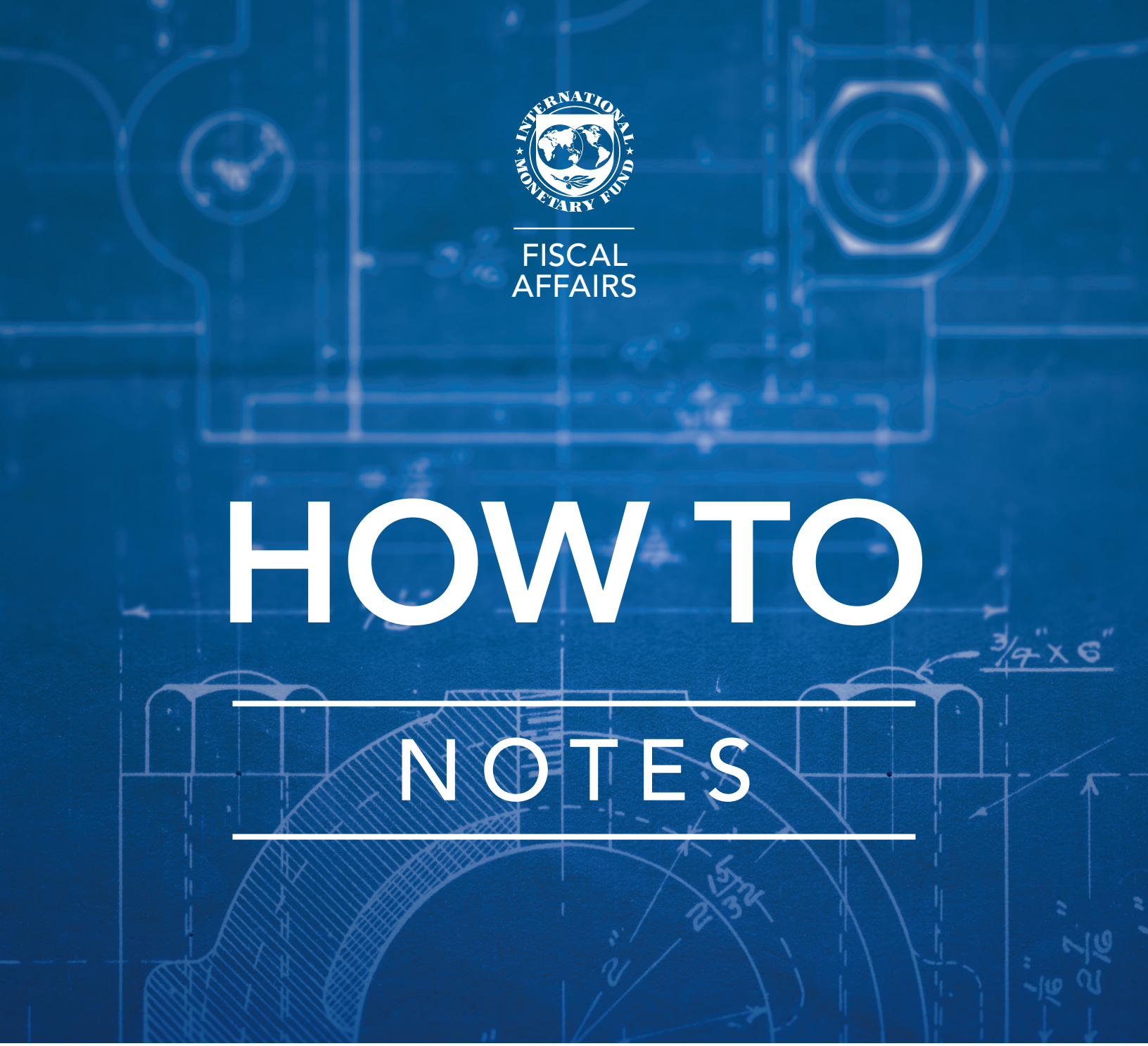

FISCAL AFFAIRS

HOW TO NOTES

How to Design Subnational Fiscal Rules

A Primer

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Fiscal Affairs Department

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A Primer

Prepared by Luc Eyraud, Andrew Hodge, John Ralyea, and Julien Reynaud

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Prepared by Luc Eyraud, Andrew Hodge, John Ralyea, and Julien Reynaud

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HOW TO DESIGN SUBNATIONAL FISCAL RULES: A PRIMER

Introduction

Mismanagement of subnational finances can entail large economic and social costs, not only within the affected jurisdiction, but also for a country as a whole. History offers many examples of costly bailouts of subnational governments by the central government (Crivelli and Staal 2013; von Hagen and others 2000).

Yet, the finances of subnational governments[1] are notoriously difficult to control and manage (IMF 2009). For instance, when local governments finance expenditure from a common pool of intergovernmental transfers, they may fail to internalize the cost of expenditures and thus overspend. When large tax and expenditure responsibilities are decentralized, the central government may be unable to monitor how efficiently taxes are utilized, resulting in moral hazard. Clientelism and governance failures also often prevail at the subnational level. Finally, administering local budgets may be challenging because of unclear spending assignments and weak public financial management systems.

To mitigate subnational fiscal risk, countries resort to a wide range of institutional arrangements that constrain the discretion of subnational governments. These arrangements seek to enforce fiscal discipline and ensure that fiscal policies of the different government levels are mutually consistent. Fiscal rules are one type of institutional arrangement. Almost all advanced countries and many developing economies impose numerical limits on certain aggregates of subnational budgets, such as the fiscal balance or debt service.

However, the literature does not offer clear guidance on the best conceptual framework for subnational institutional arrangements, including fiscal rules, and, often, pays little attention to the specific practical challenges posed by decentralized decision making.

The note was prepared by a team led by Luc Eyraud and including Andrew Hodge, John Ralyea, and Julien Reynaud. Meron Haile and Joni Mayfield provided excellent editorial support. The note benefited from useful comments from IMF staff.

[1]The note uses the term "subnational governments" to describe all levels of government below the central government, including local governments, regions, and states (or provinces) in federations.

Therefore, it is far from clear what type of arrangements, including what type of rules, subnational governments should adopt. Should rules be simple or more complex (for example, adjusted for the business cycle)? Should they include escape clauses or other design features? How should key parameters be computed? None of these questions have simple answers, and, although there is an extensive descriptive literature (for example, on Organisation for Economic Cooperation and Development [OECD] countries), little normative guidance is provided.

This note discusses how to design subnational fiscal rules, including how to select them and calibrate them.[2] It expands on the guidance provided at the national level on rule selection and calibration in IMF (2018a) and IMF (2018b). Thinking on subnational fiscal rules is still evolving, including their effectiveness (for example, Heinemann, Moessinger, and Yeter 2018; Kotia and Lledó 2016; Foremny 2014), and this note only provides a first analysis based on international experiences and the technical assistance provided by the IMF. Main findings are summarized in Box 1.

The note is divided into five sections. The first section defines fiscal rules. The second section discusses the rationale for subnational rules. The third section provides some guidance on how to select the appropriate rule(s) and whether they should differ across individual jurisdictions. The fourth section explores the issue of flexibility by looking at how rules should adjust to shocks. Finally, the last section focuses on the "calibration" of the rules.[3]

[2]The note is not exhaustive. First, it focuses on fiscal rules and does not discuss other types of constraints, including procedural rules, that are prevalent at the subnational level. Second, the paper examines subnational rules as a whole without distinguishing between different subnational government levels (for example, municipal rules versus regional rules). Third, specificities of subnational rules in federations and resource-rich countries are mentioned but not analyzed in detail. Finally, the note concentrates on rule selection and calibration, leaving aside, to some extent, institutional and legal arrangements underlying the rule system.

[3]The analysis and design of subnational fiscal rules can be seen as a first step towards extending the coverage and monitoring of public sector finances. This is consistent with the broader effort to analyze public sector balance sheets (on the asset and liability sides), allowing

Box 1. Summary of Main Findings

This How-To Note provides an initial analysis of the design of subnational rules (both selection and calibration) based on international experience and capacity development provided by the IMF.

Scope. Countries constrain the finances of subnational governments through a range of institutional arrangements. Fiscal rules are defined as constraints that are numerical, lasting, and apply to large fiscal aggregates such as budget balances and total expenditures. Fiscal rules are not as prescriptive as direct controls imposed by the national government, but they are more intrusive than market mechanisms.

Difficulties in designing subnational rules. Standard recommendations on rule design are difficult to transpose to subnational governments. For example, the model with a debt anchor and an operational rule advocated for national governments does not map well to the subnational level. Another challenge is that governments try to pursue two potentially conflicting objectives through subnational rules. On the one hand, subnational rules must be more binding than national rules to limit the scope for deficit bias (a tendency for governments to run high deficits) and excessive borrowing, which can be larger at the subnational level. On the other hand, subnational rules must leave enough flexibility to realize the benefits of decentralized decision-making tailored to local needs, especially given that subnational budgets tend to be more rigid (for example, providing for essential services).

Choice of the rule. There is no "perfect" subnational rule and its choice is necessarily context-dependent. A balanced-budget rule (that is, a rule barring a deficit) is usually not warranted because it prohibits borrowing for investment. Two other rules—the golden rule and the current balance rule—allow borrowing for this purpose. Between these two, a golden rule is inherently more restrictive. A third option is to combine a budget balance rule (imposing a nominal limit on the overall fiscal deficit) and a current expenditure ceiling, which may ensure better control over debt, while leaving space for investment.

Flexibility in response to the cycle. Cyclically adjusted balance rules are generally not warranted for subnational governments due to their complexities. Expenditure rules are a simpler way to address procyclicality concerns. However, the rigidity of subnational expenditures could make compliance difficult. Expenditure rules also impose no requirements on revenue collection, so excessive deficits remain possible. A better alternative to avoid procyclicality could be to combine a nominal budget balance rule with a rainy day fund.

Calibration of subnational rules. The calibration strategy needs to be adapted to the subnational context. It generally starts from (often ad hoc) constraints on borrowing and repayment, with the latter probably the most common approach. Intuitively, any limit on the ability to repay constrains the maximum amount of debt that can be incurred, because debt service is proportional to the amount of debt outstanding.

Definition of Subnational Fiscal Rules

Subnational finances can be constrained in numerous ways. The various types of constraints can be classified according to the degree of fiscal autonomy left to subnational governments, as illustrated in Figure 1 (Ter-Minassian and Craig 1997). On the left, direct controls by the central government[4] are associated with the lowest degree of fiscal autonomy. For instance, the central government may set and revise each year's ceilings on subnational debt or regulate the type of borrowing allowed. On the right, market discipline, where constraints are indirectly imposed by investors, provides the highest degree of autonomy; subnational governments are free to set their own targets, as long as their fiscal policy does not impair market confidence.

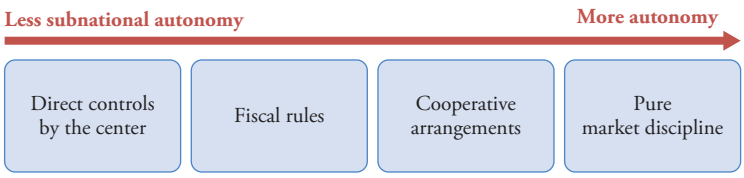
Fiscal rules, which are the focus of this note, are an intermediate form of constraint. They lie somewhat in the middle of the Figure 1 axis. Fiscal rules impose lasting constraints on fiscal policy. They are defined as fixed numerical limits (floors or ceilings) on fiscal variables set in legislation and binding for at least three years (Lledó and others 2017). Rules are not as prescriptive as direct controls but are more intrusive than market mechanisms.

Fiscal rules differ from direct controls, although the distinction is not always easy to establish. Whereas fis-

for better risk management and policymaking. See IMF October 2018 *Fiscal Monitor*.

[4]Direct controls are also called "administrative controls" in the literature.

Figure 1. Forms of Control Over Subnational Finances



Source: IMF staff.

cal rules are numerical, lasting, and apply to large fiscal aggregates, direct controls tend to be more "procedural" (some may not even rely on a numerical threshold), ad hoc (possibly revised every year), and apply to subaggregates such as current expense. According to this definition, a ban on external borrowing would be considered a direct control, but a permanent ban on *total* borrowing would be viewed as a rule.

Another important distinction is that rules can be either self-imposed by subnational governments, imposed by the national government, or negotiated between the different levels of government. For instance, US states and Canadian provinces have full discretion to impose their own rules, and these differ across states. In contrast, Brazil adopted a fiscal responsibility law in 2000 that established "from the top" numerical rules and budgetary procedures to guide fiscal policy and promote fiscal discipline at all levels of government, including limits on personnel expenditure and debt.

Analytical Framework: Rationale for Subnational Borrowing and Subnational Rules

Fiscal rules, despite their diversity, share a common objective, which is to foster fiscal sustainability. There is an emerging consensus about how fiscal rule frameworks at the central government level should be designed to achieve this objective. This section explains why a different approach may be required for subnational fiscal rules. It outlines benefits and drawbacks of borrowing at the subnational level and explains why containing the deficit bias (a tendency for governments to run excessive deficits) is an important objective of subnational fiscal rules.

Should Subnational Governments Be Allowed to Borrow and for What?

Subnational governments rely on central government transfers and, to a lesser extent, own-tax revenues to finance their expenditures. When those revenue sources are insufficient, either due to a gap between expenditure and revenue assignments,[5] a political unwillingness to raise local taxes, or cyclical swings in local revenue, should subnational governments borrow to cover the gap?[6]

This section explores the rationale supporting subnational borrowing to (1) finance public goods and services, (2) achieve macroeconomic stabilization, and (3) engage in competition with other subnational entities. It shows that there is merit in allowing some borrowing at the subnational level for investment purposes, but the case for subnational borrowing to finance current expenditure, macroeconomic stabilization, or competition seems weaker.

Borrowing to provide public goods and services?[7]

Generally, subnational *current expenditure* should not be financed through subnational borrowing. Current expenditures should preferably be financed from tax revenues or transfers (that is, current revenues). This is consistent with the well-established benefit taxation principle that those who benefit from government expenditure should pay for it. Resorting to borrowing would imply that future generations would pay taxes

[5]The concept of "vertical fiscal gap" characterizes the widespread situation where subnational governments have relatively narrow tax bases but broad expenditure responsibilities (Boadway and Eyraud 2018).

[6]Subnational governments could also curtail the quantity and/or quality of expenditures to cover the gap. However, subnational expenditures often involve politically sensitive, mandated programs that the authorities and society may find difficult to cut (for example, waste management, education, and social housing).

[7]The provision of goods and services by governments is called the "allocation function" of government in the literature on fiscal policy.

to cover the debt service generated by the current generation's consumption.

A more complex question is whether subnational borrowing should be used for *capital expenditure*. The share of capital expenditure carried out at the subnational level is, in general, very large. In OECD countries, subnational governments account for about two-thirds of public investment (OECD 2016). There is a case for financing part of subnational investment through subnational borrowing, in particular for capital projects that are purely local and have little spillover on other jurisdictions.[8] The case rests on problems that arise when investment is entirely financed through taxes or transfers, as well as on specific benefits associated with such borrowing:

- **Subnational taxes.** Financing investment projects out of current revenue would be impractical given the narrow tax bases of subnational governments.[9] The size and lumpiness of investment spending relative to subnational revenue-raising capabilities means that current expenditures would have to be severely curtailed if capital spending were financed from local taxes only. In addition, financing investment solely through local taxation would be inconsistent with intergenerational equity—paying for local investments with current revenue means current taxpayers bear the costs whereas future generations enjoy many of the benefits for free.
- **Transfers from the national government.** Financing subnational government investment exclusively through transfers from the national government can also be problematic, at least for local projects that do not entail large spillovers to other jurisdictions. First, subnational governments are often in a better position than the national government to tailor financing to their needs. Second, investment financing, which is primarily done on an ad hoc basis, is less amenable to formula-based recurrent transfers and requires so-called discretionary transfers, which are subject to political interference. Third, ad hoc capital transfers can create a common pool problem—individual subnational authorities may tend to inflate their needs because the funding cost of transfers (in terms of central taxation or central borrowing) is spread over all jurisdictions. These three arguments apply to all types of investment, but they are somewhat less relevant when transfers finance subnational projects with regional spillovers. In this particular case, "specific transfers" can and often should be used to incentivize subnational investment (Boadway and Eyraud 2018).
- **Subnational borrowing.** By comparison, subnational borrowing presents some benefits. Subnational borrowing enables sharing the cost of investment projects with future generations (contrary to the tax option) and ensures that only beneficiaries pay for the services received (contrary to the transfer option, which shares the cost across all subnational governments). Other advantages of borrowing include the potential to encourage financial market development at the local level.[10]

Overall, there is a case to finance part of subnational investment through subnational borrowing, especially for projects that have a purely local benefit. This does not preclude a partial reliance on taxes and specific transfers. But these two sources of financing are unlikely to cover all investment needs efficiently.

Borrowing for macroeconomic stabilization purposes?

Another potential motivation for borrowing is to support the operation of automatic stabilizers. When revenues decline, subnational governments may have to resort to borrowing to finance spending programs during downturns. However, the stabilization function of government is generally best left at the national level, except in highly decentralized countries where the responsibility can be shared (like in the United States).

Centralized countercyclical policy offers several advantages over a decentralized approach in offsetting both symmetrical and asymmetrical shocks (IMF 2009).[11] In the case of a symmetrical shock, a decentralized response would create large coordination costs

[8]This section assumes that there is a pool of "good" subnational projects that need to be financed. We assume that the projects generate clear local benefits and subnational governments have the institutional capacity to implement them efficiently.

[9]In general, there is less scope to decentralize revenue than expenditure (see a review of the arguments in Boadway and Eyraud 2018).

[10]Nonetheless, the development of a subnational securities market could also fragment the overall government securities market. The desirability of subnational securities market development depends on whether the benefits of decentralized borrowing outweigh the inefficiencies created by market fragmentation (World Bank 2001).

[11]Symmetrical or common shocks occur at the country level and affect all subnational governments (for example, an economic downturn due to external factors). Asymmetrical or idiosyncratic shocks affect only one or a few subnational governments (for example, local bank failure).

and run the risk that subnational governments could respond differently, with some undertaking actions at cross purposes with the effort at the national level.[12] When the economic shock is asymmetrical across subnational governments, a centralized stabilization policy allows for risk sharing among subnational entities. The national government can collect and transfer revenues from subnational governments less affected by a shock to those that were hit harder. For example, Mélitz and Zumer (2002) find that transfer systems in Canada, France, the United Kingdom, and the United States help manage asymmetric shocks on regional incomes.

Also, central governments can generally borrow more efficiently and cheaply than subnational governments. Central governments have much broader tax bases than subnational governments. This provides a more stable flow of funding across the business cycle, moderating borrowing needs. In addition, aggregating general government borrowing needs at the central government level generates economies of scale as it allows for larger issuances, and hence greater market power, than if borrowing is conducted at the subnational government level.

Borrowing to support subnational competition?

Local governments frequently grant local tax breaks or subsidies to attract and retain businesses and wealthy residents. This may induce neighboring jurisdictions to retaliate and offer even larger fiscal incentives to the same or other businesses. This type of fiscal competition can be suboptimal if it induces a race-to-the-bottom, in which subnational governments compete to offer ever larger targeted tax breaks that ultimately reduce total local government revenue without providing a comparative advantage to any one jurisdiction.

Subnational borrowing makes it easier for local authorities to yield to these excessive competitive pressures and should, in general, not be used to support such policies. Borrowing postpones the day of reckoning for local taxpayers in the form of higher taxes or reduced services to compensate for the tax breaks or services extended to a favored few without a clear payoff once all neighboring jurisdictions follow.

[12]Different responses to symmetrical shocks may be justified "locally" if each jurisdiction differs in terms of smoothing preferences. Nonetheless, the combination of legitimate individual responses may lead to a procyclical policy with respect to the common cycle, which would be a suboptimal outcome at the country level.

Objectives of Subnational Rules

The previous section shows that subnational governments should be allowed to borrow to some extent, in particular for public investment. But subnational governments may be tempted to run excessive deficits—a risk referred to in the literature as "deficit bias." There are multiple causes for the deficit bias; many of them are political factors—for instance, reelection concerns of politicians. The deficit bias can materialize at all levels of government, but the risk is often magnified at lower levels of government, which have greater incentives to undertax or overspend, leading to excessive borrowing. Two main reasons are widely discussed in the literature on fiscal decentralization (Kornai, Maskin, and Roland 2003; Oates 2006; Rodden, Eskeland, and Litvack 2003):[13]

- **Soft budget constraint.** Many subnational governments face a soft budget constraint. There is no ex ante fixed resource envelope within which they must operate. For instance, they may expect to receive gap-filling transfers from the national government; they may have special access to the local banking system, including through ownership or control of local banks or state-owned enterprises that absorb their bond issuances at below-market price; or they may defer paying suppliers and accumulate arrears.
- **Common pool problem.** Most subnational governments have relatively narrow tax bases and rely, in part, on transfers received from the national government to finance their expenditure programs. Because they finance their marginal expenditure with transfers or shared revenue that are funded by taxpayers in other jurisdictions, local policymakers may fail to internalize the full cost of local spending and spend excessively.

To mitigate these risks, subnational rules can be used to constrain the discretion of subnational governments and their tendency to run excessive deficits. Subnational governments can negatively impact the general government's fiscal position because of vertical and horizontal externalities existing across government entities. "Vertical externalities" materialize when fiscal problems in subnational governments are transmitted to the national government (or other higher levels of

[13]Other factors explaining the heightened deficit bias at the subnational level include greater potential for moral hazard, governance issues, lower quality of local bureaucracies, weak public financial systems, unclear spending assignments, and bad incentives created by transfer design.

government) through the cost of bailout payments or higher risk premiums on sovereign issuances. "Horizontal externalities" describe a situation in which the actions of an individual subnational authority affect other jurisdictions directly or indirectly. For instance, support provided by the central government to a region in fiscal distress may negatively affect other regions through tax increases borne by all local governments or higher inflation (if the support is financed through debt monetization).

Besides containing the deficit bias, a second purpose of subnational fiscal rules is to enhance coordination across government levels. Fiscal rules are sometimes used to align the fiscal objectives of subnational governments with those of the national government. For instance, rules can be used to apportion consolidation efforts equally across government levels. Rules can also ensure that all government units contribute to the achievement of supranational objectives by setting mutually consistent targets (like in Europe with the creation of domestic stability pacts; see Sutherland, Price, and Joumard 2005). Without rules, subnational and national government policies may not necessarily be consistent, even when local authorities are fiscally responsible. For example, during the global financial crisis, many countries saw a combination of fiscal stimulus at the national level and procyclical retrenchment at the subnational level (Blöchliger 2013; Blöchliger, Pinero Campos, and Vammalle 2010).

Transposing the "Debt Anchor-Operational Rule" Model to the Subnational Level

In recent years, a consensus has emerged around the idea that a well-designed fiscal rule framework should include two types of rules: a fiscal anchor and one (or a small number of) operational rules (Eyraud and others 2018). A natural fiscal anchor is the debt-to-GDP ratio, which provides a guide for medium-term fiscal expectations and creates an upper limit for repeated fiscal slippages that accumulate in the debt stock. The limit on the debt-to-GDP ratio can be calibrated to ensure the long-term fiscal sustainability of public finances. However, the debt ratio does not offer operational guidance in the near term. Thus, fiscal frameworks should also include short-term operational rules on flow variables (for example, total expenditures) that are under the direct control of the government and that have a close and predictable link to debt dynamics. At the general government level, an expenditure ceiling is often seen as a good operational rule (Andrle and others 2015).

Accordingly, the thresholds of the various rules should be computed in a sequential way (IMF 2018a). The ceiling of the debt stock is set first to ensure that the framework achieves its ultimate objective, which is to preserve fiscal sustainability. In a second stage, the operational rules, which apply to flow variables, are calibrated to ensure that debt remains below its "safe" ceiling.

However, this standard approach to rule selection and calibration cannot be easily transposed at the subnational level, except perhaps in highly decentralized federal countries (like the United States) where states or provinces have a high degree of fiscal autonomy and behave, de facto, like independent governments. In all other cases, the standard framework does not work well. In particular, debt cannot play the role of anchor for the subnational rules system for three reasons:

- Estimating a debt limit for (individual) subnational governments, which is the starting point of the calibration exercise, is difficult and uncertain. Subnational governments can receive support from higher government levels (through transfers or guarantees) or from local banks in case of stress. There are also technical difficulties to identify the debt distress level, given that many subnational governments have never experienced explicit or quasi defaults in the past.
- A more fundamental limitation is that the concept of "safe debt" can be elusive at the subnational level because of vertical spillovers across government levels. A low debt level at the subnational level should not be considered "safe" if it is achieved by shifting debt to other government levels. For instance, compliance with a tight debt ceiling at the subnational level could be achieved through bailout transfers from the national government that would deteriorate central government debt and be undesirable for the country. In this context, a partial approach—looking separately at central and subnational debts—would be problematic.
- A third issue is that many subnational governments face large de facto limitations on their ability to borrow (for example, because of undeveloped and illiquid local bond markets[14]) or their ability to

[14]According to White and Smoke (2005), financial institutions are less attracted to debt from lower levels of government, in part due to the lack of reliable financial data and insolvency policies.

Table 1. Countries with Subnational Fiscal Rules

Number of countries with subnational rules in survey	**90**
Advanced economies	39
Emerging market economies	20
Low-income economies	31
Number of countries with at least one subnational rule of the following type[1]	
Rules on the fiscal balance	**50**
Golden rule	37
Budget balance rule	6
Current balance rule	4
Cyclically adjusted balance rule	4
Rules on debt and debt service	**41**
Debt ceiling	31
Debt service ceiling	19
Borrowing limits (quantitative)	**30**
Expenditure rules	**8**

Source: Organisation for Economic Co-operation and Development/United Cities and Local Governments survey data (2016); and IMF staff calculations.
Note: Total number of countries in the survey, including those without subnational rules: 101. Total number of rules: 189.
[1]Within subsample of countries with rules imposed by the center (excluding self-imposed).

repay debt (for example, because of narrow tax bases). These borrowing or repayment constraints indirectly limit the amount of debt that can be incurred. Thus, the anchor of the framework is a limit on flows, not on stocks (see section on rule calibration).

Turning to operational rules, the standard recommendations in the fiscal rule literature need also to be tailored to the subnational context. Whereas the expenditure rule is often perceived as superior at the national level, this rule is not common for subnational governments. The following section discusses in detail the specific concerns that should be considered when selecting subnational rules.

Selecting Subnational Rules

Selecting subnational fiscal rules requires rigorous analysis and a degree of judgment. By rule selection, we mean choosing a type of rule (or combination of rules) that is best suited to achieve the objectives outlined earlier and that accounts for the unique features of subnational governments. This section first presents some stylized facts and typology on the current use of subnational fiscal rules around the world to frame the ensuing discussion on the specific considerations for subnational rule selection. Drawing on this analysis, it then offers some thoughts on what could constitute an "appropriate" fiscal rule for subnational governments and the desirability of having different subnational rules for different subnational governments within a country.

Stylized Facts and Typology

Subnational fiscal rules exist around the globe. Some 90 countries reported having subnational rules in place in 2013 in a survey of 101 countries conducted by OECD/United Cities and Local Governments (UCLG) (2016) (Table 1). In this global sample, rules were found at all levels of government, including states/provinces, regions, and municipalities. Subnational rules were present in advanced economies (39 reported countries), low-income economies (31 reported countries), and emerging market economies (20 reported countries).

In the majority of countries, subnational fiscal rules are imposed by the national government and are similar across subnational governments.[15] In the sample of 90 countries, there are only four countries where the rules are self-imposed and heterogeneous: Australia, Canada, Switzerland, and the United States—all of which are advanced economies and federations (OECD/UCLG 2016). In other countries, rules are similar across subnational authorities, even though they may differ between local and regional governments. For example, in Belgium, regions are subject to similar

[15]This statement refers to rules *at the same level of government*. Even in countries where rules are homogeneous across jurisdictions, there are often differences between the rules imposed on regions/states/provinces versus those imposed on municipalities.

deficit rules, whereas municipalities are subject to rules akin to golden rules (Coppens and others 2018).

The most common rules are fiscal balance rules[16] and debt rules. A golden rule, which allows borrowing for investment but not to finance current expenditure, was applied in more than 40 percent of countries with fiscal rules (37 reported countries). This contrasts with the use of the golden rule at the central or general government levels, which is virtually nonexistent (Lledó and others 2017). Other popular rules include debt rules (31 countries) and debt service rules (19 countries).

Rules on the budget balance, debt, and debt service are frequently accompanied by annual limits on borrowing.[17] Some 30 countries, mostly emerging market and low-income economies, report having quantitative limits on borrowing. In half of the instances (16 countries), those quantitative limits are also supported by administrative measures (procedural rules), such as the obligation to seek approval from the central government to borrow.

Most subnational governments apply a combination of fiscal rules. The most common combinations are a golden rule combined with either a debt rule or a quantitative borrowing limit.

Specific Considerations for Rule Selection at the Subnational Level

A series of principles and methods have been established to design fiscal rules at the national and general government levels (see, for instance, Eyraud and others 2018; and IMF 2018b, which define a list of six criteria to assess the quality of a rule). Some of these principles also apply to subnational rules—for instance, the need to achieve simplicity, ease of monitoring, and resilience.

However, the selection of subnational rules needs to take into account additional considerations related to the decentralized setting:

- A first issue is that the tendency to run excessive deficits is accentuated at the subnational level. As noted in the section titled "Analytical Framework: Rationale for Subnational Borrowing and Subnational Rules," "soft budget constraints," and the "common pool" problem are factors that can lead to excessive subnational borrowing. This explains why rules are often more intrusive and directive at the subnational than at the national level. For instance, tight borrowing constraints and administrative controls by the national government are prevalent. More generally, the higher risk of indiscipline may call for rules that contain the deficit more directly (such as budget balance rules or borrowing constraints) rather than rules that constrain only part of the fiscal position (such as expenditure rules or debt service rules).
- Second, budget rigidities are common at the subnational level and can complicate the implementation of the rules. Subnational governments in OECD countries spend half of their budgets on politically sensitive education, health, and social support programs (OECD 2015). In addition, requirements for expenditures are often set by higher levels of government, leaving little autonomy to pare services to reduce deficits. At the same time, subnational governments have relatively small revenue bases and limited ability to modify tax rates or tax bases (OECD 2016). These rigidities can make compliance with rules more difficult, particularly if the rules apply to a relatively narrow budget aggregate, such as current expenditure.
- Third, data constraints at the subnational government level can limit the types of fiscal rules that may be considered. For example, in OECD members, subnational governments often submit financial information with long delays following the end of financial reporting periods and it tends to be incomplete (OECD 2016). Data may not be published on a timely basis for the purpose of monitoring a rule; this gives an operational advantage to subnational debt rules over other types of rules, because debt data is generally available promptly with a monthly frequency. Further, it is more difficult to measure the business cycle at the subnational level, which complicates the use of a

[16]Rules on the fiscal balance include standard budget balance rules (which apply a ceiling to the fiscal deficit in nominal terms; if the ceiling is zero, the rule would be a balanced budget rule), cyclically adjusted balance rule, golden rule, and current balance rule. See description of these rules in Annex.

[17]Quantitative borrowing limits include ceilings on borrowing, prohibition of all types of borrowing, and prohibition of external borrowing only. There is an apparent similarity between a budget balance rule and a rule that constrains borrowing: a balance rule constrains the difference between the change in financial liabilities and the change in financial assets, whereas a borrowing rule constrains the accumulation of gross financial liabilities. See Annex.

cyclically adjusted balance (CAB) rule (see section titled "Making Subnational Rules Flexible").

- A fourth consideration is the need to achieve some allocative efficiency at the subnational level. One of the main benefits of decentralization is to allow a better tailoring of public services to the preferences of the population. Local politicians know the preferences of local taxpayers better than the central authorities and therefore can better align the provision of local outputs to those preferences (IMF 2009). The selection of fiscal rules should take into account the need to preserve or, at least, not reduce too much the scope for efficiency gains. This means that subnational rules should preferably leave some budgetary flexibility to allow revenue to be increased to fund higher spending.
- Fifth, constitutional frameworks governing relations between different levels of government can have a bearing on the design and implementation of subnational fiscal rules. In federal systems, self-imposed subnational fiscal rules are the norm, as central governments typically lack the legal power to impose such rules. In some cases, the constitution may also allow or proscribe the use of certain taxes by subnational governments, which can influence rule selection. For example, courts have interpreted Australia's constitution as not allowing subnational governments to impose certain sales taxes.

Overall, these considerations highlight a tension between the need to make subnational fiscal rules both more binding and more flexible than national rules. On the one hand, the scope for deficit bias and excessive borrowing is larger at the subnational level, so rules need to be more binding. On the other hand, subnational fiscal rules must have some flexibility, primarily for two reasons: subnational budgets tend to be rigid, and allocative efficiency needs to be preserved.

This tension cannot be fully overcome, and tradeoffs are unavoidable. But there are ways to mitigate these tradeoffs. The United States offers an instructive example of how to combine discipline and flexibility at the state level. In combination with rules calling for balanced budgets, many US states have "rainy day" funds, which accumulate resources during good times. This has helped smooth the impact of cyclical revenue fluctuations on state expenditures, by partially avoiding the need for spending cuts when revenue performance is weak (see discussion in section titled "Making Subnational Rules Flexible").

Subnational Rules and the Need to Preserve Space for Investment

Another important consideration when selecting and designing subnational rules is to leave sufficient space to finance public investment, as noted in the section titled "Analytical Framework: Rationale for Subnational Borrowing and Subnational Rules." There is a range of operational rules that allow borrowing for investment, and some are more restrictive than others when it comes to constraining debt accumulation. These rules include (1) a deficit ceiling that leaves sufficient space for the desired level of public investment, (2) a current balance rule, and (3) a golden rule. See Annex for a description of these rules. Key differences among them are:

- The first option is *a budget balance rule, in which the maximum allowed deficit corresponds to the size of the desired subnational investment*. The advantage of this rule is that it avoids the explicit segregation of the capital and current budgets inherent in the current balance and golden rules. It also sets a limit on the total deficit and debt accumulation. Its main drawback is that borrowing could be undertaken for current expenditures, crowding out public investment.[18] To contain borrowing for current expenditures, the rule could be complemented by a current expenditure ceiling.[19]
- *A current balance rule* prohibits borrowing for current expenditures but allows borrowing for investment as well as principal repayment. In other words, this rule allows borrowing to roll over debt. Its primary advantage is that debt financing of past investments does not constrain undertaking new investments. Its main downside is the risk of excessive borrowing for investment. Subnational governments may also try to circumvent the current balance rule through "creative accounting" by classifying some current expenditures as capital expenditures.
- Under a *golden rule*, borrowing is only allowed for investment. Borrowing to cover current expenditures or repay debt is not allowed. Essentially a golden rule forces subnational governments to realize cur-

[18]If the investment implemented is below the investment targeted by the rule, the rule will allow a current deficit (see Annex).

[19]The combination of a current expenditure ceiling and a budget balance rule can be equivalent to a current balance rule under certain conditions (that is, when current expenditure is capped by revenue and the size of the allowed deficit corresponds to the investment budget). See Annex.

rent surpluses to cover principal payments on past borrowing. Sometimes, this rule is also referred to as a "current surplus" rule. A key advantage of the golden rule is that it imposes a tighter constraint on debt accumulation than the current balance rule. Its main disadvantages are the same as those of the current balance rule.

- Other types of rules (total expenditure ceiling, current expenditure ceiling, debt rule, debt service rule) also allow borrowing for investment, while limiting debt accumulation. The current expenditure ceiling has the added benefit of limiting the crowding out of public investment. But these rules are not sufficient to prevent the use of borrowing to finance current spending (meaning that they are compatible with the existence of a current deficit) and should be viewed as possible complements to fiscal balance rules, but not as standalone rules.

There is no "perfect" rule to achieve both fiscal sustainability and investment support. The choice of a rule depends on the relative weights citizens place on these objectives. Given that investment can, under certain conditions, improve fiscal sustainability by raising potential output, the choice is not clear cut. If investment support is weighted more heavily, rules that allow borrowing for investment and require subnational governments to maintain a current balance (or surplus) would be consistent with a society's preferences and needs. If constraining subnational debt by avoiding excessive deficits is more important, then a budget balance rule (imposing a limit on the overall fiscal deficit), possibly combined with a ceiling on current expenditure, would likely be more appropriate.

The choice between these rules also depends on the risk that current expenditure crowds out capital expenditure (Crivelli 2011). The first rule (deficit ceiling) is preferable if there is no pressure on current expenditure because it caps the overall deficit, and implicitly, public investment. If current expenditure pressures exist and there is no ceiling on them, the current balance and golden rules are better because they contain the size of the current budget. Between the current balance and the golden rule, a golden rule is inherently more restrictive.

Should Rules Be Similar Across Subnational Governments?[20]

The literature has paid little attention to whether the type of fiscal rules should be uniform or differentiated across individual subnational governments. Most policy work that focuses on the design of subnational rules implicitly assumes homogeneity. There is nonetheless a large literature on the marginal differences across budget balance rules in US states, showing that tighter rules have a stronger disciplinary effect (see, for instance, Bohn and Inman 1996; Poterba 1994; von Hagen 1991).

Arguments in favor of uniformity

Uniform rules across heterogeneous governments are generally appropriate if accompanied by a well-functioning equalization system, which creates a level playing field:

- In the absence of equalization transfers, different subnational governments would have different abilities to provide public services of a given level at comparable tax rates. Subnational governments are heterogenous. They differ in revenue capacity (distribution of tax bases) and expenditure needs or costs. For instance, regions with relatively high levels of per capita income or consumption would be able to raise more revenues per capita at given tax rates. Those with a proportionately large share of elderly would have higher health care costs per capita and would need to raise more tax revenue to fulfil their basic expenditure mandates, whereas regions with a younger population could do the same with lower tax revenue.
- Equalization transfers that provide compensating resources to subnational governments with below-average revenue capacity and above-average expenditure requirements can partially correct these disparities (Boadway and Shah 2007). Therefore, in well-designed equalization systems, imposing similar rules across all subnational entities can be fair, even if subnational entities are heterogeneous. Of course, if transfers fail to correct these differences, similar rules would be unfair as some authorities (with

[20]This section deals with uniformity versus differentiation of rules across subnational entities *at the same government level* (for instance, rules applying to municipalities). It leaves aside the question of whether rules should be identical across government levels within the subnational government aggregate—meaning whether rules applying to municipalities should be similar to rules applying to regions or states.

larger tax bases and lower expenditure needs) could comply easily, whereas others would face large difficulties to achieve the fiscal targets.[21]

Beyond this issue of fairness, rule uniformity also presents some cost-related advantages. One benefit is that uniformity may eliminate some economic costs that would materialize because of an excessive differentiation of fiscal targets. For instance, it reduces the scope for harmful tax competition, when subnational governments engage in a race to the bottom by establishing unsustainably low tax ceilings. Another benefit is that uniformity could reduce the need for, and consequently the cost of, coordination and monitoring by the national government. In federations where rules are self-imposed and therefore differentiated across states or regions, representatives of subnational governments typically meet on a regular basis with the central government to coordinate policies and discuss shared responsibilities.[22] These coordination costs can be amplified when disputes about general government debt sustainability arise.

Arguments in favor of differentiation

Some rule differentiation may be warranted under special circumstances:

- **Specific characteristics.** Differentiation can be used to better account for structural disparities across subnational entities that cannot be easily offset by equalization systems. Countries where one or a few regions or states are commodity producers provide an example. In the case of Canada, the province of Alberta, which is a large oil producer, established its own resource revenue smoothing rule in the Balanced Budget and Debt Retirement Act of 1995 (Tapp 2013). In countries where the size of municipalities varies widely, differentiated fiscal rules across municipalities can account for the better institutional frameworks and positive externalities generated by large cities. In Vietnam, for example, the cities of Ho Chi Minh and Hanoi have differentiated borrowing limits of 150 and 100 percent of their capital budgets, respectively, whereas the limit is tighter for all other municipalities (30 percent).
- **Heterogeneous preferences.** Differentiation is also advantageous when preferences differ markedly across regions. A key benefit of decentralization is that subnational governments can tailor local public services to the preferences of their constituents, generating "allocative efficiency" gains. De facto, full homogeneity across subnational entities would largely reduce the scope for these gains.
- **Need for ownership.** A third argument is that differentiation fosters ownership, with subnational governments being in charge of their own policy targets. This can make rules more credible and increase the probability that subnational governments will stick to a rule once it is established (OECD 2014). Yet letting subnational governments self-impose their own rules requires strong institutions and a culture of fiscal discipline.

Making Subnational Rules Flexible

Fiscal rules are said to be "flexible" when numerical limits (ceilings or floors) on fiscal aggregates can be adjusted or suspended temporarily under special circumstances. This section examines different ways to make subnational rules flexible. The first subsection reviews the rationale behind flexible rules. Then several options for making subnational rules flexible to the economic cycle are discussed: CAB rules (the second subsection), expenditure rules (the third subsection), and budget balance rules used in conjunction with rainy day funds (RDFs; the fourth subsection). In the final subsection, escape clauses are studied as a mechanism to accommodate extraordinary and unforeseen events.

What Is Rule Flexibility and When Is It Needed?

The need to adjust the rules' numerical limits occurs mainly in two contexts:

- **Economic stabilization.** Flexible rules are used to avoid procyclical fiscal policy. An upward adjustment of budget deficit limits during an economic slowdown can mitigate the need for procyclical expenditure cuts that would worsen economic performance. Symmetrically, flexible deficit limits can be tightened in good times to prevent countries

[21]Equalization transfers appear to partially work (Blöchliger and Charbit 2008). OECD (2014) finds that, on average, equalization transfers reduce preequalization disparities by more than two-thirds.

[22]In Canada, for instance, the heads of provincial and territorial governments (called Premiers) are members of the Council of the Federation, which was created in 2003. The Council enables Premiers to work collaboratively to strengthen the Canadian federation by fostering constructive relationships among the provinces and territories, and with the federal government. A specific working group, the Fiscal Arrangements Working Group, established in 2012, is dedicated to dealing with provincial-federal fiscal issues.

from spending all revenue windfalls and generate some savings. The need for flexible rules is greater when countries have large automatic stabilizers at the subnational level, that is when revenue and expenditure of subnational governments are significantly affected by the economic cycle. This is particularly the case in more decentralized countries, where subnational governments are more likely to rely on income tax revenue and have more extensive spending obligations such as social protection, which increases automatically in economic downturns (Blöchliger and others 2010a; Foremny and von Hagen 2012; OECD 2016).

- **Response to unexpected events.** Flexible rules are also used to enhance resilience to shocks. Extreme shocks include natural disasters, conflicts, and particularly severe economic downturns that dramatically reduce government revenue while often requiring significant increases in government expenditure. When these shocks occur, it is difficult or even impossible to comply with fixed limits. Allowing rules to be temporarily adjusted or suspended following an extreme shock makes it less likely that rules will be abandoned.

Cyclically Adjusted Balance Rules

CAB rules allow ceilings on the fiscal deficit (or floors on the fiscal surplus) to be adjusted over the economic cycle. The CAB is derived by adjusting the nominal balance for the amount by which revenue and expenditure deviate from their trends because of the economic cycle. The position of the economic cycle is usually measured by the output gap. Under a CAB rule, the nominal deficit ceiling will be lower than the fixed cyclically adjusted deficit ceiling in good times when the output gap is positive, whereas it will be higher in bad economic times when the output gap is negative. This makes it less likely that procyclical expenditure cuts are required to comply with the rule in bad economic times (for more information, see IMF 2018b).

CAB rules are rare at the subnational government level. As discussed previously, most budget balance rules at the subnational level apply to the nominal deficit expressed as a ratio of current GDP. There are several reasons why CAB rules can be problematic at the subnational level:

- **Computational difficulties.** Computing the CAB each year requires real-time estimates of the regional or local output gap, based on the latest GDP outturns. Estimates of regional or local GDP may not be available or sufficiently timely and may be more prone to subsequent revisions than national estimates (OECD 2014; Ter-Minassian 2015).
- **Limited access to borrowing.** CAB rules require the ability to borrow freely in order to finance higher nominal deficits in economic downturns. This may not be practical for all subnational governments, even if they are creditworthy (Blöchliger and Kim 2016). In some countries, local or regional bond markets are underdeveloped or nonexistent. In addition, subnational governments may face higher borrowing costs than central governments due to uncertainty about their creditworthiness.
- **Failures of credit market discipline.** Although some subnational governments may face difficulties in borrowing, others may, on the contrary, have preferential access to borrowing on terms that fail to reflect their credit risk accurately.[23] These subnational governments face a "soft budget constraint" that can encourage excessive debt accumulation. Allowing unrestricted borrowing under a CAB may not be appropriate for subnational governments in this situation. For further information about failures of market discipline for subnational governments, see OECD (2014), Ter-Minassian (2015), and Blöchliger and Kim (2016).

Nonetheless, some countries have recently found innovative ways to overcome the computational difficulties of subnational CAB rules. Specifically, simplifying assumptions are made to compute or proxy the subnational CAB (Box 2).

Expenditure Rules

Expenditure rules can provide a relatively simple way to avoid procyclical fiscal policy while still constraining excessive deficits. Expenditure rules can contain spending in good times, generating savings that can be used in bad times to support the econ-

[23]Subnational governments can have preferential access to borrowing if commercial banks perceive their debt to be implicitly guaranteed by the central government. This perception can arise if there is a history of bailouts for subnational governments. Subnational governments may also get special treatment from banks if regulators make exemptions for subnational government debt when assessing a bank's financial soundness. A further possibility is that subnational governments receive special treatment by state-owned banks.

Box 2. Examples of Cyclically Adjusted Balance Rules at the Subnational Level

Alternative approaches exist to apply the cyclically adjusted balance (CAB) rule concept to subnational entities.

Top-down approach. A first method involves computing the CAB of all subnational governments taken as a whole and then using an ad hoc criterion to apportion the allowed CAB to individual subnational jurisdictions. Some German landers follow this approach (Deutsche Bundesbank 2017). As a first step, the general government CAB is computed using the national output gap. It is then divided into a central government component and a subnational component, by splitting the budget semi-elasticity parameter (which estimates the sensitivity of the budget balance to the output gap) into two values—one for the central government and one for all subnational governments considered as a whole. The second step is to divide the subnational component of the general government CAB among individual subnational governments, which can be done based on the relative size of revenue of these governments.

Standard approach with simplifying assumptions. Here, the CAB is directly computed for each individual subnational government, using the standard formula. However, simplifying assumptions are made given the limitations described earlier, including the difficulty of measuring the idiosyncratic business cycle of a specific jurisdiction. For instance, the output gap for each subnational government can be assumed to be the same as the national output gap, as in Spain (Independent Authority for Fiscal Responsibility 2015). An alternative means of estimating a subnational government's CAB is the "tax smoothing" approach applied in several German lander (Deutsche Bundesbank 2017). This involves estimating cyclically adjusted revenue using simple statistical techniques. For example, the cyclically adjusted revenue of a given subnational government can be computed by multiplying the lagged level of its revenue by trend revenue growth, assumed to equal its average revenue growth in recent years.

omy. If well designed, expenditure rules can produce broadly similar outcomes to CAB rules but are simpler and do not require computation of the output gap (IMF 2018b).

In practice, expenditure rules are rare at the subnational level and, where they exist, their design differs across countries. Most countries do not impose expenditure ceilings on subnational governments (Blöchliger and Kim 2016; OECD/UCLG 2016). Among the countries using expenditure ceilings, there are those that are set annually (for example, Denmark and Italy) or for a multiyear period (for example, Austria). Ceilings are commonly limited to recurrent or operating expenditures (for example, Denmark, Estonia, Korea, Italian local governments), although there are examples of constraints on total spending (for example, Italian regions). Sometimes ceilings are applied to specific budget items, such as employee compensation (for example, Brazil, Denmark, Italian local governments, and Turkey). The calibration of annual expenditure limits can also be linked to the current year's revenue (for example, Canadian provinces, Estonia, and Turkey), effectively prohibiting a deficit if expenditure cannot exceed collected revenue. In other cases, expenditure limits are set based on underlying drivers of spending needs, such as population growth (for example, Slovenia, Spanish local governments). For further discussion see OECD 2015.

There are two main challenges associated with the implementation of expenditure rules at the subnational level:

- **Expenditure rigidity.** Compliance with expenditure rules can be difficult because of limited flexibility to adjust spending. Subnational governments are often responsible for spending that is nondiscretionary and politically sensitive, making it difficult to adjust. For example, subnational governments are responsible for over 60 percent of spending on public housing and education in OECD countries (OECD 2016). Subnational governments in OECD countries can also have significant responsibility for social protection spending, which is partly nondiscretionary and can increase automatically during downturns (Blöchliger and others 2010b). If expenditure ceilings cover total subnational government expenditure, compliance may require cuts to capital expenditure, which can harm economic growth and revenue collection. Cutting subnational expenditure

may also trigger reductions in transfers from the national government when grants match subnational spending at a specified matching rate.

- **Ability to constrain the deficit.** Another potential drawback of expenditure rules is that they may not prevent excessive deficits because they impose no constraint on revenue generation. Tax policy changes by subnational governments—such as the granting of tax concessions to make a region an attractive business location—can reduce revenue collection rapidly. Excessive deficits can arise unless expenditure rules are recalibrated to reflect the tax policy changes.

Nonetheless, there may be scope for subnational governments to make greater use of well-designed expenditure rules. Expenditure rules can strike a good balance between flexibility and simplicity, avoiding procyclical fiscal policy but being simpler to operate than CAB rules. This is possible by applying the rule to the growth rate of expenditure and setting the limit equal to the potential or trend pace of revenue growth, which can be proxied by the average pace of revenue or nominal GDP growth over the recent past (Eyraud and others 2018). An expenditure growth limit of this kind would prevent procyclical spending increases in good economic times when revenue growth is above trend, while helping to avoid the need for procyclical cuts in bad economic times when revenue growth is below average. It is also simpler to compute than the output gap, which is required by a CAB rule. Expenditure limits calibrated in this way should cover both recurrent and capital spending to contain excessive deficits and avoid creative accounting that is often associated with rules applying to subaggregates.

Rainy Day Funds[24]

What is a "rainy day" fund and how can it be used in combination with a rule?

RDFs are savings accounts that help subnational governments smooth expenditure over the economic cycle. Deposits can be made into RDFs in good economic times when revenue growth is strong. These savings can be drawn down in bad economic times to supplement weaker revenue collections, helping to avoid procyclical spending cuts. Therefore, RDFs can achieve a similar purpose to CAB rules or expenditure rules.

At the subnational level, an RDF can be used in conjunction with a nominal budget balance rule to avoid procyclical fiscal policy, while still constraining excessive deficits. An RDF, by itself, does not constrain the fiscal deficit and cannot ensure fiscal sustainability. It should be used together with a fiscal rule that imposes a limit on the nominal deficit. Withdrawals from the RDF can be made to ensure compliance with the rule when revenue collection is weak, reducing the need for procyclical spending cuts. This is sustainable only if subnational governments accumulate savings by making deposits into the RDF in times of strong revenue performance.

It should be noted that combining an RDF with a nominal budget balance rule may not smooth expenditure over the economic cycle as effectively as a well-functioning CAB rule or an expenditure rule. The amount of smoothing is indeed limited by the size of accumulated deposits in the RDF. Withdrawals from the RDF may not be sufficient to avoid procyclical expenditure cuts in bad times unless sufficient deposits were made during good times. By contrast, CAB rules allow, in principle, for better expenditure smoothing, assuming the ability of subnational governments to borrow freely. In general, self-insuring against the effects of the economic cycle through an RDF is likely to be more limited than the insurance allowed by financial markets.

Another important consideration is that using an RDF in conjunction with a nominal budget balance rule requires special treatment in fiscal accounts. In order to assess rule compliance, the nominal balance measured under the rule should correspond to the difference between revenue *including* withdrawals from the RDF and expenditure *including* deposits to the RDF. Standard fiscal accounts do not show this metric, because they treat withdrawals and deposits as "below the line" financing transactions that do not affect the fiscal balance (GFSM2001/2014). For instance, standard fiscal accounts do not count a withdrawal from the RDF as part of revenue; thus, a withdrawal in bad times will not help improve the fiscal position and will not prevent the subnational government from breaching its nominal deficit ceiling. Thus, the operation of an RDF may require some modification to fiscal accounting for the strict purpose of rule monitoring.

[24]This section discusses rainy day funds in relation to budget balance rules. It does not provide a comprehensive and in-depth analysis of these funds.

How are RDFs used in practice?

In practice, RDFs are used together with nominal budget balance rules mainly by subnational governments in federal countries. This is the case for 48 US states, although the regulations governing use of RDFs differ across states. Outside the United States, RDFs are operated by state and local governments in Canada, Mexico, and Sweden, although not necessarily together with strict budget balance rules (Blöchliger and Kim 2016). The relative prevalence of RDFs in federal states may reflect "harder" budget constraints for subnational governments in countries where bailouts by the central government are less common and subnational governments enjoy greater autonomy.

Typically, subnational governments apply a formula-based approach that governs deposits and withdrawals from the RDF. Formulas often determine the size and timing of deposits and withdrawals. Formulas governing deposits tend to be rudimentary, adding to the risk that RDF balances could be insufficient to meet the budget balance target in bad economic times without spending cuts. Some US states require deposits into RDFs if there is a surplus or if revenue is higher than the previous year in nominal terms. Similarly, withdrawals are permitted in some states if revenue collection is projected to be below that of the previous year (for example, Hawaii and North Dakota) or if there would be a budget deficit without a withdrawal (for example, Massachusetts) (see Pew 2014). It is also common for US states to impose limits on the total size of RDFs, typically no more than 5 percent of the annual budget (Blöchliger and Kim 2016). The permitted size of withdrawals can also be subject to limits and combined with requirements to replenish the RDF within a short period following a withdrawal (Pew Charitable Trusts 2017b).

What is the track record of RDFs?

There is evidence that subnational governments with nominal budget balance rules have used RDFs to achieve partial expenditure smoothing. Empirical studies prior to the global financial crisis found that RDFs reduce volatility of state expenditure in the United States (Paqueo and Gonzalez 2003; Sobel and Holcombe 1996; Wagner and Elder 2005). More recently, there is evidence that RDFs were widely used to smooth US state expenditure following the crisis. RDF balances fell sharply during the financial crisis period between 2006 and 2009 (Jonas 2012).

But RDFs are not always sufficient to stabilize state budgets, especially in the face of large shocks. In the United States, state expenditures during 2008–10 were cut around 5 percent in nominal terms on average. This indicates that the total size of RDFs was insufficient to achieve budget balance without expenditure cuts, as discussed in Blöchliger and others (2010a). It is also possible that the rules governing RDF withdrawals were not sufficiently flexible to allow dissaving when most needed. States such as Maryland left substantial RDF balances untapped following the crisis, whereas Delaware made no use of its RDF, treating it as being for extreme emergencies only.

An area of research is the effect of RDFs on government credibility. RDFs can signal to the market that a subnational government is prudent and committed to achieving budget balance, even in bad times. There is evidence that rating agencies respond to strong balances in RDFs. Moody's reports that recorded a change in rating from 1992–2015 mention reserve balances more than ¾ of the time (Pew Charitable Trusts 2017a). Econometric evidence also suggests that lower credit ratings are associated with weak regulations about required deposits in RDFs, whereas stronger credit ratings are associated with RDFs where states are more easily able to make withdrawals (Charles 2010). Moreover, the adoption of an RDF by US states is associated with a modest reduction in long-term borrowing costs (Wagner 2004).

Escape Clauses

Subnational governments are particularly prone to fiscal pressures from extraordinary and unforeseen events. Subnational jurisdictions are smaller than national ones. This reduces the ability to share risk across the jurisdiction: the fiscal impact of extreme shocks occurring in a part of the jurisdiction cannot be offset easily by better conditions elsewhere, as may be the case for the general government. For example, a major natural disaster, local bank collapse, or closure of a major local industry can have much larger effects proportionally on the subnational government budget than the central budget.

Another challenge is that subnational governments often have relatively little discretion over spending, making it difficult to accommodate extreme shocks within their budgets by re-allocating spending from lower priority budget items. As discussed earlier, subnational governments are often responsible for essen-

tial, politically sensitive spending (for example, health or education) and sometimes spending on nondiscretionary social protection entitlements. Subnational governments cannot easily re-allocate spending away from these areas if there is an extreme shock such as a natural disaster.

To address these issues, escape clauses in fiscal rules can allow a temporary relaxation or suspension of limits on fiscal aggregates following extreme shocks. Activation of these clauses provides a mechanism for subnational governments to meet community expectations, without unlawfully breaching or abandoning the rules. This makes the commitment more credible in the long term by acknowledging ex ante that there will not be strict compliance with the rules following extreme shocks, though the rules will be preserved over time.

It is not uncommon for subnational government fiscal rules to have escape clauses. The most common events that can trigger activation of a subnational escape clause are natural disasters (for example, Austria, Japan, and Korea) and severe regional economic slowdowns or crises, beyond the normal economic cycle (for example, Austria and Brazil) (see Eyraud and Gomez Sirera 2015; and Sutherland, Price, and Joumard 2005). Escape clauses usually define these events broadly and imprecisely, raising the possibility that they can be abused and excuse fiscal indiscipline.

Well-designed escape clauses in subnational government rules should have two key features:

- **Precise and exogenous triggers.** The events triggering the activation of an escape clause should be events outside government control that are precisely defined and tailored to the circumstances of the subnational government. The definition should be in quantitative terms if possible. For example, the size of major economic downturns or financial crises triggering escape clauses should be quantified (as it is in Brazil for subnational governments or in Panama at the national level), although measurement will need to be based on real-time projections of economic activity. Being precise about the meaning of natural disasters is more difficult, making control and monitoring of subnational government escape clauses more important to prevent abuse. Ultimately, the triggers should be genuinely extraordinary events, which cannot reasonably be foreseen and accommodated during the budget preparation process.
- **Effective control and monitoring mechanisms.** The central government can be tasked with determining if an escape clause is validly triggered, where this is constitutionally possible (for example, Spanish regions). The central government can also determine how long the escape clause should remain in operation, if this is not explicitly defined in law, and establish a correction plan. An independent fiscal council could also perform these functions. In some federations, central governments cannot exercise control over escape clauses for constitutional or legal reasons, so regional parliaments should make the determinations for regional and local government escape clauses. These controls prevent abuse. For example, the Brazilian Fiscal Responsibility Law requires a return to compliance with the state debt rule within a fixed time period. In Germany, landers must adopt a plan to return to rule compliance (amortization plan) following the triggering of an escape clause for a natural disaster.

Calibrating Subnational Rules

Beyond the issue of rule selection, another important design aspect is rule calibration. "Calibration" refers to the choice of the numerical threshold of the rule. For instance, subnational debt cannot exceed 60 percent of revenues in the Czech Republic versus 150 percent in Iceland (OECD 2016). Some subnational rules do not have a specific threshold (for example, balanced budget rule or golden rule), but this means that the implicit threshold on the fiscal aggregate is zero.

As discussed in the second section of the note, the standard model of calibration, based on the distinction between the fiscal anchor and the operational rules, cannot be easily transposed at the subnational level. Alternative methods should be considered to calibrate subnational rules. What these methods have in common is that they reverse the traditional sequencing proposed in IMF (2018a). Instead of starting from the debt ceiling and inferring the thresholds of the operating rules, the proposed methods start from constraints on borrowing and repayment flows in order to calibrate the debt stock ceiling.

In practical terms, there are two main ways to do the calibration exercise depending on the type of constraint considered. The first one—based on borrowing—is interesting from a conceptual standpoint but rarely applied in practice. The second one—

based on repayment capacity—is more widespread. In both cases, the debt rule loses the role of fiscal anchor that it plays at the national government level (see discussion in IMF 2018a). In the calibration approaches described in the following, the debt rule is just an operational rule like all other rules. Another important difference is that the calibration of subnational rules is rarely comprehensive and systematic (that is, it relies more on judgment of policymakers).

The proposed methods ensure consistency between a subset of rules. For instance, the current surplus approach focuses on the consistency between the borrowing constraint, the golden rule, and the debt rule, whereas the prudential approach links the debt service rule and the debt rule. At this stage of research, there is no established framework linking all possible subnational rules, similar to IMF 2018a.

Calibration Based on a Borrowing Constraint

Because debt can be written as the accumulation of past borrowing, any constraint on borrowing indirectly impacts the maximum debt stock that can be incurred. Two cases need to be distinguished.

The first case is the one where borrowing is prohibited at the subnational level (like in Angola, Cambodia, Chile, and Moldova according to the OECD/UCLG 2016 survey).[25] In this case, the debt ceiling should be set as follows:

- If there is no prior repayment obligation, the debt ceiling consistent with the zero-borrowing rule should be zero. For instance, in China, local governments, except those under a pilot program for subnational bond issuance, had no official debt obligations and were not allowed to issue debt until 2015 (Lam, Wei, and van Eden 2017; Morgan and Trinh 2016).
- If there is legacy debt to repay, achieving zero debt stock instantaneously may not be feasible. Therefore, during a transition period, the subnational debt ceiling should be progressively recalibrated downward as debt is amortized. For instance, under the 2000 Fiscal Responsibility Law in Brazil, a Senate Resolution imposed a downward reduction in the debt ceilings of the states and municipalities over 15 years, while, at the same time, preventing new credit operations (when the debt limit was breached).

The second case is when there is a positive (nonzero) limit on borrowing. In this case, the associated debt ceiling could be computed by cumulating the borrowing targets and assuming a certain repayment schedule. In theory, if borrowing is only available for investment, the debt ceiling should be close to the desired capital stock.[26] But this relationship cannot provide solid ground for calibrating the debt rule, because it is difficult to estimate the desired capital stock at the subnational level. Also, the returns on investment may be such that debt pays for itself.[27]

Calibration Based on a Debt Repayment Limit

An alternative, and more common, calibration technique starts from the repayment capacity. Intuitively, any limit on the ability to repay constrains the maximum amount of debt, because the debt service is proportional to the amount of debt outstanding. Two variants are used in practice: the current surplus approach and the prudential approach.

Current surplus approach

The current surplus approach is formalized in the French subnational framework, which establishes a clear link from the repayment constraint toward the debt ceiling (see Box 3). In France, the principal debt repayment of a subnational government should not exceed its current surplus (golden rule).[28] In corporate finance, this rule, which is referred to as the "debt service coverage ratio," is common. One practical implication is that, given that the debt stock is the cumulation of debt repayments, the debt ceiling can be expressed as a multiple of the current surplus generated by the subnational government.[29]

[25]A prohibition of local borrowing is compatible with borrowing being centralized and subnational governments receiving funding through transfers from the national government.

[26]If *borrowing* = *investment*, then $\sum$ *borrowing* = $\sum$*inv* and *debt stock* ≈ *capital stock*.

[27]High-return investment improves the capacity to service debt by raising the revenue capacity. Therefore, the debt stock is likely to decline faster than the capital stock. In other words, debt amortization will be faster than capital depreciation, creating a disconnect between the two stocks.

[28]Equivalently, the total debt service (principal plus interest) should not exceed the current *primary* surplus.

[29]Given the volatility of the current surplus from one year to the other, a moving average of the current surpluses over recent years could also be used (instead of assessing the rule using the current surplus of the present year).

Prudential approach

The prudential approach also starts from a limit on debt repayment, but the limit is not the current surplus, like in the previous case. In the prudential approach, the debt service (principal plus interest) is capped, in an ad hoc way, by a share of the income generated by the subnational government, which could be total revenue or a subset of revenue. This approach is also used in the banking sector, where debt services on mortgages should remain below a certain ratio of the household income.

Debt service rules of this type are common at the subnational level. OECD (2016) and OECD/UCLG (2016) show that subnational debt service ceilings in the world range from 12 to 30 percent of subnational revenues. The tight ceilings are not surprising, given that expenditure mandates absorb a large part of the revenues and therefore leave less room for debt repayment.

Like in the previous approach, the constraint on debt repayment could be used to compute the debt ceiling. The link between the two rules can be derived as follows:

$$DS = iD + \frac{D}{m} \leq \alpha R$$

where DS is the debt service, i the implicit interest rate on debt, D the outstanding debt, m the average maturity of the outstanding debt, α the exogenously determined prudential ratio, and R government revenues. Then:

$$D \leq \frac{\alpha}{(i + 1/m)} . R$$

This relationship can also be used to check that the two types of rules are broadly consistent. For instance, a debt service cap of 20 percent of revenue would translate into a debt rule of 90 percent of revenue (assuming five-year average debt maturity and a nominal interest rate of 2 percent). At the level of the OECD as a whole, the fact that debt ceilings vary from 60 to 150 percent of revenues and debt service ceilings range from 12 to 25 percent of revenues provides a first indication that the rules are not blatantly inconsistent (OECD 2016).

One practical question is whether these rules (debt service and debt rules) should be expressed in percentage of subnational "own" revenue (meaning excluding transfers received from the national government) or total revenue. Both cases exist in practice. On the one hand, using own revenues has some clear advantages. Subnational governments have more legal power to manage their own revenue (they can change tax rates), whereas they have less control over the amount of transfers received from the national government. If the rule is in percent of total revenues, the subnational government may breach it unwillingly when the central government reduces its transfers unilaterally. Also, such a rule could create an incentive for the subnational government to pressure the national government to get a bailout. On the other hand, "own" revenues can be volatile and heterogenous across states, meaning that a debt service rule as a ratio of own revenues would allow far more borrowing in the richest states or regions and could perpetuate or accentuate inequalities across them. The alternative—using total revenues including equalization grants—would ensure that all subnational governments have broadly similar revenue capacities, and, thus, similar debt repayment capacities. It may also result in a more stable rule—although, in some cases, transfers accentuate rather than diminish the volatility of subnational revenues. Overall, given that revenue bases are unequally distributed, and transfers are in general relatively predictable, the case for applying the rules to total revenue seems stronger.

Another question is whether revenues should include one-off receipts. In general, debt and debt service rules should be expressed in percent of "regular" revenue. Subnational governments should pay their debt service from their regular income—instead of relying on nonrecurring receipts, such as grants or the proceeds from the sale of assets.

Comparison of the two approaches

The prudential approach is clearly more flexible and ad hoc than the current surplus approach, and that is probably why it is so widespread. At the same time, the prudential approach is sensitive to the calibration of the thresholds and does not "force" the subnational government to run a current surplus. As a matter of fact, if the calibration is too loose (meaning the ceiling is too high), a debt service rule can be complied with by subnational governments incurring persistent current deficits, which may not be desirable.

Box 3. Subnational Golden Rule and Debt Rule in France

In France, subnational governments are subject to a golden rule, where borrowing can only finance investment, and debt amortization should be covered by their own resources (see Annex for a definition of the golden rule).[1] This rule implies that, each year, the repayment of the debt principal of each subnational government should remain below its current surplus.[2] The current surplus is defined as the difference between the subnational government's revenue[3] and its current spending.

Given that (1) the current debt stock is equal to the sum of future repayments over the maturity of the debt, and (2) each debt repayment has to be financed by the current surplus, a natural implication is that the debt stock should not exceed the current surplus times the debt maturity. Under the additional assumption that debt maturity should match the asset life,[4] the debt ceiling can be computed as the average lifetime of the capital stock times the current surplus.

Applying this framework, a 2018 law established various ceilings differentiated according to the type and size of the local government.[5] Small municipalities (fewer than 10,000 inhabitants) and intercommunal associations (more than 50,000 inhabitants) are subject to debt ceilings ranging between 11 and 13 years of their current surplus. Departments and the city of Lyon are subject to debt ceilings between 9 and 11 years; regions as well as some islands (Corsica, French Guiana, and Martinique) are subject to debt ceilings of 8 to 10 years.

[1]Article L. 1612–4 of the *Code général des collectivités territoriales*.

[2]In this approach, the magnitude of the current surplus is assumed to be given and determined independently of the calibration exercise.

[3]Revenues considered under the rule exclude transfers received from the national government.

[4]Matching asset life to debt maturity is considered as good public financial management practice. It means that infrastructure services are paid for by those who use them (Liu 2008). Also, this matching principle ensures that a government has the ability to repay debt (from the revenues generated by the asset) as well as to borrow to replace the asset when it reaches the end of its life.

[5]*LOI n° 2018–32 du 22 janvier 2018 de programmation des finances publiques pour les années 2018 à 2022.*

Annex. How Various Fiscal Rules Allow and Constrain Borrowing

All types of rules constrain borrowing in various ways. Basic budgetary accounting identities can be used to compare the rules' properties in terms of authorized borrowing.

Budget Accounting Relationship

The following identify relates the budgetary flows of revenue and expenditure to changes in liability and asset stocks.

$$R - E^c - E^k \equiv OB \equiv \Delta FA - \Delta FL$$
$$\equiv \Delta FA - (NB - PR)$$

where

R = revenue

E^c = current expenditure

E^k = capital expenditure

OB = nominal budget balance

ΔFA = change in financial assets (= purchases minus sales of financial assets)

ΔFL = change in financial liabilities (= new borrowing minus debt principal repayment)

NB = new borrowing

PR = debt principal repayment

This accounting identity assumes that stock-flow adjustments are equal to zero; factors such as valuation changes could, in principle, create a wedge between the nominal balance and the difference between the change in financial assets and liabilities. The rest of the appendix also assumes that $\Delta FA = 0$ and that all constraints are saturated.[1]

Budget Balance Rule (also known as Budget Deficit Ceiling)

This rule imposes a ceiling on the overall fiscal deficit. It allows new borrowing for two purposes: (1) to finance the deficit up to a certain level, and (2) to repay the debt principal (meaning that debt rollover is allowed under the rule).

Constraint: $R - (E^c + E^k) = OB^*$, where OB^* is the fiscal balance target, which can be negative, meaning a deficit.

Given the accounting relationship, this implies that $-\Delta FL = OB^*$.

Thus, $\boldsymbol{NB = -OB^* + PR.}$

Budget Balance Rule with a Deficit Ceiling Equal to the Capital Expenditure Target

This rule limits new borrowing to a budget deficit equal to the targeted subnational investment, plus principal repayment. If investment is on target, the rule does not allow borrowing to cover current expenditure.

Constraint: $R - (E^c + E^k) = -E^{k*}$, where E^{k*} is the targeted level of public investment.[2]

This implies that: $-\Delta FL = -E^{k*}$.

Given that $NB = \Delta FL + PR$, then: $\boldsymbol{NB = E^{k*} + PR.}$

If $E^k = E^{k*}$, $R - E^c = -E^{k*} + E^k = 0$, meaning that the rule is identical to the current balance rule described in the following.

However, if actual investment is below targeted investment, then the rule creates room for borrowing for current expenditure. If $E^k < E^{k*}$, then $R - E^c < 0$. And the rule is compatible with the existence of a current deficit.

Current Balance Rule (also known as "Operating Balance Rule")

This rule allows new borrowing for capital expenditure and principal repayment but prevents borrowing for current expenditure.

Constraint: $R - E^c = 0$.

By substituting the constraint into the basic accounting identity, we get $R - E^c - E^k = -\Delta FL = -E^k$. This implies that $\Delta FL = E^k$.

Thus, $\boldsymbol{NB = E^k + PR}$. Therefore, this rule is equivalent to the previous rule under the assumption that $E^k = E^{k*}$.

Golden Rule (also known as "Current Surplus Rule")

This rule requires generation of a current surplus sufficient to cover the principal repayment. It allows new borrowing for capital expenditure but prevents borrowing for current expenditure and debt rollover (meaning issuing new debt to repay past debt).

Constraint : $R - E^c = PR$.

[1]A rule is typically defined as a ceiling or a floor and, thus, imposes an asymmetric constraint. To simplify the formulas, we assume that the rule targets a certain level of the fiscal aggregate. For instance, a rule requiring *at least* a balanced budget (including possibly surpluses) is reinterpreted as targeting a balanced budget.

[2]The rule is assumed to be a deficit ceiling; thus, the negative sign.

By substituting the constraint into the basic identity, we find $PR - E^k = -\Delta FL$.

This implies $\Delta FL = E^k - PR$.

Thus, $\boldsymbol{NB = E^k}$.

Borrowing Constraint

This rule imposes a ceiling on new borrowing in an ad hoc way. Contrary to the other rules, it does not link the allowed borrowing to the size of the fiscal deficit, the amount of desirable capital expenditure, or the debt repayment needs.

Thus, $\boldsymbol{NB = NB^*}$.

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