



WP/14/122

IMF Working Paper

Fiscal Rules and the Procyclicality of Fiscal Policy in the Developing World

Elva Bova, Nathalie Carcenac, and Martine Guerguil

IMF Working Paper

Fiscal Affairs Department

Fiscal Rules and the Procyclicality of Fiscal Policy in the Developing World¹

Prepared by Elva Bova, Nathalie Carcenac, and Martine Guerguil

Authorized for distribution by Martine Guerguil

July 2014

This Working Paper should not be reported as representing the views of the IMF.

The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.

Abstract

This paper documents the spread of fiscal rules in the developing world and investigates the relation between fiscal rules and procyclical fiscal policy. We find that, since the early 2000s, developing countries outnumbered advanced economies as users of fiscal rules. Rules were adopted either as part of the toolkit to join currency unions or to strengthen fiscal frameworks during and after large stabilization and policy reform episodes. The paper also finds that the greater use of fiscal rules has not shielded these countries from procyclicality, since fiscal policy remains procyclical following the adoption of a fiscal rule. We find partial evidence that some features of “second generation” rules, such as the use of cyclically-adjusted targets, well-defined escape clauses, together with stronger legal and enforcement arrangements, may be associated with less procyclicality.

JEL Classification Numbers: E62, H11, H62 , F41

Keywords: Fiscal rules, fiscal policy, cyclicity, emerging markets, developing economies

Authors' E-Mail Addresses: ebova@imf.org; ncarcenac@imf.org; mguerguil@imf.org

¹ This working paper is based on the IMF-World Bank Conference on Fiscal Policy, Equity, and Long-Term Growth in Developing Countries held in Washington, D.C., April 21–22, 2013.

| Contents | Page |
|--|------|
| Abstract | 2 |
| I. Introduction | 4 |
| II. Fiscal Rules in EMDEs | 5 |
| III. Fiscal Rules and Procyclicality: A Brief Literature Review | 9 |
| IV. Fiscal Rules and Procyclicality in EMDEs: Some Preliminary Evidence..... | 11 |
| V. Design of Fiscal Rules and Procyclicality | 16 |
| VI. Conclusions..... | 20 |
| Tables | |
| 1. National Rules and IMF Programs | 7 |
| 2. Regression Coefficients Between Cyclical Components of Real Spending and Real Spending and Real GDP, 1995–2012 | 12 |
| 3. Regression Coefficients Under Fiscal Rules, 1995–2012..... | 14 |
| 4. Regression Coefficients Before and After the Introduction of Cyclically-Adjusted Balance Rules..... | 17 |
| Figures | |
| 1. Adoption of Fiscal Rules | 6 |
| 2. Number of Countries with Fiscal Rules, 1990–2012..... | 6 |
| 3. Number Fiscal Rules per Country Groups, 2012..... | 7 |
| 4. Types of Fiscal Rules, 2012..... | 8 |
| 5. Coverage of Rules (General Versus Central Government), 2012..... | 8 |
| 6. Number of Fiscal Rules by Region, 2012..... | 8 |
| 7. Number of Countries with Change and Suspension of Fiscal Rule..... | 9 |
| 8. Regression Coefficients, 1995–2012 | 13 |
| 9. Regression Coefficients 2004–12..... | 15 |
| 10. Procyclicality per Type of Rule, 1995–2012 | 16 |
| 11. Cyclically-Adjusted Balance Budget Rules, 1995–2012..... | 17 |
| 12. Well Defined Escape Clauses | 18 |
| 13. Overall Fiscal Rule Index, 1990–2012 | 19 |
| 14. Procyclicality and Budget Institutions Index for EMDEs, 1995–2012 | 19 |
| 15. Procyclicality and Budget Institutions for EMDEs, 1995–2012 | 20 |
| Appendices | |
| I. Fiscal Rules by Country, Type, and Year of Adoption | 21 |
| II. Regression Coefficients with Alternative HP Smoothing Parameters..... | 23 |
| References..... | 25 |

I. INTRODUCTION

This study documents the spread and impact of fiscal rules in the developing world. While formerly a quasi-exclusive element of fiscal policy in advanced economies, fiscal rules have been embraced by a rapidly growing number of emerging market and developing economies (EMDEs) over the past 15 years. The database constructed by Schaechter and others (2012) allows us to map the landscape of fiscal rules in the developing world—who adopted what, when and why.

This paper also explores the relation between fiscal rules and procyclical fiscal policy in EMDEs. Fiscal policy in these economies has been notoriously procyclical, with adverse, destabilizing effects on growth and welfare. However, this procyclical bias has tended to decrease over the past decade or so, at the same time as the use of fiscal rules was spreading. It is thus worth exploring whether there could be a relation between these two trends.

The relationship between fiscal rules and procyclicality is conceptually ambiguous. By imposing strict constraints on fiscal management, rules could prevent the authorities to react to the business cycle. But when fiscal rules are part of a broader strengthening of the fiscal framework, they could help smooth large increases in spending during booms and sudden contractions during busts. Empirical studies on this topic are scarce, and largely limited to advanced economies. This paper thus tries to fill a gap in our understanding of fiscal rules in EMDEs.

We rely on simple methodologies to explore possible regularities, rather than causality, in this relationship. To fully untangle the linkages between institutions and policy outcomes is an impossible goal, given likely reverse causality and the abundance of unobservable (or unmeasurable) factors. The relatively short time series further complicate the task. Thus, we look at simple correlations to explore whether the presence of fiscal rules has been associated with changes in procyclicality, and whether specific features of the rules could have accentuated the trend.

The main findings are as follows:

- Since the early 2000s, EMDEs outnumber advanced economies as users of fiscal rules: 47 of them had a fiscal rule in place in 2012, compared with 28 advanced economies.
- In addition to becoming part of the standard toolkit of currency unions around the world, fiscal rules have been often used in EMDEs to strengthen fiscal frameworks during and after large stabilization and policy reform episodes.
- The greater use of fiscal rules has not shielded EMDEs from procyclicality. In fact, unlike in advanced economies, fiscal policy in EMDEs remains procyclical following the adoption of a fiscal rule.

- While it is impossible to establish causality, there is some partial evidence that some features of “second generation” rules, such as the use of cyclically-adjusted targets, well-defined escape clauses, together with stronger legal and enforcement arrangements, may be associated with less procyclicality.

The remainder of the paper is structured as follows. Section II documents the increasing use of fiscal rules in EMDEs since the late 1990s; Section III briefly reviews the literature on fiscal rules and procyclicality; Section IV investigates the relation between spending procyclicality and fiscal rules, Section V discusses possible factors that may underlie the association of fiscal rules with higher spending procyclicality in EMDEs; and Section VI concludes.

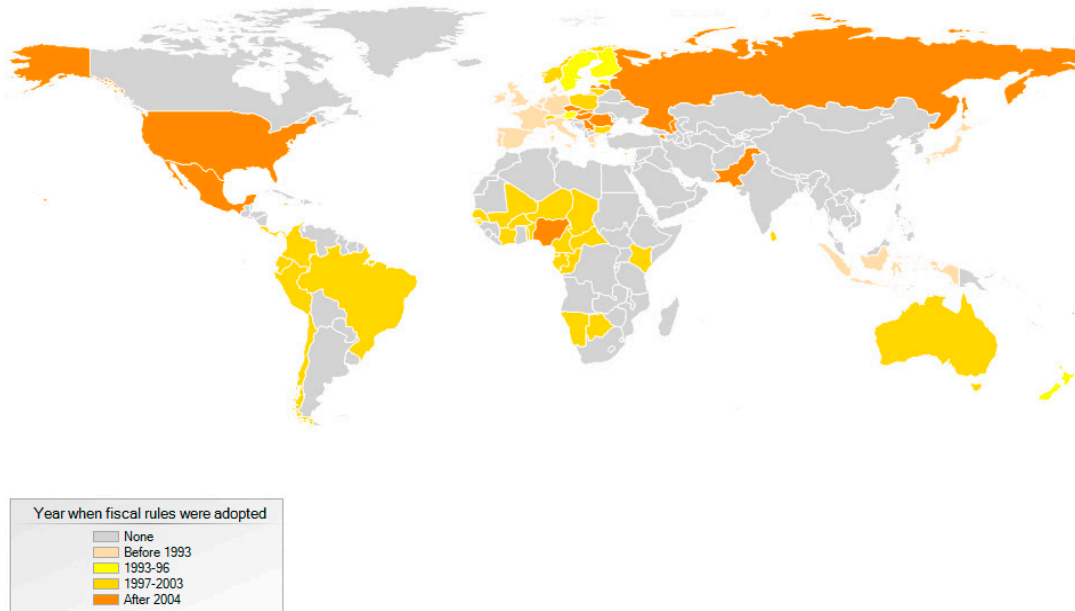
II. FISCAL RULES IN EMDES

The number of EMDEs using fiscal rules as a fiscal policy device has increased rapidly since the mid 1990s. The database of fiscal rules constructed by the IMF Fiscal Affairs Department (Schaechter and others, 2012) shows that while fiscal rules were initially confined to advanced economies, their use has rapidly gained momentum in the developing world (Figure 1).² As a result, EMDEs now largely outnumber advanced economies among fiscal rule users (Figure 2). In both groups of countries, the number of fiscal rules has remained broadly stable since the onset of the crisis, although there have been signs of renewed interest among EMDEs in the past couple of years. As of end 2012, out of a total of 76 countries with one or more fiscal rules in place, 28 were advanced economies and 48 EMDEs.³

² Following Schaechter and others (2012), the database includes all rules with specific numerical targets fixed in legislation, as well as arrangements for which the targets can be revised but are binding for a minimum of three years. This excludes medium-term budgetary frameworks or expenditure ceilings that provide multi-year projections but can be changed annually. The database only includes *de jure* arrangements and does not take into account the *de facto* compliance to the rule. Rules are classified as debt rules, budget balance rules, expenditure rules, or revenue rules according to the aggregate targeted. *Debt rules* set an explicit limit or target for public debt in percent of GDP. *Budget balance rules* set a limit on the overall balance (including or net of capital expenditures), the structural or cyclically-adjusted balance, or the balance “over the cycle.” *Expenditure rules* set limits on total, primary, or current spending; while *revenue rules* set ceilings on revenues and specify how unanticipated revenues should be allocated.

³ For a complete list of countries with fiscal rules, the type of rule and the year of adoption, see Appendix I.

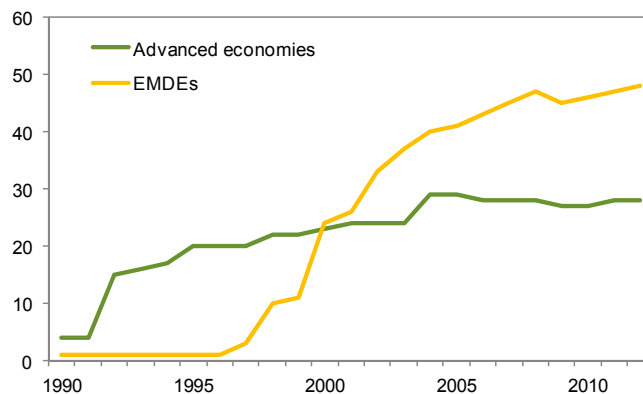
Figure 1. Adoption of Fiscal Rules



Note: Fiscal rules in place in 2012.
Source: IMF Fiscal Rules Database (2012).

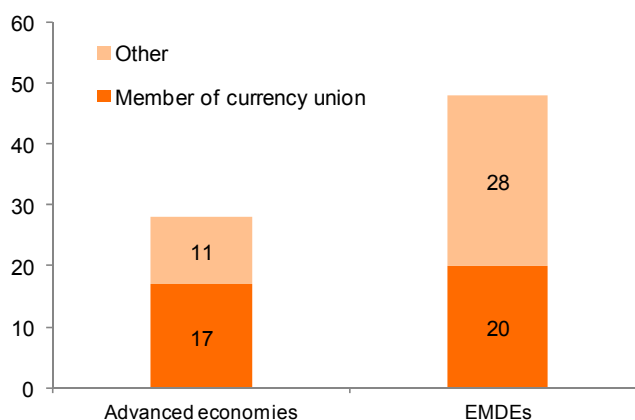
Pertaining to a currency union has been an important, but not the sole, driver behind the adoption of fiscal rules among EMDEs. On the footsteps of the euro area, members of the Eastern Caribbean Currency Union (ECCU), of the West African Economic and Monetary Union (WAEMU) and of the Central African Economic and Monetary Community (CEMAC) adopted fiscal rules in 1998, 2000, and 2002, respectively. The main purpose was to facilitate fiscal policy convergence within the currency union. Overall, members of currency unions represent slightly less than half of EMDEs with fiscal rules. The share increases to about 55 percent if emerging market economies members of the European Union (EU) (also prospective members of the euro area) are included. Among advanced economies, the share is about 60 percent (Figure 3).

Figure 2. Number of Countries with Fiscal Rules, 1990–2012



Source: IMF Fiscal Rules Database (2012).

Figure 3. Number Fiscal Rules per Country Groups, 2012
(Number of country with fiscal rules)



Source: IMF Fiscal Rules Database (2012).

Beyond membership (or prospective membership) to a currency union, fiscal rules have been adopted in EMDEs for two main reasons: to address increasing debt levels and financing costs, or to cement previous liberalization reforms. In about half of the cases (mostly in Latin America and South Asia), fiscal rules were adopted at a time of fiscal crisis, or even debt distress. Fiscal rules were part of ambitious, far-reaching fiscal stabilization plans, often including the adoption of fiscal responsibility laws (Berganza 2012, Blöndal and others 2009). In a second group of countries, mostly in Eastern Europe and Africa, fiscal rules were introduced in the context of “second wave” programs of economic liberalization aimed at strengthening the basis of earlier fiscal consolidation. In those cases, fiscal rules were often associated with the introduction of medium-term expenditure frameworks (Barbone and others 2010). In about one-half of the EMDEs that are not members of a currency union, rules were introduced during an IMF program (Table 1).

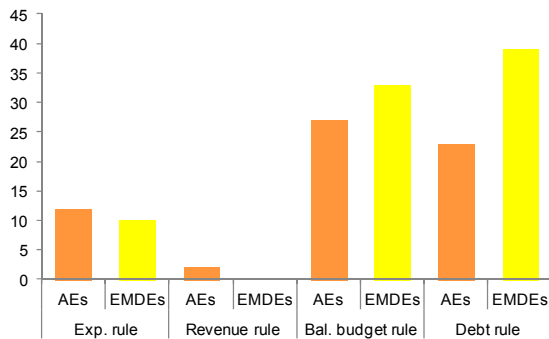
Table 1. National Rules and IMF Programs

| Country | IMF program | Country | IMF program | Country | IMF program |
|------------|-------------|-----------|-------------|-----------|-------------|
| Argentina | Yes | Hungary | Yes | Namibia | No |
| Armenia | Yes | India | No | Nigeria | No |
| Botswana | No | Indonesia | Yes | Pakistan | No |
| Brazil | Yes | Jamaica | Yes | Panama | No |
| Bulgaria | Yes | Kenya | Yes | Peru | Yes |
| Cape Verde | Yes | Kosovo | Yes | Poland | Yes |
| Chile | No | Latvia | No | Romania | Yes |
| Colombia | Yes | Lithuania | No | Russia | No |
| Costa Rica | No | Mauritius | No | Serbia | Yes |
| Ecuador | Yes | Mexico | No | Sri Lanka | Yes |

Sources: IMF Fiscal Rules Database (2012); and IMF Staff Reports.

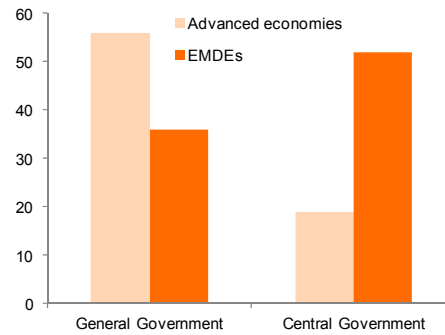
Of the four types of fiscal rules, budget balance rules and debt rules are most commonly used, both in EMDEs and in advanced economies (Figure 4). In both groups of countries, and particularly among members of currency unions, these two rules are usually combined. In EMDEs as well as in advanced economies, revenue rules are rather rare. In contrast with the practice among advanced economies, most rules in EMDEs only cover the central government, often reflecting data availability limitations (Figure 5).

Figure 4. Types of Fiscal Rules, 2012
(Number of countries with fiscal rules)



Source: IMF Fiscal Rules Database (2012).

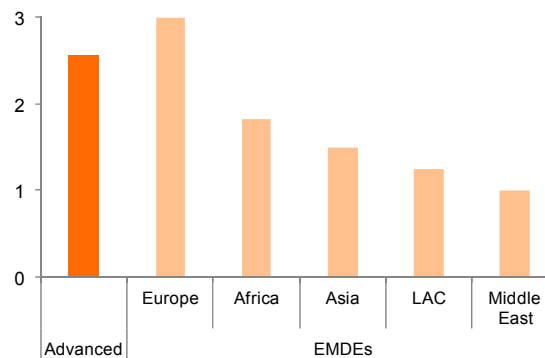
Figure 5. Coverage of Rules (General Versus Central Government), 2012
(Number of fiscal rules)



Source: IMF Fiscal Rules Database (2012).

Advanced economies, as well as emerging economies in Europe, are noticeably more inclined to use fiscal rules in combination (Figure 6). Most advanced economies with fiscal rules use both a debt rule and a budget balance rule. Nearly half of them have a debt rule, a budget balance rule and an expenditure rule. This is the approach followed in most of the EU, but also in other long-time users of fiscal frameworks such as Australia. In contrast, only half of EMDEs with fiscal rules use the debt rule and budget balance rule combination; and one third only uses one rule—mostly a debt rule. Among EMDEs, only members of the EU use more than two rules.

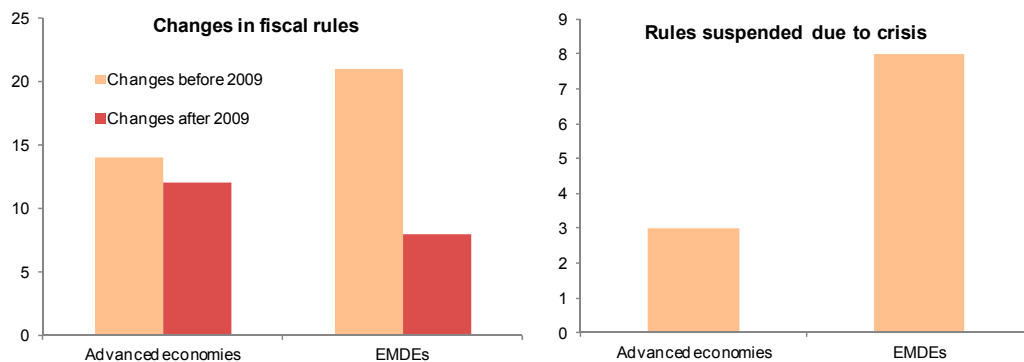
Figure 6. Number of Fiscal Rules by Region, 2012



Source: IMF Fiscal Rules Database (2012).

Before the crisis, changes in fiscal rules were relatively more frequent in EMDEs than in advanced economies (Figure 7). These changes tended to reflect either an increase in the degree of sophistication of the rule, for example the adoption of the Maastricht convergence criteria for the euro zone, of cyclically-adjusted targets in Estonia and Denmark in 2007, and the inclusion of non-oil balance targets in the CEMAC in 2008; or a simplification of the rule, such as the elimination of the deficit target for the ECCU countries in 2006. Since the onset of the crisis, changes have become less frequent in EMDEs, with a larger number of EMDEs resorting to the more radical option of suspending the rule.

Figure 7. Number of Countries with Change and Suspension of Fiscal Rules



Sources: IMF Fiscal Rules Database (2012); and IMF staff estimates.

III. FISCAL RULES AND PROCYCLICALITY: A BRIEF LITERATURE REVIEW

A large body of empirical studies concludes that fiscal policy tends to be more procyclical in EMDEs. Perotti and Gavin (1997) find fiscal policy to be highly procyclical in Latin America, and Kaminsky and others (2004) indicate that fiscal policy is generally more procyclical in developing countries than in advanced economies; a result recently confirmed by Alesina and others (2008), Ilzetzki and Vegh (2008), and, on Sub-Saharan Africa, by Lledó and others (2011).⁴

Procyclicality in EMDEs is usually ascribed to financial, political and administrative constraints. Because of their limited access to financial markets, governments in EMDEs may have no choice but to cut spending and raise revenues in bad times, while in good times, inadequate political and fiscal institutions make it difficult to resist pressures to increase expenditure and lower taxes. Weak implementation capacities, including difficulties in forecasting cycles, add to these constraints. Higher economic volatility and a less predictable

⁴ See also Catão and Sutton (2002), Akitoby and others (2004), Kaminsky and others (2004), Talvi and Vegh (2005), Manasse (2005), and Perotti (2007).

business cycle do also limit the capacity of the authorities to control the near-term fiscal stance and, for example, deliver a counter-cyclical impulse even if this was their intent.

A few recent studies have found, however, a reduction in EMDEs' procyclical bias over the past decade, mostly thanks to improved institutions. Frankel and others (2013) conclude that over the 2000s, about a third of developing economies have implemented countercyclical fiscal policies. Lledó, Yackovlev, and Gadenne (2011) find that procyclicality has declined in Africa since 2000. IMF (2010) and Guerguil and others (2014), report that a larger share of economies in sub-Saharan Africa were able to implement a countercyclical response to the great recession. Looking for causes of this shift, Frankel and others (2013) find that the cyclicity of a country's fiscal policy is inversely related to its institutional quality measured by indicators on law and order, bureaucracy quality and corruption. Dabla-Norris and others (2010) consider how fiscal policy changes in relation to the quality of budget institutions in low-income countries and conclude that countries with stronger fiscal institutions, measured through the quality of the various stages on the budget process as well as the number of checks and balances in place, are in a better position to conduct countercyclical policies.

The impact of fiscal rules on procyclicality is conceptually ambiguous. Fiscal rules are generally established as part of a broad reform of the fiscal framework that seeks to support fiscal credibility and discipline. In that context, fiscal rules aim at containing pressures to overspend, especially in good times (IMF 2009; Kopits and Symansky 1998). In addition, if the establishment of rules is associated with enhanced public financial management, it could enhance access to international markets in bad times and allow the authorities to limit spending cuts during economic downturns (although within the bounds of the rule). But fiscal rules also tend to limit the ability of fiscal authorities to react to business cycle fluctuations, thus potentially exacerbating volatility. Manasse (2005) claims that fiscal rules involve a trade-off between the benefits of reducing the average deficit bias resulting from discretionary fiscal policy and the costs of foregone stabilization. He finds that countercyclical policies are implemented only in very good times (when the fiscal constraint is not binding) or in very bad times (when it is violated since abiding would be too costly in a recession).

Studies of the effect of fiscal institutions in general and fiscal rules in particular, face severe empirical limitations. A fiscal rule, however strong, cannot substitute for commitment to comply with the rule, which is largely a political factor, and as such hard to measure. Establishing a direct link between the rule and a given outcome is equally challenging, as the outcome may be due to a host of other factors, some difficult to observe. And even if a link is found, it may be impossible to determine the direction of causality (fiscal discipline may have led to the establishment of the rule, rather than the other way around). All these problems are compounded in the case of EMDEs, given limitations regarding the length and reliability of data series and the likely existence of structural breaks.

Unsurprisingly, empirical studies of the impact of fiscal rules on fiscal outcomes are scarce, and largely limited to advanced economies. Fatàs and Mihov (2004) find that U.S. states with stricter constraints on fiscal policy have a more procyclical fiscal stance. Similarly, Levinson (1998) shows that in many U.S. states explicit constraints on the budget lead to more volatile business cycles. Debrun and others (2008) find that fiscal rules tend to encourage higher cyclically-adjusted primary balances in the EU and may reduce procyclicality as long as they are designed in a way that avoids or reduces conflicts with the stabilization objective.

IV. FISCAL RULES AND PROCYCLICALITY IN EMDEs: SOME PRELIMINARY EVIDENCE

We extend the analysis in Frankel and others (2013) to explore possible associations between fiscal rules and the cyclicity of public spending. Like other recent studies, we look at the procyclicality of public spending vis-à-vis output, and not at the procyclicality of the budget. This is because tax receipts are endogenous with respect to the business cycle, and expenditure better reflects discretionary fiscal policy (Ilzethki and Vegh 2008, Frankel and others 2013, Kaminsky and others 2004, Dabla-Norris and others 2010).⁵ We use linear regressions to calculate correlation coefficients of the cyclical components of real spending and real GDP. Data on general government spending and GDP are from the IMF's *World Economic Outlook* (WEO) database and the cyclical components are obtained through the Hodrick-Prescott filter.⁶ We conduct the analysis on an unbalanced panel of 156 countries (31 advanced economies and 125 EMDEs).

The methodology has limitations. First, the assessment is based on ex-post outcomes rather than policy design. Second, cyclicity is compared to the presence of a rule, not ex-post compliance with the rule. Third, we look at correlation coefficients, not at causality. However, the use of more complex indicators such as policy intent or compliance would require case-by-case judgment and “real time” information that is not largely accessible. The rather short time series makes recourse to more elaborate statistical approaches questionable. Against this background, correlations coefficients, even if of limited import, are still the most practical instrument at hand.

The exercise confirms that on average, public expenditure is procyclical in EMDEs and broadly acyclical in advanced economies (Table 2). A positive coefficient indicates that government spending is procyclical, while a negative coefficient indicates that it is countercyclical. Correlation for the whole sample is about 0.13, with a coefficient of about

⁵ While the spending ratio is a better indicator of the procyclicality of fiscal policy than budget balances, some elements of discretionary fiscal policy might also come from tax reforms; and although substantially reduced, some degree of endogeneity might result from the multiplier effect.

⁶ The magnitude and sign of the coefficients are robust to the use of different smoothing parameters. The tables and charts in this paper show results with a smoothing parameter of 100. Appendix II reports results with alternative parameters, within the range suggested by Ravn and Uhlig, 2002.

0.14 for EMDEs and a negative coefficient of 0.04 for advanced economies. Among EMDEs, fiscal policy is relatively more procyclical in the Middle East, and relatively less in Asia. This is in line with the results of most recent studies.

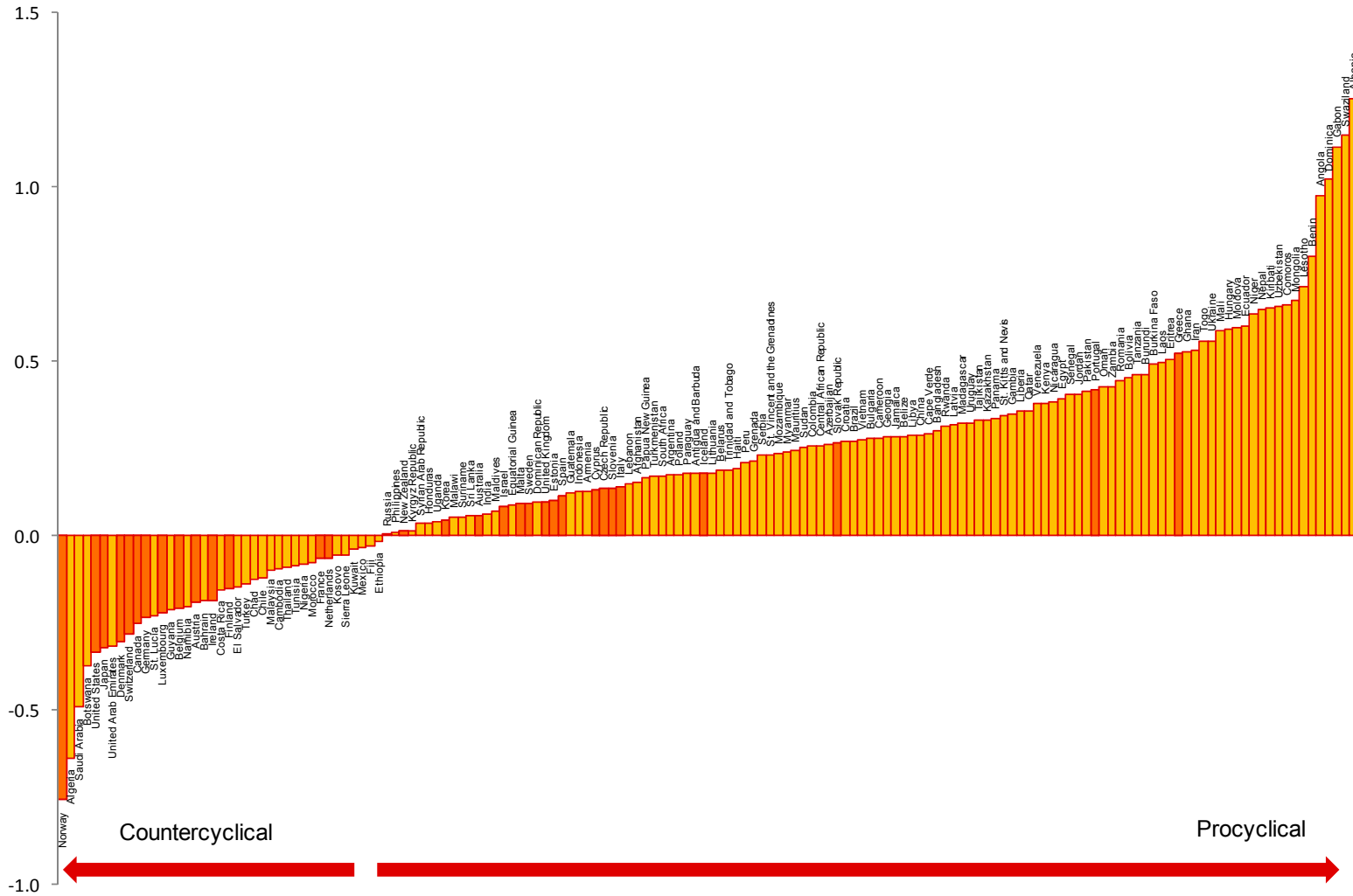
Figure 8 provides country-specific information on the correlation coefficients. Thirty-nine countries exhibit countercyclical fiscal policies, while 117 have procyclical fiscal policies. Out of the 39 countercyclical countries, 14 are advanced economies, and 25 EMDEs. In contrast, the distribution among the 117 procyclical countries is largely skewed toward EMDEs: of that group, only 17 are advanced economies.

Table 2. Regression Coefficients Between Cyclical Components of Real Spending and Real GDP, 1995–2012

| All | Advanced | EMDEs | EMDEs | | | | |
|-------|----------|-------|--------|-------|---------------|--------|-------------|
| | | | Africa | Asia | Latin America | Europe | Middle East |
| 0.126 | -0.039 | 0.137 | 0.208 | 0.125 | 0.240 | 0.210 | 0.528 |

Sources: IMF Fiscal Rules Database (2012); IMF *World Economic Outlook*; and IMF staff estimates.

Figure 8. Regression Coefficients 1995–2012
(Advanced economies in dark orange)



Having a fiscal rule does not shield EMDEs from procyclicality. Figure 9 shows that fiscal rules are distributed across levels of procyclicality in advanced economies as well as EMDEs, but about one half of advanced economies with fiscal rules show a negative coefficient, compared to less than one fourth of EMDEs with fiscal rules. Also, the correlation coefficient for advanced economies suggests that on average, the fiscal stance becomes countercyclical when a rule is in place, but for EMDEs, it remains procyclical (Table 3). Results differ across regions, as a rule is associated with somewhat lower procyclicality in Asia and Latin America, but higher procyclicality in Europe.

Table 3. Regression Coefficients Under Fiscal Rules, 1995–2012

| | All | Advanced | EMDEs | EMDEs | | | | |
|------------------------|-------|--------------------|-------|--------|-------|---------------|--------|-------------|
| | | | | Africa | Asia | Latin America | Europe | Middle East |
| No fiscal rules | 0.210 | 0.046 ¹ | 0.412 | 0.204 | 0.270 | 0.305 | 0.199 | 0.528 |
| Fiscal rules | 0.117 | -0.321 | 0.125 | 0.224 | 0.124 | 0.193 | 0.552 | ... |

Sources: IMF Fiscal Rules Database (2012); IMF *World Economic Outlook*; and IMF staff estimates.

¹The coefficient is not significant since the period of time in which advanced economies did not have fiscal rules is short.

Expenditure rules are associated with more countercyclicality than other rules. The left panel of Figure 10 confirms that procyclical fiscal stances are frequent with the debt and budget balance rules, but less so when a spending rule is in place (compared to countries with no rule). For EMDEs (right panel), however, the presence of a rule (including an expenditure rule) does not make a sizeable difference, suggesting that advanced economies drive the results for the whole sample.

Figure 9. Regression Coefficients 2004–12
(Countries with fiscal rules in blue)

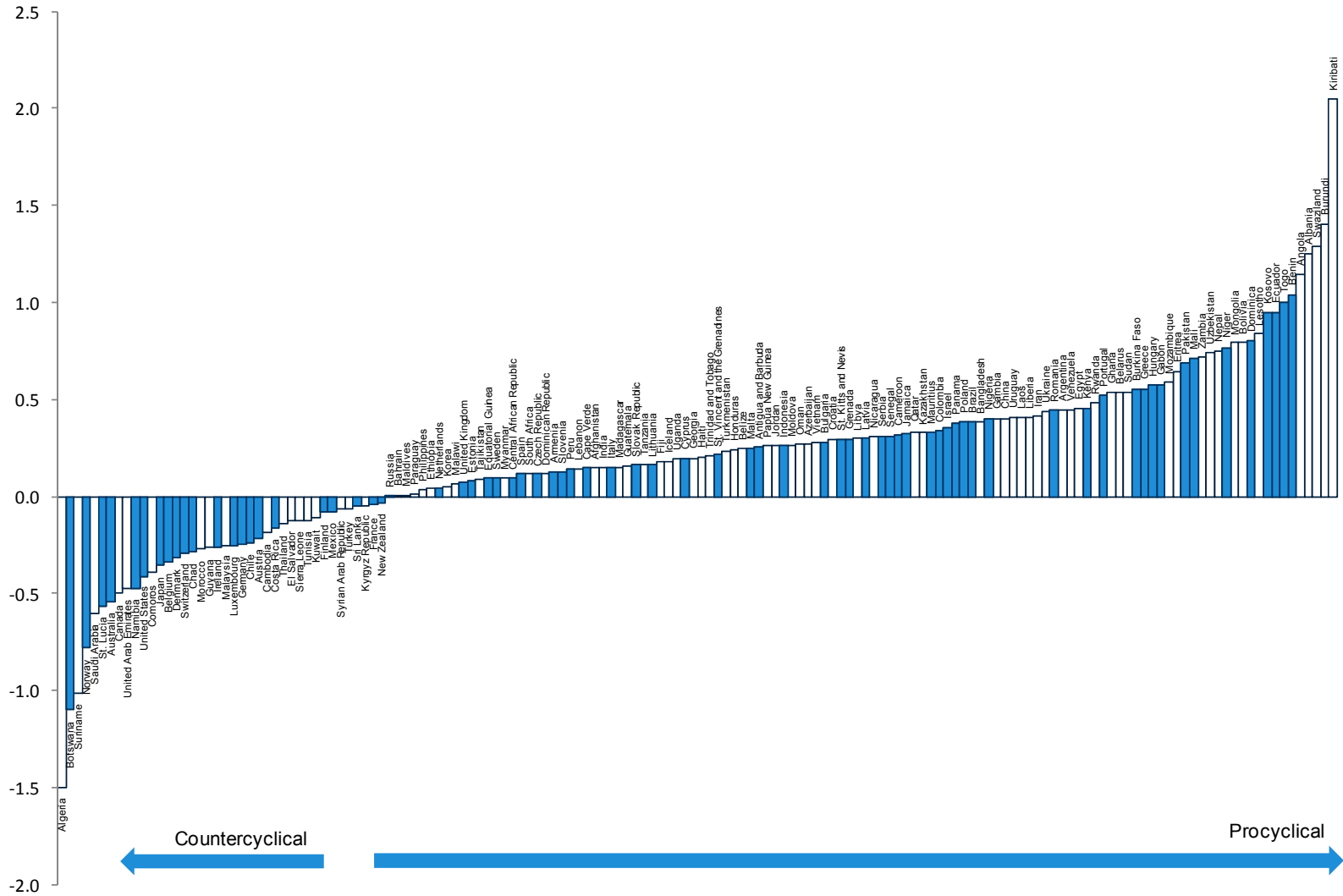
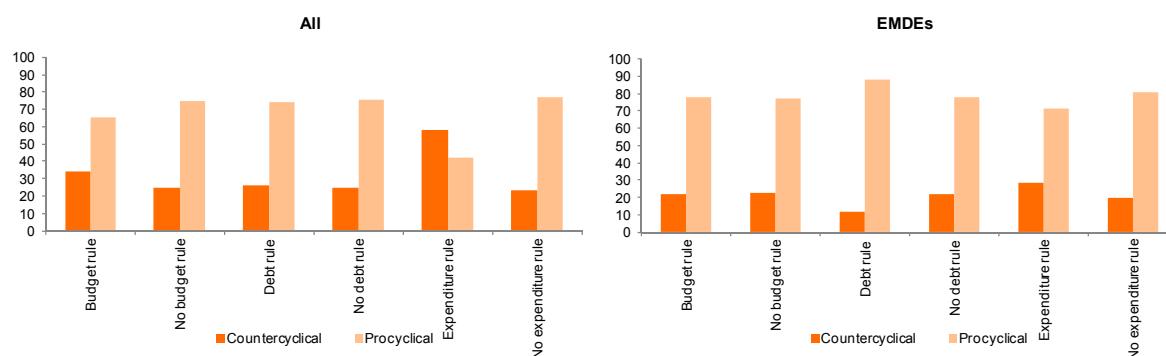


Figure 10. Procyclicality per Type of Rule, 1995–2012
(Percent of countries)



Sources: IMF Fiscal Rules Database (2012); IMF *World Economic Outlook*; and IMF staff estimates.

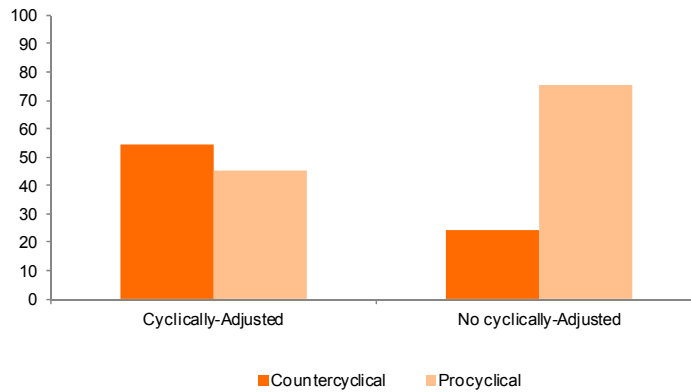
V. DESIGN OF FISCAL RULES AND PROCYCLICALITY

Many factors can lead to procyclical fiscal policy in EMDEs. The previous section showed correlation with the existence of a fiscal rule, but not causality. Even with a positive coefficient, correlation could be coincidental, if for example procyclicality arises from exogenous factors like the size or frequency of external shocks. Nevertheless, some features of fiscal rules in EMDEs may well be associated with higher procyclicality than in advanced economies.

First, simplicity in the design of fiscal rules in EMDEs can fuel a procyclical stance of spending. Partly because of technical and administrative constraints, most rules in EMDEs lack mechanisms that could make them more flexible across the cycle or in the face of shocks. In contrast, many advanced economies are increasingly targeting cyclically-adjusted balances rather than headline balances, thus leaving space to react to business cycle fluctuations. They have also introduced escape clauses to allow for temporary suspension of the rules. Escape clauses and cyclically adjusted balance targets are distinguishing features of the ‘second generation’ of fiscal rules which, in contrast with ‘first generation’ rules, combine the objective of sustainability with the need for flexibility in response to shocks (Schaechter and others 2012).

By 2012, only four EMDEs had incorporated such cyclically adjusted targets in their rules, three of them only very recently: Chile in 2001, Colombia in 2011, Panama first in 2002/03 and then in 2009, and Serbia in 2009. Targeting a cyclically-adjusted balance as opposed to the headline balance tends to improve the stabilizing properties of the rule (Figure 11). Table 4 shows that in most cases, the introduction of a cyclically-adjusted balance as the target for the rule has been associated with more countercyclical (or less procyclical) public spending. It also shows that countercyclicality has somehow declined since the onset of the financial crisis.

Figure 11. Cyclically-Adjusted Balance Budget Rules, 1995–2012
(Percent of countries)



Sources: IMF Fiscal Rules Database (2012); IMF *World Economic Outlook*; and IMF staff estimates.

Table 4. Regression Coefficients Before and After the Introduction of Cyclically-Adjusted Balance Rules

| | Year of introduction | Before introduction | Introduction–2009 | Introduction–2012 |
|----------------|----------------------|---------------------|-------------------|-------------------|
| Australia | 1998 | 0.039 | -0.349 | -0.227 |
| Denmark | 1992 | 0.288 | -0.302 | -0.277 |
| Finland | 1995 | -0.359 | -0.115 | -0.128 |
| Norway | 2001 | -0.015 | -1.401 | -0.910 |
| Spain | 2003 | 0.030 | -0.191 | 0.115 |
| Sweden | 2003 | -0.604 | 0.088 | 0.093 |
| Switzerland | 2003 | -0.204 | -0.295 | -0.290 |
| United Kingdom | 1997 | -0.330 | 0.068 | 0.138 |
| Chile | 2001 | -0.017 | -0.419 | -0.214 |

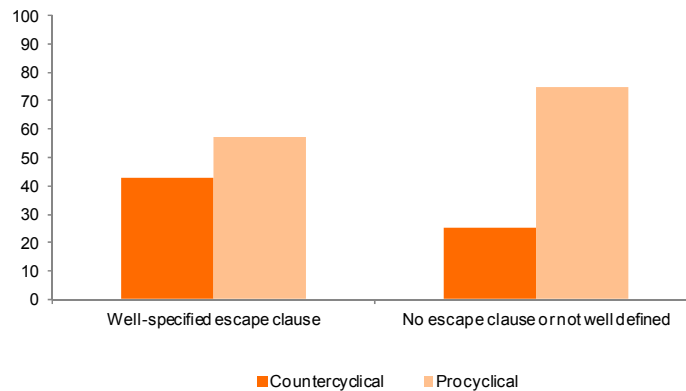
Sources: IMF Fiscal Rules Database (2012); IMF *World Economic Outlook*; and IMF staff estimates.

Note: Periods are country specific and centered around the date at which the fiscal rule was introduced. The pre-introduction period starts in 1985; the first post-introduction period lasts from the introduction of the rule until 2009, and the second post-introduction period lasts from the introduction of the rule until 2012, hence encompassing the financial crisis. Colombia, Panama, and Serbia are not included because they did not have a cyclically-adjusted rule before 2009.

Absence or lack of specification of an escape clause also seems associated with more frequent procyclicality. Escape clauses allow relaxing the rule in case of rare events such as recessions, natural disasters or other large shocks, thus facilitating countercyclical action in such circumstances. There is evidence that, in those countries that have adopted fiscal rules, procyclicality is more frequent when an escape clause is either not included or badly designed (Figure 12). This conclusion still holds when the sample is limited to EMDEs. As of end 2012, 16 EMDEs (including the eight members of the WAEMU) had included an escape clause in their fiscal rules. Given the notoriously higher volatility of output in EMDEs, escape clauses seem warranted; but specification is key. For the escape clause to be

effective, it must come with clear guidelines on the determination of qualifying events (including voting rules) and include an explicit path back to the rule. Among EMDEs, only Brazil has defined a voting mechanism to activate the escape clause, and only Panama, Peru, and Romania have laid out a transition path back to the rule. In WAEMU countries, in contrast, the escape clause allows a relaxation of the rule during large and temporary negative shocks to real GDP and revenues but does not specify transition path back to the rule.

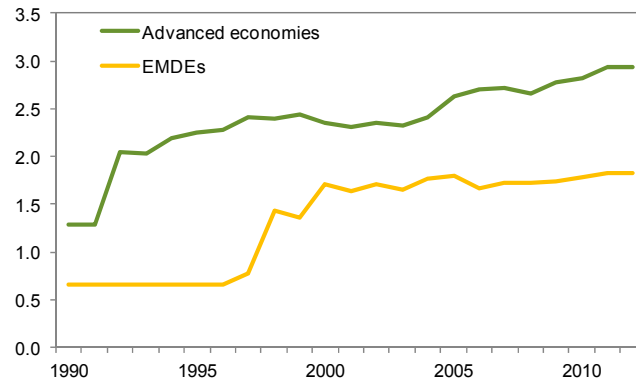
Figure 12. Well Defined Escape Clauses
(Percent of countries)



Sources: IMF Fiscal Rules Database (2012); IMF *World Economic Outlook*; and IMF staff estimates.

Second, fiscal rules in EMDEs seem to be embedded in weaker legal and administrative environments than in advanced economies, which could contribute to higher procyclicality. The fiscal rule index formulated by Schaechter and others (2012) measures the quality of the different elements that support implementation of fiscal rules, such as its legal basis, its coverage and enforcement procedures, and other complementary arrangements such as fiscal responsibility laws or fiscal councils. Such elements can increase the credibility and legitimacy of the rule, and more broadly of the fiscal policy framework, thus opening space for countercyclical action when needed. Despite an improvement in the quality of rules, the index is still significantly lower in EMDEs than in advanced economies (Figure 13). This reflects a combination of factors, such as narrower coverage (leaving a large part of public activities outside the reach of the rule), weaker enforcement procedures, and the absence of monitoring bodies. Interestingly, after shrinking through the mid 2000s, the gap between the two groups of countries has tended to widen in recent years, largely because of efforts to raise rule quality in advanced economies, while action in this area has been more subdued in EMDEs.

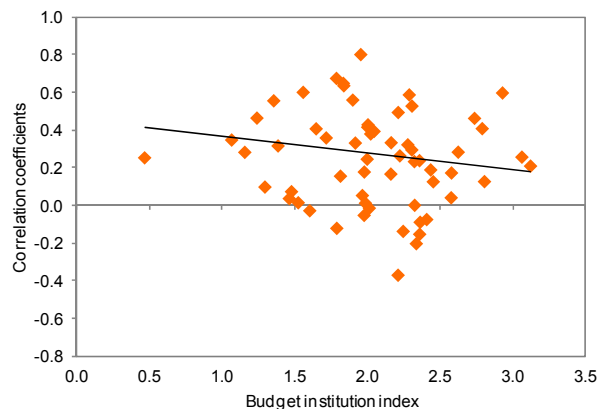
Figure 13. Overall Fiscal Rule Index, 1990–2012
(Index ranging from zero to five)



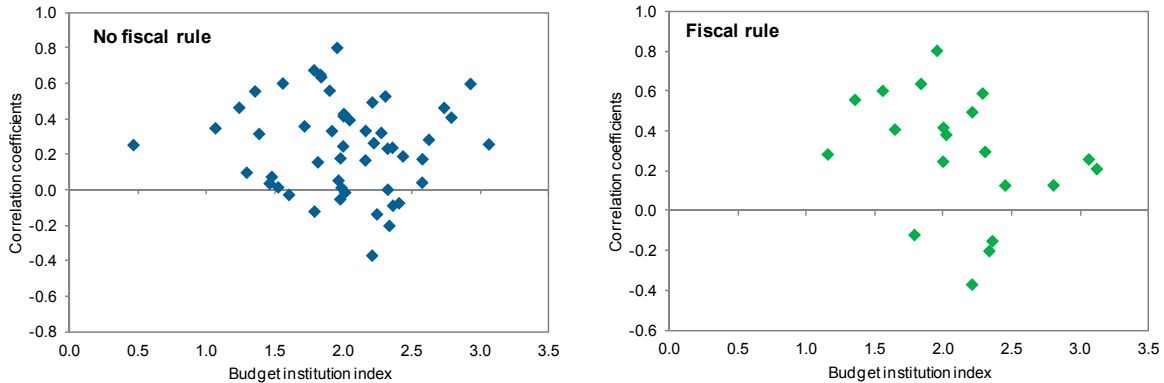
Source: IMF Fiscal Rules Database (2012).

Third, in addition to aspects related to the design of rules themselves, high procyclicality may result from the weak quality of fiscal institutions at large. In Figures 14 and 15, we use the index of quality of budget institutions for EMDEs constructed by Dabla-Norris and others (2010). Although weak, the relationship between the correlation coefficients and the quality of fiscal institutions is negative, confirming that better institutions could be associated with lesser procyclicality. No clear difference emerges, however, when we split the sample between countries with fiscal rule and countries without fiscal rule. This would seem to rule out the hypothesis of a selection bias, whereby countries with weaker institutions would adopt rules as a way to boost governance. But it also suggests that there is scope to improve the design of fiscal rules to make them more active instruments in reducing procyclicality, and more generally improving fiscal capacity in EMDEs.

Figure 14. Procyclicality and Budget Institutions Index for EMDES, 1995–2012



Sources: IMF Fiscal Rules Database (2012); IMF *World Economic Outlook*; and IMF staff estimates.

Figure 15. Procyclicality and Budget Institutions for EMDEs, 1995–2012

Sources: IMF Fiscal Rules Database (2012); IMF *World Economic Outlook*; and IMF staff estimates.

VI. CONCLUSIONS

Improved institutions, particularly in the fiscal area, are often credited for the reduction in procyclicality observed in many EMDEs over the past decade or so. This paper has shown that the use of fiscal rules has indeed increased rapidly over that period in the developing world. However, this does not seem to have been a factor behind the reduction in the procyclicality bias. In fact, the paper finds that in contrast with advanced economies, the adoption of fiscal rules in EMDEs has not been associated with more acyclical or countercyclical fiscal policies.

More flexible rules and more supportive institutional arrangements could help reduce the procyclical bias associated with rules. Without looking for causality, elements in the design of fiscal rules in EMDEs may be associated with a more procyclical fiscal stance than in advanced economies. Cyclically-adjusted targets and escape clauses are relatively uncommon in EMDE rules, although they could play a stabilizing role. However, such flexible rules also call for higher-quality institutional arrangements that strengthen monitoring and enforcement mechanisms.

Better fiscal rules alone are unlikely to reduce the procyclical bias in EMDEs, let alone enhance their fiscal capacity. Reaching these ends will require improvements along the whole gamut of the fiscal framework, from the selection of macrofiscal goals to the orderly management of budgetary accounts. However, crafting rules that allow for flexibility within the technical and political constraints facing EMDEs can still help tilt this larger effort in the right direction.

Appendix I. Fiscal Rules by Country, Type, and Year of Adoption

| | Expenditure rule | | Revenue rule | | Budget balance rule | | Debt rule | |
|--------------------------|------------------|------------|--------------|------------|---------------------|------------|--------------|------------|
| | Start period | End period | Start period | End period | Start period | End period | Start period | End period |
| Antigua and Barbuda | | | | | 1998 | 2005 | 1998 | ... |
| Argentina | 2000 | 2008 | | | 2000 | 2008 | | |
| Armenia | | | | | | | 2008 | ... |
| Australia | 1985 | 1988 | 1985 | 1988 | 1985 | 1988 | | |
| Australia | 2009 | ... | 1998 | ... | 1998 | ... | 1998 | ... |
| Austria | | | | | 1995 | ... | 1995 | ... |
| Belgium | 1993 | 1998 | 1992 | 1999 | 1992 | ... | 1992 | ... |
| Benin | | | | | 2000 | ... | 2000 | ... |
| Botswana | 2003 | ... | | | | | | |
| Brazil | 2000 | ... | | | | | 2000 | ... |
| Bulgaria | 2006 | 2009 | | | | | | |
| Bulgaria | | | | | 2006 | ... | 2003 | ... |
| Burkina Faso | | | | | 2000 | ... | 2000 | ... |
| Cameroon | | | | | 2002 | ... | 2002 | ... |
| Canada | 1998 | 2005 | | | 1998 | 2005 | 1998 | 2005 |
| Cape Verde | | | | | 1998 | ... | 1998 | ... |
| Central African Republic | | | | | 2002 | ... | 2002 | ... |
| Chad | | | | | 2002 | ... | 2002 | ... |
| Chile | | | | | 2001 | ... | | |
| Colombia | 2000 | ... | | | 2011 | ... | | |
| Congo | | | | | 2002 | ... | 2002 | ... |
| Costa Rica | | | | | 2001 | ... | | |
| Cote d'Ivoire | | | | | 2000 | ... | 2000 | ... |
| Cyprus | | | | | 2004 | ... | 2004 | ... |
| Czech Republic | | | | | 2004 | ... | 2004 | ... |
| Denmark | 1994 | ... | 2001 | 2011 | 1992 | ... | 1992 | ... |
| Dominica | | | | | 1998 | 2005 | 1998 | ... |
| Ecuador | 2010 | ... | | | 2003 | 2009 | 2003 | 2009 |
| Equatorial Guinea | | | | | 2002 | ... | 2002 | ... |
| Estonia | | | | | 1993 | ... | 2004 | ... |
| Finland | 2003 | ... | | | 1995 | ... | 1995 | ... |
| France | 1998 | ... | 2006 | ... | 1992 | ... | 1992 | ... |
| Gabon | | | | | 2002 | ... | 2002 | ... |
| Germany | 1985 | ... | | | 1985 | ... | 1992 | ... |
| Greece | | | | | 1992 | ... | 1992 | ... |
| Grenada | | | | | 1998 | 2005 | 1998 | ... |
| Guinea Bissau | | | | | 2000 | ... | 2000 | ... |
| Hungary | 2010 | 2011 | | | 2004 | ... | 2004 | ... |
| Iceland | 2004 | 2008 | | | | | | |
| India | | | | | 2004 | 2008 | | |
| Indonesia | | | | | 1985 | ... | 2004 | ... |
| Ireland | | | | | 1992 | ... | 1992 | ... |

Appendix I (Concluded)

| | Expenditure rule | | Revenue rule | | Budget balance rule | | Debt rule | |
|--------------------------------|------------------|------------|--------------|------------|---------------------|------------|--------------|------------|
| | Start period | End period | Start period | End period | Start period | End period | Start period | End period |
| Israel | 2005 | ... | | | 1992 | ... | | |
| Italy | | | | | 1992 | ... | 1992 | ... |
| Jamaica | | | | | 2010 | ... | 2010 | ... |
| Japan | 2006 | 2008 | | | | | | |
| Japan | 2010 | ... | | | 1985 | ... | | |
| Kenya | | | 1997 | ... | | | 1997 | ... |
| Kosovo | 2006 | 2008 | | | | | 2010 | ... |
| Latvia | | | | | 2004 | ... | 2004 | ... |
| Lithuania | 2008 | ... | 2008 | ... | 2004 | ... | 1997 | ... |
| Luxembourg | 1990 | ... | | | 1992 | ... | 1990 | ... |
| Mali | | | | | 2000 | ... | 2000 | ... |
| Malta | | | | | 2004 | ... | 2004 | ... |
| Mauritius | | | | | | | 2008 | ... |
| Mexico | | | | | 2006 | ... | | |
| Namibia | 2010 | ... | | | | | 2001 | ... |
| Netherlands | 1994 | ... | 1994 | ... | 1992 | ... | 1992 | ... |
| New Zealand | | | | | 1994 | ... | 1994 | ... |
| Niger | | | | | 2000 | ... | 2000 | ... |
| Nigeria | | | | | 2007 | ... | | |
| Norway | | | | | 2001 | ... | | |
| Pakistan | | | | | 2005 | ... | 2005 | ... |
| Panama | | | | | 2002 | 2003 | 2002 | 2003 |
| Panama | | | | | 2009 | ... | 2009 | ... |
| Peru | 2000 | ... | | | 2000 | ... | | |
| Poland | 2011 | ... | | | 2004 | ... | 1999 | ... |
| Portugal | | | | | 1992 | ... | 1992 | ... |
| Romania | 2010 | ... | | | 2007 | ... | 2007 | ... |
| Russia | 2012 | ... | | | 2007 | 2008 | | |
| Senegal | | | | | 2000 | ... | 2000 | ... |
| Serbia | | | | | 2011 | ... | 2011 | ... |
| Slovak Republic | | | | | 2004 | ... | 2004 | ... |
| Slovenia | | | | | 2004 | ... | 2000 | ... |
| Spain | 2011 | ... | | | 1992 | ... | 1992 | ... |
| Sri Lanka | | | | | 2003 | ... | 2003 | ... |
| St. Kitts and Nevis | | | | | 1998 | 2005 | 1998 | ... |
| St. Lucia | | | | | 1998 | 2005 | 1998 | ... |
| St. Vincent and the Grenadines | | | | | 1998 | 2005 | 1998 | ... |
| Sweden | 1997 | ... | | | 1995 | ... | 1995 | ... |
| Switzerland | | | | | 2003 | ... | | |
| Togo | | | | | 2000 | ... | 2000 | ... |
| United Kingdom | | | | | 1992 | ... | 1992 | ... |
| United States | 1990 | 2002 | | | 1986 | 1989 | | |
| United States | 2011 | ... | | | | | | |

Note: "..." indicates fiscal rule still in place in 2012.

Source: IMF Fiscal Rules Database (2012).

Appendix II. Regression Coefficients with Alternative HP Smoothing Parameters

| | lambda=100 | | | | | | | |
|--------------------------------|--|-----------|-----------|----------|---------------|---------------|-------------|-------------|
| | 1995–2012 | | | | | | | |
| | Cyclical component of real spending | | | | | | | |
| | All | Advanced | EMDEs | EMDEs | | | | |
| Africa | | | | Asia | Latin America | Europe | Middle East | |
| Cyclical component of real GDP | 0.126*** | -0.0387** | 0.137*** | 0.208*** | 0.125*** | 0.240*** | 0.210** | 0.528*** |
| | -0.007 | (0.0172) | (0.00811) | (0.0347) | (0.0186) | (0.0170) | (0.0839) | (0.0475) |
| Constant | -11.59 | 12.25 | -19.22 | -0.883 | -77.89 | 20.51 | -22.21 | -20.29 |
| | -45.03 | (58.17) | (54.62) | (4.139) | (301.2) | (31.41) | (70.28) | (162.8) |
| Observations | 2564 | 546 | 2,018 | 667 | 335 | 502 | 333 | 181 |
| R-squared | 0.104 | 0.009 | 0.124 | 0.051 | 0.119 | 0.286 | 0.019 | 0.408 |
| | Countries with no fiscal rules, 1995–2012 | | | | | | | |
| | Cyclical component of real spending | | | | | | | |
| | All | Advanced | EMDEs | EMDEs | | | | |
| | | | | Africa | Asia | Latin America | Europe | Middle East |
| Cyclical component of real GDP | 0.210*** | 0.0456 | 0.412*** | 0.204*** | 0.270*** | 0.305*** | 0.199** | 0.528*** |
| | (0.0143) | (0.0331) | (0.0187) | (0.0380) | (0.0463) | (0.0186) | (0.0975) | (0.0475) |
| Constant | -2.142 | 2.832 | -2.808 | 0.439 | 0.157 | 35.66 | -31.46 | -20.29 |
| | (33.38) | (229.8) | (30.20) | (4.746) | (79.01) | (28.11) | (92.19) | (162.8) |
| Observations | 1,610 | 100 | 1,510 | 474 | 294 | 307 | 254 | 181 |
| R-squared | 0.118 | 0.019 | 0.243 | 0.058 | 0.105 | 0.469 | 0.016 | 0.408 |
| | Countries with fiscal rules, 1995–2012 | | | | | | | |
| | Cyclical component of real spending | | | | | | | |
| | All | Advanced | EMDEs | EMDEs | | | | |
| | | | | Africa | Asia | Latin America | Europe | Middle East |
| Cyclical component of real GDP | 0.117*** | -0.321*** | 0.125*** | 0.224*** | 0.124** | 0.193*** | 0.552*** | ... |
| | (0.0111) | (0.0230) | (0.0149) | (0.0799) | (0.0532) | (0.0298) | (0.0303) | ... |
| Constant | -27.86 | 6.378 | -69.49 | -4.201 | -638.6 | -29.86 | 0.973 | ... |
| | (107.3) | (41.35) | (196.3) | (8.333) | (2,446) | (68.66) | (8.769) | ... |
| Observations | 950 | 446 | 504 | 193 | 41 | 191 | 79 | ... |
| R-squared | 0.106 | 0.305 | 0.123 | 0.040 | 0.123 | 0.181 | 0.812 | ... |

Sources: IMF Fiscal Rules Database (2012); IMF *World Economic Outlook*; and IMF staff estimates.
 Note: Standard errors in parentheses, ***p < 0.01, **p < 0.05, *p < 0.1.

Appendix II (Concluded)

| | lambda=6.25 | | | | | | | |
|--------------------------------|-------------------------------------|------------|----------|----------|---------------|----------|-------------|----------|
| | 1995–2012 | | | | | | | |
| | Cyclical component of real spending | | | | | | | |
| | All | Advanced | EMDEs | EMDEs | | | | |
| Africa | | | | Asia | Latin America | Europe | Middle East | |
| Cyclical component of real GDP | 0.169*** | -0.0609*** | 0.199*** | 0.126** | 0.202*** | 0.107*** | -0.0364 | 0.122** |
| | -0.01 | (0.0120) | (0.0116) | (0.0525) | (0.0277) | (0.0260) | (0.0792) | (0.0619) |
| Constant | -9.7 | 3.627 | -14.09 | -0.331 | -66.13 | 6.640 | -7.094 | -44.30 |
| | -38.82 | (33.78) | (47.81) | (3.288) | (274.1) | (23.45) | (46.20) | (127.3) |
| Observations | 2564 | 546 | 2,018 | 667 | 335 | 502 | 333 | 181 |
| R-squared | 0.100 | 0.045 | 0.126 | 0.009 | 0.138 | 0.033 | 0.001 | 0.021 |

| | lambda=40 | | | | | | | |
|--------------------------------|-------------------------------------|------------|-----------|----------|---------------|----------|-------------|----------|
| | 1995–2012 | | | | | | | |
| | Cyclical component of real spending | | | | | | | |
| | All | Advanced | EMDEs | EMDEs | | | | |
| Africa | | | | Asia | Latin America | Europe | Middle East | |
| Cyclical component of real GDP | 0.137*** | -0.0492*** | 0.153*** | 0.180*** | 0.145*** | 0.215*** | 0.103 | 0.439*** |
| | -0.008 | (0.0148) | (0.00941) | (0.0412) | (0.0220) | (0.0195) | (0.0816) | (0.0546) |
| Constant | -11.32 | 8.952 | -18.11 | -0.537 | -77.14 | 14.94 | -20.48 | -42.65 |
| | -43.19 | (47.66) | (52.86) | (3.879) | (297.2) | (28.81) | (59.90) | (155.0) |
| Observations | 2564 | 546 | 2,018 | 667 | 335 | 502 | 333 | 181 |
| R-squared | 0.096 | 0.020 | 0.116 | 0.028 | 0.116 | 0.196 | 0.005 | 0.265 |

| | lambda=60 | | | | | | | |
|--------------------------------|-------------------------------------|------------|-----------|----------|---------------|----------|-------------|----------|
| | 1995–2012 | | | | | | | |
| | Cyclical component of real spending | | | | | | | |
| | All | Advanced | EMDEs | EMDEs | | | | |
| Africa | | | | Asia | Latin America | Europe | Middle East | |
| Cyclical component of real GDP | 0.132*** | -0.0445*** | 0.146*** | 0.192*** | 0.136*** | 0.229*** | 0.168** | 0.490*** |
| | -0.008 | (0.0158) | (0.00888) | (0.0382) | (0.0206) | (0.0184) | (0.0835) | (0.0515) |
| Constant | -11.41 | 10.51 | -18.64 | -0.659 | -77.51 | 17.37 | -21.39 | -34.29 |
| | -44.04 | (52.28) | (53.69) | (3.995) | (299.3) | (30.02) | (64.44) | (159.2) |
| Observations | 2564 | 546 | 2,018 | 667 | 335 | 502 | 333 | 181 |
| R-squared | 0.098 | 0.014 | 0.118 | 0.036 | 0.115 | 0.237 | 0.012 | 0.336 |

Sources: IMF Fiscal Rules Database (2012); IMF *World Economic Outlook*; and IMF staff estimates.
Note: Standard errors in parentheses, ***p< 0.01, **p< 0.05, *p< 0.1.

References

- Akitoby, B., D. Ghura, A. Tahari, and E. B. Aka, 2004, “Sources of Growth in Sub-Saharan Africa,” IMF Working Paper 04/76 (Washington: International Monetary Fund).
- Alesina, A., F. Campante, and G. Tabellini, 2008, “Why is Fiscal Policy often Procyclical,” *Journal of the European Economic Association*, Vol. 6, No. 5, pp. 1006–36.
- Barbone, L., I. Roumeen, and L.A. Sanchez, 2010, “The Great Crisis and Fiscal Institutions in Eastern and Central European and Central Asia,” World Bank Policy Research Working Paper 5453 (Washington: World Bank).
- Berganza, J. C., 2012, “Fiscal Rules in Latin America: A Survey,” Bank of Spain Occasional Paper 1028 (Madrid: Bank of Spain).
- Budina, N., T. Kinda, A. Schaechter, and A. Weber, 2012, “Fiscal Rules at a Glance: Country Details from a New Dataset,” IMF Working Paper 12/273 (Washington: International Monetary Fund).
- Blöndal, S, and S. Dougherty, 2009, “Priorities for Growth in OECD Economies,” in *Innovation and Growth: Chasing a Moving Frontier*, Chapter 4 (Paris: Organisation for Economic Co-operation and Development).
- Catão, L., and B. Sutton, 2002, “Sovereign Defaults: The Role of Volatility,” IMF Working Paper 02/149 (Washington: International Monetary Fund).
- Dabla-Norris, E., R. Allen, L. Zanna, T. Prakash, E. Kvintradze, V. Lledo, I. Yackovlev, and S. Gollwitzer, 2010, “Budget Institutions and Fiscal Performance in Low-Income Countries,” IMF Working Paper 10/80 (Washington: International Monetary Fund).
- Debrun, X., L. Moulin, A. Turrini, J. Ayuso-i-Casals, and M. S. Kumar, 2008, “Tied to the Mast? National Fiscal Rules in the European Union,” *Economic Policy*, pp. 299–362.
- Fatàs, A., and I. Mihov, 2004, “The Macroeconomic Effects of Fiscal Rules in the U.S. States,” *Journal of Public Economics*, Vol. 90, pp. 101–17.
- Frankel, J. A., C. A. Végh, and G. Vuletin, 2013, “On Graduation from Fiscal Procyclicality,” *Journal of Development Economics*, Vol. 100, No. 1, pp. 32–47.
- Guerguil, M., M. Poplawski-Ribeiro, and A. Shabunina, 2014, “Fiscal Policy Response During the Crisis in Low-Income African Economies,” in *Post-crisis Fiscal Policy*, ed. by C. Cottarelli, P. Gerson, and A. Senhadji (Cambridge: MIT Press), pp. 287–314.

- Hodrick, R. J., and E. C. Prescott, 1997, "Postwar U.S. Business Cycles: an Empirical Investigation," *Journal of Money, Credit, and Banking*, pp. 1–16.
- Ilzetzki, E., and C. A. Végh, 2008, "Procyclical Fiscal Policy in Developing Countries: Truth or Fiction," NBER Working Paper 14191 (Cambridge: National Bureau of Economic Research).
- International Monetary Fund (IMF), 2009, "Fiscal Rules—Anchoring Expectations for Sustainable Public Finances," IMF Policy Paper prepared by the Fiscal Affairs Department (Washington).
- , 2010, *Regional Economic Outlook: Sub-Saharan Africa, Back to High Growth?* (Washington).
- Kaminsky, G. L., C. M. Reinhart, and C. A. Végh, 2004, "When It Rains, It Pours: Procyclical Capital Flows and Macroeconomic Policies," NBER Working Paper 10780 (Cambridge: National Bureau of Economic Research).
- Kopits, G., and S. Symansky, 1998, "Fiscal Policy Rules," IMF Occasional Paper 162 (Washington: International Monetary Fund).
- Levinson, A., 1998, "Balanced Budgets and Business Cycles: Evidence from the States," *National Tax Journal*, Vol. 51, No. 4, pp. 715–32.
- Lledó, V. D., I. Yackovlev, and L. Gadenne, 2011, "A Tale of Cyclicity, Aid Flows and Debt: Government Spending in Sub-Saharan Africa," *Journal of African Economies*, Vol. 20, No. 5, pp. 823–49.
- Manasse, P., 2005, "Deficit Limits, Budget Rules and Fiscal Policy," IMF Working Paper 05/230 (Washington: International Monetary Fund).
- Perotti, R., 2007, "In Search of the Transmission Mechanism of Fiscal Policy," NBER Working Paper 13143 (Cambridge: National Bureau of Economic Research).
- Perotti, R., and Gavin M., 1997, "Fiscal Policy in Latin America," *NBER Macroeconomics Annual 1997*, Vol. 12, pp. 11–72.
- Ravn, M. O., and H. Uhlig, 2002, "On Adjusting the HP Filter for the Frequency of Observations," *Review of Economics and Statistics*, Vol. 84, pp. 371–6.

Schaechter, A., T. Kinda, N. Budina, and A. Weber, 2012, “Fiscal Rules in Response to the Crisis—Toward the ‘Next-Generation’ Rules. A New Dataset,” IMF Working Paper 12/187 (Washington: International Monetary Fund).

Talvi, E., and C. A. Végh, 2005, “Tax Base Variability and Pro-Cyclical Fiscal Policy in Developing Countries,” *Journal of Development Economics*, Vol. 78, No. 1, pp. 156–190.