The CAPB further strips out automatic effects driven by economic fluctuations—such as stronger output boosting revenues and improving fiscal ratios—that fall outside the government's direct influence.

To estimate the CAPB, the methodology outlined by Fedelino et al. (2009) is followed:

$$CAPB_t = r_t * \left(\frac{Y_t^*}{Y_t}\right)^{\varepsilon_R} - g_t * \left(\frac{Y_t^*}{Y_t}\right)^{\varepsilon_G} \quad (1),$$

where  $r_t$  is government revenue as a share of GDP,  $g_t$  is primary expenditure (i.e., excluding interest payments) as a share of GDP,  $Y_t$  is actual real output, and  $Y_t^*$  is trend output estimated using a Hodrick-Prescott (HP) filter.<sup>32</sup> The parameters  $\varepsilon_r$  and  $\varepsilon_g$  denote the elasticities of revenue and primary expenditure with respect to the output gap, respectively.

In the literature, it commonly assumed that government revenues respond one-for-one to deviations of trend from actual output ( $\varepsilon_r = 1$ ), while expenditure is generally assumed to be non-cyclical ( $\varepsilon_g = 0$ ). However, advanced economies often have built-in automatic

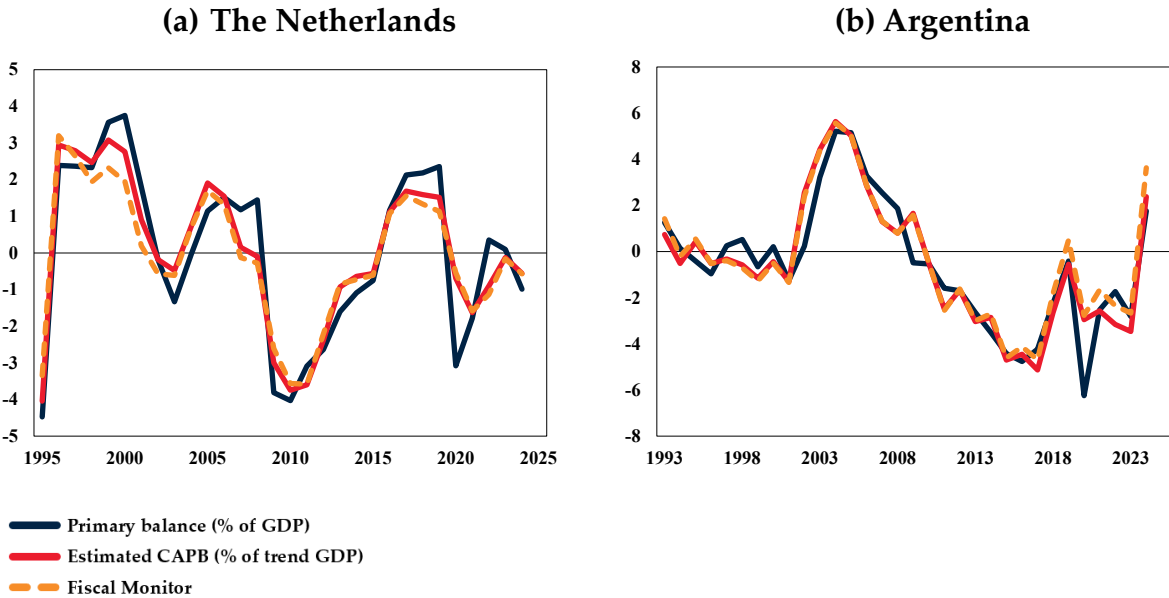
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<sup>32</sup> We use the HP filter, as it yields results that are more consistent with those presented in the IMF Fiscal Monitor, making it the preferable choice for reasons of comparability. Alternative filtering techniques proposed in the literature, such as the Hamilton filter, generate different outcomes.

stabilizers on both the revenue and expenditure sides—such as unemployment benefits. For instance, Girouard and André (2005) estimate that government spending in OECD countries typically exhibits a negative elasticity of approximately  $-0.25$ . Hence, for advanced economies, we set the elasticity  $\varepsilon_g$  to  $-0.25$ .

[Figure A0](#) compares our estimated CAPB with (i) the primary balance reported in the IMF WEO and (ii) the official CAPB published in the IMF Fiscal Monitor. The estimated CAPB closely tracks the official series, indicating that our elasticity assumptions are well aligned with those underlying the official estimates. At the same time, for both countries we observe notable differences between the CAPB and the primary balance—particularly during periods of economic volatility—highlighting that filtering out cyclical conditions can have important implications.

Figure A0: Estimated CAPB of the Netherlands and Argentina

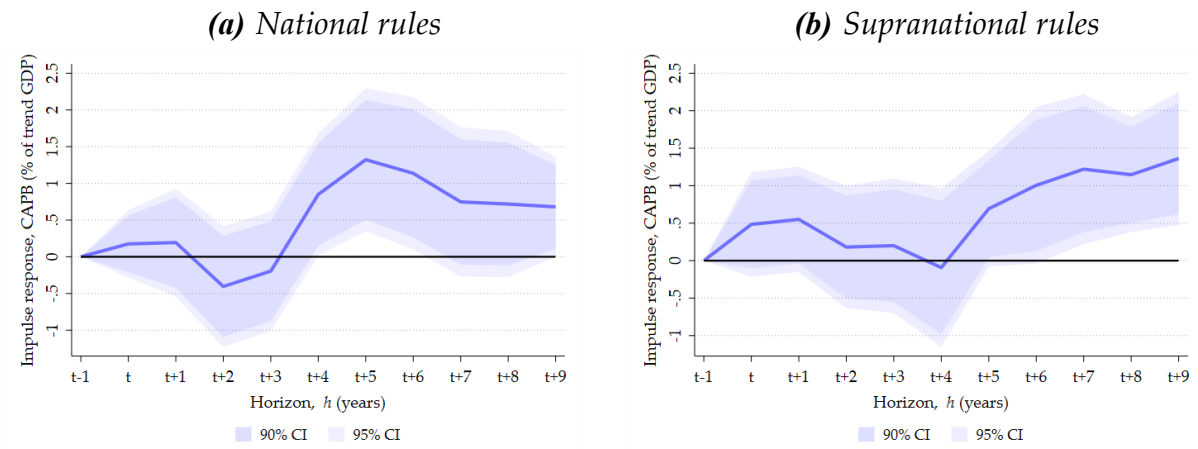


## Appendix 2

Table A1: Definition and sources of variables

Variable	Definition	Source
Primary balance	Net lending (+)/borrowing (-) plus net interest payable/paid (interest expense minus interest revenue)	WEO (October 2025), IMF
Fiscal rules	0-1 indicator capturing the presence of a fiscal rule	Fiscal Rules Dataset, IMF
Public debt	Government debt (% of GDP or revenues)	WEO (October 2025), IMF
Real GDP growth	Annual percentages of constant price GDP are year-on-year changes	WEO (October 2025), IMF
Inflation	$\ln(\text{GDP deflator} + \sqrt{(\text{GDP deflator}^2 + 1)})$ , where GDP deflator is derived by dividing current price GDP by constant price GDP.	WEO (October 2025), IMF
Current account balance	All transactions other than those in financial and capital items (% of GDP)	WEO (October 2025), IMF
Elections	In an election year, the variable equals $M/12$ , where $M$ represents the month of the election, and $(12 - M)/12$ in the preceding year. For all other years, the variable is set to zero.	DPI 2020
Political institutions	Index is constructed with PCA using data that measures the perceptions on democratic accountability, law and order, bureaucracy quality, and control of corruption (see Online Appendix)	ICRG Database
Inflation targeting regime	0-1 indicator that captures the presence of an inflation targeting regime.	AREAR Dataset, IMF
Exchange rate regime	1-15 indicator of the de facto exchange rate arrangement classification.	Ilzetzki, Reinhart, and Rogoff (2019)
Capital account openness	0-1 index that captures the de jure capital account openness.	Chinn and Ito (2006)
Independent fiscal councils	0-1 indicator that captures the presence of an independent fiscal council.	Fiscal Councils Dataset, IMF
Financial development	0-1 index that measures the development of financial markets in countries based on depth, access, and efficiency.	Financial Development Dataset, IMF
HIPC	0-1 indicator that captures participation in the HIPC initiative	Own calculations
Margin of majority	The fraction of seats held by the government. It is calculated by dividing the number of government seats by total seats.	DPI 2020

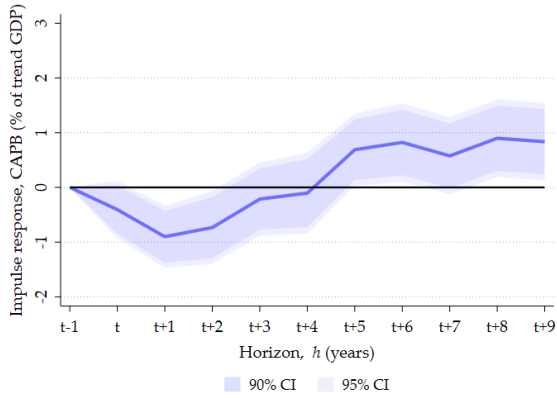
Figure A1: Impulse responses of the CAPB, national vs. supranational rules



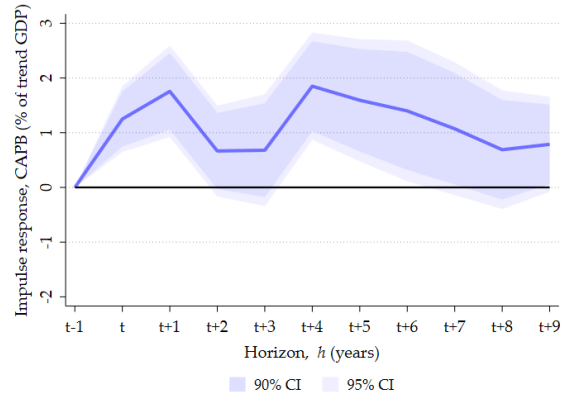
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Figure A2: Impulse responses: commodity importers vs. commodity exporters.

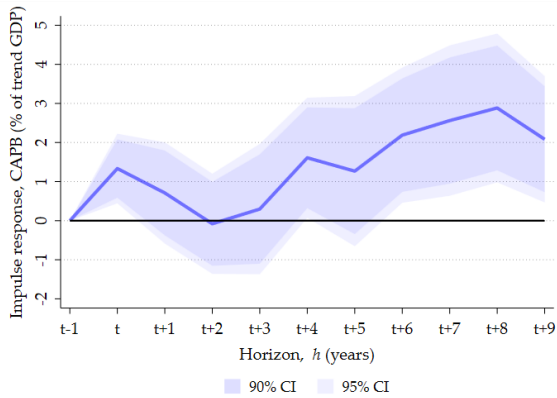
(a) *Non-commodity-dependent countries*



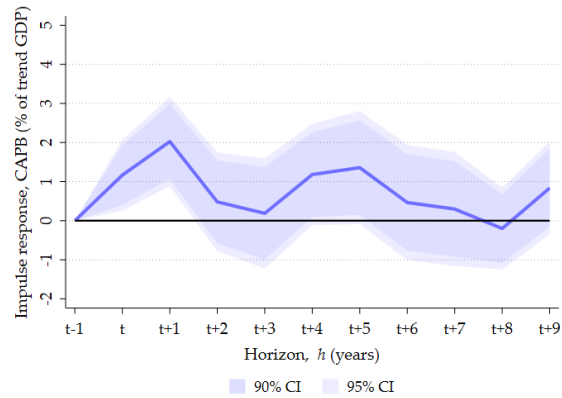
(b) *Commodity-dependent countries*



(c) *Commodity-dependent countries with strong institutions*

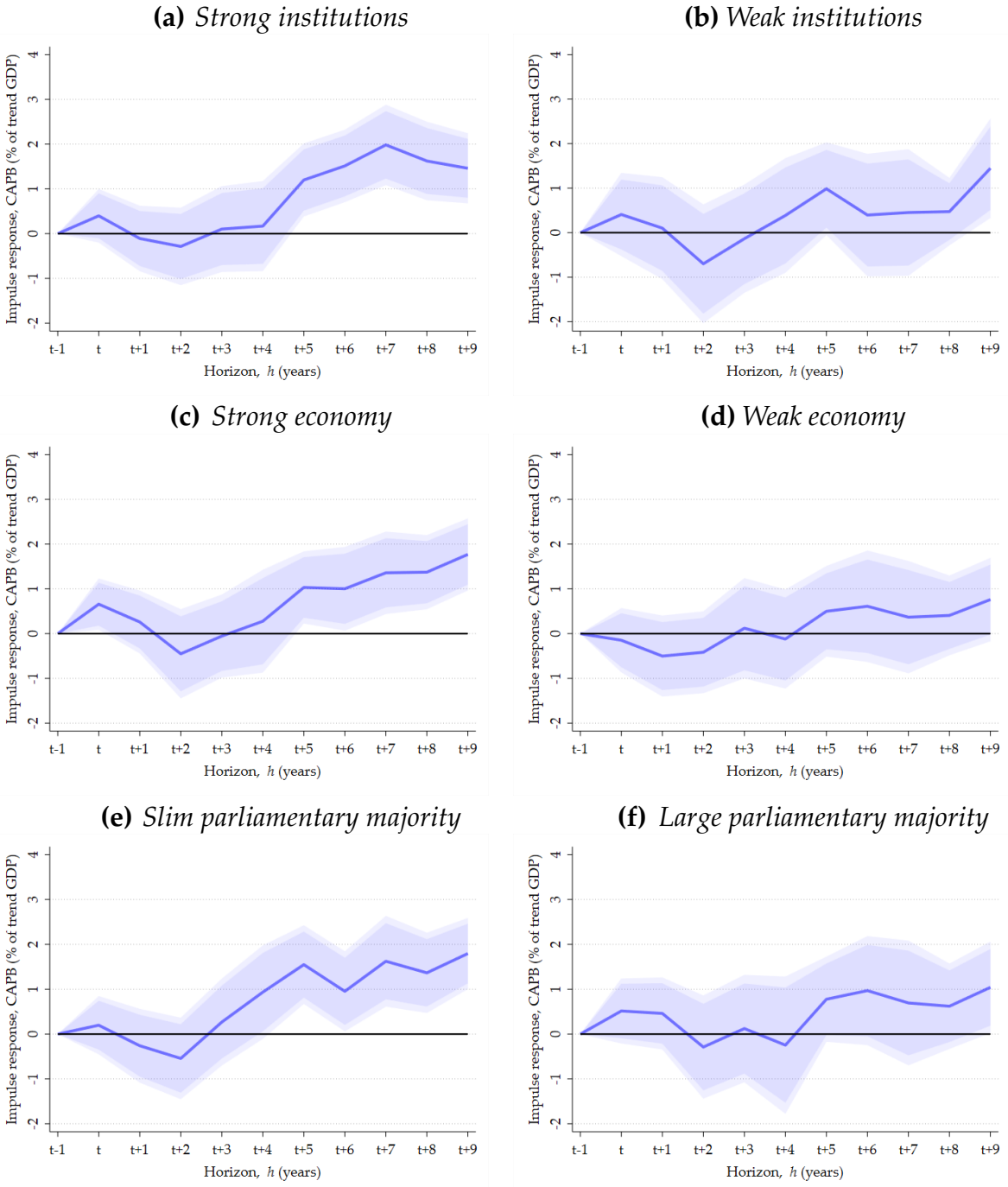


(d) *Commodity-dependent countries with weak institutions*



Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Figure A3: Impulse responses of deficit rules—institutional, economic, and political adoption environment



Notes: See notes [Figure 2](#). The analysis covers 106 countries, including 51 cases of fiscal rule adoption. The number of observations included in each regression ranges between 1,784 and 1,790.

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**Declaration of generative AI and AI-assisted technologies in the manuscript preparation process**

During the preparation of this work the authors used Chat GPT in order to improve language and readability, with caution. After using this tool/service, the authors reviewed and edited the content as needed and takes full responsibility for the content of the published article.

## Online Appendix

### Principal Component Analysis

We use Principal Component Analysis (PCA) to analyze institutional quality, drawing on four key measures: democratic accountability, bureaucracy quality, control of corruption, and rule of law. These variables are sourced from the International Country Risk Guide (ICRG) dataset for 2021–22, which provides ratings for 140 countries spanning the period 1984 to 2022. The ICRG compiles political, financial, and economic data, converting these into risk scores for each component based on a consistent evaluation framework. Political risk assessments are derived through qualitative analysis of available information by ICRG staff. The variables, except for bureaucracy quality (which ranges from 0 to 4), are scored on a scale from 0 to 6. Higher scores indicate stronger institutional quality, reflecting less corruption, a more robust legal and judicial system, a government more responsive to its citizens, and greater bureaucratic quality.

We take the first principal component—a linear combination of the original variables that accounts for the most variance. This component explains over 70% of the variation in the data ([Table OA.1](#)). All variables contribute positively to the first component ([Table OA.2](#)), meaning higher values of each variable result in a higher predicted score for the component. We interpret this first component as a composite measure of the quality of political institutions.

The institutional quality measure ranges from -4.15 (Liberia, 1991–92) to 3.47, achieved by several advanced economies, including Canada (1985–2000), Denmark (1984–2000; 2021–23), Finland (1984–1995; 1998–2011), France (1992–93), Iceland (1984–2000), Luxembourg (1986–1996), the Netherlands (1984–2000), New Zealand (1984–1995), Norway (1984; 1995), Sweden (1984–2000), and Switzerland (1984–1995).

[Figure OA.1](#), panel (a), illustrates a general improvement in institutional quality worldwide between 1984 and 2023, particularly in EMDEs. A notable bump in the 1990s stands out across both AEs and EMDEs. Panel (b) highlights that this bump was largely driven by a spike in the scores for control of corruption and law and order, which declined in later decades. These setbacks were only partially offset by improvements in bureaucracy quality and democratic accountability in the following decades.

## Tables and Figures

Table OA.1: Principal component, eigenvalues

<u>Eigenvalues</u>	Coefficients	Explained variation
Component 1	2.818	0.705
Component 2	0.558	0.139
Component 3	0.335	0.084
Component 4	0.290	0.072

Table OA.2: Principal component, correlation matrix

<u>Component 1</u>	Coefficients
Bureaucracy quality	.530*** (.004)
Democratic accountability	.453*** (.007)
Control of corruption	.513*** (0.005)
Rule of law	.500*** (0.005)

Figure OA.1: Institutional quality

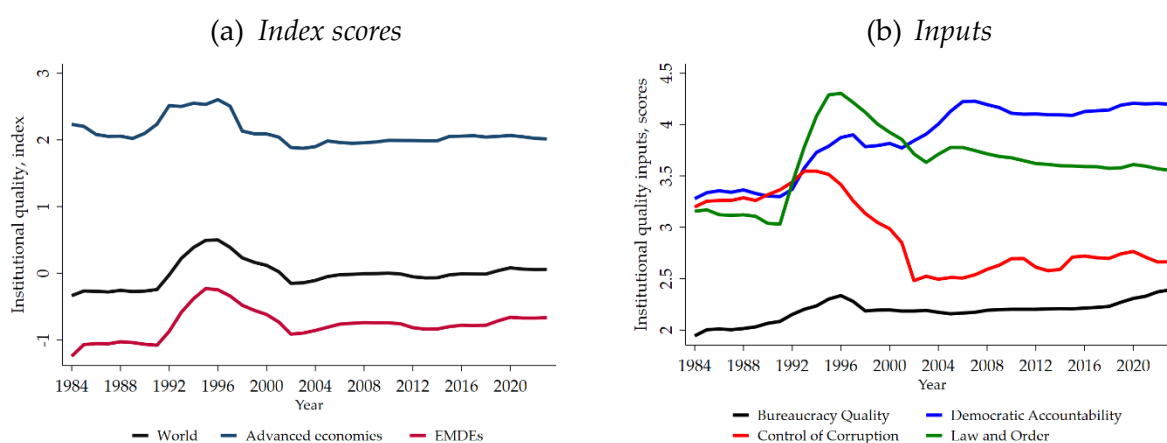
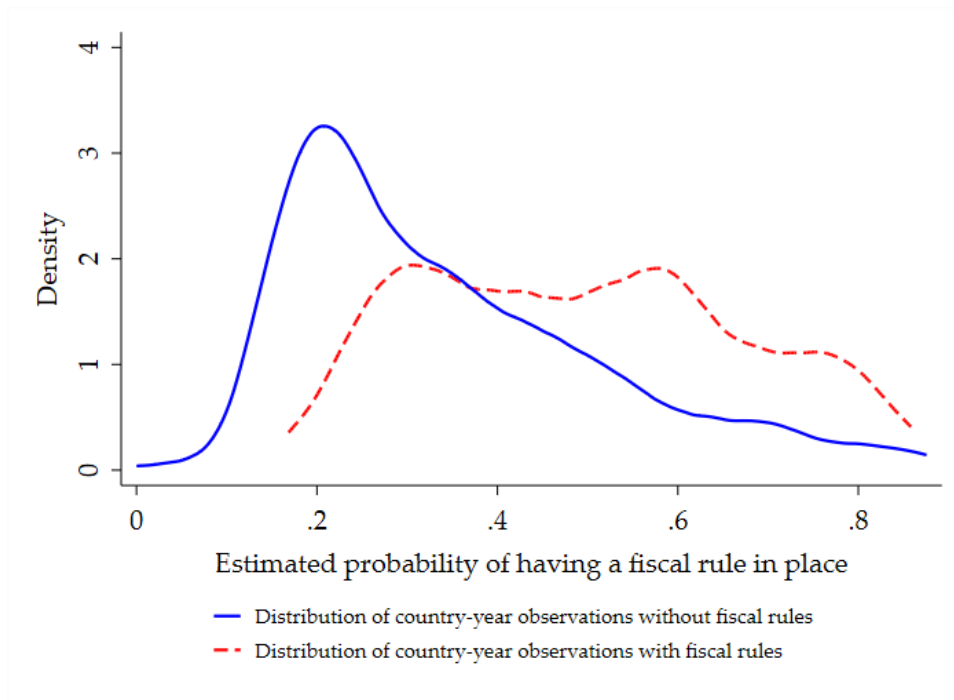
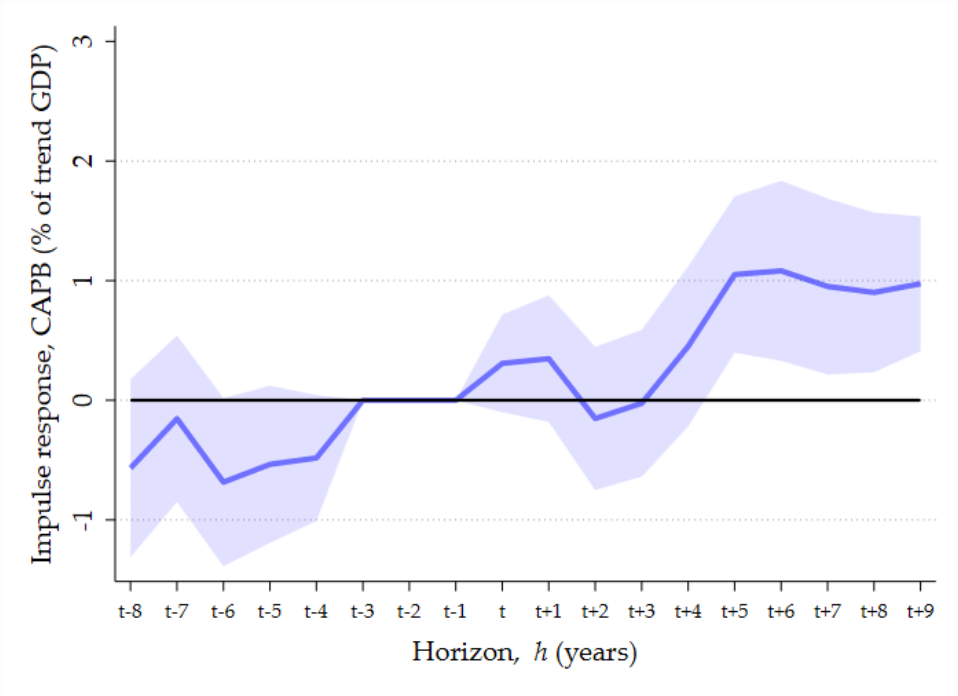


Figure OA.2: Overlap check: empirical distributions of the treatment propensity score



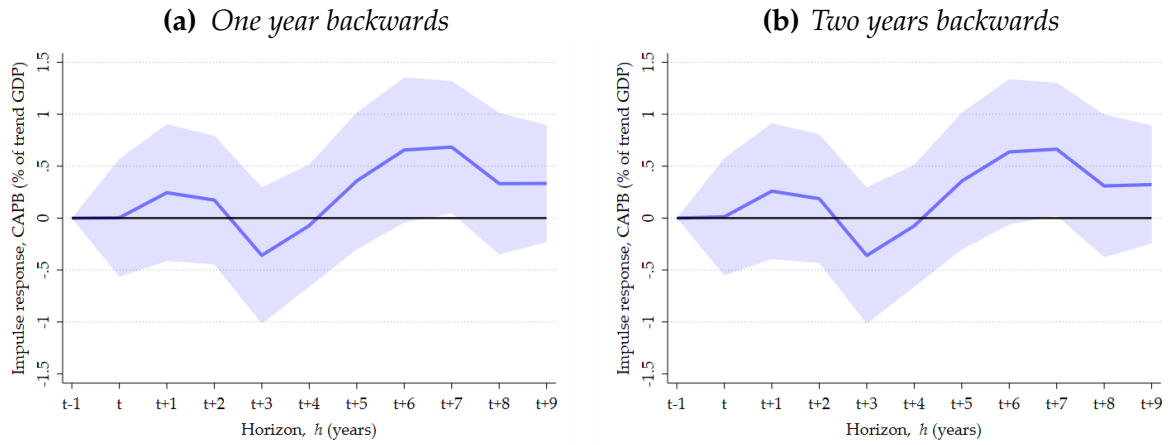
Notes: See text. Figure shows smooth kernel density estimates for the estimated probability of having a fiscal rule in place.

Figure OA.3: Impulse responses of the CAPB—pre-adoption trends



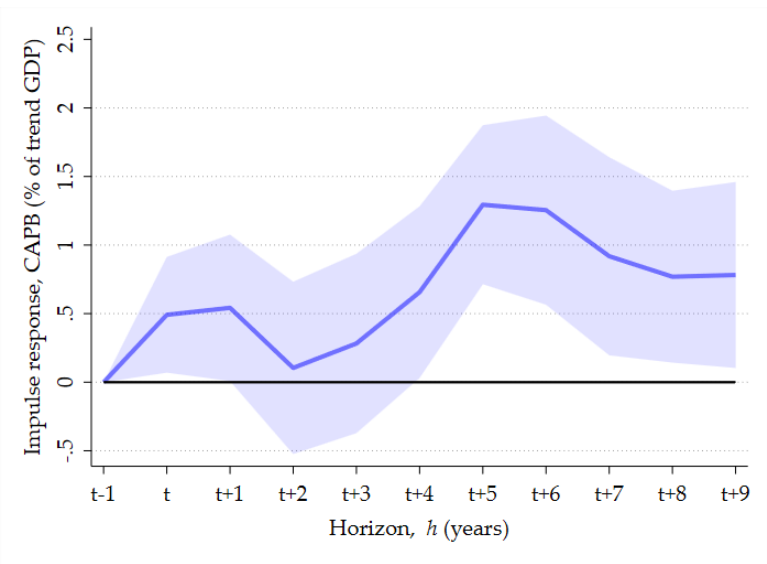
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Figure OA.4: Impulse responses of the CAPB—placebo tests



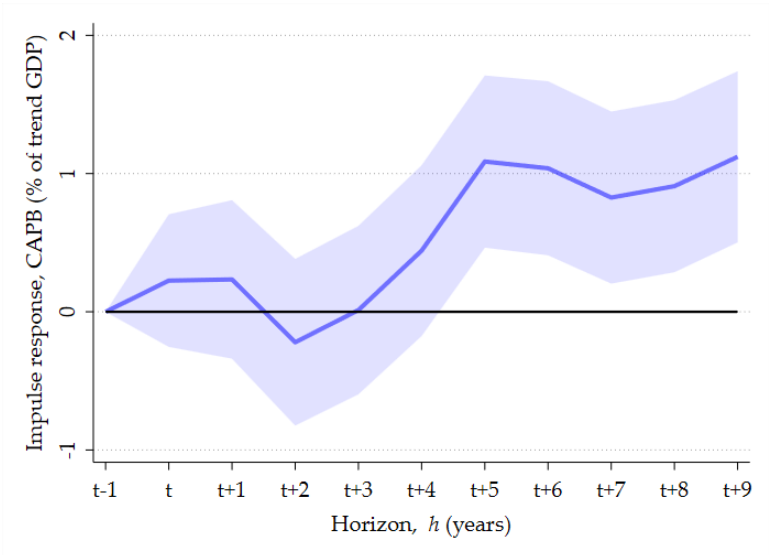
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,198 and 2,207.

Figure OA.5: Impulse responses of the CAPB – clean control condition



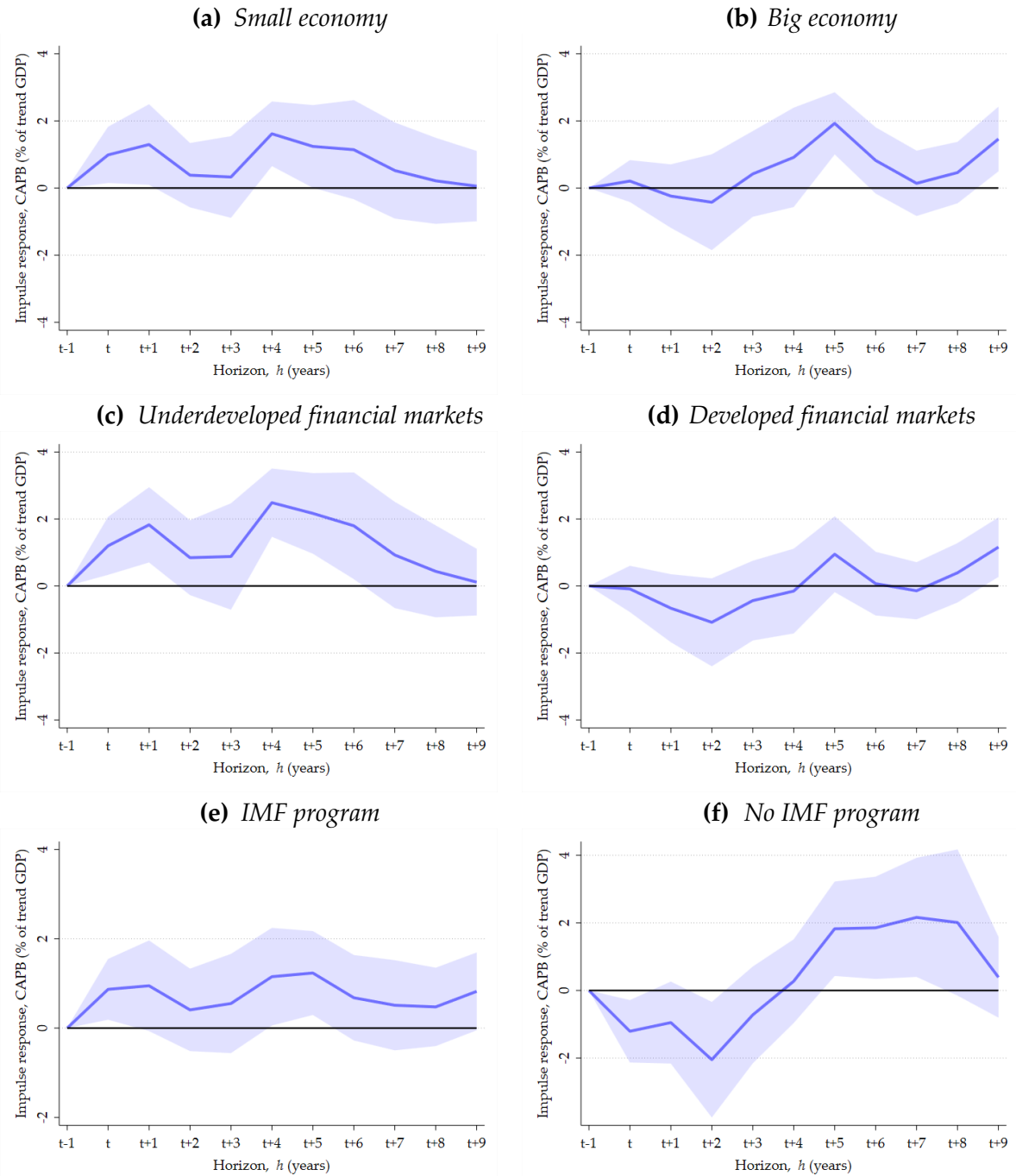
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 1,716 and 1,724.

Figure OA.6: Impulse responses of the CAPB – Split-sample jackknife estimator



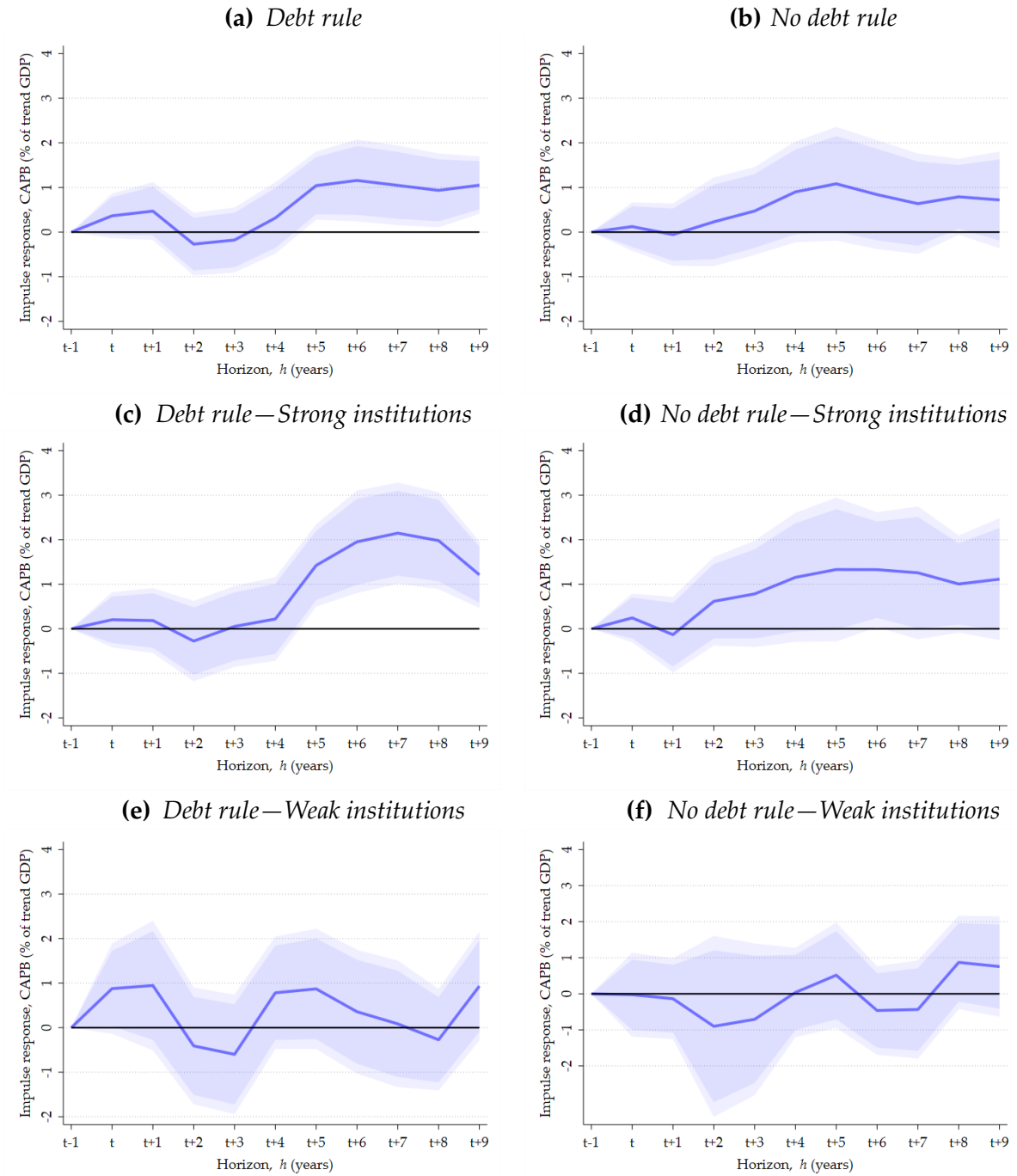
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Figure OA.7: Impulse responses in EMDEs—other structural factors



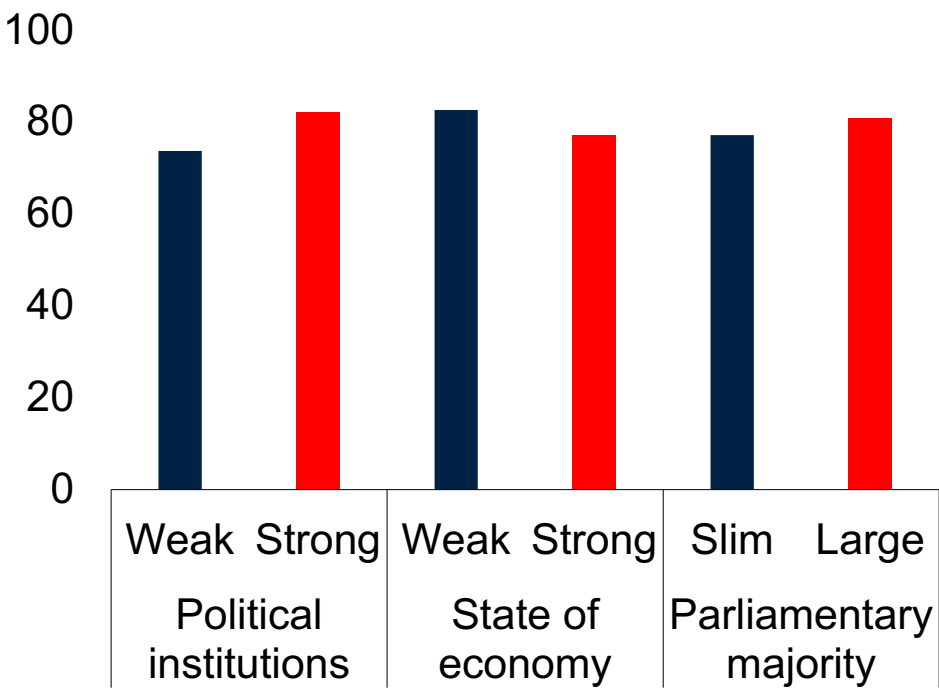
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Figure OA.8: Impulse responses of CAPB to debt rule adoption



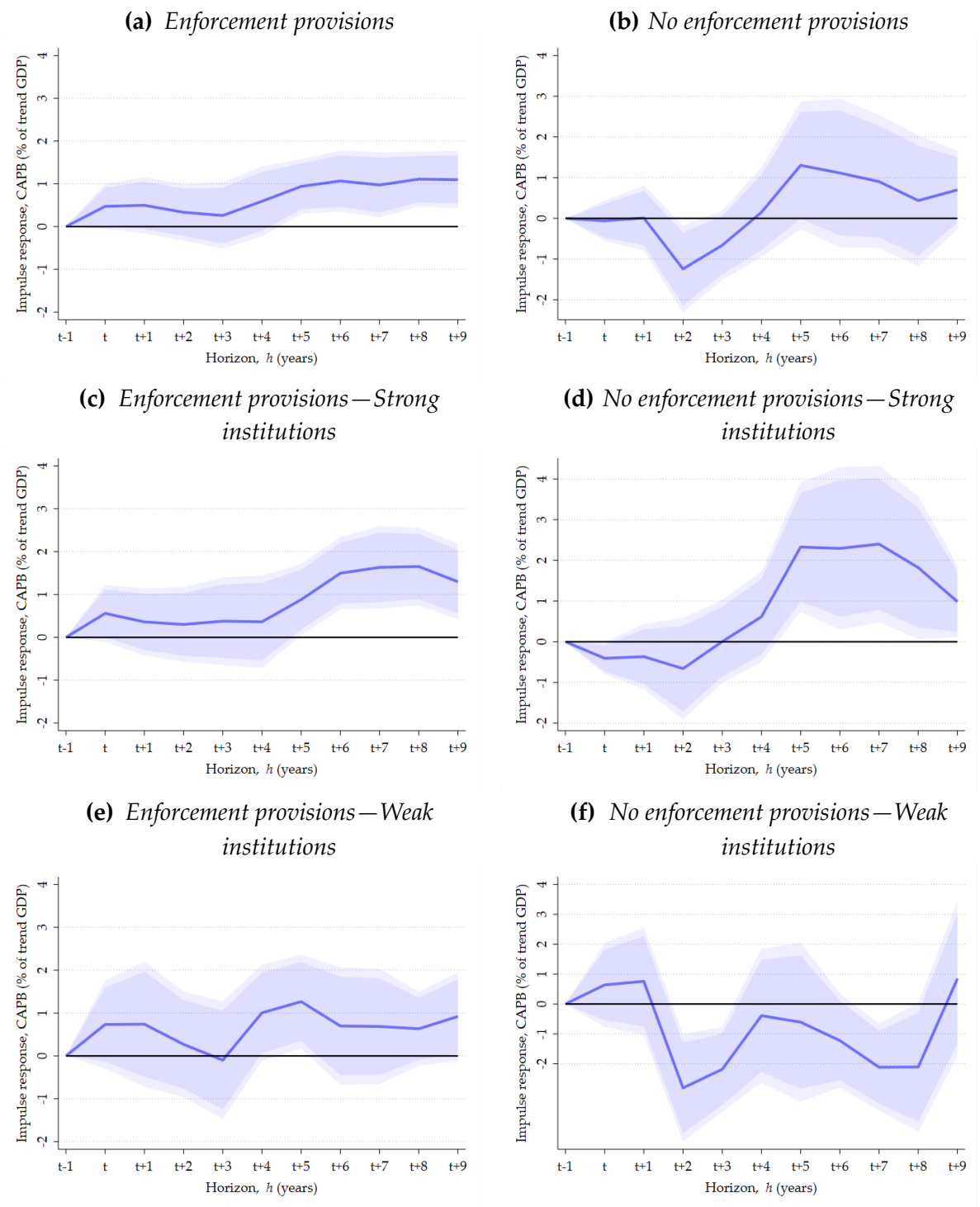
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Figure OA.9: Adoption environment of rule adoption with deficit rule (%)



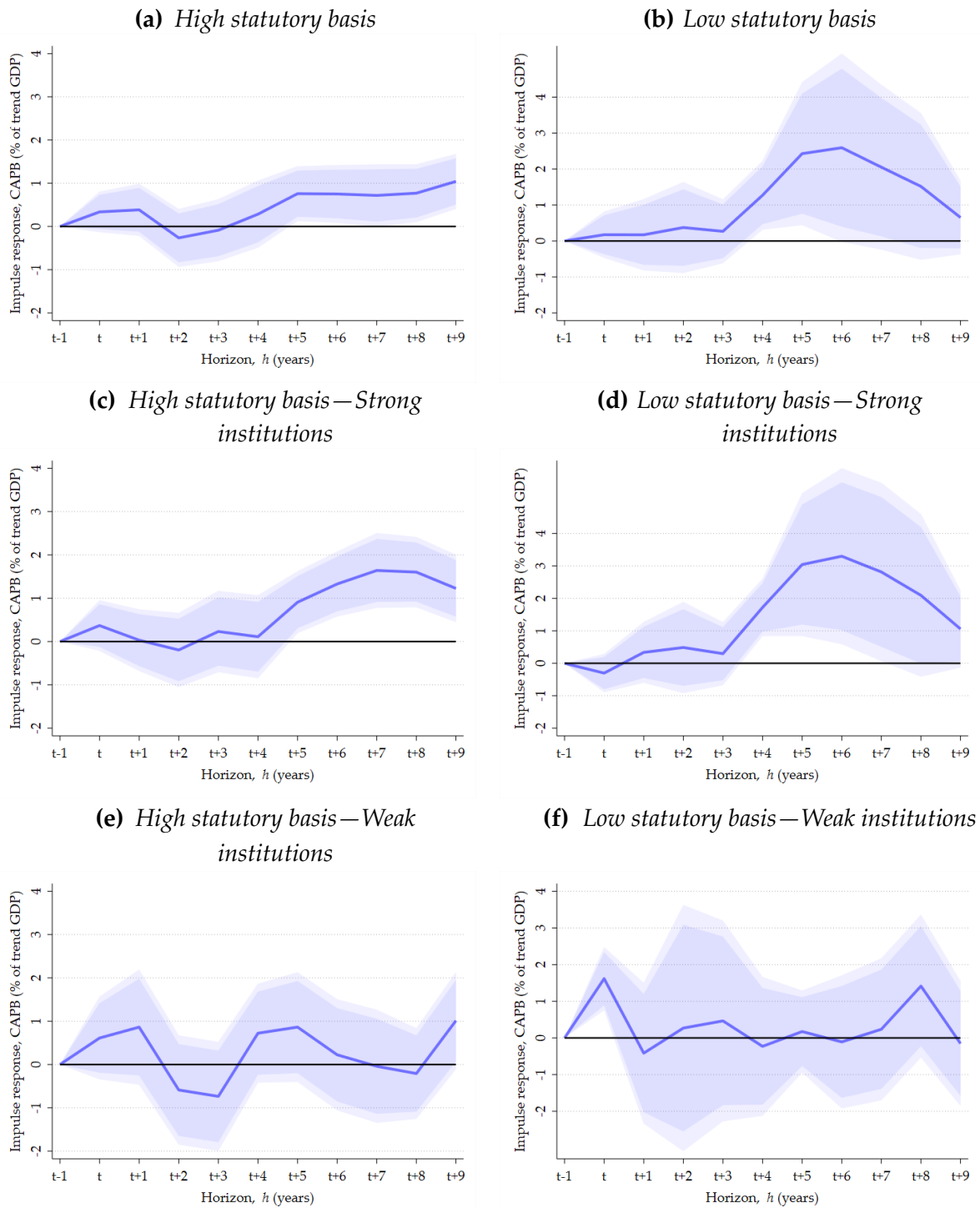
Notes: Figures show the percentage of initial rule adoption that included deficit rules across different adoption environments.

Figure OA.10: Impulse responses of CAPB conditional on inclusions of (strict) enforcement provisions



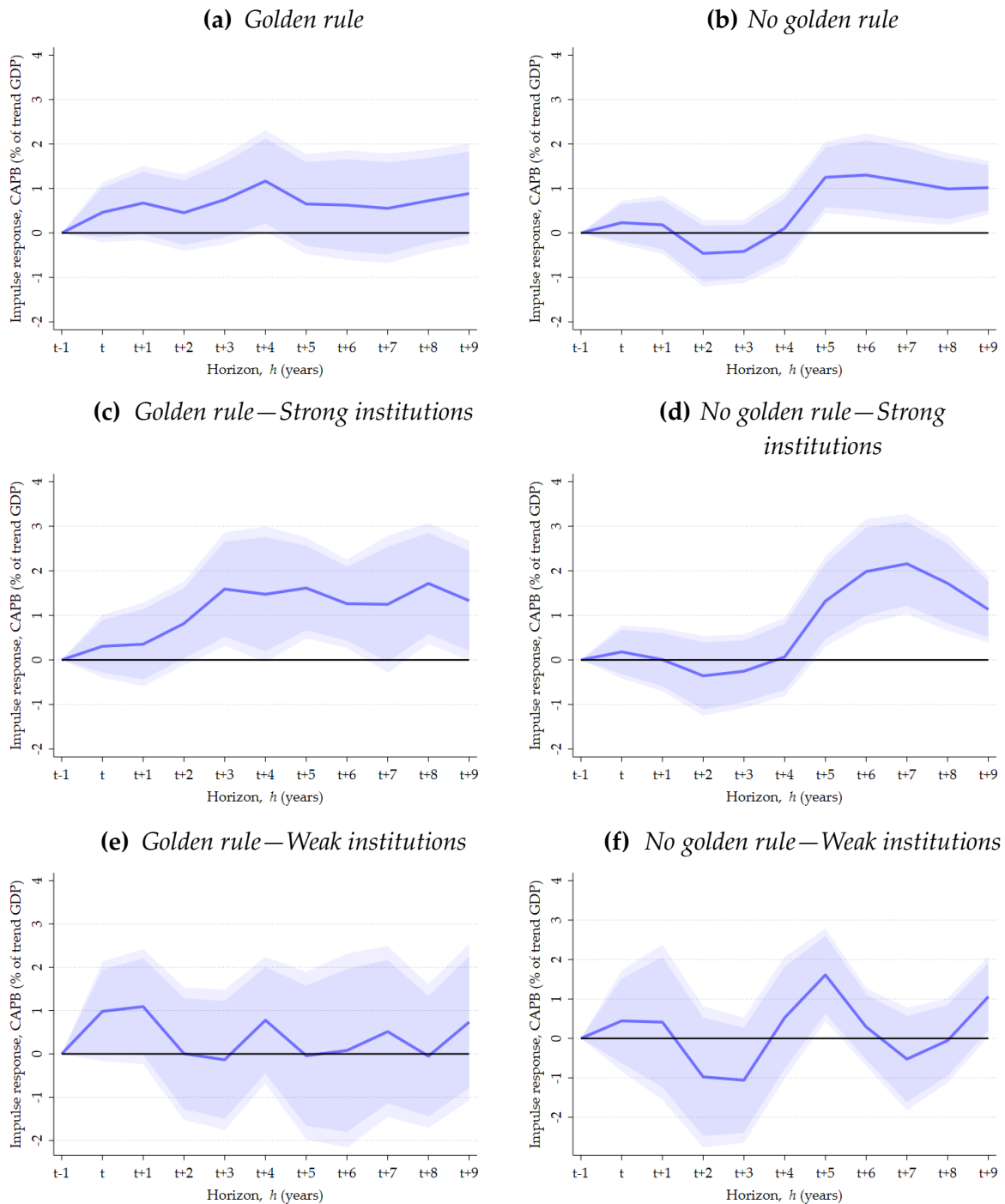
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Figure OA.11: Impulse responses of CAPB conditional on statutory basis of fiscal rule(s)



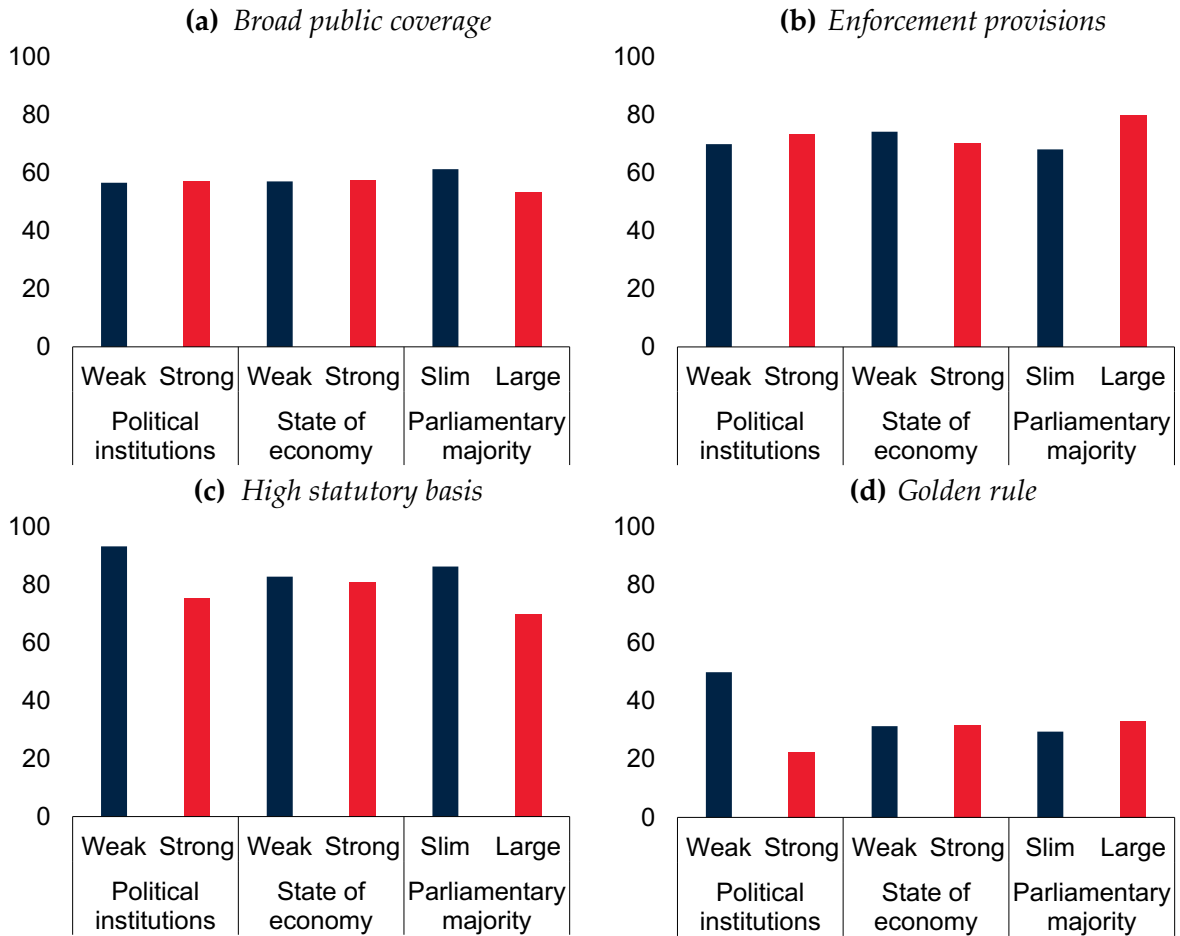
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Figure OA.12: Impulse responses of CAPB conditional on built-in flexibility into fiscal rule framework



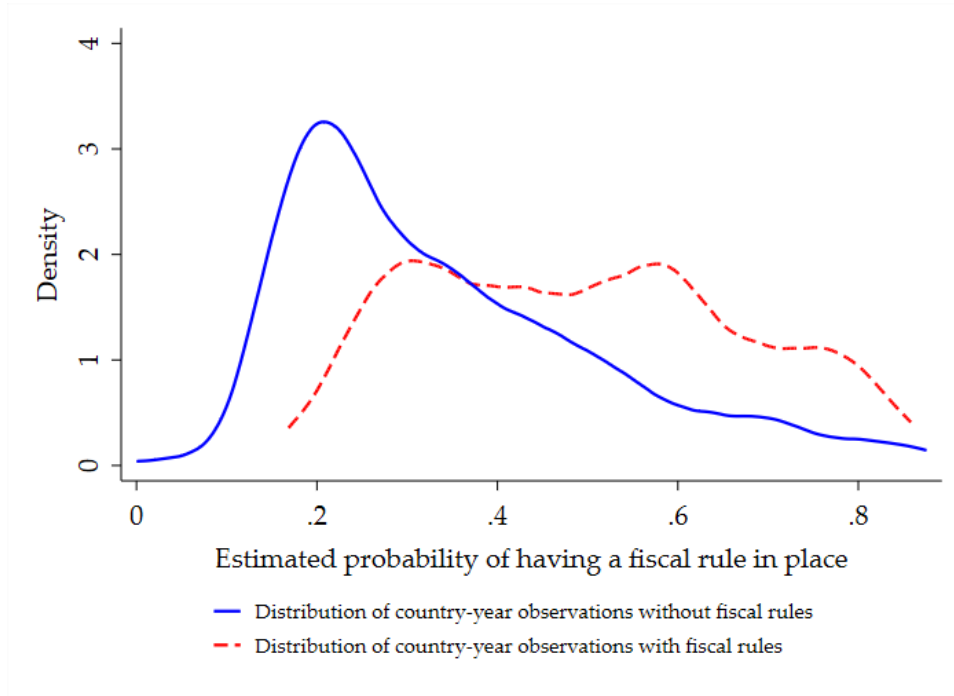
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Figure OA.13: Design choices and adoption environments (%)



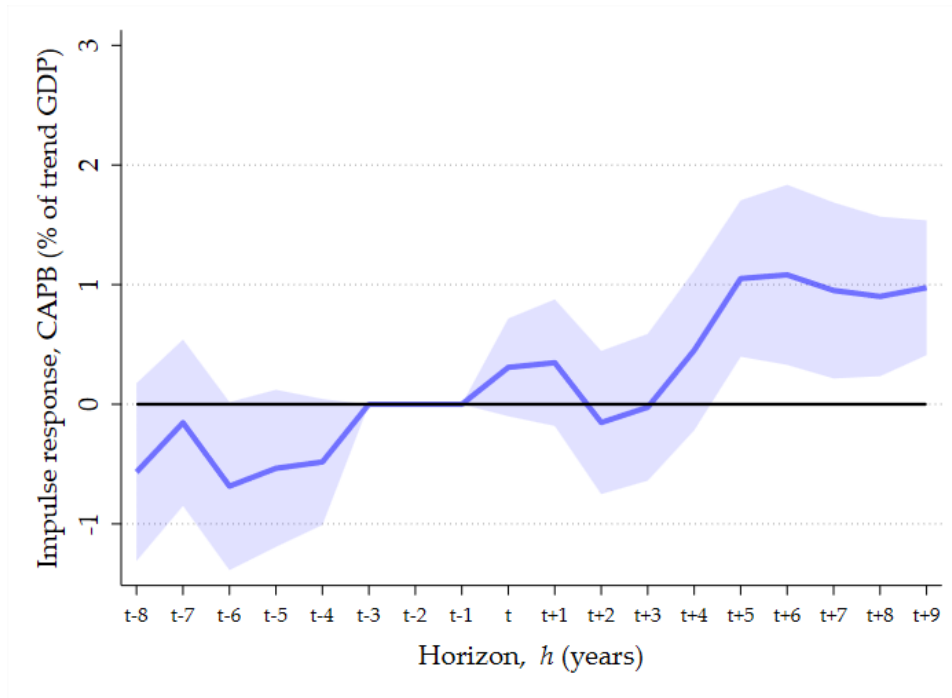
Notes: Figures show the percentage of initial rule adoption that included strict enforcement, a high statutory basis, wide coverage, and a golden rule across different adoption environments.

Figure OAI.1: Overlap check: empirical distributions of the treatment propensity score



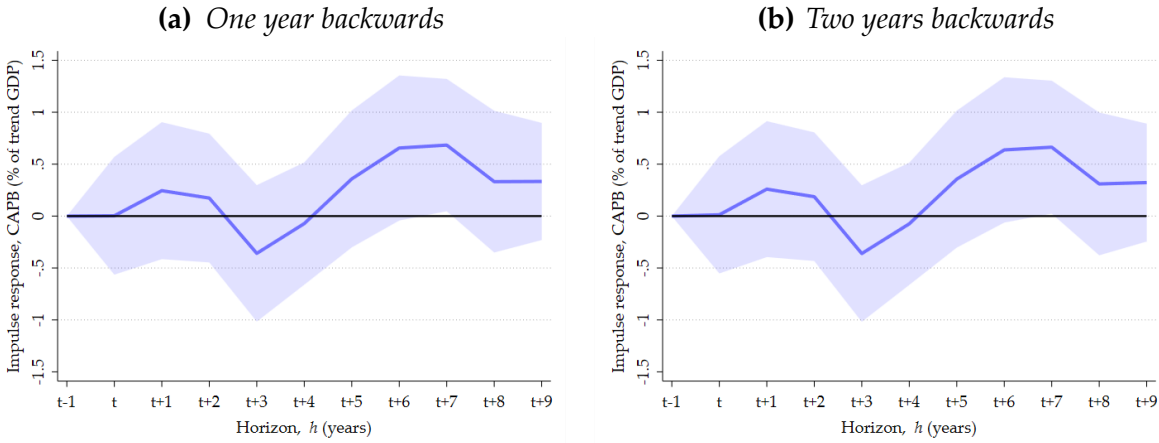
Notes: See text. Figure shows smooth kernel density estimates for the estimated probability of having a fiscal rule in place.

Figure OAI.2: Impulse responses of the CAPB—pre-adoption trends



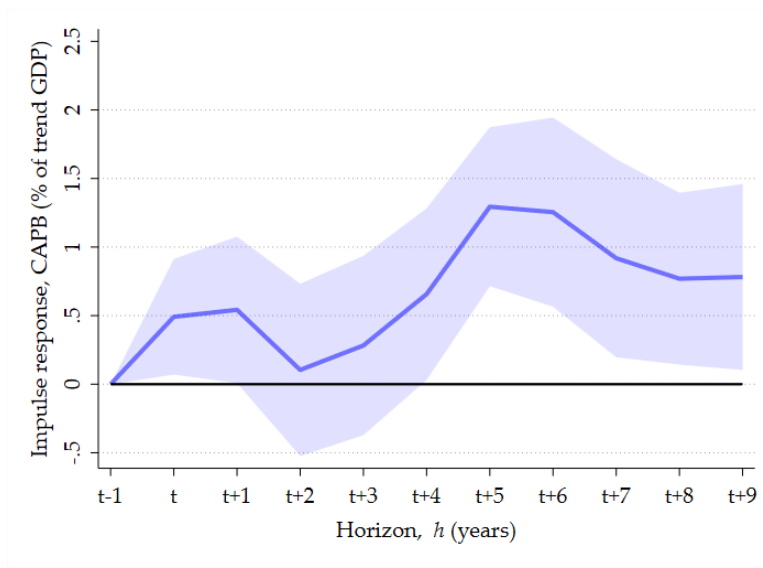
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Figure OAI.3: Impulse responses of the CAPB—placebo tests



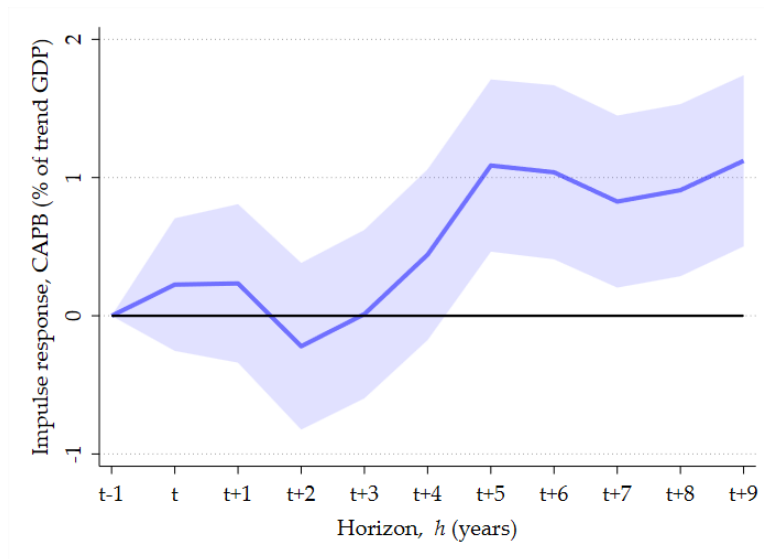
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,198 and 2,207.

Figure OAI.4: Impulse responses of the CAPB – clean control condition



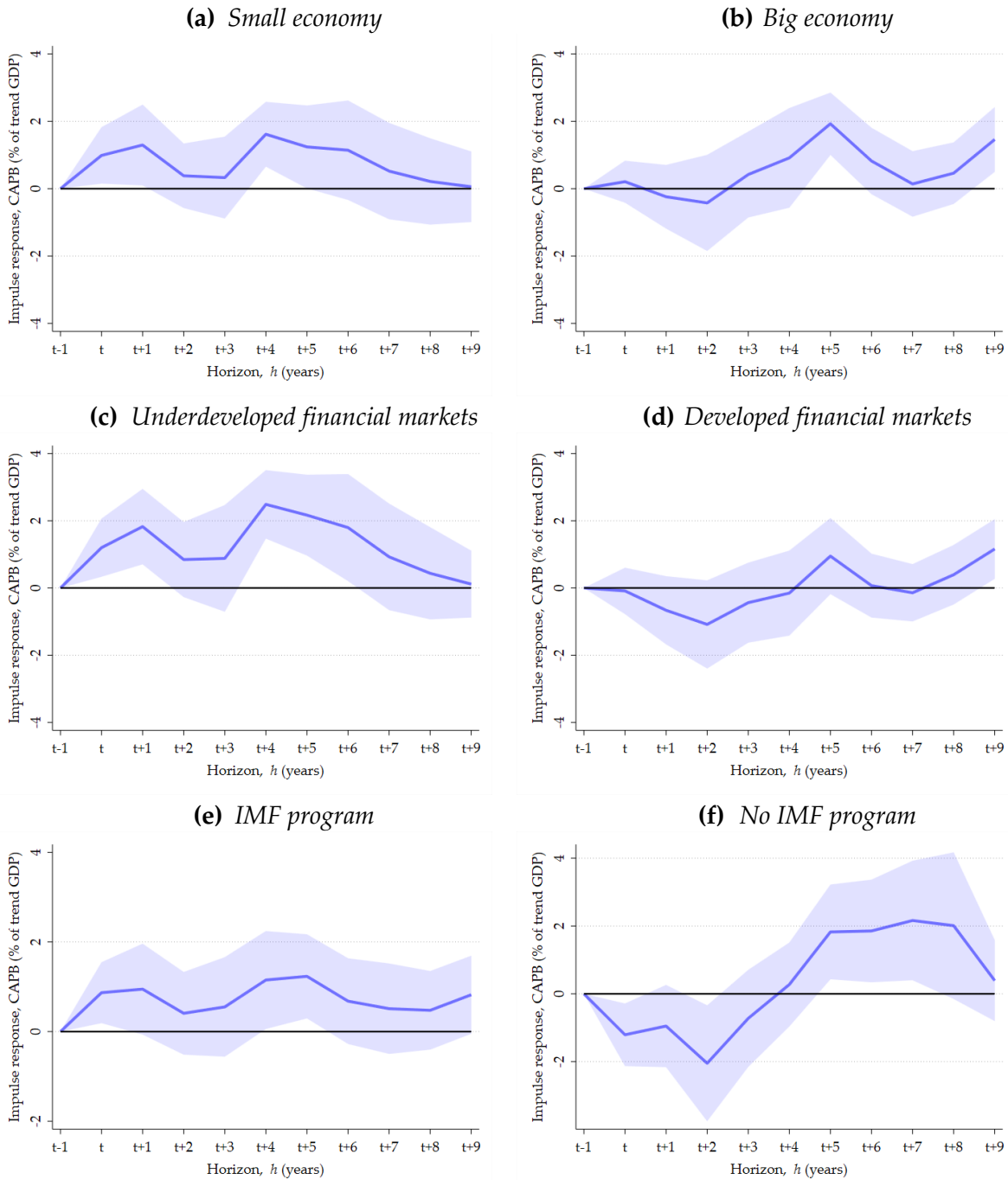
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 1,716 and 1,724.

Figure OAII.5: Impulse responses of the CAPB – Split-sample jackknife estimator



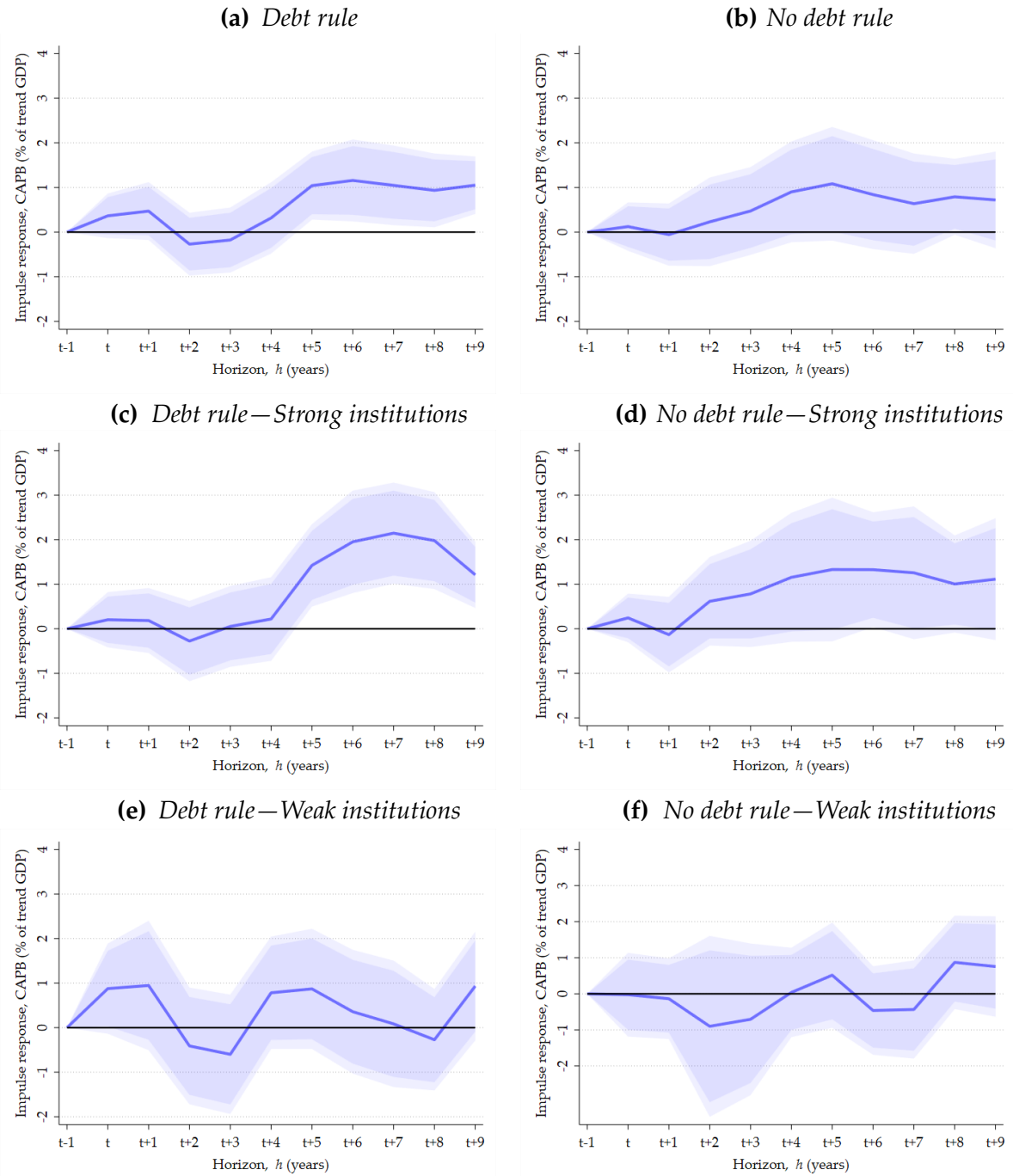
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Figure OAI.6: Impulse responses in EMDEs—other structural factors



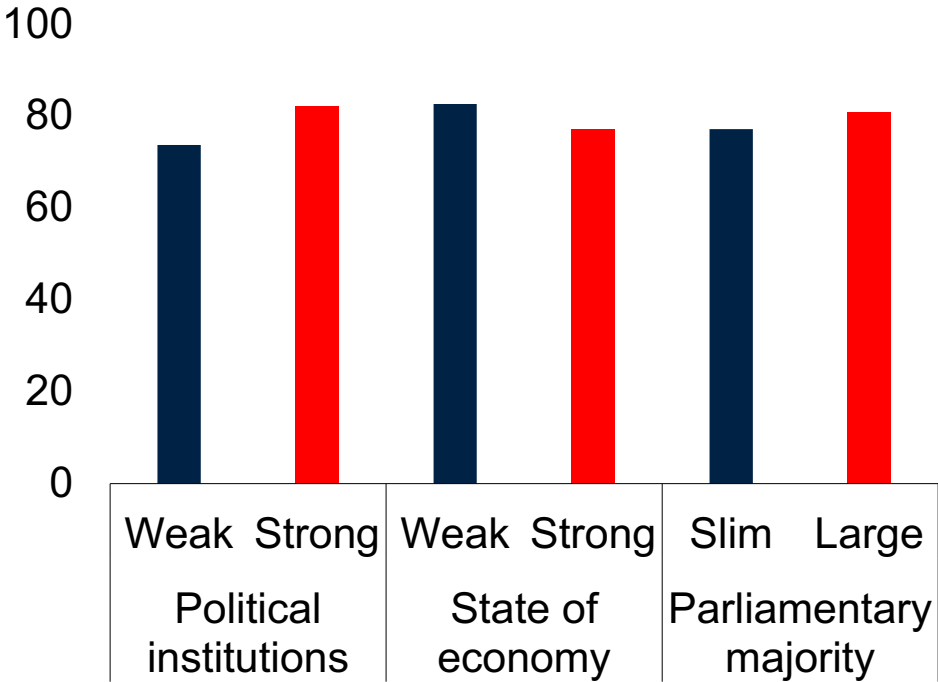
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Figure OAI.7: Impulse responses of CAPB to debt rule adoption



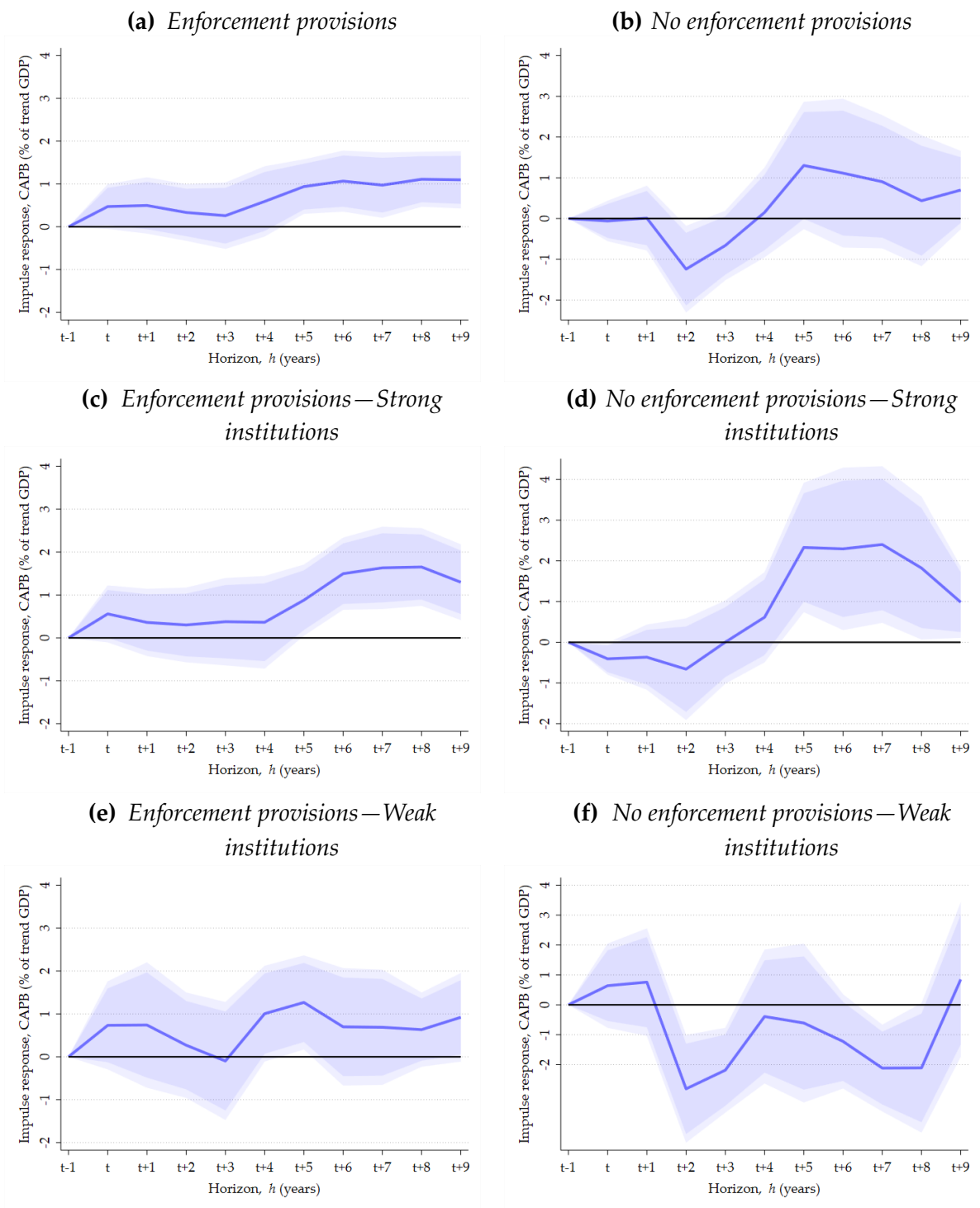
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Figure OAI.8: Adoption environment of rule adoption with deficit rule (%)



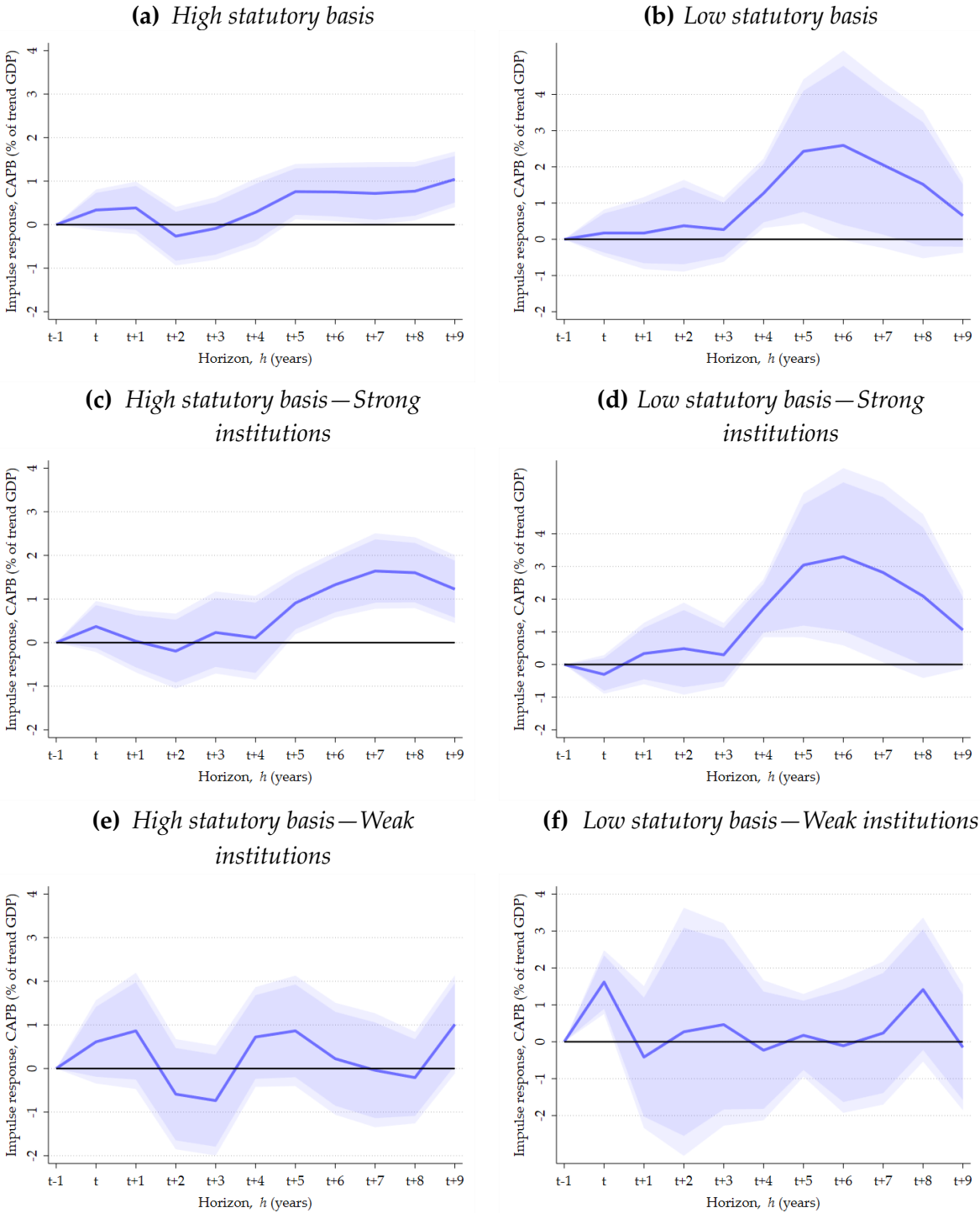
Notes: Figures show the percentage of initial rule adoption that included deficit rules across different adoption environments.

Figure OAI.9: Impulse responses of CAPB conditional on inclusions of (strict) enforcement provisions



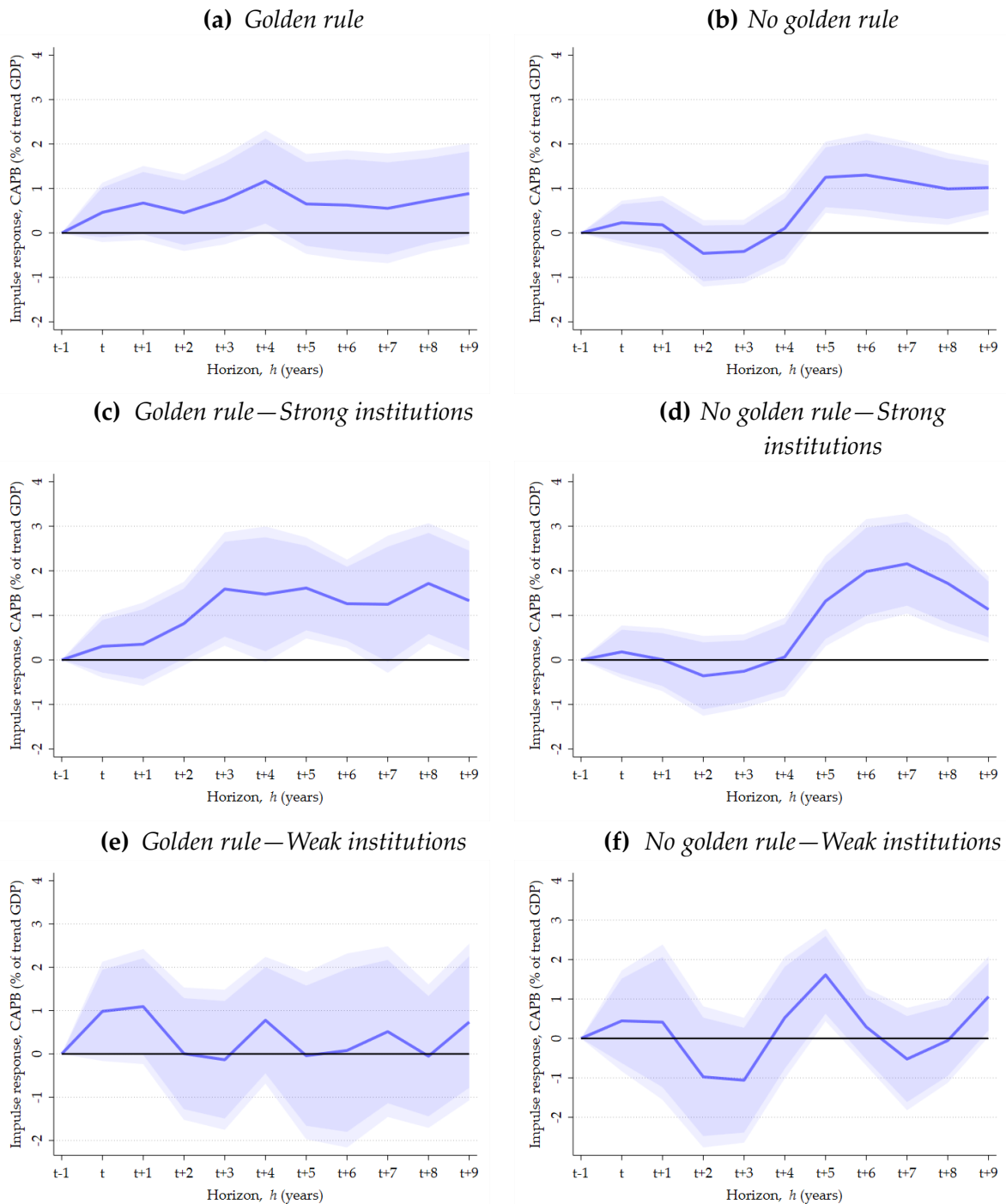
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Figure OAI.10: Impulse responses of CAPB conditional on statutory basis of fiscal rule(s)



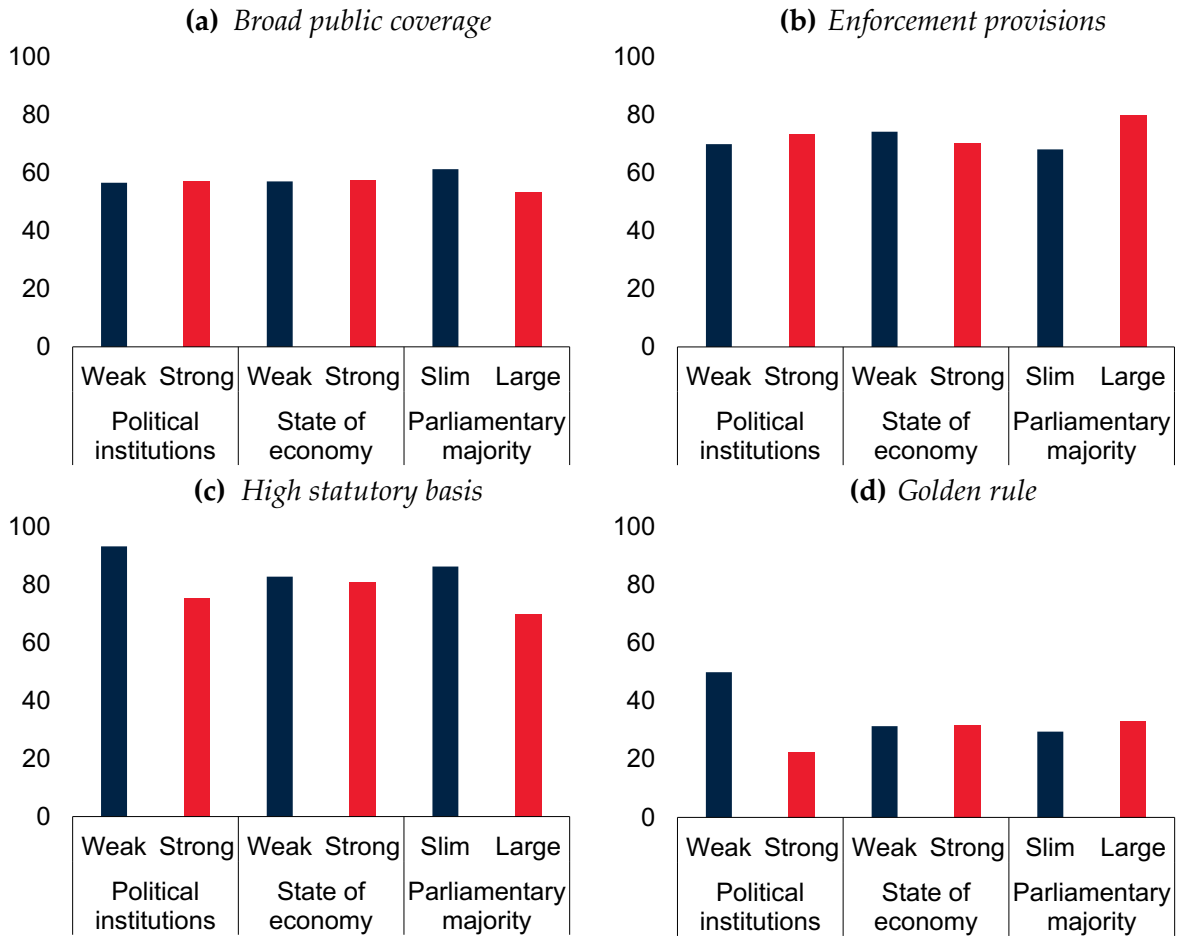
Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Figure OAI.11: Impulse responses of CAPB conditional on built-in flexibility into fiscal rule framework



Notes: See notes [Figure 2](#). The analysis covers 116 countries, including 58 cases of fiscal rule adoption. The number of observations included in each regression ranges between 2,201 and 2,209.

Figure OAI.12: Design choices and adoption environments (%)



Notes: Figures show the percentage of initial rule adoption that included strict enforcement, a high statutory basis, wide coverage, and a golden rule across different adoption environments.