The Sovereign Spread Compressing Effect of Fiscal Rules during Global Crises

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Abstract

Do fiscal rules help suppress sovereign spreads during periods of global financial stress? Yes! This paper examines whether fiscal rules contribute to mitigating sovereign spreads in emerging markets and developing economies during periods of heightened financial and economic volatility worldwide. It finds that the presence of fiscal rules is statistically significantly associated with lower sovereign spreads during the COVID-19 crisis—about 350 basis points lower on average. Interestingly, this correlation persists even when nations deviate from these rules,

indicating an expectation of post-crisis compliance. The study shows that deviations from fiscal rules are typically short-lived, with fiscal balance rules reinstated within 3.5 years. Robustness checks, including controls for institutional quality, fiscal rule strength, and global and regional factors confirm these results. Overall, the findings suggest that fiscal rules can help emerging markets and developing economies signal fiscal responsibility during episodes of global financial stress, reducing borrowing costs relative to countries without fiscal rules.

The Sovereign Spread Compressing Effect of Fiscal Rules during Global Crises

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JEL classification: F34, F41

1.   Introduction

Sovereign spreads rose rapidly in emerging markets and developing economies (EMDEs) at the onset of the Covid-19 pandemic, a period during which governments faced rising borrowing costs and fiscal expansion needs, albeit at varying degree across countries. We empirically investigate whether the existence of a fiscal rule was associated with lower or higher sovereign spreads in EMDEs during the recent Covid-19 pandemic shock.[1] In theory, the relation between the existence of a fiscal rule and sovereign spreads during economic downturns is ambiguous. On the one hand, fiscal rules could signal fiscal responsibility and serve as a commitment device to reassure financial markets' confidence, lowering sovereign spreads. On the other hand, fiscal rules might exacerbate the negative shock by constraining the government's flexibility to conduct countercyclical fiscal policy, rising even more sovereign spreads.[2]

We first document trends in fiscal rule adoption prior to and throughout the recent pandemic using the IMF Fiscal Rule Dataset (IMF, 2022). We then empirically investigate whether fiscal rules are associated with lower spreads and whether this relationship held through the pandemic. Next, we distinguish between rules that were continually enforced throughout the pandemic, rules that were temporarily abandoned due to escape clause usage, and rules that were suspended due to discretionary fiscal policy. In each of the empirical analyses described above, we use daily data of sovereign spreads from countries included in the J.P. Morgan Emerging Markets Bond Index Global (EMBI Global). Our baseline sample includes 58 EMDEs and spans the period between January 2019 through the first five months of 2022.[3] Our tests include controls such as global, regional, and corporate factors, country-specific proxies of economic activity, and various policy-related variables.

We document three novel findings regarding the relationship between fiscal rules and sovereign spreads. First, we show that countries with fiscal rules in place faced lower sovereign spreads relative to countries without rules before and after the onset of the COVID-19 pandemic.[4] Specifically, our estimates imply that through the pandemic, the presence of fiscal rules is associated with 350 basis point lower sovereign spreads, on average. Second, we illustrate that the difference in sovereign spreads for countries with and without rules widened in the

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[1] We consider budget balance rules, debt rules, expenditure rules, and revenue rules in our empirical analysis.

[2] An important strand of the literature has theoretically studied the fiscal rules' tradeoff between commitment and flexibility. See for example, Angeletos et al. (2006); Halac and Yared (2014); Halac and Yared (2018); and Halac and Yared (2022).

[3] In a robustness test, we investigate the spread-compressing effect of fiscal rules during the global financial crisis (GFC) of 2008-09. The sample covering the GFC timeframe includes 26 countries and uses data covering January 2007 through December 2009.

[4] Importantly, we show that the spread-compressing effect of fiscal rules is robust to the GFC of 2008-09.

post-pandemic period (292 basis points prior to the pandemic vs. 398 basis points after the pandemic started), mostly driven by sovereign spreads in countries without rules remaining high even after the global financial stress resided. Third, we find that the coefficient estimates of the fiscal rule dummy variables flagging enforcement throughout the pandemic, escape clause activation, and rule suspension are virtually identical, suggesting that the spread-compressing effect does not depend on the degree of enforcement of the rules through the pandemic.

Our results suggest that, during periods of global crisis, credit markets interpret the mere existence of fiscal rules as a signal of the sovereign government's fiscal responsibility.[5] Even if a rule is temporarily abandoned during a global crisis, the sovereign is expected to restore fiscal discipline in the aftermath of the crisis. Our results are robust after controlling for government effectiveness, suggesting that the adoption of fiscal rules creates a degree of market confidence beyond that generated by the government's reputation alone.

We provide suggestive evidence of the mechanism underlying our result that fiscal rules compress spreads even when temporarily abandoned, by performing an event study in which we empirically estimate the time it takes to return to compliance following such an abandonment of a budget balance rule. Using a sample including every instance of a sovereign government either suspending, revising upward, or activating an escape clause for a budget balance rule from 2000-2019, we show that following such a rule modification, a government is expected to return to compliance in approximately 3.5 years. This result, in conjunction with the sovereign spread-compressing effect, suggests that during global crises, credit markets internalize that temporary rule abandonments generally do not sacrifice long-term debt sustainability, and therefore do not penalize governments for activating an escape clause or suspending a fiscal rule. Thus, our results provide evidence that sovereigns possessing a reputation of fiscal responsibility faced lower borrowing costs through the pandemic.

This paper mainly contributes to the literature on sovereign spreads, in particular the literature exploring the effect of the COVID-19 shock on sovereign spreads and sovereign debt.[6] Zheng (2023), which is closely related to this paper, uses the global natural experiment created by the COVID-19 shock to identify sovereign borrowing capacity in time of need and its determinants. The study shows that countries with fiscal rules in place were able to borrow more through the pandemic and concludes that following fiscal rules and maintaining fiscal discipline during normal times allows sovereign governments to build the capacity to finance policy responses to fiscal

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[5] Our paper complements Halac and Yared (2014), Halac and Yared (2018), and Halac and Yared (2022) by showing empirically that, during the COVID-19 crisis and GFC, fiscal rules help signaling future commitment without sacrificing flexibility in the short run.

[6] For example, Davoodi et al., (2022b); Havlik et al., (2022); Arellano et al., (2023); and Zheng (2023).

shocks. We view our findings as complementary to Zheng (2023), as we highlight the mechanism through which fiscal rules lead to the ex-ante creation of fiscal space. Specifically, we show that fiscal rules lower borrowing costs for sovereign governments, and that the signal of fiscal responsibility provided to credit markets persists through a crisis period, regardless of the extent to which rules are followed during the crisis.[7]

Davoodi et al. (2022b) investigate the relationship between fiscal rule compliance and 5y CDS spreads for a panel of 90 countries during the 1990-2021 period. The authors find that after exceeding a budget balance rule, a country is expected to have higher spreads than countries who adhere to the rule, for around 3-4 years after the initial breach. Our framework presents a comprehensive analysis of the determinants of spreads, as we follow the existing literature by including controls such as a global factor, regional factor, corporate factor, country-specific measurements of economic activity, and various policy-related variables.[8] In this sense, our framework allows for a comparison of sovereign spreads between countries with a fiscal rule and those without a rule, and allows us to control for the degree of compliance of each rule. Further, our analysis focuses on periods of global crisis, during which EMDEs are more likely to experience shocks of a global nature.

Arellano et al. (2023) study debt relief programs and finds a compelling case for their implementation as a policy option to provide EMDEs with fiscal space during global crises. Havlik et al. (2022) compare the impact of monetary versus fiscal policy announcements on euro area government bond spreads in the unfolding COVID-19 pandemic, finding larger effects for monetary than for fiscal announcements. The study also finds that the relaxation of European fiscal rules through the activation of the emergency-escape clause under the Stability and Growth Pact is associated with rising spreads. Other studies that have empirically examined the impact of fiscal rules on spreads include Iara and Wolff (2010) and Kalan et al. (2018). To date, however, the existing literature is mostly limited to studies exploring the effect of fiscal rules across countries within the European Union, or the effect of fiscal rules at the sub-national level.[9] Our paper complements this strand of the literature by exploring the signaling effect of

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[7] Our study also considers a broader set of fiscal rules, as Zheng (2023) only considers national rules that are determined to be credible following a specified set of criteria, and the rules flagged are only up to date as of 2015. Therefore, this study is not able to consider rule suspensions or escape clause activations through the pandemic, as our study does.

[8] Daehler et al. (2020) test a similar specification in a study of the determinants of changes in sovereign CDS spreads of 30 emerging market economies through the first six months of 2020. The authors do not, however, consider the spread compressing effect of fiscal rules.

[9] Iara and Wolff (2010) study the impact of national fiscal rules on sovereign spreads within the euro area, finding stronger fiscal rules in member states to have a compressing effect. Kalan et al. (2018) study the impact of noncompliance with fiscal rules on sovereign spreads within the European Union from 1999-2016, finding spreads for countries that have been placed under an Excessive Deficit Procedure (EDP) to be on average 50-150bp higher than spreads for those that have not. Feld et al. (2017) studies the effects of sub-national fiscal rules on the risk premia of sub-national government bonds in Switzerland.

fiscal rules on sovereign spreads across a broader group of EMDEs, beyond the European Union, which typically face relatively higher spreads during periods of global financial stress.

This paper is also related to the literature on rules versus discretion. At the core of these papers is a tradeoff between the benefit of committing the government to not overspend against the benefit of granting it flexibility to react against negative shocks. For example, Angeletos et al. (2006) study the trade-off between commitment and flexibility in a consumption savings model with taste shocks privately observed by agents. They derive conditions under which minimum-savings policies, reminiscent to fiscal rules, characterize the solution to the principal-agent problem. Halac and Yared (2014), Halac and Yared (2018), and Halac and Yared (2022) study fiscal rules under similar environments. Fiscal rules emerge as an efficient mechanism through which citizens provide incentives to the government to behave according to their best interest. Our paper complements this strand of the literature by showing empirically that, during global crises, fiscal rules can signal future commitment (i.e., fiscal responsibility) without sacrificing flexibility to react against exogeneous shocks.

Our study also ties more broadly into the literature pertaining to the functioning and effectiveness of fiscal rules in influencing fiscal outcomes. The mechanism through which we hypothesize that fiscal rules dampen sovereign spreads is the signaling effect to credit markets of fiscal responsibility and long-term debt solvency. Crucial to this signal is the belief that fiscal rules are effective in achieving their intended use. An extensive theoretical literature has found the impact of a fiscal rule to vary based on the specific type of rule in place. Azzimonti et al., (2016), for example, theoretically and quantitatively evaluate the impact of a budget balance rule under which legislators cannot run any deficit whatsoever, finding that such a rule leads to a gradual reduction in public debt. Bianchi et al. (2023) study optimal policy response to a recession in the presence of sovereign risk, showing theoretically that in the midst of a recession, a rule that promises lower government spending in the future can help reduce current spreads and make stimulus more desirable. Hatchondo et al. (2022) introduce fiscal rules into a sovereign default model featuring long-term debt, showing that welfare gains can be achieved from the introduction of debt-brake and spread-brake rules, and that a common spread brake generates larger welfare gains for a union of heterogeneous countries. More recently, Esquivel and Samano (2023) show theoretically and quantitatively in a sovereign debt model with capital accumulation that a debt limit rule could increase investment due to lower sovereign risk, generating an economic expansion in the long run and relatively larger welfare gains.

The remainder of the paper is structured as follows: Section 2 details trends in fiscal rule adoption, and outlines the data employed in our empirical analysis as well as our empirical methodology. Section 3 presents our empirical

results and discusses the policy implications that follow. Section 4 concludes. In the Appendix we report additional figures relating to movements in sovereign spreads through the GFC and COVID-19 pandemic, as well as the results for our robustness checks.

2. Data and Empirical Framework

2.1 Fiscal Rules

In the thirty years preceding the pandemic, fiscal rules, which are numerical limits on budgetary aggregates, had surged in popularity as policies implemented by sovereign governments to achieve fiscal discipline. Fiscal rules commonly take the form of budget balance rules, debt rules, expenditure rules, and revenue rules.[10] Across all income levels, the number of countries with at least one fiscal rule in place has increased from 26 countries in 1997 to 103 countries in 2021.[11] As can be seen in Figure 1a, whereas high-income economies were early adopters of fiscal rules, recent growth in fiscal rule adoption has been dominated by low- and middle-income economies. As recently as 1997, low- and middle-income economies accounted for only 12% of all countries adhering to a fiscal rule, but by 2021 this share had risen to 58%. Among low- and middle-income countries, fiscal rule adoption has been widespread geographically. Regarding the types of rules adopted, budget balance rules and debt rules are by far the most adopted rules (see Figure 1b).

The widespread adoption of fiscal rules by low- and middle-income countries in recent years has been associated with enhanced fiscal discipline for sovereign governments adopting rules. As discussed in Section 1, a large literature exists documenting the disciplinary effect of fiscal rules on sovereign governments. Our descriptive statistics provide yet further evidence of the correlation that exists between fiscal rule adoption and fiscal discipline. Table 1 shows that during the 15-year period spanning 2007-2021, the average structural deficit-to-GDP ratio of countries adhering to any type of fiscal rule was 0.63 percentage points lower than the structural deficit of countries without a fiscal rule, and a one-sided t-test for the difference in means shows this difference to be statistically significant. The two years that stand out, however, are 2020 and 2021, as in these two years the trend reverses as countries with fiscal rules have slightly larger structural deficit-to-GDP ratios (4.59%), on average, than those without (4.35%).[12] Contrary to popular belief, this fact illustrates that fiscal rules do not constraint the government's capacity to respond to negative shocks. Moreover, as we will show in Section 3, the

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[10] See for example, Davoodi et al., (2022a).

[11] Ibid.

[12] This finding is consistent with Zheng (2023), which shows that fiscal rules enhance sovereign borrowing capacity.

unprecedented spike in rule suspensions and escape clause usage that occurred through the COVID-19 pandemic did not dampen the effect of fiscal rules on spreads for countries temporarily abandoning their rules. Instead, our empirical results imply that fiscal rules still provide a spread-compressing effect even if abandoned. We interpret these results to reflect the expectation that rule abandonment will be temporary, and that countries will return to fiscal rule compliance after a short duration of time.

Figure 1. Trends in Fiscal Rule Adoption

a. Adoption of fiscal rules, by income group

b. Fiscal rules in low- and middle-income countries, by type
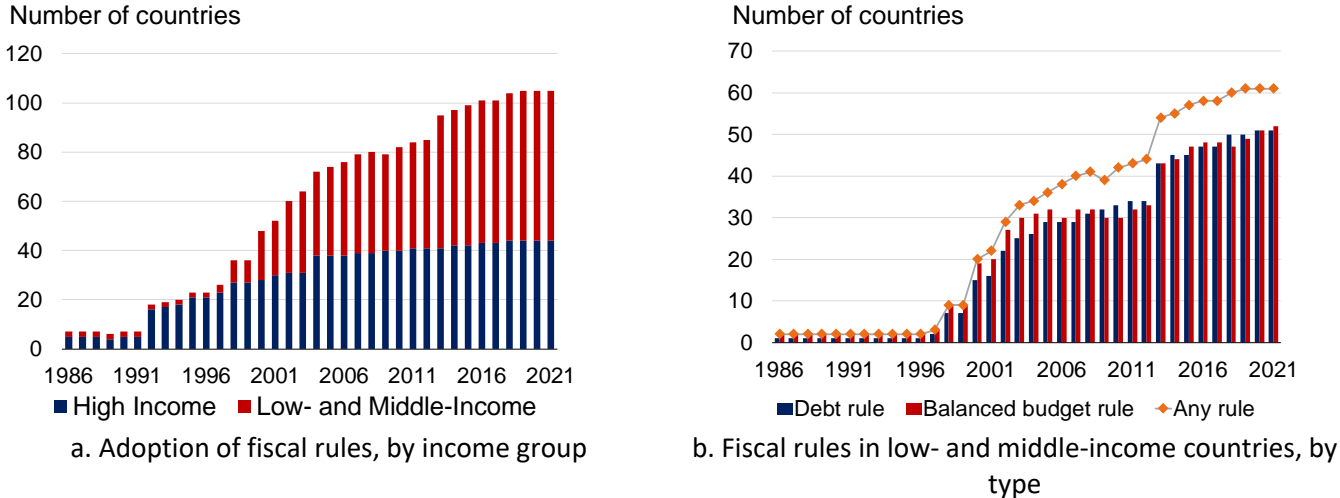
Source: Davoodi et al. (2022a)

Table 1. Average Structural Deficit (% GDP) for Countries with and without Fiscal Rules (2007-2021)

	Average	Standard Deviation
Countries With Fiscal Rule	2.78%	1.01%
Countries Without Fiscal Rule	3.41%	0.81%

Source: Davoodi et al. (2022a) and World Economic Outlook Database (April 2022 Vintage)
Note(s): Sample size of 41 middle and low-income countries.

Perhaps the most notable development in fiscal rule usage recently has been the unprecedented spike in escape clause usage and fiscal rule suspension witnessed during the COVID-19 pandemic. In 2020 and 2021, 39% and 36% of low- and middle-income countries with fiscal rules, respectively, either temporarily suspended a rule or used an escape clause.[13] The previous peak occurred in 2010, when suspensions and escape clause usage stood at a 7% rate, as only three countries abandoned their fiscal rules (see Figure 2). With the growing importance and relevance of fiscal rules in the years leading up to the pandemic, such a sudden breakdown in fiscal discipline raises the question of how long it will take for fiscal balances to return to their pre-pandemic trend, thus allowing

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[13] See Appendix Table A1 for a list of all low- and middle-income countries that either enacted an escape clause or temporarily suspended a fiscal rule during 2020-2021.

countries to return to fiscal rule compliance. We address this question in Section 3 using the IMF Fiscal Rule Dataset (IMF 2022), which provides us with a sample including every instance in which a budget balance rule was either suspended, revised upward, and/or an escape clause was used over the period 2000-2019.

A potential contributing factor to the increase in escape clause usage and temporary rule suspensions during the pandemic was the development of a "second-generation" of fiscal rules in the decade preceding the COVID-19 pandemic. As noted by Eyraud et al. (2018), in the years following GFC 2008-09, a "second-generation" of fiscal rules emerged which sought to construct rules in such a way that allows for an appropriate degree of short-run flexibility when necessary while still promoting long-term fiscal responsibility. In this context, many reforms made post-GFC introduced new escape clauses covering a larger set of contingencies during crisis periods in which unexpectedly large fiscal expansion is necessary, while providing guidance on the path back to compliance. The trend shown in Figure 2 highlights the fact that these enhancements allowed for a high degree of flexibility in fiscal rule enforcement through COVID-19 pandemic. Our empirical results reported in Section 3 provide evidence that with this added flexibility, fiscal rules continued to serve as a signal of fiscal responsibility during the pandemic, even for countries that enacted escape clauses and used discretion to suspend rules. Interestingly, we show that the existence of fiscal rules compressed sovereign spreads through the pandemic regardless of whether enforcement continued during the COVID-19 period.

Figure 2. Suspensions or Activations of Escape Clause by Year
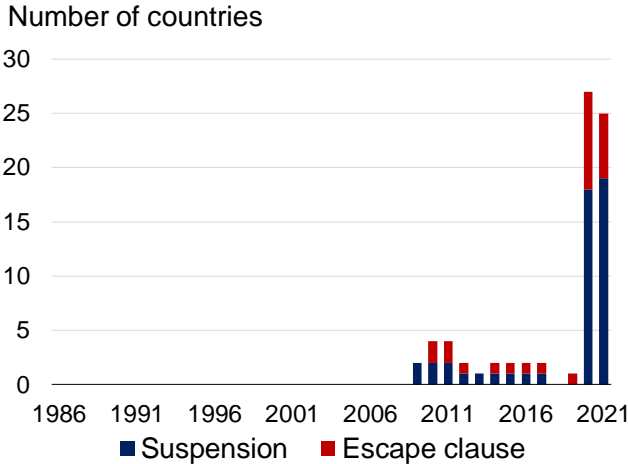
Source: Davoodi et al. (2022a)
Note: Figure includes all middle- and low-Income countries with fiscal rules

2.2   Sovereign Spreads

Through the first five months of 2020, the median sovereign spread on US dollar-denominated debt issued by emerging market economies increased by over 300 basis points. The trend of rising spreads was widespread geographically, yet some emerging market economies managed to navigate through the pandemic with a more subdued increase than others, providing these governments with much needed fiscal space through a period in which borrowing needs increased drastically. Interestingly, when partitioning the data on sovereign spreads into countries with and without fiscal rules, a clear pattern emerges. As can be seen in Figure 3, countries with fiscal rules tended to have lower spreads compared to countries without fiscal rules both prior to and after the onset of the pandemic. A similar pattern can be seen when comparing countries with and without fiscal rules during the GFC era from March 2008 onward (see Figure A1 in the appendix). This trend is suggestive of a role played by fiscal rules in compressing sovereign spreads, yet it is important to acknowledge the issue of endogeneity involved in taking such a stand, as sovereign governments that are inherently more fiscally responsible and hence experience lower borrowing costs are also more likely to adopt fiscal rules in the first place. Thus, it is not obvious ex-ante whether a sovereign government adopting a fiscal rule should be expected to experience lower spreads relative to a counterfactual in which no rule is adopted.

Figure 3. Sovereign Bond Spreads – By Existence of Fiscal Rule (COVID-19 Timeframe)
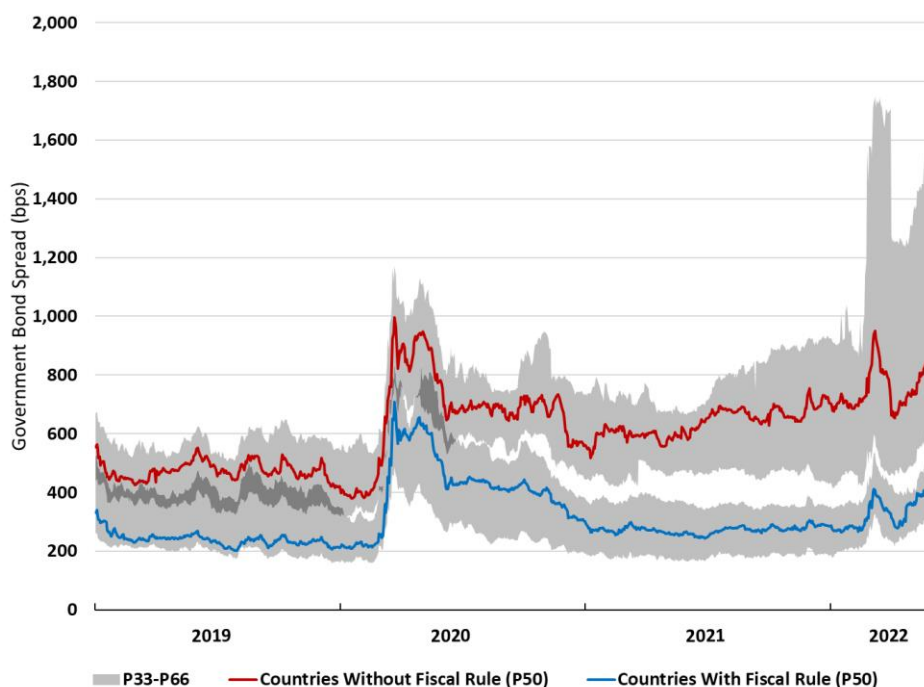
Source: J.P. Morgan Emerging Markets Bond Index Global, Davoodi et al. (2022a)
Notes: Gray areas are intended to show a period around the start of each event and not the longevity of each episode. Dashed lines show 25th and 75th percentile country spread.

2.3   Data

In our baseline analysis, we employ daily data of emerging market sovereign spreads over Treasuries on U.S. dollar-denominated debt for 58 countries included in the J.P. Morgan Emerging Markets Bond Index Global (EMBI Global). Table A2 presents our sample of countries, and the sample period covered is January 2, 2019 through May 27, 2022. The global factor used in our analysis is the EMBI Global index. Corporate spreads are captured by the J.P Morgan CEMBI IG+ index. To construct the regional factor, we adopt an approach similar to that used by Daehler et al. (2021). First, countries are grouped into geographic buckets according to the seven regional classifications defined by the World Bank's World Development Indicators database.[14] The regional factor for a given country is then calculated as the daily average logged spread for the country's regional grouping, excluding the country itself.

The country-specific economic indicators used as controls include the total external debt stock, primary balance (% of GDP), GDP per capita growth, and annual changes in consumer prices, all lagged by one year. Data for the external debt stock and primary balance is sourced from the spring 2022 vintage of the cross-country database of fiscal space created by Kose et al. (2022). GDP per capita growth is sourced from the IMF WEO database, and annual inflation data comes from the IMF as well.

Our policy-related variables are included to control for the influence of monetary policy decisions and pandemic-induced lockdowns and restrictions. These controls include dummy variables indicating dates of Federal Reserve and ECB announcements through the pandemic timeframe, and daily log changes in the Oxford COVID-19 Government Response Tracker Stringency Index. The Stringency Index, ranging from 0 to 100 (with 100 indicating the strictest response), is a composite of nine metrics measuring the stringency of school and workplace closures, stay-at-home requirements, and other government-mandated restrictions. Use of the Stringency Index serves as a control for variation in governments' responses to the pandemic.[15] The Federal Reserve and ECB actions that we flag include interest rate cuts and any other monetary policy-related measures taken to reassure markets through the early stages of the pandemic. A priori, it is ambiguous whether Federal Reserve or ECB action would increase or decrease spreads during a crisis period. On one hand, by easing global risk aversion, action taken could lower spreads by encouraging capital flows into emerging markets. On the other hand, if Fed or ECB action fails to soothe

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[15] Our methodology using the Oxford COVID-19 Government Response Tracker Stringency Index follows Daehler et al., (2021), who investigated factors influencing credit default swap (CDS) spreads through the COVID-19 pandemic.

global risk aversion, spreads may increase as capital is redirected away from emerging markets (particularly those struggling to contain the pandemic) and into the United States and EU.

Fiscal rules, suspensions, and escape clause usage are flagged using the IMF Fiscal Rule Dataset (IMF 2022). Finally, following Bergman and Hutchison (2015), we control for institutional quality using the World Bank Worldwide Governance Indicators (WGI) dataset. Specifically, we employ the percentile rank pertaining to the "government effectiveness" index reported out by the WGI data, ranging from 0 (lowest) to 100 (highest).[16]

2.4. Empirical framework

Our baseline specification takes the following form:

$$spread_{i,t} = \beta_0 + \beta_1 FiscalRule_{i,t} + \beta_2 GE_{i,t} + \beta_3 CEMBI_t + \beta_4 EMBI_t + \beta_5 Region_{i,t} + \eta' X_{i,t}^{economy} + \Theta' X_{i,t}^{policy} + \gamma_t + v_i + \epsilon_{i,t} \quad (1)$$

where $spread_{i,t}$ denotes the logged sovereign spread for country i on date t, with January 2, 2019 $\leq t \leq$ March 27, 2022. $FiscalRule_{i,t}$ is a dummy variable indicating whether a fiscal rule exists in country i at time t. The global factor is denoted $EMBI_t$, while $Region_{i,t}$ denotes the regional factor, $CEMBI_t$ is the corporate factor, $GE_{i,t}$ is the government effectiveness index, $X_{i,t}^{Economy}$ denotes the country-specific vector of covariates relating to macroeconomic activity, and $X_{i,t}^{Policy}$ is the country-specific vector of policy-related covariates. Month and country fixed effects are included in all tests.

Further, to test whether the spread-compressing effect of fiscal rules found during the COVID-19 timeframe, if any, also applies to other periods of global crisis, we test a similar specification using daily data of emerging market sovereign spreads for 26 countries during the GFC era. With this sample, we test a variation of the specification presented in equation (1) above which does not include the global, corporate, or regional factors, nor the vector of policy-related variables, due to data limitations:

$$spread_{i,t} = \beta_0 + \beta_1 FiscalRule_{i,t} + \beta_2 GE_{i,t} + \eta' X_{i,t}^{economy} + \gamma_t + v_i + \epsilon_{i,t} \quad (2)$$

where $January\ 2, 2007 \leq t \leq December\ 31, 2009$.

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[16] This variable captures "perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies".

3. Empirical Results

3.1   The Sovereign Spread-Compressing Effect of Fiscal Rules

Table 2 shows the results from the specification outlined in Equation (1). The full set of estimates for all covariates are reported in Table A4, in the appendix. Column (1) displays the estimates when the fiscal rule flag, global factor, regional factor, corporate factor, variable controlling for government effectiveness, country fixed effects, and month fixed effects are included as regressors. Column (2) includes all the variables mentioned above, in addition to our regressors relating to fiscal space. Column (3) includes the variables in Column (1), in addition to inflation and GDP per capita growth. Column (4) incorporates all the variables included in the first three tests. Column (5) includes all these as well as our policy variables. Notably, the existence of a fiscal rule is negatively associated with spreads across all tests, and the relationship is always statistically significant at the 1 percent level, with coefficient estimates ranging from -.775 to -1.029. In other words, the existence of a fiscal rule is associated with 54%-64% lower sovereign spreads. Given that the median spread throughout the entire sample period for countries without a fiscal rule was 590 basis points, our estimates imply that the average spread-reducing effect of a fiscal rule is 319 to 378 basis points. As expected, March 2020 is the month associated with the highest spreads.

We also estimate a negative and statistically significant relationship between government effectiveness and spreads. Turning to the regressors related to fiscal space, GDP growth, external debt, and inflation, the signs of most coefficient estimates are in line with our expectations.[17] Higher inflation and external debt are found to be associated with higher spreads, GDP per capita growth is found to be associated with lower spreads, and these coefficients are estimated with statistical significance at the 5 percent level across all tests. A stronger primary balance is estimated to compress spreads across all tests, although these coefficients are not always estimated with a high degree of statistical significance. Regarding policy-related regressors, we find statistically insignificant announcement effects for both the Fed and ECB policy variables. Likewise, we find statistically insignificant policy stringency effects.

Similarly, the results for the GFC era shown in Table A5 in the appendix indicate that a statistically significant spread-compressing effect of fiscal rules existed during 2007-2009, albeit one of a smaller magnitude. The coefficient estimates for β_1 range from -.101 to -.195, implying that an average spread-reducing effect of 36 to 67 basis points, given that the median spread for countries without a fiscal rule during the sample period is 378 basis

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[17] See Table A4 in the appendix.

points. We again estimate a negative and statistically significant relationship between government effectiveness and spreads, and the coefficient estimates for the variables related to fiscal space, real GDP growth, and inflation are all statistically significant and are estimated with the expected sign.

Table 2. Panel Regression Estimates of Fiscal Rule Impact on Sovereign Spreads

	Dependent Variable Log Spread (Daily)				
	(1)	(2)	(3)	(4)	(5)
Fiscal Rule	-1.029***	-0.867***	-0.835***	-0.775***	-0.775***
	(-38.99)	(-34.36)	(-32.24)	(-29.21)	(-29.21)
Global/Regional/Corporate Factors	Yes	Yes	Yes	Yes	Yes
Policy-Related Controls	No	No	No	No	Yes
Total External Debt Stocks	No	Yes	No	Yes	Yes
Primary Balance	No	Yes	No	Yes	Yes
GDP Per Capita Growth	No	No	Yes	Yes	Yes
Inflation	No	No	Yes	Yes	Yes
Government Effectiveness	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	48956	46675	45887	44320	44320
R^2	0.9184	0.9264	0.9107	0.9135	0.9135

t statistics in parentheses
* $p<0.10$, ** $p<0.05$, *** $p<0.010$

3.2   The Sovereign Spread-Compressing Effect during Global Crises

Beyond the effect of fiscal rules on sovereign spreads across the entire timeframe captured in our baseline specification, we are also interested in estimating the differential impact of fiscal rules on spreads prior to and throughout the onset of a crisis period. In a second specification, we employ a difference-in-difference regression to achieve this aim. Specifically, we begin by estimating the following specification, applied to the COVID-19 timeframe:

$$spread_{i,t} = \beta_0 + \beta_1 FiscalRule_{i,t} + \beta_2 PostCrisis_t + \beta_3 FiscalRule_{i,t} * PostCrisis_t + \beta_4 GE_{i,t} + \beta_5 CEMBI_t + \beta_6 EMBI_t + \beta_7 Region_{i,t}$$
$$+\eta' X_{i,t}^{economy} + \Theta' X_{i,t}^{policy} + \nu_i + \epsilon_{i,t} \tag{3}$$

where $PostCrisis_t$ equals 1 from $March\ 1, 2020$, onward, and equals 0 in the preceding period. Here, β_1 measures the effect of the existence of a fiscal rule on sovereign spreads in the pre-pandemic period, and $\beta_1 + \beta_3$ captures the effect of fiscal rules through the pandemic.

The full set of estimates obtained from our second specification can be found in Table A6 in the appendix, and a compressed version of the estimates can be seen in Table 3. The coefficient estimate for the COVID-19 period, which is found to be highly statistically significant across all tests, implies a 98 to 147 basis point increase during the pandemic relative to the pre-pandemic average. The existence of a fiscal rule is again estimated to compress spreads across all tests, with significance at the 1 percent level. As discussed above, the effect of fiscal rules on sovereign spreads prior to the pandemic is estimated by the standalone fiscal rule coefficient – ranging from -.626 to -.745 – which implies an average spread-reducing effect of 274 to 310 basis points for countries with a fiscal rule compared to those without. The effect of fiscal rules on sovereign spreads through the pandemic is estimated by the sum of the standalone fiscal rule coefficient and coefficient on the interaction term. This estimate ranges from -0.8 to -0.973, implying an average spread-reducing effect of 373 to 422 basis points through the pandemic. Thus, while fiscal rules are associated with lower spreads both prior to and through the pandemic, the ex-post spread compression that we estimate through the pandemic is larger in magnitude than the ex-ante compression.

Table 3. Difference-in-Difference Estimates of Fiscal Rule Impact in Post-Covid Time Period

	Dependent Variable Log Spread (Daily)				
	(1)	(2)	(3)	(4)	(5)
Fiscal Rule	-0.745***	-0.626***	-0.711***	-0.709***	-0.709***
	(-29.01)	(-25.22)	(-28.31)	(-27.26)	(-27.27)
Post Covid	0.337***	0.238***	0.261***	0.253***	0.254***
	(61.88)	(42.20)	(48.16)	(44.68)	(44.72)
Fiscal Rule#Post Covid	-0.228***	-0.174***	-0.176***	-0.174***	-0.174***
	(-42.38)	(-33.32)	(-35.33)	(-34.31)	(-34.30)
Global/Regional/Corporate Factors	Yes	Yes	Yes	Yes	Yes
Policy-Related Controls	No	No	No	No	Yes
Total External Debt Stocks	No	Yes	No	Yes	Yes
Primary Balance	No	Yes	No	Yes	Yes
GDP Per Capita Growth	No	No	Yes	Yes	Yes
Inflation	No	No	Yes	Yes	Yes
Government Effectiveness	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	No	No	No	No	No
Observations	48956	46675	45887	44320	44320
R^2	0.9195	0.9252	0.9115	0.9136	0.9136

t statistics in parentheses
* $p<0.10$, ** $p<0.05$, *** $p<0.010$

To measure how the impact of fiscal rules on sovereign spreads changed through the pandemic on a more granular level, we employ a third specification in which the time dummies are captured at the weekly level, and the fiscal rule flag is interacted with these weekly dummies:

$$spread_{i,t} = \beta_0 + \beta_1 FiscalRule_{i,t} + \beta_2(FiscalRule_{i,t} * \gamma_t) + \beta_3 GE_{i,t} + \beta_4 CEMBI_t + \beta_5 EMBI_t + \beta_6 Region_{i,t}$$
$$+\eta' X_{i,t}^{economy} + \Theta' X_{i,t}^{policy} + \gamma_t + \nu_i + \epsilon_{i,t}$$

(4)

The results obtained from our estimation of Equation (4) can be visualized in Figure 4. Specifically, the weekly fixed effect estimates are reported out alongside the sum of the weekly fixed effect estimate and weekly fixed effect-fiscal rule interaction term. Thus, the difference between the two trends reported out in Figure 4 represents the time-varying effect of fiscal rules on sovereign spreads through the entire sample period. The trends show that a spread-compressing effect is estimated prior to the onset of the pandemic in early 2020, that this effect largely disappears from March-May 2020, and that it reemerges from the end of May 2020 through the remainder of the sampling timeframe. These estimates align with our estimation of Equation (2) shown above, in that the COVID-19 period is associated with rising spreads for countries with and without fiscal rules alike, yet fiscal rules are still found to significantly compress spreads.

We then test for the differential impact of fiscal rules on sovereign spreads both before and throughout the GFC era, using the same specification as shown in (3) but excluding the global, regional, and corporate factors, again due to data limitations.[18] The results of this test, which can be found in Table A7 in the appendix, imply that the spread-compressing effect of fiscal rules was stronger in the post-crisis period then pre-crisis period. In fact, while a negative and statistically significant coefficient estimate is found across all tests for the interaction term between the fiscal rule and post-crisis dummies, the standalone fiscal rule coefficient estimate is only statistically significant in two out of five tests. Therefore, while we do not find strong evidence of a spread-compressing effect of fiscal rules prior to the onset of the GFC, fiscal rules are estimated to compress spreads through the crisis period. Given that the median spread for countries without a fiscal rule was 420 basis points in the post-crisis period, our estimates of the spread-compressing effect of fiscal rules after March 2008 range from 16 to 42 basis points. Our results therefore imply that the spread-compressing effect of fiscal rules during periods of global crisis has strengthened since the GFC. One possible explanation for this development is the development of second-generation rules, which as discussed by Eyraud et al. (2018), have improved previously existing fiscal rules along numerous dimensions, including the balance between flexibility and enforceability.

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[18] The post-crisis period for tests applied to the GFC era is defined as starting in March 2008.

Figure 4. Coefficient Estimates for Weekly Fixed Effects and Interaction with Fiscal Rule
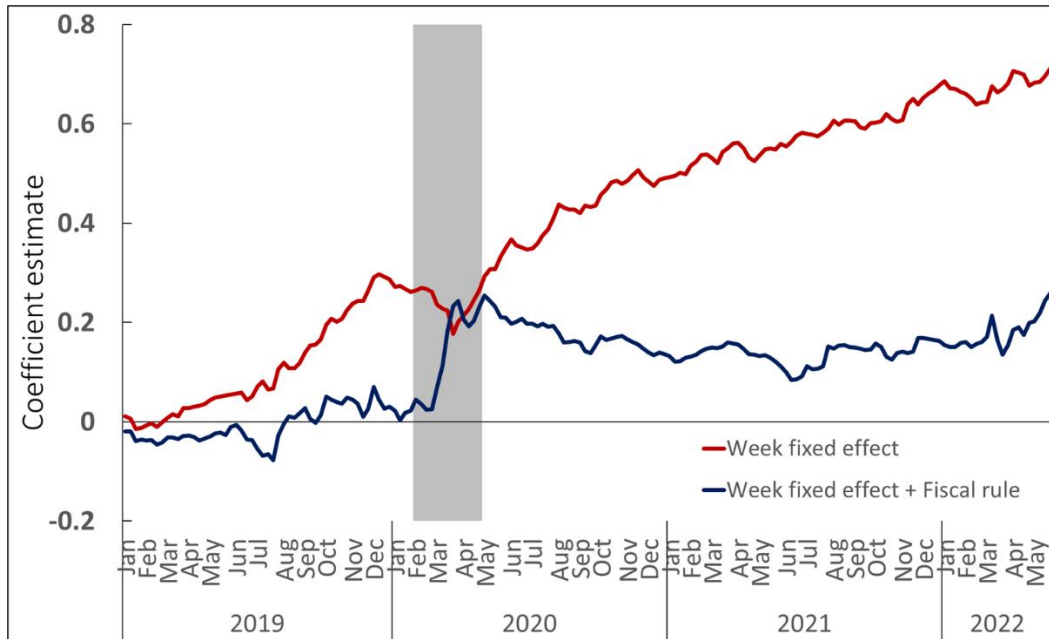
Source: Authors' estimates
Notes: Results are obtained from estimation of Equation (3), with controls including the global, regional, and corporate factors, measurement of government effectiveness, existence of a fiscal rule, weekly fixed effects, and country fixed effects.

3.3 The Sovereign Spread-Compressing Effect of Fiscal Rule Suspensions and Escape Clause Usage

In our next set of empirical tests, we investigate the effect of fiscal rules on sovereign spreads during the COVID-19 pandemic while distinguishing between rules that are continually enforced throughout a given year, rules that are temporarily abandoned due to escape clause usage, and rules that are temporarily suspended due to discretionary fiscal policy. Recall that in our baseline specification, we did not distinguish between these three cases, and our estimates of Equations (1) – (4) therefore only captured the effect of fiscal rules on spreads through the COVID-19 pandemic at the broadest level. As mentioned in Section 2, an unprecedented spike in escape clause usage and rule suspensions occurred in 2020 and 2021. In the tests that follow, we investigate whether or not fiscal rules with escape clauses have a larger spread-compressing effect than fiscal rules suspended due to discretionary fiscal policy. Surprisingly, we find no evidence suggesting that usage of an escape clause or a fiscal rule suspension weakened the spread reduction associated with a fiscal rule through the pandemic. We believe this finding to be of particular interest given the trade-offs faced by policymakers seeking to balance the competing goals of simplicity, flexibility, and enforceability. While Debrun and Jonung (2018) show that simplicity, flexibility, and enforceability are very difficult to attain simultaneously, our results suggest that complex rules

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attempting to achieve flexibility through the inclusion of complicated escape clauses covering many contingencies can be greatly simplified given that credit markets do not appear to perceive any difference between suspensions and escape clause usage during global crises.

We estimate the differential effect of fiscal rule suspensions and escape clause usage on spreads with the following modification of Equation (1):

$$spread_{i,t} = \beta_0 + \beta_1 FiscalRule_{i,t} + \beta_2 EscapeClause_{i,t} + \beta_3 Suspension_{i,t} + \beta_4 GE_{i,t} + \beta_5 CEMBI_t + \beta_6 EMBI_t + \beta_7 Region_{i,t}$$
$$+\eta' X_{i,t}^{economy} + \Theta' X_{i,t}^{policy} + \gamma_t + \nu_i + \epsilon_{i,t} \tag{5}$$

where now, $FiscalRule_{i,t}$ only takes on a value of 1 if a fiscal rule is enforced continually throughout a given year. In our sample, ten countries suspend a fiscal rule in 2020 and 2021. The number of countries enacting an escape clause are one in 2019, eight in 2020, and five in 2021. Of the countries suspending fiscal rules and using an escape clause in 2020 and 2021, three nations – India, Paraguay, and the Russian Federation – fall under both categories in both years. In the tests shown in this section, we exclude Russia due to the fact that it is an outlier nation in 2022, the reasons for which are largely influenced by sociopolitical developments rather than COVID-19 related factors. Additionally, we include India and Paraguay with the group of nations suspending fiscal rules rather than with nations using an escape clause. With this assumption, we implicitly assume that from the perspective of credit markets, the implications of a suspension on long-term debt solvency outweigh the implications of escape clause usage. In the appendix we report out the results of both specifications in this section reversing this assumption, by categorizing India and Paraguay as countries enacting an escape clause, rather than categorizing the two nations as rule suspenders. The results remain largely unchanged under this alternative assumption.

The coefficient estimates of the three fiscal rule dummy variables in Equation (5) are shown in Table 4. The full set of estimates is reported in Table A8 in the appendix. Across all tests, the coefficient estimates are virtually identical for the dummy variables flagging escape clause usage and fiscal rules that are continually enforced. Crucially, the coefficient estimates for the dummy variable indicating a rule suspension do not show any evidence of a mitigation of the spread-reducing effect of fiscal rules. In fact, the coefficient estimates for the fiscal rule suspension dummy variable are slightly larger in magnitude than for the other two fiscal rule indicators. As we show in our event study analysis presented in the following section, historical evidence points toward this conclusion, as we estimate that countries who temporarily abandon a budget balance rule will return to compliance in less than three years.

Table 4. Panel Regression Estimates of Escape Clause vs. Suspension Usage on Sovereign Spreads

	Dependent Variable Log Spread (Daily)				
	(1)	(2)	(3)	(4)	(5)
Fiscal Rule – No Suspension or Escape Clause	-1.022***	-0.867***	-0.845***	-0.802***	-0.802***
	(-39.05)	(-34.57)	(-32.91)	(-30.49)	(-30.48)
Escape Clause	-1.021***	-0.886***	-0.841***	-0.822***	-0.822***
	(-36.68)	(-33.26)	(-31.03)	(-29.43)	(-29.42)
Suspension	-1.232***	-1.041***	-1.043***	-1.004***	-1.004***
	(-45.30)	(-39.94)	(-39.12)	(-36.57)	(-36.57)
Global/Regional/Corporate Factors	Yes	Yes	Yes	Yes	Yes
Policy-Related Controls	No	No	No	No	Yes
Total External Debt Stocks	No	Yes	No	Yes	Yes
Primary Balance	No	Yes	No	Yes	Yes
GDP Per Capita Growth	No	No	Yes	Yes	Yes
Inflation	No	No	Yes	Yes	Yes
Government Effectiveness	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	48956	46675	45887	44320	44320
R^2	0.9197	0.9274	0.9125	0.9152	0.9152

t statistics in parentheses
* p<0.10, ** p<0.05, *** p<0.010

Event Study – Path of Debt Following Suspension or Modification of the Budget Balance Rule

The results of our empirical analysis outlined in Section 3.3 indicate that through the pandemic, the spread-compressing effect of fiscal rules was maintained, even for countries who temporarily abandoned their rules. In this section we provide suggestive evidence of the mechanism driving this result, namely the fact that countries who suspend their fiscal rules or enact an escape clause generally return to rule compliance in a short amount of time. Hence, credit markets do not perceive a material impact on a sovereign government's long-term debt solvency if a rule is temporarily abandoned. We show this empirically through an event study analysis in which the deviation of a country's fiscal balance from its prior average is estimated in the years following the relaxation of a budget balance rule.[19]

The IMF Fiscal Rule Dataset (IMF 2022) provides us with a sample including every instance in which a budget balance rule was either suspended, revised upward, and/or an escape clause was used over the time period 2000-

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[19] We focus the event study on budget balance rules, and not debt, revenue, or expenditure rules, due to sample size limitations. For example, while we identify 14 instances in which a budget balance rule was suspended or modified from 2000-2019, only three countries (Hungary, Malaysia, and Panama) suspended or modified a debt rule over this timeframe.

2021. Limiting the sample timeframe to 2000-2019, we identify fourteen instances of such events in the dataset, which we refer to as budget balance rule modification events and are reported out in the appendix, in Table A14. Following Davoodi et al. (2022b), we measure a country's fiscal balance using the country's specified budget balance target, which can differ across countries. For example, Chile's budget balance rule pertains to its structural balance, whereas Israel's budget balance rule pertains to its overall balance, and Uruguay's rule pertains to its primary balance. Each of these variables are identifiable in the IMF's Fiscal Rules and World Economic Outlook (WEO) datasets. A country's baseline (pre-suspension/revision) fiscal balance is calculated as the three-year average target balance prior to the suspension or revision of a fiscal rule. Our summary statistics (reported in Table A15) show that following a budget balance rule modification event, the median duration for a country to return to its baseline fiscal balance is 3.5 years. The median deviation of a country's fiscal balance from its baseline following a modification is 4.4% of GDP. In the sample analyzed, two countries, Argentina and Russia, which both suspended their budget balance rules in 2009 as a result of the global financial crisis, never returned to their pre-suspension baseline in the years following the suspensions, and ultimately abolished their rules.[20]

While the sample of countries that have previously suspended, revised, and/or enacted an escape clause for budget balance rules is not large, we employ an event study analysis as an initial step to empirically answer the question of how long a country should be expected to take to return to compliance. After controlling for year and country fixed effects, our estimates indicate that following a budget balance rule modification, a country is expected to take approximately three years to return to its baseline fiscal balance. This implies that for a country that suspended its budget balance rule in 2020, its target balance would be expected to return to its 2017-2019 average by the year 2023. Further, our estimates find the deterioration of the fiscal balance to reach its peak one year following the initial modification, with the deficit in this year estimated to be almost 4% of GDP higher than the three-year average preceding the modification. As mentioned at the beginning of this section, we believe that the short time duration for which it has historically taken for sovereign governments to return to compliance after abandoning fiscal rules is a key driver underlying the results reported out in Section 3.3. The full results of our analysis can be seen in Figure 5.

Figure 5. Fiscal Balance Path Following Suspension/Revision of Budget Balance Rule or Escape Clause Usage

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[20] In the case of Argentina, the budget balance rule was suspended between 2009 and 2017, and then abolished thereafter. For Russia, its short-lived budget balance rule (targeting the non-oil balance) became effective in 2008, was suspended in April 2009, and was formally abolished in 2012.
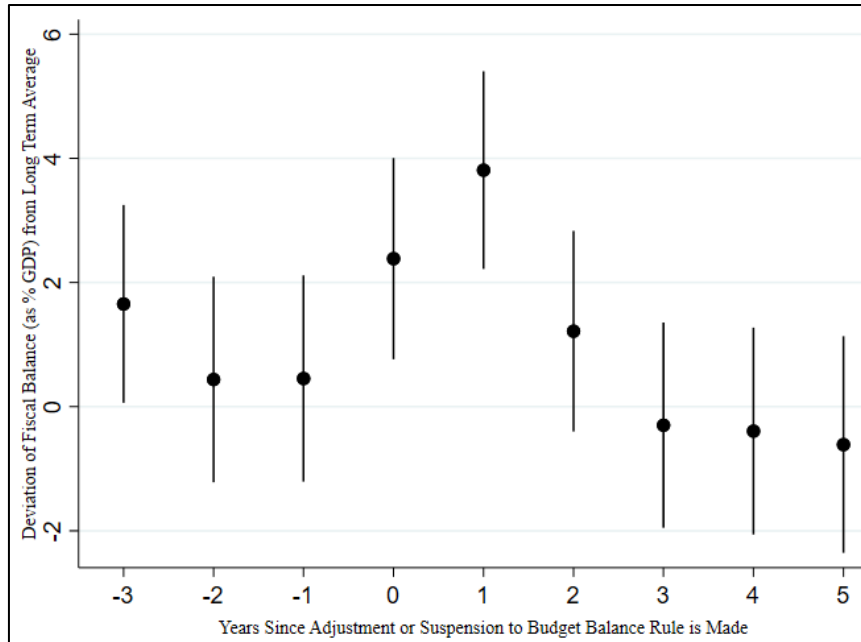
Source: Davoodi et al. (2022a) and World Economic Outlook Database (April 2022 Vintage)

Notes: GLS coefficient estimated (and their 95% confidence intervals) are reported. The dependent variable is equal to the deviation of a country's fiscal balance (as a percentage of GDP) from its three-year average at the time of suspension/adjustment. For example, the coefficient estimate at t=0 implies that in the year in which a rule modification event occurs, a country's deficit is estimated to be approximately 2% of GDP higher than the three-year average preceding the modification. Controls include country and year fixed effects, and the data covers the period 2000-2019.

3.4   Robustness Tests

We explore whether the empirical results pertaining to the COVID-19 timeframe outlined in Sections 3.1-3.3 are robust to tests controlling for the strength of fiscal rules, rather than our binary measurement which only captures the existence of a rule. To do so, we construct an index of fiscal rule strength following Davoodi et al. (2022b). For any given country with fiscal rules in place, the fiscal rule index is measured by assigning scores within the following four categories: 1) statutory or legal basis of the fiscal rule, 2) monitoring of fiscal rules, 3) enforcement and correction mechanisms, and 4) flexibility and resilience against shocks. Scores are assigned based on rule characteristics as captured in the IMF Fiscal Rule Dataset (IMF 2022). If a country has multiple fiscal rules in place then each rule is scored, weighted according to its score in descending order, then summed to compute the country-level index. Both national and supranational rules are considered, and ultimately the country-level index is standardized such that the lowest possible score is 0, and the highest possible score is 1.[21] Conditional on the

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[21] The standardization procedure used by Davoodi et al., (2022b) results in an index ranging between -.7 and 3.6. Other than this difference in standardization procedure, our constructed index follows the exact steps outlined in Davoodi et al., (2022b).

existence of a fiscal rule, our constructed index has a mean of .362 and standard deviation of .258 during our sample timeframe of 2019-2022.

Use of our constructed index allows us to assess the notion that not all rules are created equal, and that the strength of a country's rules may influence the spread-compressing effect afforded by the rules. Indeed, the literature has found rule strength to matter in some contexts, such as their disciplinary effect. For example, Caselli and Reynaud (2020) estimate the causal effect of fiscal rules on fiscal balances using a panel of 142 countries from 1985-2015, finding well-designed rules to have a statistically significant impact on fiscal balances, after correcting for selection bias. Given that rule strength influences the disciplinary effect of fiscal rules, and this disciplinary effect in turn influences a country's degree of fiscal responsibility as perceived by credit markets, it is plausible that the strength of rules may influence their ability to compress spreads as well.

We begin by testing our initial specification outlined in Equation (1), replacing the binary fiscal rule variable with our constructed index, lagged by one year. We lag the index due to the fact that it is constructed on an annual basis, and in practice the individual components of fiscal rules from which our index is measured may change at different points during the calendar year for different countries. The lagged index value therefore represents the strength of a country's fiscal rules at the onset of the current year. The results of this test, which are reported out in Appendix Table A10, indicate that a similar spread-compressing effect is estimated when our index of rule strength is used as a regressor, the difference being that the magnitude of spread reduction associated with the existence of fiscal rules is now increasing in rule strength. For example, for a country whose fiscal rule index takes on the mean value of .362, the magnitude of spread reduction relative to a country with no fiscal rules is estimated to be range from 118 to 156 basis points. Meanwhile, a country whose fiscal rule index takes on the maximum possible value of 1, as Lithuania does throughout the entire sample timeframe, the magnitude of spread reduction is estimated to range from 272 to 338 basis points. It is worth noting that our estimated spread reduction associated with fiscal rules is lower when rule strength is controlled for, compared to our baseline analysis. We therefore interpret the range of estimates reported out in Section 3.1 to be an upper bound for the reduction in spreads associated with the existence of fiscal rules.

Next, we test our second specification for the COVID-19 timeframe outlined in Equation (3) using the fiscal rule index in place of the binary fiscal rule variable and estimate a similar spread-compressing effect as in Section 3.2 now with the magnitude increasing in rule strength. The full set of coefficient estimates for this test can be seen in Appendix Table A11. The standalone fiscal rule index coefficient estimate again represents the spread reduction

associated with fiscal rules prior to the onset of the pandemic. This coefficient ranges from -.444 to -.542, implying a 88 to 105 basis point reduction in spreads for a country with rules of mean strength. The spread reduction associated with fiscal rules through the pandemic is then given by the sum of the coefficient estimates for the standalone fiscal rule index and interaction between fiscal rule index and post-pandemic indicator variable. This sum ranges from -.884 to -.958, implying a spread reduction of 186 to 199 basis points through the pandemic.

Similarly, we retest the specification shown in Equation (5) which distinguishes between countries that temporarily suspended their fiscal rules, countries that enacted an escape clause, and those that maintained their rules through the pandemic, using the lagged fiscal rule index in place of binary measurements. As was the case in the initial test outlined in Section 3.3, the results of this test imply a similar spread compression for all countries with fiscal rules, regardless of the degree of enforcement through the pandemic. The results from this test can be seen in Appendix Table A12. Finally, the results of our three main tests outlined in Sections 3.1-3.3 remain robust to tests in which outlier countries are excluded. See the Appendix for a description of the methodology used for these tests and see Table A13 for the full set of coefficient estimates for our baseline estimation with outliers removed.

4   Conclusion

This paper provides empirical evidence that the adoption of fiscal rules can help suppress borrowing costs for emerging markets and developing economies during periods of global financial stress. Using the COVID-19 timeframe as our baseline sample period, we find that the existence of a fiscal rule is associated with lower sovereign spreads, with estimates of the average spread-compressing effect ranging from 319 to 378 basis points. The result is robust after controlling for institutional quality, and to the extent to which enforcement of the rule occurred during the global crisis. Our robustness tests also indicate that the spread-compressing effect is increasing in rule strength, and we therefore interpret the spread-compressing effect estimated in our baseline test as an upper bound. Further, we show that the spread-compressing effect of fiscal rules is robust to other global crisis periods such as the GFC of 2008-09. The spread-compressing effect is estimated to be stronger during the COVID-19 pandemic than during the GFC, a result which we interpret to reflect the gradual improvement of fiscal rules and generation of "second-generation" rules in the decade preceding the pandemic.

Regarding the finding that fiscal rules compressed spreads through the pandemic regardless of the degree of enforcement, we also provide suggestive evidence for the mechanism driving this result by performing an event study empirically estimating the time it takes to return to compliance following an abandonment of a budget

balance rule. Together, our results suggest that during global crises, credit markets internalize the fact that temporary rule abandonments generally do not lead to long-term debt insolvency. Thus, our results provide evidence that credit markets functioned properly through the pandemic in the sense that sovereign governments possessing a reputation of fiscal responsibility faced borrowing costs which facilitated meeting rising short-term needs. Our results have strong implications for policymakers in EMDEs who seek policies that signal fiscal responsibility and compress borrowing costs, especially during global crises such as the COVID-19 pandemic. The results not only suggest that a spread-compressing effect of fiscal rules exists, but that complex rules attempting to achieve flexibility through the inclusion of complicated contingencies can be greatly simplified given that credit markets do not perceive any difference between suspensions and escape clause usage during global crises.

There are several interesting issues concerning the spread-compressing effect and the fiscal responsibility channel of fiscal rules that future work can focus on. For instance, does the spread-compressing effect of fiscal rules hold during idiosyncratic, country-specific crises? If so, do markets internalize temporarily rule abandonments during idiosyncratic negative shocks the same way they do during periods of global crisis? Which type of fiscal rule is most effective in simultaneously signaling fiscal responsibility and enforcing fiscal discipline - simple debt rules, spread break rules as in Hatchondo et al. (2022), or a rule promising low government spending in the future as in Bianchi et al. (2023)? What would constitute an adequate escape clause for this fiscal rule, if any? Our analysis suggests that the spread-compressing effect of fiscal rules is worth consideration, and, thus, we view the questions posed as promising avenues for future research. Specifically, extending our empirical framework to country-specific crises and enhancing sovereign debt models with strategic enforcement of fiscal rules to explore the issues raised above are interesting areas for future research.

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Appendix

Table A1. Countries Suspending Fiscal Rules or Enacting Escape Clause During 2020-2021

Country	Rule Adjustment
Argentina	Suspension
Armenia	Escape clause activation
Azerbaijan	Suspension
Benin	Suspension
Bulgaria	Escape clause activation
Burkina Faso	Suspension
Colombia	Suspension
Costa Rica	Escape clause activation
Côte d'Ivoire	Suspension
Georgia	Escape clause activation
Grenada	Escape clause activation
Guinea Bissau	Suspension
India	Activation of escape clause, then suspension of rules.
Indonesia	Suspension
Jamaica	Escape clause activation
Maldives	Suspension
Mali	Suspension
Mauritius	Suspension
Niger	Suspension
Paraguay	Activation of escape clause, then suspension of rules.
Peru	Suspension
Russian Federation	Suspension of budget balance rule, escape clause activated for expenditure rule.
Senegal	Suspension
St. Vincent and the Grenadines	Suspension
Togo	Suspension

Table A2. Sample of Countries in Baseline Analysis (COVID-19 Timeframe)

Angola	Ghana	Papua New Guinea
Argentina	Guatemala	Paraguay
Armenia	Honduras	Peru
Azerbaijan	India	Philippines
Belarus	Indonesia	Romania
Belize	Iraq	Russian Federation
Bolivia	Jamaica	Senegal
Brazil	Jordan	Serbia
Cameroon	Kazakhstan	South Africa
China	Kenya	Sri Lanka
Colombia	Lebanon	Suriname
Costa Rica	Malaysia	Tajikistan
Côte d'Ivoire	Mexico	Tunisia
Dominican Republic	Mongolia	Türkiye
Ecuador	Morocco	Ukraine
Egypt, Arab Rep.	Mozambique	Venezuela, RB
El Salvador	Namibia	Vietnam
Ethiopia	Nigeria	Zambia
Gabon	Pakistan	
Georgia	Panama	

Table A3. Sample of Countries in Limited Sample (GFC Timeframe)

Argentina	Indonesia	Russian Federation
Brazil	Iraq	Serbia
Bulgaria	Lebanon	South Africa
China	Malaysia	Tunisia
Colombia	Mexico	Türkiye
Dominican	Pakistan	Ukraine
Ecuador	Panama	Venezuela, RB
Egypt, Arab Rep.	Peru	Vietnam
El Salvador	Philippines	

Table A4. Panel Regression Estimates of Fiscal Rule Impact on Sovereign Spreads (COVID-19 Timeframe)

| | | *Dependent Variable* | | | |
| | | Log Spread (Daily) | | | |
	(1)	(2)	(3)	(4)	(5)
Fiscal Rule	-1.029***	-0.867***	-0.835***	-0.775***	-0.775***
	(-38.99)	(-34.36)	(-32.24)	(-29.21)	(-29.21)
EMBI Global	0.742***	0.715***	0.739***	0.725***	0.717***
	(10.39)	(10.47)	(11.27)	(10.91)	(10.67)
CEMBI	0.195***	0.221***	0.186***	0.196***	0.201***
	(3.32)	(3.89)	(3.44)	(3.55)	(3.61)
Regional Factor	0.174***	0.165***	0.220***	0.210***	0.210***
	(12.56)	(12.13)	(16.86)	(15.42)	(15.42)
Government Effectiveness	-0.0157***	-0.0123***	-0.0127***	-0.0125***	-0.0125***
	(-39.20)	(-32.47)	(-33.38)	(-32.90)	(-32.90)
GDP Per Capita Growth			-0.00842***	-0.00924***	-0.00924***
			(-18.20)	(-17.46)	(-17.46)
Inflation			0.0195***	0.0189***	0.0189***
			(85.01)	(56.73)	(56.73)
Primary Balance		-0.0067***		-0.000757	-0.000760
		(-10.82)		(-0.87)	(-0.87)
Total External Debt Stocks		0.00715***		0.000513**	0.000512**
		(65.89)		(2.38)	(2.38)
Fed Policy Dummy					-0.00765
					(-0.46)
ECB Policy Dummy					0.00925
					(0.58)
Stringency Index					0.0170
					(0.86)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	48956	46675	45887	44320	44320
R^2	0.9184	0.9264	0.9107	0.9135	0.9135

t statistics in parentheses
* p<0.10, ** p<0.05, *** p<0.010

Table A5. Panel Regression Estimates of Fiscal Rule Impact on Sovereign Spreads During GFC

| | | *Dependent Variable* | | |
| | | Log Spread (Daily) | | |
	(1)	(2)	(3)	(4)
Fiscal Rule	-0.195***	-0.108***	-0.173***	-0.101***
	(-13.35)	(-5.26)	(-12.69)	(-5.12)
Government Effectiveness	-0.0129***	-0.00849***	-0.00400***	-0.00483***
	(-18.72)	(-11.49)	(-6.09)	(-6.73)
GDP Per Capita Growth			-0.0393***	-0.0405***
			(-33.55)	(-30.75)
Inflation			1.542***	1.700***
			(48.00)	(21.95)
Primary Balance		-0.0581***		-0.0484***
		(-21.12)		(-18.22)
Total External Debt Stocks		-0.00143***		-0.00099***
		(-6.85)		(-4.89)
Country Fixed Effects	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes
Observations	19521	18019	19521	18019
R^2	0.8963	0.8995	0.9106	0.9072

t statistics in parentheses
* $p<0.10$, ** $p<0.05$, *** $p<0.010$

Table A6. Difference-in-Difference Estimates of Fiscal Rule Impact in Post-Covid Time Period

	Dependent Variable Log Spread (Daily)				
	(1)	(2)	(3)	(4)	(5)
Fiscal Rule	-0.745***	-0.626***	-0.711***	-0.709***	-0.709***
	(-29.01)	(-25.22)	(-28.31)	(-27.26)	(-27.27)
Post Covid	0.337***	0.238***	0.261***	0.253***	0.254***
	(61.88)	(42.20)	(48.16)	(44.68)	(44.72)
Fiscal Rule#Post Covid	-0.228***	-0.174***	-0.176***	-0.174***	-0.174***
	(-42.38)	(-33.32)	(-35.33)	(-34.31)	(-34.30)
EMBI Global	0.261***	0.199***	0.293***	0.289***	0.291***
	(10.63)	(8.35)	(12.99)	(12.45)	(12.53)
CEMBI	0.193***	0.352***	0.260***	0.269***	0.270***
	(11.41)	(20.30)	(16.30)	(15.79)	(15.84)
Regional Factor	0.375***	0.365***	0.365***	0.371***	0.370***
	(31.29)	(30.34)	(32.09)	(31.24)	(31.16)
Govt. Effectiveness	-0.0151***	-0.0125***	-0.0118***	-0.0117***	-0.0117***
	(-37.91)	(-32.84)	(-31.12)	(-30.85)	(-30.86)
GDP Per Capita Growth			-0.00243***	-0.000236	-0.000255
			(-7.95)	(-0.60)	(-0.65)
Inflation			0.0202***	0.0208***	0.0208***
			(90.42)	(63.85)	(63.83)
Primary Balance		-0.00251***		-0.00618***	-0.00617***
		(-4.63)		(-7.83)	(-7.82)
Total External Debt Stocks		0.00586***		0.0000239	0.0000258
		(59.47)		(0.11)	(0.12)
Fed Policy Dummy					-0.0359**
					(-2.28)
ECB Policy Dummy					-0.0000608
					(-0.00)
Stringency Index					0.0104
					(0.53)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	48956	46675	45887	44320	44320
R^2	0.9195	0.9252	0.9115	0.9136	0.9136

t statistics in parentheses
* p<0.10, ** p<0.05, *** p<0.010

Table A7. Difference-in-Difference Estimates of Fiscal Rule Impact During GFC

		Dependent Variable Log Spread (Daily)		
	(1)	(2)	(3)	(4)
Fiscal Rule	-0.156***	0.00371	-0.148***	0.00943
	(-5.95)	(0.10)	(-5.76)	(0.26)
Post GFC	0.863***	0.862***	0.825***	0.820***
	(103.91)	(96.89)	(100.00)	(86.68)
Fiscal Rule#Post GFC	-0.0561***	-0.106***	-0.0390***	-0.0685***
	(-4.14)	(-7.53)	(-2.95)	(-4.79)
Government Effectiveness	-0.0127***	-0.00889***	-0.00648***	-0.00782***
	(-11.07)	(-7.19)	(-5.68)	(-6.35)
GDP Per Capita Growth			-0.0313***	-0.0275***
			(-16.51)	(-12.73)
Inflation			1.218***	0.927***
			(23.87)	(8.12)
Primary Balance		-0.0810***		-0.0581***
		(-18.65)		(-12.84)
Total External Debt Stocks		-0.00193***		-0.00198***
		(-5.54)		(-5.67)
Country Fixed Effects	Yes	Yes	Yes	Yes
Observations	19521	18019	19521	18019
R^2	0.7155	0.7154	0.7277	0.7202

t statistics in parentheses
* $p<0.10$, ** $p<0.05$, *** $p<0.010$

Table A8. Panel Regression Estimates of Escape Clause vs. Suspension Usage on Sovereign Spreads

	Dependent Variable Log Spread (Daily)				
	(1)	(2)	(3)	(4)	(5)
Fiscal Rule - No Suspension or Escape Clause	-1.022*** (-39.05)	-0.867*** (-34.57)	-0.845*** (-32.91)	-0.802*** (-30.49)	-0.802*** (-30.48)
Escape Clause	-1.021*** (-36.68)	-0.886*** (-33.26)	-0.841*** (-31.03)	-0.822*** (-29.43)	-0.822*** (-29.42)
Suspension	-1.232*** (-45.30)	-1.041*** (-39.94)	-1.043*** (-39.12)	-1.004*** (-36.57)	-1.004*** (-36.57)
EMBI Global	0.738*** (10.41)	0.714*** (10.52)	0.734*** (11.30)	0.720*** (10.95)	0.713*** (10.71)
CEMBI	0.193*** (3.32)	0.221*** (3.91)	0.184*** (3.44)	0.194*** (3.55)	0.199*** (3.61)
Regional Factor	0.179*** (13.03)	0.167*** (12.30)	0.227*** (17.49)	0.216*** (15.99)	0.216*** (15.99)
Govt. Effectiveness	-0.0157*** (-39.65)	-0.0125*** (-33.11)	-0.0125*** (-33.36)	-0.0124*** (-32.98)	-0.0124*** (-32.98)
GDP Per Capita Growth			-0.00777*** (-16.91)	-0.00872*** (-16.58)	-0.00872*** (-16.57)
Inflation			0.0199*** (87.16)	0.0200*** (60.18)	0.0200*** (60.18)
Primary Balance		-0.00690*** (-11.26)		-0.00261*** (-3.00)	-0.00261*** (-3.00)
Total External Debt Stocks		0.00701*** (64.88)		-0.0000977 (-0.46)	-0.0000977 (-0.46)
Fed Policy Dummy					-0.00757 (-0.46)
ECB Policy Dummy					0.00922 (0.58)
Stringency Index					0.0161 (0.82)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	48956	46675	45887	44320	44320
R^2	0.9197	0.9274	0.9125	0.9152	0.9152

t statistics in parentheses
* p<0.10, ** p<0.05, *** p<0.010

Table A9. Panel Regression Estimates of Escape Clause vs. Suspension Usage on Sovereign Spreads[22]

	Dependent Variable Log Spread (Daily)				
	(1)	(2)	(3)	(4)	(5)
Fiscal Rule - No Suspension or Escape Clause	-1.032*** (-39.30)	-0.873*** (-34.73)	-0.852*** (-33.07)	-0.806*** (-30.52)	-0.806*** (-30.51)
Escape Clause	-1.111*** (-40.15)	-0.960*** (-36.23)	-0.913*** (-33.85)	-0.892*** (-31.95)	-0.892*** (-31.94)
Suspension	-1.211*** (-43.78)	-1.015*** (-38.37)	-1.031*** (-38.10)	-0.982*** (-35.40)	-0.982*** (-35.40)
EMBI Global	0.741*** (10.41)	0.718*** (10.55)	0.735*** (11.28)	0.723*** (10.96)	0.716*** (10.72)
CEMBI	0.194*** (3.32)	0.222*** (3.93)	0.184*** (3.43)	0.195*** (3.57)	0.200*** (3.62)
Regional Factor	0.176*** (12.77)	0.162*** (11.92)	0.225*** (17.32)	0.212*** (15.63)	0.212*** (15.63)
Govt. Effectiveness	-0.0156*** (-39.09)	-0.0124*** (-32.76)	-0.0124*** (-32.78)	-0.0123*** (-32.58)	-0.0123*** (-32.58)
GDP Per Capita Growth			-0.00755*** (-16.37)	-0.00836*** (-15.85)	-0.00836*** (-15.85)
Inflation			0.0199*** (87.05)	0.0199*** (59.54)	0.0199*** (59.54)
Primary Balance		-0.00690*** (-11.19)		-0.00228*** (-2.59)	-0.00228*** (-2.59)
Total External Debt Stocks		0.00706*** (65.15)		0.0000707 (0.33)	0.0000707 (0.33)
Fed Policy Dummy					-0.00757 (-0.46)
ECB Policy Dummy					0.00928 (0.58)
Stringency Index					0.0154 (0.78)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	48956	46675	45887	44320	44320
R^2	0.9197	0.9274	0.9125	0.9152	0.9152

t statistics in parentheses
* p<0.10, ** p<0.05, *** p<0.010

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[22] In this test, we flag India and Paraguay as countries enacting an escape clause, and not as countries suspending a rule (both are categorized as countries that suspended a rule in Table A8).

Table A10. Panel Regression Estimates of Fiscal Rule Index and Spreads (COVID-19 Timeframe)

	(1)	(2)	(3)	(4)	(5)
Fiscal Rule Index (Lagged)	-0.850***	-0.618***	-0.692***	-0.621***	-0.621***
	(-26.71)	(-18.99)	(-24.44)	(-20.08)	(-20.08)
EMBI Global	0.744***	0.714***	0.740***	0.725***	0.718***
	(10.48)	(10.50)	(11.35)	(10.97)	(10.72)
CEMBI	0.196***	0.221***	0.187***	0.196***	0.201***
	(3.35)	(3.90)	(3.47)	(3.58)	(3.63)
Regional Factor	0.172***	0.167***	0.220***	0.209***	0.210***
	(12.54)	(12.26)	(16.91)	(15.42)	(15.42)
Government Effectiveness	-0.0149***	-0.0117***	-0.0119***	-0.0117***	-0.0117***
	(-37.26)	(-30.81)	(-31.34)	(-30.89)	(-30.89)
GDP Per Capita Growth			-0.00788***	-0.00929***	-0.00929***
			(-17.13)	(-17.65)	(-17.64)
Inflation			0.0194***	0.0189***	0.0189***
			(84.93)	(56.84)	(56.85)
Primary Balance		-0.00574***		0.000744	0.000742
		(-9.32)		(0.85)	(0.85)
Fed Policy Dummy					-0.00767
					(-0.46)
ECB Policy Dummy					0.00926
					(0.58)
Stringency Index					0.0173
					(0.88)
Total External Debt Stocks		0.00697***		0.000357*	0.000357*
		(64.18)		(1.66)	(1.66)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	48956	46675	45887	44320	44320
R^2	0.9196	0.9270	0.9119	0.9143	0.9143

t statistics in parentheses
* $p<0.10$, ** $p<0.05$, *** $p<0.010$

Table A11. Difference-in-Difference Estimates of Fiscal Rule Index and Spreads in Post-Covid Time Period

		Dependent Variable Log Spread (Daily)			
	(1)	(2)	(3)	(4)	(5)
Fiscal Rule Index, (Lagged)	-0.542***	-0.466***	-0.490***	-0.444***	-0.444***
	(-16.86)	(-14.15)	(-17.16)	(-14.30)	(-14.30)
Post Covid	0.294***	0.211***	0.227***	0.217***	0.218***
	(59.56)	(41.02)	(46.67)	(42.44)	(42.48)
Fiscal Rule#Post Covid	-0.416***	-0.357***	-0.329***	-0.330***	-0.330***
	(-39.96)	(-35.68)	(-34.99)	(-34.48)	(-34.48)
EMBI Global	0.275***	0.205***	0.306***	0.296***	0.299***
	(11.23)	(8.65)	(13.60)	(12.83)	(12.91)
CEMBI	0.157***	0.329***	0.225***	0.241***	0.242***
	(9.30)	(19.02)	(14.17)	(14.20)	(14.26)
Regional Factor	0.392***	0.378***	0.385***	0.389***	0.388***
	(32.81)	(31.60)	(33.98)	(32.92)	(32.83)
Govt. Effectiveness	-0.0149***	-0.0122***	-0.0117***	-0.0116***	-0.0116***
	(-37.55)	(-32.08)	(-31.14)	(-30.74)	(-30.75)
GDP Per Capita Growth			-0.00249***	-0.000410	-0.000430
			(-8.20)	(-1.04)	(-1.09)
Inflation			0.0200***	0.0203***	0.0203***
			(89.77)	(62.54)	(62.51)
Primary Balance		-0.00281***		-0.00594***	-0.00592***
		(-5.20)		(-7.54)	(-7.52)
Total External Debt Stocks		0.00598***		0.000289	0.000291
		(61.22)		(1.35)	(1.36)
Fed Policy Dummy					-0.0350**
					(-2.23)
ECB Policy Dummy					-0.00183
					(-0.12)
Stringency Index					0.00642
					(0.33)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	48956	46675	45887	44320	44320
R^2	0.9201	0.9261	0.9125	0.9143	0.9143

t statistics in parentheses
* p<0.10, ** p<0.05, *** p<0.010

Table A12. Panel Regression Estimates of Escape Clause vs. Suspension Usage on Spreads, Using Lag of Fiscal Rule Index

	Dependent Variable Log Spread (Daily)				
	(1)	(2)	(3)	(4)	(5)
Fiscal Rule - No Suspension or Escape Clause	-0.844***	-0.619***	-0.678***	-0.604***	-0.604***
	(-26.35)	(-18.90)	(-23.77)	(-19.43)	(-19.43)
Escape Clause	-0.995***	-0.779***	-0.771***	-0.713***	-0.713***
	(-25.67)	(-20.09)	(-22.33)	(-19.39)	(-19.39)
Suspension	-1.222***	-0.932***	-1.024***	-0.950***	-0.950***
	(-34.33)	(-26.07)	(-32.21)	(-28.00)	(-28.00)
EMBI Global	0.740***	0.713***	0.734***	0.720***	0.712***
	(10.48)	(10.52)	(11.33)	(10.95)	(10.71)
CEMBI	0.194***	0.220***	0.184***	0.194***	0.199***
	(3.34)	(3.90)	(3.44)	(3.55)	(3.60)
Regional Factor	0.177***	0.169***	0.226***	0.217***	0.217***
	(12.92)	(12.47)	(17.50)	(16.02)	(16.02)
Govt. Effectiveness	-0.0149***	-0.0118***	-0.0119***	-0.0117***	-0.0117***
	(-37.63)	(-31.26)	(-31.52)	(-31.11)	(-31.11)
GDP Per Capita Growth			-0.00759***	-0.00905***	-0.00905***
			(-16.57)	(-17.24)	(-17.24)
Inflation			0.0195***	0.0192***	0.0193***
			(85.99)	(58.28)	(58.28)
Primary Balance		-0.00612***		-0.0000936	-0.0000953
		(-9.96)		(-0.11)	(-0.11)
Total External Debt Stocks		0.00691***		0.000165	0.000165
		(63.79)		(0.77)	(0.77)
Fed Policy Dummy					-0.00756
					(-0.46)
ECB Policy Dummy					0.00922
					(0.58)
Stringency Index					0.0158
					(0.81)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	48956	46675	45887	44320	44320
R^2	0.9204	0.9277	0.9129	0.9153	0.9153

t statistics in parentheses
* $p<0.10$, ** $p<0.05$, *** $p<0.010$

Table A13. Panel Regression Estimates of Fiscal Rule Impact on Spreads (COVID-19 Timeframe), Outliers Removed[23]

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable Log Spread (Daily)				
Fiscal Rule	-1.392***	-1.371***	-1.118***	-1.096***	-1.096***
	(-61.93)	(-56.50)	(-42.72)	(-40.67)	(-40.67)
EMBI Global	0.707***	0.689***	0.707***	0.679***	0.672***
	(11.53)	(11.09)	(11.35)	(10.83)	(10.59)
CEMBI	0.181***	0.206***	0.182***	0.186***	0.191***
	(3.59)	(3.99)	(3.54)	(3.57)	(3.63)
Regional Factor	0.233***	0.216***	0.256***	0.262***	0.262***
	(19.85)	(17.58)	(20.72)	(20.40)	(20.39)
Government Effectiveness	-0.00707***	-0.00643***	-0.00825***	-0.00794***	-0.00794***
	(-20.51)	(-18.62)	(-22.74)	(-22.00)	(-22.00)
GDP Per Capita Growth			-0.00437***	-0.00377***	-0.00377***
			(-9.87)	(-7.49)	(-7.49)
Inflation			0.0155***	0.0157***	0.0157***
			(27.76)	(27.40)	(27.40)
Primary Balance		-0.00838***		-0.00697***	-0.00697***
		(-13.08)		(-8.48)	(-8.48)
Total External Debt Stocks		0.00194***		0.000329	0.000328
		(11.18)		(1.60)	(1.60)
Fed Policy Dummy					-0.00689
					(-0.44)
ECB Policy Dummy					0.00917
					(0.61)
Stringency Index					0.0146
					(0.77)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	47250	45173	45136	43569	43569
R^2	0.9042	0.9083	0.9050	0.9084	0.9084

t statistics in parentheses
* p<0.10, ** p<0.05, *** p<0.010

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[23] Countries are excluded whose mean spread over the entire sample timeframe is more than three standard deviations away from the mean across all countries. This results in Venezuela and Lebanon being excluded from the sample.

Table A14. Sample of Budget Balance Rule Modification Events, 2000-2019

Country	Year	Adjustment	Target Statistic
Argentina	2009	Suspension	Overall balance excluding investment
Armenia	2009	Revision	Overall balance
Chile	2009	Revision	Structural balance
Denmark	2011	Revision	Structural balance
India	2009	Suspension	Primary Balance
Israel	2009	Revision	Overall balance
Mexico	2010	Escape Clause Activation	Overall balance excluding investment
Mongolia	2015	Revision	Structural balance
Panama	2004	Suspension	Nonfinancial public sector deficit
Peru	2009	Suspension	Nonfinancial public sector deficit
Russian Federation	2009	Suspension	Primary Balance
Spain	2008	Escape Clause Activation	Structural balance
United Kingdom	2009	Escape Clause Activation	Overall balance excluding investment
Uruguay	2009	Revision	Primary Balance

Table A15. High Deficit Periods Following Budget Balance Rule Modification Events

	Min	Median	Mean	Max
Duration (Years)	1	3.5	3.7	n/a
Amplitude (Deviation from Prior Average as % GDP)	1.4%	4.4%	5.6%	12.4%

Note(s):
1) Sample size of 14 countries, with revisions or suspensions identified spanning the years 2001-2015.
2) Two countries (Argentina and Russia) do not return to prior average deficit in the time period analyzed.