

Fiscal procyclicality in emerging markets: The role of institutions and economic conditions

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Abstract

Procyclicality of fiscal policy is a common feature in emerging markets, by contrast with high-income economies, and leads to greater business-cycle amplitudes. We investigate potential causes of fiscal procyclicality, including a host of economic and institutional variables of especial import in emerging markets. We employ dynamic panel methods in a large sample of countries to investigate what factors are associated with fiscal cyclicity. We find that fiscal procyclicality is mainly due to procyclical fluctuations in government investment expenditure. In addition, we find that procyclical fiscal policy is positively associated with government debt levels, terms-of-trade volatility, and costs of foreign borrowing, while negatively associated with better government efficiency. Only a weak association is found between International Monetary Fund program participation and fiscal procyclicality. Finally, we find that certain fiscal rules are associated with lower fiscal procyclicality and, in particular, balanced-budget rules may help mitigate the adverse cyclicity effects of high terms-of-trade volatility and government debt burdens in emerging markets.

KEYWORDS

fiscal cyclicity, fiscal rules

JEL CLASSIFICATION

E32; E62; H5



1 | INTRODUCTION

Fiscal policy is generally more procyclical in emerging markets than in high-income economies, a stylized fact well-documented over time by Gavin and Perotti (1997), Tornell and Lane (1999), Lane (2003), Kaminsky, Reinhart, and Vegh (2005), Talvi and Vegh (2005), Mendoza and Oviedo (2006), Alesina, Campante, and Tabellini (2008), Ilzetzki and Vegh (2008), Bergman and Hutchison (2015), and others. Procyclical fiscal policy is problematic for a number of reasons, including its contribution to greater business cycle volatility (Lane, 2003).¹ A number of institutional and economic factors likely influence the cyclicity of fiscal policy (Calderón, Duncan, & Schmidt-Hebbel, 2012; Eyraud, Debrun, Hodge, Liedó, & Pattillo, 2018; Frankel, Vegh, & Vuletin, 2013; IMF, 2009). In general, however, relatively little work has systemically explored a broad range of economic and institutional characteristics that generate fiscal policy cyclicity in emerging markets.

This paper investigates the causes of fiscal procyclicality in emerging markets, with particular focus on the common factors often facing this group of countries and suggested by the literature—volatile commodity prices, increasing costs of sovereign borrowing during volatile periods, market sensitive to foreign debt levels, participation in International Monetary Fund (IMF) programs, natural-resource dependence, frequently weak government bureaucracies, and so on. We also measure the types of government spending (consumption and investment) mainly contributing to cyclicity. And we also consider the effects of two types of fiscal rules—balance budget rules (BBR) and debt rules (DR)—on fiscal cyclicity, examining whether they influence procyclicality directly or indirectly by mitigating other channels that contribute to policy procyclicality. We address these issues using a dynamic panel fixed-effects framework for a large number of emerging markets and, for purposes of comparison, high-income economies.

Section 2 briefly reviews the literature and discusses likely causes of fiscal cyclicity in emerging markets. Section 3 presents the empirical model and methodology. Section 4 presents the data. Section 5 presents the empirical results and Section 6 concludes. Overall, we find that high procyclicality in emerging markets is associated with a number of identifiable economic and institutional characteristics. Well-designed fiscal rules may also mitigate fiscal procyclicality.

2 | MOTIVATION AND LITERATURE

A number of economic and institutional factors are likely contributors to fiscal cyclicity in emerging markets. We address a number of leading candidates suggested in the extant literature—three economic variables, three institutional factors and fiscal rules. The three economic factors investigated are:

- Volatility in the *terms-of-trade* generally leads to volatility and transitory movements in real income, government revenues, and hence fiscal procyclicality. Chile is a good example of an

¹Lane (2003) finds empirical evidence suggesting that emerging markets have experienced much more volatile output and income fluctuations than high-income economies, and that these fluctuations have been further exacerbated by procyclical policies. He argues that institutional reforms in the conduct of monetary and fiscal policies can improve the capacity to stabilize cyclical fluctuations; and while monetary institutional reforms, namely inflation targeting (IT), is now widely accepted, relatively less progress has been made in designing and implementing new fiscal procedures.

emerging market with government revenues closely tied to world copper prices (Frankel, 2013). Related to this factor is a country's dependence on natural resources as part of gross domestic product (GDP) and exports.

- Countries with relatively high *government debt levels* may be unable to borrow—facing a “sudden stop”—during economic downturns when cyclical budget deficits climb. DeLong and Summers (2012) argue that high debt levels have played an important role in constraining how countries have responded to economic downturns using fiscal instruments. The result is expenditure austerity and discretionary actions to balance budgets during recessions, increasing policy procyclicality. Romer and Romer (2019) show that countries with lower debt-to-GDP ratios responded to financial distress with much more expansionary fiscal policy. They suggest that countries with high debt ratios experienced difficulties with market access to funds resulting in austerity policies during downturns.
- Closely related to government debt levels is that the *cost of sovereign borrowing* frequently rises with the uncertainties associated with recessions, especially in emerging markets, and could be a source of fiscal procyclicality (see Altug & Kabaca, 2017 and Neumeyer & Perri, 2005). In particular, higher sovereign debt service costs during downturns could directly impact budget positions and increase fiscal cyclicality.

The three institutional factors investigated are:

- The presence of an *IMF program* could induce countries to follow strict budget limits regardless of the cyclical position of the economy, possibly leading to increased procyclicality. On the other hand, IMF programs could also provide countries with financial resources to limit government expenditure austerity measures during downturns and, over time, push countries to have more fiscal space for countercyclical policy. The net effect of IMF programs is therefore not clear a priori, depending on the specific nature of the program and situation of the recipient country.
- An *inflation-targeting regime* (IT), especially a modified IT regime such as a Taylor rule, induces a countercyclical monetary policy. Lower interest rates during economic downturns, and higher rates during upturns, would in principle help to reduce business cycle fluctuations and may result in less political pressure for discretionary countercyclical fiscal actions. On the other hand, IT regimes may be associated with more stable economic environments and less market uncertainty. Under these circumstances, there may be more room for larger fiscal stimulus during downturns (deficit financing) in emerging markets without adverse market reactions.
- The “*efficiency*” of *government bureaucracy* in shaping fiscal outcomes has been investigated by a number of researchers. Calderón et al. (2012), for example, consider the role of government administrative quality. They find that the level of institutional quality plays a key role in countries' ability to implement countercyclical macroeconomic policies.² Similarly, Frankel et al. (2013) find that the quality of institutions (measured by an index of the investment profile, corruption, law and order and bureaucratic quality) is a key determinant of emerging market countries' ability to “graduate” to fiscal countercyclicality. They also

²Calderón et al. (2012) use a sample of 115 high-income, emerging and low-income countries for 1984–2008. Their results show that countries with strong (weak) institutions adopt counter- (pro-) cyclical macroeconomic policies, reflected in extended monetary policy and fiscal policy rules. The threshold level of institutional quality at which monetary and fiscal policies are acyclical is found to be similar.



show empirical evidence that as the quality of institutions increases over time, the level of procyclicality falls. In their sample, about a third of emerging markets became fiscally countercyclical in 2000s and they argue that stronger institutions played a key role in this development, that is the causal link runs from stronger institutions to less procyclical fiscal policy.³

We also investigate the role of *fiscal rules* in contributing to or mitigating fiscal cyclicality from two perspectives. On the one hand, reducing political deficit bias is the primary objective of most fiscal rules, with an aim to facilitating longer-term sustainability of government budget positions and debt (e.g., Badinger & Reuter, 2017; Bergman, Hutchison, & Jensen, 2016; Debrun, Moulin, Turrini, Ayuso-i-Casals, & Kumar, 2008; De Haan, Jong-A-Pin, & Mierau, 2013; Eyraud et al., 2018; Sacchi & Salotti, 2015).⁴ This may exacerbate procyclicality. On the other hand, fiscal rules, by increasing “fiscal space” may increase the scope for discretionary fiscal stimulus during downturns, in turn, reducing policy procyclicality.⁵ The IMF (2017) and Gaspar, Obstfeld, and Sahay (2016) argue that fiscal expansions must be anchored in a medium-term fiscal framework consistent with a sustainable path for public debt, that is with substantial fiscal space.⁶ The net effect of rules on fiscal cyclicality cannot be determined a priori. Moreover, fiscal rules may have an indirect or secondary effect of mitigating or exacerbating the effects of other economic/institutional factors in generating procyclicality of fiscal policy.

3 | MODEL AND METHODOLOGY

We explore which factors appear to be important for fiscal cyclicality using a dynamic panel model. We measure cyclicality of fiscal policy by regressing cyclical GDP on a cyclical measure of government expenditures. As discussed in detail below, this is the standard approach in the literature. Adding to the basic framework, allowing us to differentiate between fiscal cyclicality in high-income and emerging markets, a dummy-variable interaction term for emerging markets is added to GDP. Further interaction terms, as well as estimating different effects of cyclicality for advanced and emerging markets, capture the effects of institutional and economic variables on fiscal cyclicality. Our basic dynamic panel model with interaction terms is specified as follows:

³Balassone and Kumar (2007), Ilzetzki and Vegh (2008), Kaminsky et al. (2005), Hausmann and Stein (1996), Gavin and Perotti (1997), Talvi and Vegh (2005), Melitz (2000), and Gali and Perotti (2002). Céspedes and Velasco (2014) also find evidence of reduced fiscal procyclicality in a number of countries.

⁴Bergman et al. (2016) focus on European countries and the distinction between national and supranational rules in promoting longer-term fiscal sustainability.

⁵The IMF use of the term “fiscal space” refers to the government’s ability to undertake discretionary fiscal policy while preserving market access and debt sustainability. When fiscal space exists, according to this view, discretionary policy can take the form of either a fiscal expansion or a slower pace of consolidation—both of which require additional borrowing relative to an unchanged policy scenario (IMF, 2017).

⁶Fiscal rules, in turn, may be part of the medium-term fiscal framework that allow for fiscal expansions during downturns that reduce procyclicality (IMF, 2018). Eyraud et al. (2018) argue that “Good rules encourage building buffers in good times and allow fiscal policy in bad times” (p. 4), that is encourage fiscal countercyclicality. Also, the activation of fiscal rule “escape clauses” should allow for discretionary policy during economic downturns, encouraging fiscal countercyclicality. On the other hand, poorly designed fiscal rules may worsen policy cyclicality. Eyraud et al. (2018) point to nominal deficit caps as an example of a specific rule that could induce fiscal procyclicality. Ultimately, it is an empirical question as to the effect of fiscal rules generally, and specific types of fiscal rules in particular, on the cyclicality of fiscal policy.

$$GEXP_{it} = \beta_0 GEXP_{it-1} + \beta_1 GDP_{it} + \beta_2 (GDP_{it} * EM_i) + \beta_3 (GDP_{it} * X_{it}) + \beta_4 (GDP_{it} * EM_i * X_{it}) + \beta_5 X_{it} + \mu_i + \varepsilon_{it}, \quad (1)$$

where $GEXP_{it}$ is cyclical government expenditure for country i at time t , GDP_{it} is cyclical GDP, EM_i is a dummy variable equal to one if country i is an emerging market (and zero otherwise), X_{it} represents institutional factors and economic conditions (identified in the previous section) that might in principle affect fiscal cyclicity, μ_i estimates country fixed effects and ε_{it} is the error term. The marginal effects of the institutional factor X_{it} on fiscal cyclicity in high-income and emerging markets, conditional on varying levels of the modifying factor (X_{it}), are given by, respectively, $\beta_1 + \beta_3 * X_{it}$ and $\beta_1 + \beta_2 + (\beta_3 + \beta_4) * X_{it}$. Note that inference of the significance of the marginal effect cannot be based only on the parameter associated with the interaction term. The marginal effect may be statistically significant for relevant values of the modifying variable X_{it} even if the coefficient β_3 (or β_4) on the interaction term is insignificant.⁷ The preferred approach in the literature, followed in this paper, is to present a figure showing the marginal effect (and statistical confidence boundaries) with varying levels of the specific factor X_{it} .

We also investigate whether fiscal rules directly affect fiscal cyclicity or indirectly offset or at least mitigate some of the adverse shocks (e.g., terms-of-trade volatility) prevalent in many emerging markets. We do this by measuring the effect of strength of specific fiscal rules (FRI_{it}) on fiscal cyclicity directly or indirectly through other specific factors of interest by specifying the following, a multiple-interaction term empirical model:

$$GEXP_{it} = \beta_0 GEXP_{it-1} + \beta_1 GDP_{it} + \beta_2 (GDP_{it} * EM_i) + \beta_3 (GDP_{it} * X_{it}) + \beta_4 (GDP_{it} * X_{it} * EM_i) + \beta_5 (GDP_{it} * FRI_{it}) + \beta_6 (GDP_{it} * FRI_{it} * EM_{it}) + \beta_7 (GDP_{it} * X_{it} * FRI_{it}) + \beta_8 (GDP_{it} * X_{it} * FRI_{it} * EM_{it}) + \beta_9 EM_{it} + \beta_{10} FRI_{it} + \beta_{11} (FRI_{it} * EM_i) + \beta_{12} X_{it} + \beta_{13} (X_{it} * EM_{it}) + \beta_{14} (FRI_{it} * X_{it}) + \beta_{15} (FRI_{it} * X_{it} * EM_{it}) + \mu_i + \varepsilon_{it}, \quad (2)$$

where the $(GDP_{it} * FRI_{it} * X_{it})$ term allows us to measure the interaction of both fiscal rules and factor X_{it} together in influencing procyclicality in advanced economies and, analogously, $(GDP_{it} * FRI_{it} * X_{it} * EM_{it})$ for emerging markets. (Note that the constitutive terms in Equations (1) and (2), that is, those not involving GDP in the interaction terms, are included in the regressions but not reported in the tables for brevity.) The marginal fiscal cyclicity conditional on fiscal rules is also conditional on institutional/economic factors. This marginal effect is given by $\beta_1 + \beta_3 * X_{it} + \beta_5 * FRI_{it} + \beta_7 (X_{it} * FRI_{it})$ for advanced economies and $\beta_1 + \beta_3 * X_{it} + \beta_5 * FRI_{it} + \beta_7 (X_{it} * FRI_{it}) + \beta_2 + \beta_4 * X_{it} + \beta_6 (X_{it} * FRI_{it})$ for emerging markets. The marginal effect of relevant values of the modifying variable FRI_{it} is measured conditional on relevant values of the modifying variable X_{it} .

The model is a dynamic panel, estimated using Blundell-Bond (1998) system generalized method of moments (GMM), where we report coefficient estimates and Windmeijer's (2005)

⁷See Brambor and Clark (2006) for a clear and detailed description and analysis of the interpretation of interaction model parameters.



finite-sample corrected standard errors.⁸ We also report tests of autocorrelation of both first and second order and Hansen J test statistic for overidentifying restrictions (the joint validity of all instruments). If the model is well-specified we expect to reject the null of first-order autocorrelation and not the second-order autocorrelation and Hansen J test.

A potential problem when implementing the GMM methods is that the number of instruments explodes with T , overall the number of instruments is quadratic in T . This is also a potential problem in our panel. Roodman (2009b) discusses many of the potential pitfalls of instrument proliferation and its consequences, including over fitting of endogenous variables, bias in estimates and the weakening of overidentifying tests. We follow the suggestions in Hall and Peixe (2003), Roodman (2009b), and Bontempi and Mammi (2012) and limit the number of instruments by collapsing the instruments.⁹

An additional issue is endogeneity. The Blundell-Bond GMM estimator allows us to handle endogeneity using internal instruments. We will assume that GDP is endogenous and include this variable as a GMM-style instrument (in addition to government expenditures). We assume that the specific factors in X_{it} are predetermined and therefore included as standard IV-style instruments. When adding interaction terms to the regressions we assume that these are exogenous thus using them as IV-style instruments.¹⁰

4 | DATA

We employ annual data for a large sample of high-income (31 countries) and emerging-markets (25 countries) economies. (Quarterly data is generally not available for fiscal policy indicators for emerging markets.) Our total sample is 56 countries over the 1985–2015 period and we classify emerging markets using the World Bank Analytical Classification metric. Our panel data is unbalanced (different start and end dates) but without gaps. In our estimations we use all available data. A complete discussion of the data is included in the online appendix.

To summarize, we use the cyclical components (computed using the HP-filter) of both government expenditures and GDP in our empirical analysis. The “government efficiency” (GE) index is from the World Bank “Worldwide Governance Indicators” (WGI) project research data set. The debt ratio (Debt) is downloaded from the World Economic Outlook database. Terms-of-trade volatility (ToT) is measured using data published in the database by Gruss and Perotti (2019). The cost of sovereign borrowing (Cost) is taken from the J.P. Morgan Emerging markets Bond Spread (EMBI+) downloaded from the Global Economic Monitor database.

⁸It is recognized in the literature that the LSDV estimator is not consistent for finite T (Nickell, 1981). A number of alternative estimators have been suggested to account for the bias, including instrumental variable and various GMM estimators. Instrumental variable and GMM estimators may suffer from small sample bias due to weak instruments, therefore Blundell and Bond (1998) proposed a system GMM estimator. Monte Carlo simulations suggest that the system GMM estimator is less biased than other available approaches not only in small sample but also in large samples such as our panel data where $N = 50$ and $T = 31$ (Hayakawa, 2015).

⁹The Stata command `xtabond2`, written by Roodman (2009a), implements this method.

¹⁰It could be argued that the interaction terms should be treated as potentially endogenous. Our main conclusions from the empirical analysis below are unaffected but the number of instruments increase considerably leading to over fitting of endogenous variables and weakening Hansen J -tests even when collapsing the instruments.

5 | EMPIRICAL RESULTS

5.1 | Institutional and economic factors and fiscal cyclicality

Table 1 reports the regression estimates of fiscal cyclicality for the two *dichotomous* institutional explanatory variables—participation in IMF programs (IMF) and IT. The first two columns show estimates of fiscal cyclicality using dummy variables to indicate whether a country participated in an IMF program during that year. The first column estimates the sample distinguishing between high-income and emerging-markets economies, and the second uses only the emerging-markets sample since so few high-income countries have participated in IMF

TABLE 1 Cyclicity of fiscal policy and discrete institutional/economic factors (IF), high-income countries and emerging markets

	IMF	IMF EM	IT
GEXP(−1)	0.416*** (0.056)	0.470*** (0.070)	0.422*** (0.055)
GDP	0.037 (0.124)	0.299*** (0.082)	0.131 (0.168)
GDP × IF	0.958 (0.638)	0.375 (0.296)	0.126 (0.340)
GDP emerging	0.283* (0.164)		0.320 (0.234)
GDP × IF emerging	−0.518 (0.692)		−0.193 (0.422)
Fiscal cyclicality			
EM IF = 0	0.320***		0.451***
EM IF = 1	0.760***		0.384**
Difference	0.440		−0.067
#countries	56	25	56
#instruments	22	16	22
Obs	1,341	518	1,341
AR(1)	0.001	0.032	0.001
AR(2)	0.280	0.216	0.278
Hansen	0.083	0.660	0.076

Note: System GMM estimates with clustered and robust standard errors. All regressions also include a constant and all constitutive terms of each of the five institutional variables but these are not reported for brevity. In addition to government expenditures, we assume that GDP is endogenous whereas all other variables are assumed to be exogenous including interaction terms with GDP. AR(1) and AR(2) are tests for first- and second-order autocorrelation and Hansen *J* test for over identification.

* $p < .10$.

** $p < .05$.

*** $p < .01$.



programs (only 3% of total observations).¹¹ We therefore re-estimate this regression only for the emerging-markets sample.

Since these are dummy variables the results can be determined directly from the sum of the coefficient estimates. The coefficient estimates are presented in the table, as are the relevant sums of coefficients, under “Fiscal Cyclicity.” We measure fiscal cyclicity with or without an IMF program in column (1), or without an IT regime column (3), or with an IMF program or with an IT regime ($EM\ IF = 1$). As expected, we find significant procyclicality for emerging markets both without (0.32) and with participation in IMF programs (0.76). Although cyclicity is more than twice as large with IMF program participation, the difference is not statistically significant. Focusing on the emerging-markets sample alone, reported in column (2), we find very similar coefficient estimates.

The third column in Table 1 reports analogous results for countries following inflation-targeting regimes. The estimates indicate that the degree of fiscal cyclicity is very similar to countries with (0.38) or without (0.45) an inflation-targeting regime and the difference is not statistically significant. Inflation targeting does not apparently affect the degree of fiscal cyclicity in emerging markets.¹² This result also holds for the high-income group.

Table 2 reports the regression estimates of three *continuous* economic variables, ToT, Debt and Sovereign Borrowing Cost (Cost), as well as one institutional variable, Government Efficiency (GE). As these are continuous interaction terms, the full results and significance boundaries for each institutional/economic variable (IF) are best presented graphically and are shown in Figure 1a (for ToT and Debt) and 1b (for GE and Cost). Before turning to the figures, however, point estimates and significance levels are shown at the bottom of the table (under “Fiscal Cyclicity”) for mean and median values of the focus explanatory variable. The mean and median values are calculated separately for the emerging market and high-income groups and are also found in Figure 1a,b. These estimates therefore represent fiscal cyclicity at circumstances typical for each group of countries.

The results suggest that fiscal cyclicity is sizable at both mean and medium values for all of the focus explanatory variable (IF) in emerging markets, and statistically significant at the 1% level or better, but not for the high-income group of countries. That is, fiscal policy is procyclical for an emerging market economy with average and median values of terms-of-trade volatilities, debt ratios, government efficiencies and borrowing costs. By contrast, we find that fiscal policy is acyclical in high-income countries regardless of economic variable we interact with.

Figure 1 provides marginal effects and significance levels for varying levels of the focus variables, distinguishing between the two groups of countries. Higher terms-of-trade volatility, shown in Panels a-b of Figure 1, raises marginal procyclicality for emerging markets and this effect is statistically significant for all values in the relevant range. However, there is no significant marginal effect of ToT on fiscal cyclicity for the high-income countries. This is not surprising since ToT volatility is a much more important issue in less-diversified emerging markets than in the high-income group. In particular, the average terms-of-trade volatility index is 2.1 in emerging markets and only 0.6 in high-income countries. Increasing debt ratios, shown in panels c-d, are also significantly associated with increasing procyclicality in emerging

¹¹The share of observations for emerging markets participating in IMF programs is 32%.

¹²The shares of observations for high-income countries and for emerging markets that have adopted IT is above 22%.

TABLE 2 Cyclicity of fiscal policy and continuous institutional/economic factors (IF), high-income countries and emerging markets

	ToT	Debt	GE	Cost
GEXP(-1)	0.424* (0.084)	0.423* (0.051)	0.429* (0.052)	0.634* (0.070)
GDP	0.077* (0.182)	-0.092 (0.175)	0.544 (0.418)	0.146 (0.235)
GDP × IF	1.063 (2.469)	0.005 (0.003)	-0.280 (0.296)	-0.000 (0.028)
GDP emerging	0.208 (0.205)	0.227 (0.273)	0.034 (0.462)	0.115 (0.241)
GDP × IF emerging	10.224* (3.601)	0.003 (0.008)	0.049 (0.352)	0.002 (0.028)
Fiscal cyclicity				
EM IF = 0	0.285*	0.135	0.578*	
EM mean IF	0.526*	0.460*	0.479*	0.291*
EM median IF	0.312*	0.474*	0.484*	0.273*
High-income mean IF	0.084	0.205	0.158	0.146
High-income median IF	0.079	0.185	0.103	0.146
#countries	55	56	55	49
#instruments	22	22	22	14
Obs	1,281	1,244	1,292	997
AR(1)	0.001	0.000	0.001	0.001
AR(2)	0.144	0.126	0.271	0.269
Hansen	0.041	0.029	0.162	0.150

Note: System GMM estimates with clustered and robust standard errors. All regressions also include a constant and all constitutive terms of each of the five institutional variables but these are not reported for brevity. In addition to government expenditures, we assume that GDP is endogenous whereas all other variables are assumed to be exogenous including interaction terms with GDP. AR(1) and AR(2) are tests for first- and second-order autocorrelation and Hansen *J* test for over identification.

* $p < .01$.

markets but not in high-income countries.¹³ Emerging markets experience marginally higher procyclical policies in line with increasing government debt within the range 15–75% of GDP range, while debt only appears to impact fiscal procyclicality high-income countries once the ratio goes beyond 110%.

Higher borrowing costs on sovereign debt, shown in panels g-h, are also positively associated with marginally higher fiscal procyclicality for emerging markets. This is evident at 10%

¹³Note that the highest debt ratio is 224% of GDP in the emerging-markets sample (Serbia), while it reaches 236% in the high-income sample (Japan). However, the debt ratio is on average lower in emerging markets (42% of GDP) than in high-income countries (62% of GDP), see Table A2 in the online appendix.

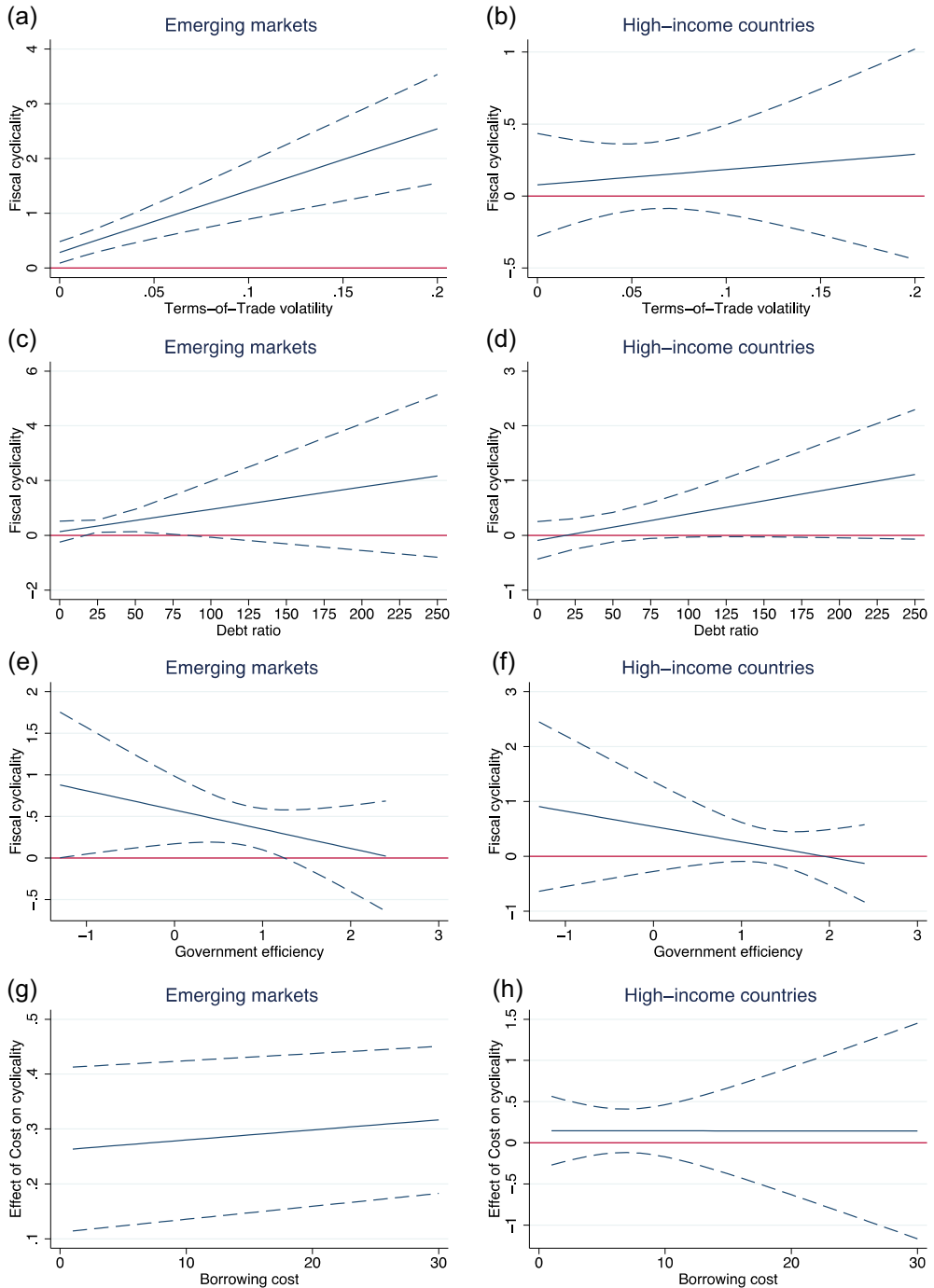


FIGURE 1 (a) Panels a-d show fiscal cyclicality conditioned on terms-of-trade volatility and debt ratio. Based on estimates reported in columns (1)–(2) in Table 2. A 95% confidence bands (dashed lines) computed using the Delta method. (b) Panels e-h show fiscal cyclicality conditioned on government efficiency and cost of sovereign borrowing. Based on estimates reported in columns (3)–(4) in Table 2. A 95% confidence bands (dashed lines) computed using the Delta method [Color figure can be viewed at wileyonlinelibrary.com]

and higher values of the cost of funds. High-income countries, by contrast, do not exhibit positive marginal cyclicity associated with higher sovereign debt costs.

Finally, improving GE, shown in panels e-f, significantly reduces fiscal cyclicity in emerging markets up to a point (1.3 index value) and then further improvements have no significant effect. No effect of increasing GE is seen for high-income countries. Emerging markets would apparently reduce fiscal procyclicality by moving toward the institutional frameworks of high-income countries. Government efficiency, however, is quite stable over time, with little increase over our sample period in either country group. The maximum change in GE on an annual basis is 2.8% (Turkey in 2005), otherwise annual changes are small (less than 0.5% annually). Many countries in this group experienced falling GE (e.g., Malaysia and Mexico), especially in the last decade of the sample. However, the results suggest that GE is generally high and stable in high-income countries and further increases do not impact fiscal cyclicity.

Overall, these results suggest that institutions and economic factors are helpful in explaining how fiscal cyclicity varies across emerging markets. In particular, higher terms-of-trade volatility, higher debt ratios, higher sovereign debt borrowing costs and lower GE are associated with greater fiscal cyclicity. Participation in IMF programs has at best a weak effect, and adopting an inflation-targeting regime no statistically significant effect, on fiscal procyclicality in emerging markets. None of these factors are systemically related to fiscal procyclicality in high-income countries.

5.2 | Fiscal rules and fiscal cyclicity

Figure 2 reports estimates of the effect of the *strength of specific fiscal rules* (BBR and DR) on fiscal cyclicity in emerging markets and high-income countries. These figures are based on system GMM estimates reported in columns (1) and (2) in Table A5 in the online appendix and show the marginal effects of the strength of the fiscal rule on fiscal cyclicity where we again distinguish between the emerging markets and high-income groups.¹⁴ Higher values imply a stronger, more comprehensive and enforceable fiscal rule (as explained in the data section).

The figure shows that both BBR and DR are effective in reducing fiscal cyclicity and that the threshold for zero cyclicity is lower for high-income countries than for emerging markets.¹⁵ DR are slightly more effective than BBR in emerging markets. The thresholds in emerging markets, given a 95% confidence level, are 2.15 for DR and 2.25 for BBR. The sum of the coefficients associated with BBR in column (1) of Table A5 is 0.38. The corresponding value for DR is 0.36. For average values of these rules,¹⁶ the estimates indicate that procyclicality would be 0.31 for BBR (significant at the 5% level) and 0.21 for DR (insignificantly different from zero at the 5% level). This indicates that much stronger fiscal rules than generally in place would be necessary to eliminate procyclicality of fiscal policy. It is noteworthy that BBR are

¹⁴As the strength of fiscal rules is a continuous variable the interaction terms and significance levels change with the level of the variable and are best shown in graphical form.

¹⁵The results are robust to using alternative measures of the presence of fiscal rules. See online appendix.

¹⁶For emerging markets with BBR or DR in place. The average strength of BBR (DR) in emerging markets having such a rule in place is 1.6 (2.3).

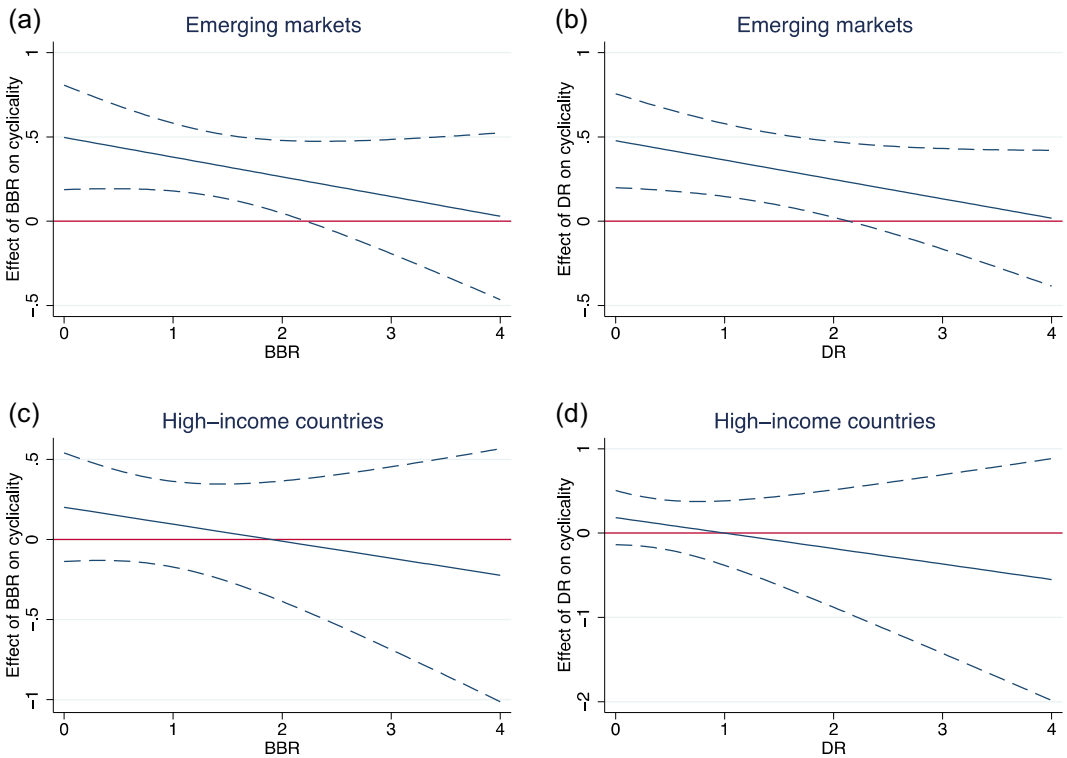


FIGURE 2 Fiscal cyclicity and specific fiscal rules: BBRs and DRs in high-income countries and emerging markets. Based on estimates reported in columns (1) and (2) in Table A5 in online appendix for, respectively, BBRs and DRs. 95% confidence bands (dashed lines) computed using the Delta method. BBR, balanced budget rule; DR, debt rule [Color figure can be viewed at wileyonlinelibrary.com]

more popular to adopt—in our sample 24 of 31 high-income countries and 13 of 25 emerging markets have adopted this form of rule.

How might adopting a fiscal rule reduce the adverse effects of high terms-of-trade volatility and high government debt ratios on fiscal cyclicity? Figure 3 shows the empirical estimates where BBR strength is interacted with terms-of-trade volatility and the debt ratio. To compute the marginal effects for each group of countries we rely on the system GMM estimates reported in Table A6 in the online appendix and we use the average level of terms-of-trade volatility and debt ratio for each group. The graphs show the effect of BBR for the average emerging markets and average high-income country. Figure 3 suggests that adopting fiscal rules will significantly reduce the effect of both terms-of-trade volatility and debt ratio on fiscal procyclicality. However, comparing the strengths of BBR we find that they are similar in emerging markets and high-income countries—minimum, maximum, average, and standard deviation of BBR are of the same magnitude, despite the fact that the terms-of-trade volatility is more than three times as high in emerging markets compared with high-income countries, while the average debt ratio emerging markets is only 42% of GDP compared with 62% for high-income countries.

Figure 4 shows a similar graph for DR, again based on Table A6. DR, by contrast with BBR, only marginally, and at very low levels, reduce the fiscal procyclical effects of increasing

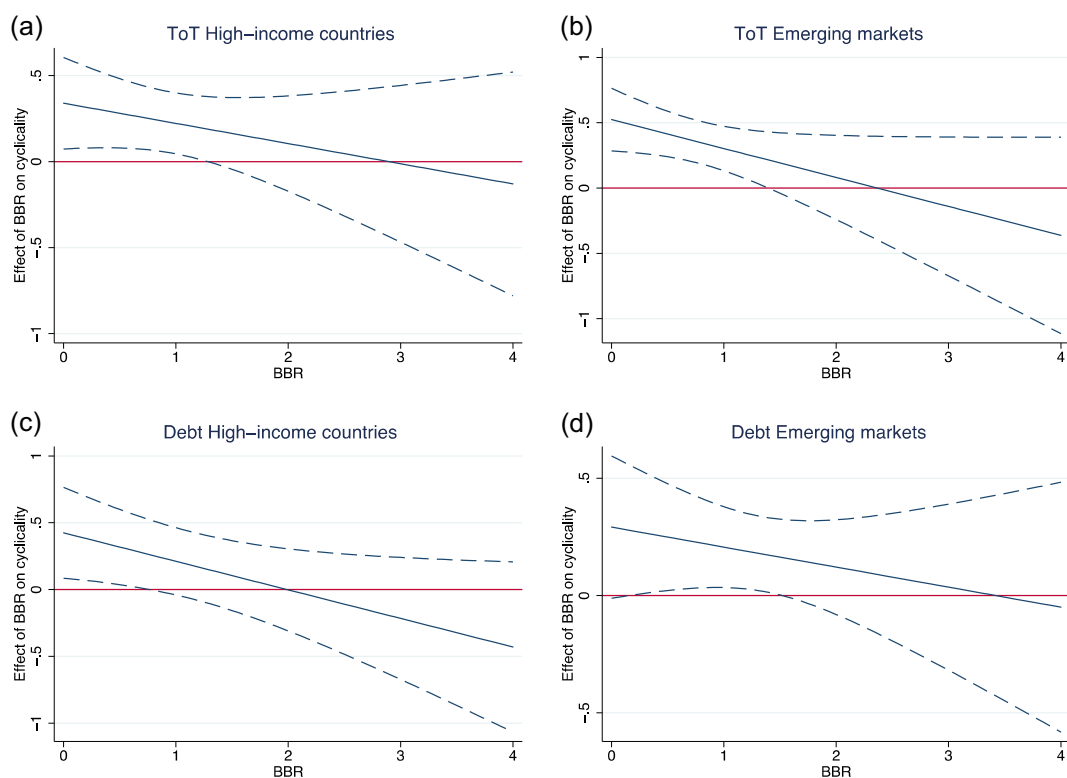


FIGURE 3 Effect of BBR in reducing procyclicality associated with increasing terms-of-trade volatility and debt ratios. We use the average of terms-of-trade volatility, debt ratio, and government efficiency for each group of countries when computing the marginal effects. A 95% confidence bands (dashed lines) computed using the delta method. Figures based on estimates reported in columns (1) and (2) in Table A6 of online appendix. BBR, balanced budget rules [Color figure can be viewed at wileyonlinelibrary.com]

terms-of-trade volatility or higher debt levels in emerging markets or high-income countries. The effect is almost constant (flat line) in all cases indicating no marginal effect associated with increasing the strength of the DR.¹⁷

We also consider whether adoption of inflation target strengthens the effect of fiscal rules. Combes, Debrun, and Tapsoba (2018) find a significant improvement in macro performance (fiscal balance and inflation) for a large group of countries when both IT and FR are in place. We explore whether these findings carry over to fiscal cyclicity. We find that fiscal rules have a stronger effect on fiscal cyclicity if rules are combined with IT. These results are reported in Table A8 and discussed in detail in the online appendix.

5.3 | Extensions

Table 3 considers several extensions of the analysis. The first extension determines what category of government spending is the determinant of overall fiscal cyclicity. The first three

¹⁷DR are much stronger on average in emerging markets (average strength is 2.3) than in high-income countries (average strength is 1.1). The results cannot therefore be explained by differences in DR strength.

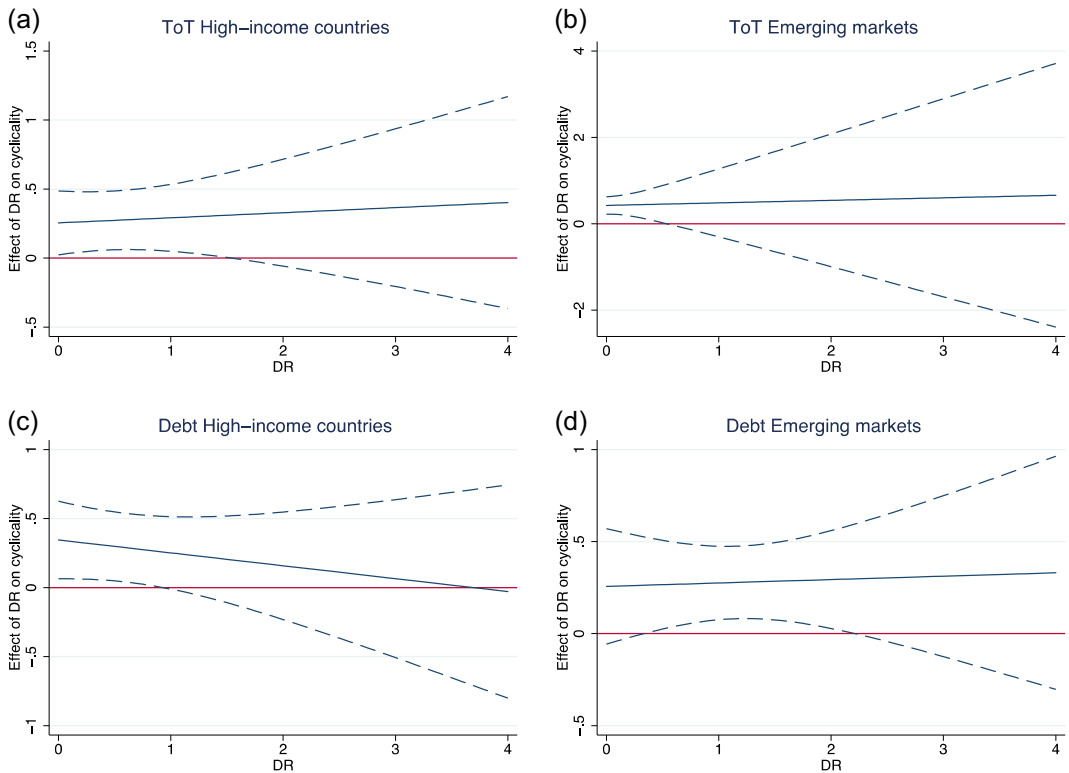


FIGURE 4 Effect of DR in reducing procyclicality associated with increasing terms-of-trade volatility and debt ratios. We use the average of terms-of-trade volatility, debt ratio and government efficiency for each group of countries when computing the marginal effects. A 95% confidence bands (dashed lines) computed using the delta method. Based on estimates reported in columns (4) and (5) in Table A6 of online appendix. DR, debt rules [Color figure can be viewed at wileyonlinelibrary.com]

columns look at cyclical volatility where the dependent variable is real government investment (column 1), real government consumption (column 2), and real total government expenditures (column 3).¹⁸ (Total government expenditures is our baseline-dependent variable for other regressions in our research, including columns 4–7 in Table 3.) This decomposition of expenditures clearly indicates that government investment is driving fiscal cyclical volatility—the degree of cyclical volatility is 0.518 for advanced economies and 1.408 for emerging markets ($0.518 + 0.890$). This compares to cyclical volatility of government consumption of 0.178 for advanced economies and 0.581 ($0.178 + 0.403$) for emerging markets. Large investment increases during upturns and cutbacks in downturns is the primary spending category driving fiscal cyclical volatility in both high-income and emerging-market economies.

¹⁸The data on government consumption from World Development Indicators and investment extracted from the IMF Investment and Capital Stock Database. We use the GDP deflator to compute real government consumption and investment. As with government expenditures, we then compute the cyclical component of these time series to be used in the regressions.

TABLE 3 Fiscal cyclicity with respect to government consumption, government investment, resource rich countries, and business cycle asymmetry

	Government consumption	Government investment	Government expenditures	Resource rich countries	Business cycle asymmetry	Business cycle asymmetry
GEXP (-1)			0.472*** (0.060)	0.475*** (0.053)	0.471*** (0.053)	0.459*** (0.052)
GCONS (-1)	0.534*** (0.059)					
GINV (-1)		0.465*** (0.057)				
GDP	0.178* (0.092)	0.518* (0.275)	0.070 (0.142)	0.227** (0.094)	0.267*** (0.084)	0.054 (0.126)
GDP emerging	0.403*** (0.124)	0.890** (0.398)	0.363** (0.178)			0.395** (0.161)
GDP resource rich				0.416 (0.401)		
GDP downturn					0.126 (0.141)	0.276 (0.194)
GDP emerging downturn						-0.226 (0.249)
#countries	54	49	56	56	56	56
#instruments	24	16	12	16	16	20
Obs	1,479	1,269	1,341	1,341	1,332	1,332
AR(1)	0.009	0.000	0.001	0.001	0.001	0.001
AR(2)	0.240	0.428	0.301	0.293	0.332	0.324
Hansen	0.053	0.188	0.220	0.193	0.457	0.491

Note: Dependent variable in the first two columns is cyclical government consumption and investment, respectively. Government expenditure is the dependent variable in the remaining five columns. System GMM estimates with clustered and robust standard errors. All regressions also include a constant and all constitutive terms but these are not reported for brevity. In addition to government expenditures, we assume that GDP is endogenous whereas all other variables are assumed to be exogenous including interaction terms with GDP. AR(1) and AR(2) are tests for first- and second-order autocorrelation and Hansen *J*-test for over identification.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

The second extension focuses on natural-resource rich countries. Natural-resource rich countries may exhibit greater fiscal procyclicality than other countries though both export price volatility and also through the institutional channel (“Dutch disease”). To test this potential heterogeneity, column (4) of Table 3 reports on term interacting GDP with a dummy variable equal to unity if the country is natural-resource rich and zero otherwise

(GDP*Resource rich).¹⁹ This coefficient measures the additional effect of fiscal cyclicality for natural-resource rich economies and is not statistically significant.

The third extension shown in Table 3 focuses on business cycle asymmetry and considers whether fiscal procyclicality is greater during economic downturns than upturns for the full sample of countries (column 5) and, in particular, for emerging-markets economies (column 6).²⁰ Several factors could generate asymmetry during different phases of the business cycle (Balassone, Francesse, & Zotteri, 2010). We explore asymmetry by including in our regression an interaction term that captures additional procyclicality during downturns (GDP*Downturn) for the full sample of countries and additional procyclicality during downturns in emerging markets (GDP*Emerging*Downturn). Neither of these coefficients are statistically significant. Fiscal cyclicality for emerging markets in downturns is 0.499 and in upturns 0.449 both significant at the 1% level but the difference is insignificant. Fiscal cyclicality does not seem to be dependent on the phase of the business cycle.

Finally, it is possible that the nature of fiscal cyclicality shifted at the time of the Global Financial Crisis. To investigate this issue, we limited the sample to the period before the financial crisis (1985–2007) to check the robustness of the results on one set of regressions (fiscal rules impact on fiscal cyclicality). We find the results generally robust to the shortened sample period. These results are reported in Table A7 and Figure A3 and discussed in detail in the online appendix.

6 | CONCLUSION

Fiscal policy procyclicality is a well-documented problem in emerging-markets economies. We explore the impact of institutional and economic factors on cyclicality in emerging markets, focusing on a host of potential candidates that have been identified as especially important to this group of countries. To address these issues, we estimate a dynamic panel model with 56 emerging-markets and high-income countries over 1985–2013 and test which factors are important contributors to fiscal cyclicality. We also explore whether specific types of fiscal rules play an independent role in fiscal cyclicality or an indirect role in helping to offset the adverse procyclicality effects from factors such as high terms-of-trade volatility and high government debt.

We find some support that particular institutional and economic factors may influence fiscal procyclicality in emerging markets. In particular, high terms-of-trade volatility, high government debt levels and increasing costs of servicing sovereign government debt are economic factors associated with higher procyclicality. Low government capacity/efficiency is an institutional factor that also generates higher cyclicality. There is only weak evidence that participation in IMF programs may be associated with high fiscal cyclicality in emerging markets,

¹⁹We define resource rich countries as countries where more than 20% of exports consist of oil, gas and metals or where these commodities represent more than 15% of fiscal revenues. Using this definition, we have the following resource rich countries in our sample: Australia, Botswana, Canada, Chile, Gabon, Mexico, Norway, Russia, South Africa and Venezuela (three high-income countries and seven emerging markets).

²⁰We divide the sample into two regimes depending on whether there is an upturn (trough-to-peak) or a downturn (peak-to-trough). This is the NBER definition, respectively, of expansions and contractions. We define a dummy variable equal to 1 if there is a downturn. We also distinguish between high-income and emerging markets providing two regression results, one without distinguishing between type of country and one where we divide the sample of countries.

and adopting an inflation-targeting regime apparently plays no role in this dimension. We also find that fiscal rules lower fiscal procyclicality (which in principle could either increase or decrease cyclicality). Moreover, well-designed BBR appear to partly mitigate the adverse fiscal effects of adverse terms-of-trade shocks and high debt levels. Finally, fiscal cyclicality is largely concentrated in procyclical government investment expenditures and not in government consumption expenditures.

Emerging markets have evolved over time, approaching in some cases the institutional and economic characteristics of high-income countries. However, some characteristics, such as substantial exposure to terms-of-trade volatility and rising debt servicing costs during economic downturns, are likely to remain a distinguishing characteristic of emerging markets. Fiscal procyclicality, though declining in some emerging markets, may therefore continue to be a problem in many others. Adoption of medium-term fiscal rules, to the extent that they provide greater fiscal space, may mitigate some adverse economic and institutional characteristics of emerging markets that contribute to fiscal procyclicality and help move them toward the (acyclical) norm of high-income countries.

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CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon request.

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SUPPORTING INFORMATION

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

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