Fiscal Policy Rules

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recycled paper

Contents

The following symbols have been used throughout this paper:

. . .   to indicate that data are not available;

n.a.   not applicable;

—   to indicate that the figure is zero or less than half the final digit shown, or that the item does not exist;

–   between years or months (e.g., 1994–95 or January–June) to indicate the years or months covered, including the beginning and ending years or months;

/   between years (e.g., 1994/95) to indicate a crop or fiscal (financial) year.

"Billion" means a thousand million.

Minor discrepancies between constituent figures and totals are due to rounding.

The term "country," as used in this paper, does not in all cases refer to a territorial entity that is a state as understood by international law and practice; the term also covers some territorial entities that are not states, but for which statistical data are maintained and provided internationally on a separate and independent basis.

Preface

An earlier draft of the paper was discussed by the Executive Board in October 1997. The present version incorporates the comments received on that occasion. However, the opinions expressed are those of the authors and do not necessarily reflect the views of the Executive Directors, the management, or the staff of the International Monetary Fund.

I Introduction

Growing interest in fiscal policy rules is in part attributable to the deterioration in fiscal performance, the so-called deficit bias, experienced for more than two decades by a large part of the IMF membership. In many countries the deterioration recently has been reversed—in a number of cases, as part of the convergence toward meeting fiscal rules. Still, some advanced economies face a major task in managing a sustainable fiscal policy over the medium to long run, given uncertainties in the macroeconomic outlook, structural rigidities, and the aging of populations. Equally worrisome are the prospects for developing and transition economies, as continued vulnerability to macroeconomic imbalances prevents realization of their full growth potential, especially in the absence of predictable and sound fiscal policies. In the light of these considerations, in its September 1996 *Declaration on Partnership for Sustainable Global Growth,* the Interim Committee of the Board of Governors of the International Monetary Fund attached particular importance to "achieving budget balance and strengthened fiscal discipline in a multi-year framework" (IMF, 1996b, p. xii).

This paper addresses a number of major questions. What are fiscal policy rules? What are the principal benefits and drawbacks associated with various fiscal rules, particularly compared with alternative approaches to fiscal adjustment? Can fiscal rules contribute to long-run sustainability and welfare without sacrificing short-run stabilization? If so, what characteristics of fiscal rules make this contribution most effective? And in what circumstances and contexts, if any, should the IMF encourage its member countries to adopt fiscal rules? In an attempt to answer these and related questions, the paper ultimately seeks to identify sensible fiscal policy rules that can succeed, if chosen by a member country or a group of countries, as an alternative to discretionary fiscal policies.

At the outset, we should note that fiscal policy rules tend to be more heterogeneous and complex than monetary and exchange rate rules. Fiscal rules vary considerably across countries in terms of the target variable, institutional coverage, and method of implementation. Although this paper refers to the theoretical literature on the subject, it does not pre-tend to settle the academic debate over the broader question of policy rules versus discretion. Equally, on the basis of the arguments presented and the relatively limited experience with rules, this paper cannot provide a categorical endorsement (or rejection) of fiscal rules over discretionary practices. Rather, the objective is simply to shed light on the usefulness and advantages of implementing—under appropriate circumstances—fiscal rules endowed with certain characteristics.

Anticipating the discussion of the desirable rule characteristics, transparency stands out as probably the most important attribute in determining the usefulness of such rules.[1] In general, clarity in institutional arrangements, measurement, and analysis is a critical element for the formulation and implementation of successful fiscal policy. A hardening of budget constraints, through limits on government deficits or borrowing—whether imposed through a rule or on a discretionary basis—may in fact induce nontransparent practices. Accordingly, application of a fiscal rule without an explicit mandate to maintain transparency is likely to lead to circumvention and distortions, which ultimately erode the effectiveness of the rule. By the same token, transparent implementation of a well-designed and credible medium-term fiscal adjustment program can be highly effective in securing fiscal discipline.

The remainder of this section presents a relatively broad definition of fiscal policy rules (illustrated with examples from a survey of rules provided in Appendix I) and a brief discussion of past fiscal developments that serves as background to the rest of the paper. Section II reviews the arguments often advocated in the literature and used by various countries for adopting rules, followed by a discussion of institutional aspects of fiscal rules. Section III examines the likely economic consequences of fiscal rules, on the basis of actual experience with existing rules and of simulations of proposed rules (discussed in detail in Appendices II and III) for major industrial countries. Building on the preceding sections,

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[1] Hence, this paper is closely linked to Kopits and Craig (1998).

Section IV discusses the political economy of rules, outlines the key desirable characteristics of fiscal rules, and explores the implications of the analysis for IMF advice to member countries. The final section summarizes the main findings.

Fiscal Policy Rules Defined

For the purposes of this paper, a fiscal policy rule is defined, in a macroeconomic context, as a permanent constraint on fiscal policy, typically defined in terms of an indicator of overall fiscal performance. The rules under consideration cover summary fiscal indicators, such as the government budget deficit, borrowing, debt, or major components thereof—often expressed as a numerical ceiling or target, in proportion to gross domestic product (GDP) (Box 1).[2]

Besides consisting of restrictions on the overall budget balance, government borrowing, or public debt (as envisaged under Economic and Monetary Union (EMU) for example), fiscal rules may encompass key subsets of these aggregates, including the current budget balance—that is, permitting borrowing only for investment (as applied with regard to subnational governments in Germany and the United States). Also, in the absence of sufficiently developed domestic financial markets or given limited access to external sources of financing, prohibition on domestic borrowing (as in Indonesia) and restrictions on borrowing from the central bank (as in CFA franc zone member countries) may impose a severe constraint on the budget deficit and thus serve as fiscal rules (Table 1). Specialized rules imposed on the level or allocation of certain categories of government expenditure or revenue, though potentially useful in their own right, are beyond the scope of this paper.

A critical feature of a fiscal rule is that—regardless of the statutory instrument (international treaty, constitutional amendment, legal provision, or policy guideline) or local terminology[3]—it is intended for application on a permanent basis by successive governments in a given country, at the national or subnational levels. For a policy rule to be credible, it must involve commitment over a reasonably long period of time.[4] Thus, constraints that when adopted were meant to apply indefinitely can be viewed as rules, even if eventually they were abandoned or sus-

pended. In this sense, for example, both the former structural deficit ceiling in the Netherlands and the former limitation on government borrowing to finance capital expenditures in Japan qualify as rules.[5] By contrast, budget deficit ceilings or targets specified in the context of a fiscal adjustment program over a preannounced period of time—including one-year or multiyear IMF-supported programs—cannot be regarded as fiscal rules.

Much like other rules-based policies,[6] fiscal rules can be defined in terms of the degree of stringency, precision, and enforcement of the statutory instrument. A narrow definition would require both ex ante (budget approval) and ex post (budget execution) compliance, subject to tangible penalties. Ex-

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> **Box 1. Major Types of Fiscal Policy Rules**
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> *Balanced-budget or deficit rules*
> • Balance between overall revenue and expenditure (that is, prohibition on government borrowing); or limit on government deficit as a proportion of GDP.
> • Balance between structural (or cyclically adjusted) revenue and expenditure; or limit on structural (or cyclically adjusted) deficit as a proportion of GDP.
> • Balance between current revenue and current expenditure (that is, borrowing permitted only to finance capital expenditure).
>
> *Borrowing rules*
> • Prohibition on government borrowing from domestic sources.
> • Prohibition on government borrowing from central bank; or limit on such borrowing as a proportion of past government revenue or expenditure.
>
> *Debt or reserve rules*
> • Limit on stock of gross (or net) government liabilities as a proportion of GDP.
> • Target stock of reserves of extrabudgetary contingency funds (such as social security funds) as a proportion of annual benefit payments.

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[2]For a description of major types of fiscal policy rules, including institutional arrangements, see Appendix I.

[3]From a semantic point of view, a fiscal rule may take the form of a budget norm (the Netherlands), reference value (EMU), guideline (Indonesia), or principle (New Zealand), among others. The term "rule" is rarely used in any country for statutory purposes.

[4]According to Taylor (1993), several business cycles would be sufficient.

[5]For a discussion of various, mostly temporary, budget norms in the Netherlands, see Oort and de Man (1968).

[6]Inflation targeting, for instance, is to be observed both ex ante and ex post in some countries, but only ex ante in others. Exchange rate rules, whether in fixed or in preannounced crawling forms, are often specified within a wide band around a central rate. Also, the targeting of monetary aggregates or inflation in a number of countries is specified within a margin. The purpose of these margins and of exchange rate bands is comparable to the latitude provided for balanced-budget rules, namely, for accommodating the impact of unanticipated exogenous developments. For most of these rules, nonobservance is penalized by loss in reputation.

Table 1. Selected Countries: Fiscal Policy Rules

	Target or Ceiling	Effective Period	Statutory Instrument	Government Level	Penalty for Noncompliance
Netherlands	Structural deficit limit	1961–74	Government policy	Central government	Reputational
European Union members	Medium-term overall balance	Since 1997	International treaty[1] (Stage 3 of EMU)	General government	Reputational
	Yearly deficit limit (3 percent of GDP)				Financial (from 1999)
United States	Yearly overall balance	Proposal	Constitutional amendment	Federal government	Judicial
Costa Rica	Yearly deficit limit (1 percent of GDP)	Proposal	Constitutional amendment	Public sector	Judicial
Switzerland	Cyclically adjusted balance	Proposal	Constitutional amendment	Federal government	Reputational
New Zealand	Medium-term operating balance	Since 1994	Legal provision	Public sector	Reputational
Germany	Yearly current balance	Since 1949	Constitutional amendment	Federal and sub-national governments	Judicial
Japan	Yearly current balance	1946–75 and proposed from 2003	Legal provision	Central government	Judicial
United States	Yearly current balance	Various	Constitutional amendment	Subnational governments	Judicial
Canada	Overall balance or deficit limit	Since 1993	Legal provision	Subnational governments	Judicial
Indonesia	No domestic borrowing	Since 1967	Government policy	General government	Reputational
European Union members	No borrowing from central bank	Since 1994	International treaty (Stage 2 of EMU)	General government	Judicial
Argentina, Canada, Chile, Ecuador, Hungary, Japan, Peru, United States	No borrowing from central bank	Various	Various	General government	Judicial
CFA franc zone members	Borrowing from central bank limited to 20 percent of last year's revenue	Since 1973	International treaty	General government	Financial
Brazil, Egypt, Morocco, Philippines, Slovak Republic	Borrowing from central bank limited as fixed proportion of last year's revenue	Various	Various	General government	Judicial or reputational
European Union members	Gross debt limit (60 percent of GDP)	Since 1997	International treaty (Stage 3 of EMU)	General government	Judicial

Source: Appendix I.
[1]Including Stability and Growth Pact and pertinent European Council Regulations.

amples include the current budget balance in some U.S. states, the reference value for the budget deficit under EMU, and the borrowing limits in the CFA franc zone; in all these cases, ex post noncompliance carries judicial or financial sanctions.[7] A broader de-

finition also encompasses cases of mere ex ante compliance (such as the current budget balance in Germany and in the remaining U.S. states) and those with some latitude in interpretation (for example, the former structural deficit ceiling in the Netherlands, the medium-term operating balance in New Zealand, the medium-term overall balance under the EMU Stability and Growth Pact, and the proposed cyclically adjusted balance in Switzerland), accompanied by reputational sanctions for noncompliance.

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[7]Financial penalties are usually imposed for violating an international treaty obligation—applicable for EMU or the CFA—by a country vis-à-vis a supranational authority, but seldom, if at all, in the context of national or subnational rules.

There are borderline cases that in principle can be viewed as fiscal rules, such as the provisions for reducing the public debt–GDP ratio to a reference value at a satisfactory pace (under EMU) or to a prudent level while achieving an adequate level of net worth (New Zealand). These provisions may be open to considerable judgment and involve mainly reputational sanctions for noncompliance. Given the significant scope for interpretation, it is debatable whether they qualify as fiscal rules.[8]

The primary focus of this paper is on fiscal policy rules, as distinct from the procedural rules that can be found in many countries to ensure the execution of either discretionary or rules-based policies. Procedural rules include automatic contingency measures, such as across-the-board cuts in noninterest spending (usually, but not always, excluding transfers under mandatory programs), cash limits, sequestration of funds, or imposition of a surtax.[9] These or other measures, specified in advance, are triggered during the fiscal year if actual budget implementation (in terms of expenditure or revenue performance) deviates from budget forecasts, whether in the context of an annual or a multiyear program or pursuant to a fiscal policy rule. A fiscal policy rule that incorporates such contingency measures is called a contingent policy rule.[10]

Background

To understand the current interest in fiscal policy rules, it is useful to recapitulate the broad fiscal trends in major groups of countries. Except for the past few years, the period since the 1970s—following the breakdown of the Bretton Woods system—has seen a rise in the share of government in economic activity in the advanced economies and widening fiscal imbalances: the strong rise in government outlays was not matched by a commensurate improvement in revenue performance.[11] The diverging structural trends in government revenue and expenditure, in combination with a fiscal policy stance guided by the short-run stabilization goal, reflected a largely asymmetrical demand management: budget deficits that emerged during recessions were not fully offset by equivalent surpluses during economic expansions.[12]

Fiscal developments in the developing economies were characterized by far larger fluctuations. While upward pressures on government spending were, for the most part, just as intense as in the advanced economies, the limits to taxation set in at a much lower level—given a relatively larger informal sector and lower administrative capacity. In addition, in the developing regions, expenditure programs and tax revenues were subject to large swings, reflecting terms-of-trade shocks as well as the relatively short decision-making horizon of unstable governments, compounded by rapid shifts in investor confidence. These developments led to a highly volatile and procyclical fiscal policy stance.[13]

Faced with widening fiscal imbalances, from the mid-1980s onward, a number of countries launched medium-term fiscal adjustment plans;[14] these met with success in only some cases, however.[15] Among the advanced economies, the adjustment has been sustained in recent years largely as part of the convergence toward a balanced-budget position under actual (in New Zealand and the European Union) or proposed (in Japan, Switzerland, and the United States) fiscal rules. In developing economies, fiscal adjustment—often undertaken, in the context of an IMF-supported program, following an external pay-

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[8]As observed by Mussa (1994) with respect to monetary policy, the distinction between rules-based and discretionary regimes tends to fade when implementation of the former is widely open to interpretation and when the latter is applied with some degree of consistency and regularity.

[9]The Budget Enforcement Act of 1990 in the United States is a recent example of a procedural rule (effective through 1998) whereby any excess discretionary spending over the specified limits is subject to sequestration by a uniform percentage across activities.

[10]It may be noted that all stochastic simulations reported in Section III have been performed on contingent policy rules that broadly specify whether the rules-based adjustment takes place on the revenue or the (noninterest) expenditure side.

[11]See Masson and Mussa (1995) and Tanzi and Schuknecht (1995). Apart from the exceptional spending demands imposed by major wars and the Great Depression, fiscal policy in the in-

dustrial countries was relatively disciplined and debt ratios were stable until the early 1970s. To a large extent, fiscal rectitude was dictated by the needs of adhering to the gold standard and the Bretton Woods system. In essence, this period can be characterized as one of adherence to an implicit fiscal rule imposed by the existing monetary regime; see Laidler (1985) and Bordo and White (1993).

[12]This, in effect, was a departure from the policy prescription based on either a Keynesian or a neoclassical ("tax-smoothing") approach.

[13]See, for example, the evidence presented for the 1970–95 period in Latin America, in Gavin and others (1996).

[14]Examples of medium-term fiscal consolidation plans launched in the industrial countries in the 1980s are the so-called Trilogy in Australia, the Deficit Reduction and Debt Control Act in Canada, the Goria Plan in Italy, the Medium-Term Financial Strategy in the United Kingdom, and the Gramm-Rudman-Hollings Act in the United States. Some of these plans were vitiated by creative accounting, overoptimistic macroeconomic forecasts underlying the fiscal targets, and a lack of accountability for nonobservance of targets.

[15]Between 1970 and 1995, out of the 74 episodes identified in IMF (1996a), there were only 14 documented cases of successful fiscal adjustment in industrial countries. Recent examples of significant and durable adjustment, underpinned by reform measures, can be found in Denmark, Ireland, the Netherlands, and New Zealand.

ments crisis—has usually included a blend of structural fiscal reform and financial and trade liberalization. But in many cases, as market access was restored, the commitment to consolidating the initial gains from the adjustment vanished and a new crisis emerged, requiring an adjustment effort even tougher than the previous one.[16] Taken as a whole, however, these countries have managed to reduce their fiscal deficits in recent years.

As they embarked on a market-oriented transition in the early 1990s, the former centrally planned economies underwent considerable fiscal stress. Owing to the collapse of output, waves of privatization, lack of administrative resources, and growth of the informal sector, tax revenue fell dramatically. Meanwhile, the need for government expenditure in building infrastructure and social safety nets and in supporting enterprise and bank restructuring was only partially financed by savings from sizable cuts in price subsidies. In some cases, fiscal imbalances were exacerbated by large, inherited debt-service obligations—in part carried outside the budgetary accounts. More recently, an increasing number of transition economies have made progress in reducing their fiscal deficits and achieving some policy credibility.[17]

Fiscal developments over the past two decades can be summarized by four observations. First, many countries experienced a deficit bias, reflected in the steady deterioration in public finances; a recent reversal, in a number of cases, is mainly attributable to convergence under fiscal rules. Second, efforts to arrest this deterioration with short- or medium-term discretionary action have succeeded in relatively few countries. Third, contrary to previously held conventional wisdom—largely derived from Keynesian tradition—fiscal adjustment, if underpinned by structural reform, need not induce a recession.[18] And, fourth, a critical ingredient to successful adjustment is prolonged commitment to fiscal discipline.

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[16]Among developing countries, the experiences of Ghana and Turkey since the early 1990s illustrate the unraveling of earlier successful fiscal adjustment. Subsequent adjustment programs have been adopted by Argentina in 1991 and Ghana in 1994. By contrast, Chile has pursued a sustained fiscal adjustment since the mid-1980s.

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[17]See Fischer, Sahay, and Vegh (1996), and Cheasty and Davis (1996).

[18]On the contrary, there is ample evidence to support the view that a credible expenditure-based stabilization, in combination with structural reform, may be associated with an expansion toward trend growth and a deceleration in inflation. For industrial countries, see Alesina and Perotti (1996); for developing and transition economies, see Easterly (1996).

II Rationale and Institutions

Against the backdrop of fiscal developments in recent decades, this section reviews the major arguments that have been put forth to adopt fiscal policy rules. It then discusses the institutional aspects of existing and proposed rules, the encompassing statutory instruments, the authority responsible for enforcing or monitoring compliance, and the actual means of enforcement.

Rationale for Fiscal Rules

The rationale for fiscal policy rules needs to be examined mainly against the widespread deterioration in public finances, moderated by some attempts to reverse this trend through discretionary fiscal policy and by the recent adjustment in the run-up to EMU participation in the European Union (EU). These developments point to a twofold task: first, making a credible reduction in the fiscal deficit within a range that will stabilize the public debt ratio at a prudent level and, then, containing the debt ratio over the medium to long term. Broadly speaking, the task is to ensure fiscal discipline that contributes to price stability and is conducive to sustained economic growth. For this purpose, it is necessary to inquire whether this objective can be served better with continued efforts at discretionary correction in the context of annual budgets or medium-term adjustment plans, or, alternatively, with the design and implementation of economically sensible fiscal policy rules. As part of this inquiry, it is useful to review the specific arguments often advanced for adopting broad-based fiscal rules: macroeconomic stability; support of other financial policies, including other policy rules; sustainability of fiscal policy; avoidance of negative spillovers and adverse market reactions, especially within a common currency zone; and overall policy credibility.

The traditional rationale for fiscal policy rules is *macroeconomic stability*. In several Western European countries and Japan, the current budget balance rule was largely enacted to support the post-war macroeconomic stabilization; as this goal was accomplished, the rules were relaxed or abandoned.[19] Although applied to a less comprehensive indicator of fiscal imbalance, limits or prohibition on government borrowing from all domestic sources (as in Indonesia) and particularly from the central bank (especially useful in some developing and transition economies) was seen as contributing to stability by removing a major source of base-money creation and thus of inflationary pressures. Against this consideration, there is concern that a rule, especially in the form of a strict balanced-budget requirement, might impair the short-run stabilization and tax-smoothing roles of fiscal policy. In this sense, a judicious mix of discretionary fiscal and monetary policies guided by targets for macroeconomic performance—namely, low inflation and external balance—can be viewed as conceptually superior to fiscal rules. As noted earlier, however, the superiority of discretionary fiscal policy has not always been corroborated in practice. Moreover, often the lack of adequate fiscal discipline has reduced the countercyclical role of fiscal policy to the point of rendering it procyclical.[20] If applied flexibly, fiscal rules may be seen as restoring at least a moderate countercyclical role through the operation of automatic stabilizers, rather than as constraining fiscal policymaking. In these circumstances, given the politically induced deficit bias of many governments, appropriate fiscal rules constitute a second-best solution.[21]

A fiscal policy rule can *assist other financial policies*, especially the utilization of monetary instruments, in pursuing the stabilization goal. It has been suggested (for example, in connection with EMU and the Stability and Growth Pact) that a rule that re-

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[19]In the Netherlands, the rule was abandoned in the 1950s; in Japan, it was in effect suspended in 1975; and in Germany, it has been increasingly ignored in recent years.

[20]See footnote 13 above.

[21]According to Buchanan and Wagner (1977), the balanced-budget rule is necessary to restrain the politically rational behavior of policymakers—reflected in the deficit bias—in response to the electorate's failure to understand the intertemporal budget constraint. See the discussion of trade-offs in Corsetti and Roubini (1993).

duces budget deficits—while allowing the automatic stabilizers to work—tends to lessen the burden on monetary policy.[22] By the same token, the case for fiscal discipline through fiscal rules is usually strengthened in the presence of other policy rules; specifically, certain monetary or exchange rate rules impose an implicit constraint on government deficits.[23] However, an excessively rigid balanced-budget rule (such as the proposed U.S. constitutional amendment) could overburden the stabilization role of monetary policy.[24]

Much of the recent interest in fiscal rules has been prompted by the need to achieve or maintain long-run *fiscal sustainability*. In fact, the main objective of fiscal rules introduced in New Zealand and proposed in Switzerland and Japan has been to consolidate gains from earlier discretionary adjustment and to prevent a potential future increase in public indebtedness associated, for instance, with the prospective aging of the population. Similarly, rules intended for containing the public debt—possibly including a measure of unfunded contingent liabilities—relative to GDP under a certain threshold can contribute to a fair distribution of fiscal benefits and burdens across generations.[25] More immediately, such rules should help moderate real interest rates in financial markets, ease crowding out of private investment, and reduce income redistribution from wage earners to interest earners.

Historically, fiscal rules have been utilized at various levels of government for the *avoidance of negative spillovers* within a federation, confederation, or currency area.[26] A fiscal rule restraining subnational government deficits prevents externalities from fiscal misbehavior in one jurisdiction from being trans-mitted, through credit downgrading and concomitantly higher interest charges, to other subnational jurisdictions and to the national government—with the stabilization function generally to be exercised at the national or federal level. This argument has been applied to member countries of a confederation-cum-monetary union (as in the case of EMU)—the argument being stronger, the larger the weight of each member's budget in relation to the confederation or supranational budget.[27] Also, it is relevant, perhaps to a lesser extent, to all countries in the international economy.[28] The rationale for preventing the accumulation of deficits at lower levels of government (such as through the rules adopted in most U.S. states) is compounded by the potential interest risk premium on debt at those levels in the absence of an explicit or implicit bailout commitment by the national (or supranational) government.[29] Conversely, it is feared that profligate fiscal policies at lower jurisdictions generate pressures for a bailout that the common (supranational) monetary authority may find difficult to resist.[30]

A fiscal rule can be useful for ensuring the *credibility of government policy over time*. Stated differently, a major advantage of rules-based policies over a discretionary approach is time consistency.[31] This is crucial in countries with a track record characterized by wide swings: periods of poor fiscal performance alternating with market-imposed adjustments, followed again by unsustainable deficit spending, and so forth. To gain the lasting confidence of financial markets, households, and enterprises, governments may need to subject themselves to permanent constraints on deficits, borrowing, or debt.[32] As an example, in Costa Rica, the balanced-budget rule has been proposed with a view to elimi-

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[22]See European Commission (1996, p. 23).

[23]As indicated in footnote 11, the exchange rate regime under the Bretton Woods system imposed, in effect, a rules-based constraint on fiscal policy—although not necessarily binding, since the peg could shift. Similarly, a currency board arrangement is not likely to be sustainable—except at a high cost in terms of crowding out or external indebtedness—without strict limits on domestic bank credit for the government. See Baliño and Enoch (1997).

[24]See the criticism in United States (1995, Box 1-2).

[25]Likewise, a rule requiring a specified level of reserves under a public pension scheme, or other contributory entitlement program, is based on an intergenerational equity criterion. The accumulation of contingency reserves for public pension programs in Canada, Japan, and the United States is predicated on this criterion. As shown by Kotlikoff (1989), a balanced budget or surplus over one or several years does not guarantee intergenerational equity.

[26]Although the theory of optimum currency areas is silent on the appropriate fiscal policy regime, in practice a currency area requires either a unified fiscal policy or a supporting fiscal policy rule applicable to members of the area; see the papers by Mundell and Goodhart in Blejer and others (1997).

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[27]In the EU, the bulk of fiscal resources remains below the supranational level—in part explained by the subsidiarity principle—permitting the national authorities to retain the stabilization function (at least through the automatic stabilizers), subject to the EMU deficit reference value.

[28]This resembles the central argument for a rules-based versus a discretion-based exchange rate system, on grounds that the former reduces negative spillovers of national policies on the international economy; see Guitián (1992).

[29]McKinnon (1996) observes that the lack of sufficient separation between the fiscal and monetary authorities—and the ensuing lack of hard budget constraints—at various levels of government, within the EU context, strengthens the case for fiscal rules under EMU, as compared with the U.S. states where constraints are imposed more effectively by financial markets.

[30]See Eichengreen and von Hagen (1995).

[31]As shown in Kydland and Prescott (1977), in a dynamic two-period context, rules-based policies are time consistent and lead to a higher level of welfare than discretionary policies, given the likely reaction of private agents with rational expectations to the incentive of governments to deviate from previously announced policies under discretion.

[32]In this regard, fiscal rules may be particularly relevant for economies in transition; see Kopits (1994).

nating deficits caused by the electoral cycle.[33] More generally, given the considerable danger in postponed adjustment, such a rule may be helpful when the electorate is prone to overlook—under the so-called fiscal illusion—the consequences of a deterioration in sustainability or when creditors may not accurately judge default risk in lending to sovereign borrowers. In fact, an upgrading or downgrading by international credit-rating agencies tend to take place with a considerable lag, following either a substantial improvement or a substantial deterioration in performance indicators. In brief, fiscal rules can help reduce or remove the influence of short-run political expediency that leads to a deficit bias,[34] especially in an environment where policymakers are exposed periodically (especially before elections) to strong, often conflicting, pressures to relax the fiscal stance.

In practice, it may be difficult to attain sustainability, to avoid negative spillovers, or to gain policy credibility, with or without a fiscal rule, in the absence of a sufficiently widespread perception of the need for enforcing fiscal discipline. Yet a country experiencing extraordinary fiscal stress in the midst of a major financial crisis may have no alternative but to submit to a fiscal rule to restore policy credibility. Particularly once the initial adjustment has been completed, a well-designed rule may be useful in preventing reversion to failed discretionary policies. Less often, such a rule may be perceived as necessary to avert a future deterioration in fiscal performance, in view of, say, future demographic pressures under a generous system of entitlements. In either case, essentially the rule represents the constraint that, under a discretionary regime, would be imposed—probably at a much higher cost—by financial markets. In these circumstances, a well-designed fiscal rule (Section IV) may prove to be an effective proxy for the discipline sought by a far-sighted electorate.

Institutional Arrangements

Statutory Basis

The statutory basis of existing and proposed fiscal rules can be found in a variety of instruments: constitution, law, regulation, policy guideline, or international treaty. The instrument selected by a given country is largely a function of custom, legal precedent, or convention. Although a constitutional provi-

sion or amendment would be expected to carry much greater weight than a law or a policy guideline, the latter may in fact be equally or even more binding.

To illustrate the point, in Germany, for both the federal and most *Länder* governments, the balanced-budget rule is stipulated in the constitution and confirmed in the respective budget laws. Similarly, the fiscal rules proposed in Costa Rica, Switzerland, and the United States require passage of a constitutional amendment. The majority of U.S. states with fiscal rules have some constitutional requirement (approved through a state referendum) to balance the budget, whereas the others rely on legislation enacted at the state level. Yet, while in most U.S. states fiscal rules are strictly enforced, in Germany they often are not realized and rarely attract a judicial challenge.

Among the countries that follow the legislative approach, New Zealand's Fiscal Responsibility Act of 1994 requires the government to abide by principles of responsible fiscal management, including maintenance of a balanced operating budget. These principles allow for some flexibility in implementation but are subject to strict standards of transparency.[35] Although all rules, including those prescribed by legislation, are intended to apply strictly and permanently—over successive governments— they are, in practice, open to some interpretation and conceivably can be revised, suspended, or repealed through subsequent legislative action. In Japan, for example, the Public Finance Law of 1947, which limits the issuance of government bonds ("construction" bonds) to finance public investment, has been overridden through legislation every year since 1975 to allow the issuance of bonds for the general financing of budget deficits. However, the present government intends to reinstate the original legislation.[36] At the subnational government level, in the first half of the 1990s, the majority of Canadian provinces and territories enacted legislation requiring budget balance or limiting the deficit.

Indonesia and the Netherlands provide examples of rules based on policy guidelines. In Indonesia, the fiscal rule is contained in the Guidelines for State Policy. Although these guidelines are not formally backed by law, they have been followed by the ministry of finance in the formulation and execution of the budget. In the Netherlands, the structural deficit ceiling, which was introduced as a policy norm in 1961, was

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[33]A surge in government spending—usually accompanied by widening fiscal imbalances—immediately prior to elections has been the dominant domestic macroeconomic shock over the last 15 years in Costa Rica.

[34]See Corsetti and Roubini (1993).

[35]See Cangiano (1996).

[36]In December 1996, on the advice of the Fiscal System Council, the authorities decided to reduce the government deficit (excluding social security operations) to 3 percent of GDP and to refrain from issuing general-purpose bonds over the medium term. After achieving these goals by 2005 at the latest, the authorities will endeavor to prevent a further increase in debt outstanding.

abandoned in 1974 after a number of nontransparent recalculations were made partly to accommodate a widening budget deficit.[37] Under a more recent approach, introduced in 1995, the Netherlands is pursuing a similar rule to meet the EMU deficit reference value in a transparent manner.[38]

Limits on, or prohibition of, central bank credits to governments are usually stated in the central bank statutes. An exception is the United Kingdom, where the prohibition is based on tradition. In the CFA franc zone, the limit is reinforced by an international treaty. Similarly, under the Maastricht Treaty, participation in EMU requires EU member countries to abstain from direct central bank financing of government, to meet the budget deficit ceiling—while targeting a balance or surplus over the medium term—and to show satisfactory progress toward the debt reference value. Although, in principle, EU members that are not able to fulfill these fiscal criteria are not eligible to participate in EMU (Stage 3), the treaty allows considerable scope for judgment in the application of the reference value on debt.

More specialized rules targeting the accumulation of a minimum level of contingency reserves in an insurance-based extrabudgetary fund are usually supported by a policy guideline or legislation. In the United States, the target ratio of public pension reserves to annual benefits has been set by the Board of Trustees of the Social Security Trust Funds, which is fully accountable to the public; in Canada, the target ratio is prescribed under the Canadian Pension Plan Act. In Chile, the contingency reserve requirement under the Copper Compensatory Fund was formally enacted in 1986.

Authority

Enforcement of restrictions on central bank financing of budget deficits usually rests with the central bank or, in some cases, with the department or agency in charge of budget execution, under the authority of the ministry of finance. More generally, a higher competent authority, possibly independent of the executive branch, acts as a referee or renders judgment to determine compliance with fiscal policy rules. In countries where national or subnational rules are incorporated in the constitution, stewardship is normally entrusted to the supreme court at the national or subnational jurisdiction.

On the other hand, in Indonesia and New Zealand, both enforcement and monitoring of the rules have been exercised quite effectively by the ministry of finance within the executive branch. Moreover, in New Zealand, a high degree of transparency is ensured by a formal requirement, which is binding on both the minister of finance and the secretary to the treasury.[39] By contrast, in the Netherlands, the government consistently failed to enforce the former structural deficit ceiling. In the United States, responsibility for compliance with the reserve rule lies with the Social Security Administration, under the authority of the Board of Trustees of the Social Security Trust Funds, which is directly responsible to Congress. In Chile, oversight of the Copper Compensation Fund is exercised jointly by the central bank, the state-owned copper corporation (CODELCO), the treasury, and the budget office of the ministry of finance.

Surveillance over convergence to, and observance of, the Maastricht Treaty criteria is to be assumed by the EU Council of Ministers—on the basis of monitoring by the European Commission—which meets periodically for this purpose. In the CFA franc zone, authority over borrowing limits is vested in the two regional central banks, namely, the Banque Centrale des Etats de l'Afrique de l'Ouest (BCEAO) and Banque des Etats de l'Afrique Centrale (BEAC). In most countries, judgment over observance of limits on central bank credit to government rests in principle with the courts.

These examples indicate that, depending on the specific circumstances and tradition of a given country, fiscal rules can be enforced effectively even by an entity close to, or within, the government. Nevertheless, a certain degree of independence for the supervisory body is desirable to ensure adherence to the rules. Also, the more complex a set of rules, the greater the need for a technically competent supervisory authority.[40]

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[37]See the critical review of several consecutive policy norms (underpinned by coalition agreements) in Wellink (1996).

[38]For a discussion of this "trend-based fiscal policy," see Zalm (1997).

[39]Under the Fiscal Responsibility Act, the *statement of responsibility*, which accompanies published fiscal reports, stipulates that (1) the minister of finance is responsible for the overall integrity of the reports and for their consistency with legislated fiscal rules, (2) the minister is to provide the secretary to the treasury with all relevant policy decisions and information needed to prepare the reports, and (3) the secretary is to confirm that the treasury department has used its best technical skills and professional judgment to incorporate that information into the reports.

[40]In a similar vein, von Hagen and Harden (1994) and Eichengreen, Hausmann, and von Hagen (1996) proposed, respectively, the creation of national debt boards for European countries and national fiscal councils for Latin American countries—endowed with independence especially vis-à-vis the executive branch—to set limits on, and ensure compliance with, the permissible increase in public debt and thus constrain the annual budget deficit.

Method of Implementation

A key question determining implementation is whether the rule must be complied with merely ex ante, that is, at the time of budget approval, or also ex post, during the budget execution. Obviously, although the first step is always a necessary condition, only the second step can be sufficient to ensure compliance. Moreover, assuming that major aggregates—budget balance, financing, or expenditure levels—in the enacted budget are consistent with the rule, there are three essential elements of implementation: availability of automatic or discretionary contingency measures during budget execution; provision for safeguards or escape clauses (or unintended loopholes); and effectiveness of sanctions for noncompliance with the rule.

Concerning the initial question, with the exception of mostly subnational jurisdictions (some U.S. states and all German *Länder*) where the rule can be met simply by approval of a balanced current budget (that is, legislative enactment), virtually all rules also require actual implementation. Usually, ex ante compliance with the rule implies that the legislative debate and action affect the composition of expenditures but not the aggregates subject to the rule.[41] Once the budget is enacted, the authorities must focus, in the course of the fiscal year, on implementing the budget, keeping within the limits consistent with the rule, and availing themselves of the budget control and execution techniques at their disposal. Alternatively, they may attempt to resort to formal or informal escape clauses or safeguards to avoid breaching those limits.

Among existing rules, only some U.S. states are known to prescribe automatic contingency measures—such as uniform expenditure cuts or imposition of, say, a surtax—in response to an unexpected revenue loss or expenditure overrun.[42] Under a variant of the rule proposed in Switzerland, the Federal Council would be authorized to cut various subsidies in order to prevent an excess deficit. However, under certain rules, including those setting limits on deficit financing, there is scope for bypassing the rule through alternative channels. For example, Indonesia's rule permits recourse to extrabudgetary operations. Some U.S. states allow for carryover of spending authorizations to the following fiscal year. Less formally, a no-borrowing rule—if tantamount to a cash budget balance rule—could induce a government to invoke cash limits or to sequester funds, accompanied by a buildup of arrears.

To strengthen their effectiveness, fiscal policy rules should be specified insofar as possible in terms of accrual-based recording and in reference to the general government (as done under EMU), or to the entire public sector when necessary to capture widespread quasi-fiscal activities (as in Costa Rica). Under the excessive deficit procedure of EMU, as indicated above, adherence to the deficit and debt limits will be subject to EU Council surveillance. If warranted, the Council may initiate waivers for any deficits in excess of the ceiling; such waivers, granted in "exceptional circumstances," would require a numerical test of a recession or judgment by a qualified majority in the Council. Of course, EMU and the Stability and Growth Pact may be buttressed with specific rules at the national level in each EU member country (as in the Netherlands). Normally, such national rules need to prescribe internal procedures, including the nature and timing of contingency measures and the circumstances that would trigger their implementation—whether automatically or through a supplementary budget.[43] In Switzerland, the proposed constitutional amendments would contain contingency measures for compliance as well as escape clauses that permit fiscal policy to respond to large unfavorable shocks. By contrast, in Germany and Costa Rica, actual and proposed rules fail to specify the circumstances and the escape clauses that allow deviation from the basic rule. In the United States, under the proposed constitutional amendment, deficits would be permitted only in extreme situations.[44] Unlike in most other countries, where the fiscal rules leave some latitude for circumvention or creative accounting, in New Zealand the scope for such practices has been minimized.[45]

The final deterrent for noncompliance consists of a set of financial, judicial, or reputational penalties for nonobservance. The penalty can take the form of a reduced ceiling—in the amount of the excess in the preceding year—in the fiscal year that follows, as practiced in some U.S. states. In the context of an international treaty, the government may be penalized financially. The Maastricht Treaty provides, in principle, scope for the imposition of financial sanctions

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[41]For example—though without a policy rule—in both Chile and Italy, legislative modification of the budget is acceptable only if the resulting additional spending is offset by compensatory measures, so as to leave the overall balance unaltered.

[42]For a discussion of expenditure control techniques used for complying with medium-term fiscal consolidation plans in Australia, the United Kingdom, and the United States in the mid-1980s, see Craig (1987).

[43]For an example of such an approach in the Netherlands, see Zalm (1997).

[44]For a criticism of this feature, see Suits and Fisher (1985).

[45]Such practices seem to be proliferating in certain EU member countries in the run-up to the final stages of EMU. For a discussion of both the New Zealand and EMU accounting standards, see Kopits and Craig (1998).

for the violation of EMU reference values on deficits or debt. Whereas in practice no such penalties are envisaged for noncompliance with the debt reference value, the Stability and Growth Pact imposes financial sanctions for excesses above the deficit reference value. Each percentage point of excess deficit above the 3 percent of GDP reference value would oblige the transgressing EU member country to make an interest-free deposit of up to ½ of 1 percent of GDP if the excess were not corrected by the following year—unless the excess is attributable to "exceptional circumstances."[46] Failure to take corrective action over a two-year period would convert the deposit into a transfer to the EU budget. In one Canadian province (Manitoba) the law provides for a penalty, consisting of cuts in cabinet members'

salaries, in the event of budget deficits that are not caused by exogenous shocks. In the CFA franc zone, similar financial penalties are applicable for any excess over the limit on central bank advances to the government. In many other cases, violation of fiscal rules may entail an unfavorable court decision on the noncomplying government, at the national or subnational level.

Quite apart from any financial or judicial penalties, noncompliance usually entails loss of prestige by the government before the electorate and financial markets. In New Zealand, for example, noncompliance carries a reputational penalty for the transgressing government. In the EU, the failure of member governments to meet the EMU reference value for the public debt ratio would result in a reputational cost. Likewise, in Switzerland, nonobservance of the proposed constitutional amendments would be accompanied by a loss in prestige for the government.[47]

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[46]A member country experiencing an annual fall in real GDP of at least 2 percent (or 0.75 percent in the light of further supporting evidence) can invoke exceptional circumstances. This definition of exceptional circumstances may impose a serious burden on a country undergoing a smaller annual downturn, albeit over a longer period, or on a less advanced country that is on a higher trend growth path. Indeed, it would seem more reasonable to define the downturn in reference to trend GDP growth and incurred over a period longer than one year.

[47]Unlike in many other countries, in Switzerland, the government cannot be sued in a court of law for violating the constitution; instead, the government is subject to legislative censure—a rather hypothetical occurrence.

III Economic Effects

Binding fiscal policy rules are likely to influence the level and composition of government expenditure and taxation. In addition, fiscal rules have major macroeconomic consequences for inflation, external indebtedness, and economic growth. Of particular concern is the effect of balanced-budget rules on the short-run variability in output and income. Given the limited experience with fiscal rules, some of these effects must be examined with the help of simulations. By comparison, it is noteworthy that, in the monetary policy area, experience with inflation targeting, applied since the early 1990s, has been even more limited.

Experience

For the most part, economic performance under fiscal rules has been mixed. Besides a number of successes, some rules have been ineffective, suspended, or abandoned. At the national level, in the advanced economies (including the recent convergence in the fiscal position of most EU member countries), attempts to comply with fiscal rules contributed to a decline in inflation and interest rates, mitigated the crowding out of private investment, and alleviated the external imbalance. In developing economies, in the absence of sufficiently deep internal financial markets, restrictions on bank financing or domestic borrowing were partly accommodated by a substantial buildup in foreign indebtedness. To some extent, the latter was facilitated by the credibility gains associated with implementation of the fiscal rule.

Apart from broadly favorable macroeconomic effects, compliance with fiscal rules has led to distortions in the composition of government expenditures or to tax increases. On the expenditure side, often the brunt of the adjustment has been borne by cuts in public investment. In some instances, fiscal rules induced a lack of transparency in the budget process (for example, accumulation of payment arrears), proliferation of creative accounting practices, and recourse to one-off measures (such as financing from privatization receipts). Also, distortions in tax structure and administration (say, by advancing tax payments) may have

been compounded, along with an increase in the overall tax burden. Nevertheless, more than in the case of discretionary policies, the future maintenance, and thus the credibility, of a fiscal rule is jeopardized by excessive reliance on low-quality, one-off measures.

Actual experience with fiscal policy rules has been limited mainly to borrowing limits at the national level and balanced-budget rules at the subnational level of government. In general, prohibition on central bank credit to governments has been effective; leakages (mainly, through short-term advances) have been relatively infrequent. In some countries, however, a buildup of expenditure arrears or an acceleration of tax collections has taken place; also, if permitted, indirect central bank financing, mainly through the government securities market, has proved to be an additional channel to bypass the intent of the rule. It has been far more difficult to ensure that ceilings—in contrast to a prohibition—on central bank credit (in proportion to past revenue or expenditure) to governments are, in fact, binding, as calculation of the ceiling is likely to leave room for circumvention. Although a successful reduction in inflation depends mainly on monetary control, rather than on rules limiting central bank financing of budget deficits, in practice it is not possible to maintain an appropriate monetary stance if the government has virtually unlimited access to central bank financing. Thus, prohibition on central bank credit removes an important source of inflationary pressure, and binding limits on such credit contribute to the moderation of inflation.

The experience of the CFA franc zone countries illustrates the difficulty of enforcing a ceiling (as compared with a prohibition) on central bank credit to the government. The statutory limit on central bank lending and advances to the government has been reached or exceeded in most member countries. Excesses have occurred when a decline in government revenue was not necessarily matched by the required cut in central bank financing and when, in some cases, the central bank assumed the external debt obligations of the member government without formally violating the rule. Partly through these outlets and partly through heavy reliance on external financing and

payment arrears, most countries incurred sizable budget deficits in the 1980s. The resulting crowding out of private activity and appreciation of the franc contributed to stagnation in output and widening of external current account deficits.[48]

Indonesia's rule disallowing domestic financing of budget deficits has provided a remarkable degree of fiscal discipline for almost three decades. During most of this period, while enjoying sustained growth, Indonesia has managed to avoid the high inflation experienced by many other countries at a comparable stage of development, particularly the oil-producing developing countries. Calculation of the cyclically adjusted budget balance since the early 1970s reveals that the rule has provided scope for authorities to conduct a countercyclical fiscal policy, particularly during the 1980s.[49] However, although effectively restraining domestically financed deficit spending, the rule has permitted a significant accumulation of external debt in recent years.

The experience of U.S. states with the balanced-budget rule probably yields the richest empirical evidence in this area. Because of the varying degrees of stringency of the rule among different states, it has been possible to test the effect of institutional features on compliance and the effect of the rule on output variance and interest costs. The U.S. states that are subject to a strict constitutional ex post rule have been successful in achieving balance between current expenditure and revenue, as compared with states that follow merely an ex ante rule under the authority of a state supreme court elected by the legislature or appointed by the governor.[50] In other words, the effectiveness of the rule in constraining budget deficits is enhanced if applied to end-of-year performance, with no allowance for expenditure carryover, under the surveillance of a politically more independent authority and on the basis of a constitutional obligation. As regards the composition of the adjustment, deficits tend to be reduced, or surpluses generated, through spending cuts instead of tax increases.[51] This result is not surprising in view of the competitive pressures among the states to reduce local sales tax, income tax, and property tax rates.

In contrast to the subnational balanced-budget rules in the United States, in Canada most of these rules have been in effect for only one or two fiscal years. During this short period, preliminary evidence indicates that those provinces or territories with anti-deficit constraints have achieved better budgetary outcomes than those without constraints. This result may be attributed to the relatively rapid response of financial markets in encouraging fiscal discipline through increased borrowing costs for provincial governments that failed to correct a high and increasing level of indebtedness, as well as to the greater public tolerance for fiscal austerity at the subnational level of government.[52]

Evidence on the macroeconomic effects of the U.S. states' balanced-budget rules is mixed. Between the early 1970s and mid-1980s and again at the beginning of the 1990s, fiscal performance seems to have been responsive to cyclical fluctuations in output—broadly reflected in a countercyclical stance—through the effect of either automatic stabilizers or of discretionary action. By comparison, in the 1960s and late 1980s, budget surpluses and output seemed to have been either unrelated or inversely related. The more recent trend may be explained, in part, as the consequence of devolution of fiscal responsibility to the lower levels of government and the increased ability of the states to draw on their stabilization funds set up from accumulated surpluses.[53] Cyclical responsiveness depends, however, on the coverage of the state budget and on the choice of the cyclical indicator.[54] More recent tests have confirmed that the fiscal rule limits budget flexibility, but this in turn does not appear to influence output variance.[55] Although encouraging for proponents of balanced-budget rules, these findings are of limited relevance for national fiscal rules given the small weight of subnational governments relative to that of a federal government. A potentially useful lesson, however, is that binding balanced-budget rules can work in limiting fiscal deficits, though they sometimes result in an inefficient expenditure structure; moreover, with the accumulation of sufficient contingency reserves, they are not inconsistent with macroeconomic stabilization.

The track record of U.S. states also provides evidence of the sensitivity of interest costs to the level of indebtedness and to the stringency of the fiscal

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[48]In 1994, CFA franc zone countries sought to correct the imbalance with a major devaluation, followed by a medium-term stabilization effort that included a significant fiscal adjustment. See Clément and others (1996).

[49]See Kopits and others (1993).

[50]For examples of circumvention of the balanced-budget rule in Michigan and New York, see Suits and Fisher (1985).

[51]In addition, the gubernatorial line-item veto limits the size of deficits, and restrictions on debt issues tend to reduce outstanding debt but at the expense of capital rather than current outlays. See Bohn and Inman (1996).

[52]See Millar (1997).

[53]State governments were responsible for about 15 percent of the fiscal offset to changes in state value added in the 1970s and 1980s, while the federal government and the social security trust funds provided the remainder; see Bayoumi and Eichengreen (1995).

[54]The responsiveness is stronger upon including in the budget measure the states' insurance trust funds and upon using the income level rather than the unemployment rate as the cyclical variable; see Bohn and Inman (1996).

[55]See Alesina and Bayoumi (1996).

rule.[56] Presumably, the latter can strengthen the market discipline that would be felt (for example, in the context of certain Canadian provinces) in the absence of rules. Again, however, it should be noted that the experience of subnational governments is limited by the much lower debt ratios than those found for sovereign borrowers at the national level. Ultimately, the market response to fiscal stance and indebtedness depends on the perception of whether the higher-level government or central bank will be ready to bail out the lower-level government in the event of default. Sufficiently binding fiscal rules would, of course, obviate such occurrences.[57]

The fiscal policy stance adopted under currency board arrangements in Argentina and Estonia in the early 1990s helped restore the credibility of financial policies. This in turn contributed to a pickup in investment and growth and to price stability in Argentina—a significant turnaround from the previous period of high inflation and stagnation—albeit at the cost of some external indebtedness.[58] In Estonia, the policy rule led to the containment of output contraction and the deceleration of inflation, in contrast to the deep contraction and inflation spiral experienced by Russia and the other countries of the former Soviet Union.[59] These episodes corroborate the significant gains that result from adherence to a strict monetary rule supported by an implicit balanced-budget rule.

In anticipation of the advent of EMU, most EU member countries launched, beginning in 1992, convergence plans to meet the deficit reference value by 1997 and to approach the debt reference value over the medium term. Although some EU members have made progress in reducing the public debt–GDP ratio (Belgium, Denmark, and Ireland), and most members have reduced the budget deficit relative to GDP, success in meeting these criteria is not always assured; further convergence appears difficult in a few cases, partly because of the slower-than-anticipated cyclical recovery in output. In a number of countries, the durability of the convergence is open to question insofar as the fiscal adjustment was accomplished through revenue enhancement rather than expenditure cuts.[60] This is remarkable given the already high tax rates across much of Europe, which clearly cannot prevail indefinitely, as lower rates in some EU countries in the context of the single market are likely to result in competitive pressures to reduce rates in high-tax countries. Accordingly, the high rates of payroll contributions and weak financial position of social security institutions—also included in the definition of fiscal criteria—are probably not sustainable over the medium to long run.[61] This problem is exacerbated by attempts to meet the deficit limit with reliance on one-off measures.[62]

Although it would be premature to determine the full macroeconomic consequences of the convergence, it appears that the fiscal adjustment may have been partly responsible for the recent slowdown in certain European countries. On the other hand, real interest rates have eased, especially in high-debt countries, such as Belgium and Italy—in anticipation of the final stage of EMU, as achievement of the fiscal criteria by the majority of members is deemed to be within reach—thus mitigating the slowdown.[63] However, the immediate effect of the fiscal adjustment on output can only be inferred on the basis of studies of past adjustment episodes.[64] An implication of these episodes is that the nature or composition of the adjustment under a fiscal rule, as in the case of a discretionary regime, can be critical for the macroeconomic repercussions of the rule. Indeed, its salutary effects on investment and growth can be enhanced through permanent cuts in transfers, government employment, and subsidies, rather than through public investment cuts, wage freezes, or tax increases, which tend to be transitory and contractionary. Thus, if the convergence had been supported by more efficient and durable structural reform measures, it could have contributed to a faster recovery in output (or to a milder recession) in some European economies.[65]

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[60] Over the period 1992–95, only four countries (Belgium, Italy, the Netherlands, and the United Kingdom) managed to reduce expenditure; see Masson (1996).

[61]See Kopits (1997).

[62]Recent examples of one-off measures include an extraordinary transfer from a state-owned enterprise in France, a government wage freeze in Spain and Germany, and a temporary income tax surcharge in Italy.

[63]Alternatively, there is a view that the relatively high level of some European interest rates, despite the recession, reflects a premium due to the implicit assumption of the debt obligations of certain high-debt countries.

[64]See Appendix II on the macroeconomic effects of fiscal adjustment, and Alesina and Perotti (1996) for an analysis of the successful adjustment implemented by Denmark and Ireland in the 1980s, and the less successful experience of Italy in the 1990s.

[65]Simulations conducted on the basis of MULTIMOD suggest that the EU-wide effects of satisfying the EMU deficit reference value would have a relatively moderate negative contractionary impact, reflecting the benefits of declining interest rates—if the underlying fiscal measures are perceived as part of a credible and irreversible adjustment program.

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[56]See the statistically significant nonlinear explanation for municipal bond yields in terms of the state debt-output ratio and fiscal control, in Bayoumi, Goldstein, and Woglom (1995).

[57]The question remains, however, as to whether they can hold under all situations, as illustrated by the strains in the exchange rate mechanism (ERM) in 1992.

[58]For a critical view of the Argentine case, where, under the currency board arrangement, fiscal deficits were largely financed with privatization receipts and external borrowing, see Teijeiro (1996).

[59]Estonia is a special case of a broader range of adjustment programs adopted in some of these countries where the combination of a pegged exchange rate and fiscal retrenchment spurred growth while reducing inflation. See Fischer, Sahay, and Vegh (1996).

The experience of New Zealand in the aftermath of the recent introduction of fiscal rules has been, on the whole, favorable. Since 1994, the government has followed strictly and transparently the fiscal policy goals it had set for itself. The budget has been in surplus, net debt has declined, and net worth has turned positive. The high degree of fiscal discipline, accomplished through these rules, was accompanied by high growth and low inflation, though also by a widening in the external current account deficit in recent years.

The U.S. social security trust funds have accumulated sufficient contingency reserves for the Old-Age, Survivors' and Disability Insurance (OASDI) programs, exceeding by a wide margin the minimum reserve ratio to annual benefit payments, whereas the Medicare funds are forecast to be depleted by the end of the decade. However, the reserve buildup has been effectively used to offset part of the federal budget deficits. Thus, social security surpluses have helped reduce the unified budget deficit, so that successive medium-term fiscal adjustment plans undertaken since the mid-1980s look more successful than they could have been without those surpluses.[66]

In Chile, the Copper Compensation Fund has been managed scrupulously over the last decade. Notwithstanding its symmetrical stabilization function, the fund has accumulated significant reserves and thus—along with the prohibition on central bank financing of government deficits—contributed to government surpluses and to macroeconomic stability.

Simulations

Given the paucity of real world experience with balanced-budget rules—particularly at the national level—and rules limiting government deficits and debt, it is necessary to complement an assessment of their likely macroeconomic effects with two types of fiscal adjustment experiments. The first draws on the existing literature to ascertain the likely effects of the fiscal adjustment, associated with implementation of binding fiscal rules, on interest rates and growth. The other consists of a set of stochastic simulations of the effect of various fiscal rules on the short-term variability of output.

Binding fiscal rules would be expected to have, in the first place, similar macroeconomic effects as those of any fiscal adjustment, with the quantity and quality of the effects on interest rates and growth reflected in fiscal multipliers (Appendix II). Furthermore, as the fiscal adjustment under such a rule is perceived as permanent, expected increases in future output, as well as expected declines in future interest

rates and tax rates, tend to encourage present investment and consumption, while mitigating the negative withdrawal of demand. For the same fiscal shock, the multiplier can exhibit substantial variation (between negative and positive values), depending on expectations regarding the future course of policy. In general, multipliers tend to be smaller if the fiscal policy adjustment is gradual but credible. In this case, the positive credibility effects (such as lower long-term interest rates and higher future income growth) of a continuous fiscal reduction are anticipated and thus realized early in the adjustment.

Concerning the nexus between fiscal adjustment and interest rates, empirical estimates for industrial countries confirm that interest rates are sensitive to variations in the public debt–GDP ratio (Appendix II). Most researchers have found a positive relationship between interest rates and government debt, with estimates over a fairly wide range: on average, an increase in government debt equivalent to 25 percent of GDP would result in an increase of up to 500 basis points (but at least 125 points) in long-run interest rates. In any event, these results should be regarded as a lower bound of the beneficial long-run effects that may result from debt reduction arising from a permanent rule limiting government debt-GDP or deficit-GDP ratios.

A set of stochastic simulations were performed for the Group of Seven economies, on the basis of shocks derived from historical data, to ascertain the likely effect of various balanced-budget rules on the variability of macroeconomic performance (Appendix III). A basic premise underlying these simulations is that if a major source of the variability is irresponsible fiscal policy, then fiscal rules will tend to dampen macroeconomic fluctuations. If, on the other hand, output variability is the result of disturbances due to shocks other than fiscal policy, then fiscal rules will be procyclical and will tend to exacerbate these fluctuations.[67]

In general, the source of overall macroeconomic variability is a result of shocks to the behavioral equations of the model, as well as of fiscal policy, with allowance for automatic stabilizers to operate. The effect of fiscal rules on output variability is determined by the relative size and persistence of fiscal policy

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[66]See, for example, U.S. General Accounting Office (1989).

[67]At best, these results can be regarded as suggestive only, since they depend crucially on MULTIMOD providing a reasonable characterization of past economic behavior. Since the model is generally linear and most of the simulated budget rules are symmetric, average macroeconomic conditions, including the average level of public deficits and debt, are largely independent of the fiscal rule; rather, it is their variability that is affected. An effective balanced-budget rule may raise the variance of output, but it is also likely to increase policy credibility, lower interest rates, and increase the mean level of output. On the other hand, strict adherence to rules does not necessarily enhance credibility when such a policy stance is viewed as untenable. See Drazen and Masson (1994) in the context of the ERM.

shocks compared with the size of the other underlying shocks, and by their interaction with automatic stabilizers. On the whole, for most countries, the variability in the baseline simulation is fairly close to the actual variability over the period 1974–95.

The simulations were conducted for several major policy rules: a strict balanced-budget rule, enforced alternatively through adjustment in government consumption, adjustment in transfers, and tax adjustment; a no-deficit target and a 3 percent of GDP budget deficit ceiling, with allowance for automatic stabilizers when in surplus or below the ceiling, respectively; and a debt target, with allowance for short-run debt accumulation and drawdown. All rules are stylized in that they are assumed to be immediately binding.

The results suggest that, except for the most rigid (symmetric) definition of the balanced-budget rule, the simulated rules add very little variability to output as compared with variability under the baseline simulation (Table 2). An important finding is that both the no-deficit target (similar to the proposed U.S. constitutional amendment) and the 3 percent of GDP deficit ceiling (consistent with the EMU reference value) provide a sufficiently comfortable margin to allow for the operation of automatic stabilizers. In addition to providing such flexibility, the debt target has the added advantage of preventing a possible accumulation of shortfalls over time, which may occur under a deficit ceiling.[68] Therefore, none of the fiscal rules under consideration or being adopted in major industrial countries would appear to be significantly procyclical and to exacerbate output fluctuations.

[68]In many ways, this is analogous to the advantage of multiyear monetary targeting, which avoids the drift in the price level associated with inflation targeting; see Green (1996).

Table 2. Output Variability Under Alternative Fiscal Rules
(Root-mean-square error, in percentage terms)

	Baseline simulation	Government consumption adjustment (1)	Transfer adjustment (2)	Tax adjustment (3)	No deficit (4)	Deficit ceiling (3 percent of GDP) (5)	Debt target (6)
United States							
GDP	1.78	2.60	1.89	1.92	1.97	1.83	1.82
Fiscal balance	1.57	—	—	—	1.61	1.26	1.01
Japan							
GDP	3.29	5.22	3.58	3.61	3.85	3.58	3.21
Fiscal balance	2.11	—	—	—	2.02	1.70	1.81
Germany							
GDP	3.06	3.93	3.16	3.13	3.30	3.13	3.04
Fiscal balance	2.37	—	—	—	2.04	1.95	1.75
Canada							
GDP	2.34	3.02	2.44	2.45	2.46	2.35	2.35
Fiscal balance	1.70	—	—	—	1.55	1.42	1.19
France							
GDP	1.97	3.33	2.15	2.19	2.41	2.09	2.08
Fiscal balance	1.64	—	—	—	1.37	1.49	1.33
Italy							
GDP	2.76	4.51	2.99	3.00	3.35	3.13	3.30
Fiscal balance	4.00	—	—	—	4.64	3.89	2.03
United Kingdom							
GDP	3.33	5.94	3.78	3.81	4.44	3.93	3.69
Fiscal balance	2.44	—	—	—	1.87	1.91	2.04

Source: Appendix III.
[1]All rules are assumed to be binding; except for (2) and (3), the rules are assumed to be met through changes in government consumption.

IV   Evaluation of Fiscal Rules

The preceding section suggests that appropriate rules-based fiscal policies could correct the deficit bias—often encountered with discretionary policies—and lead to improved economic performance. On the basis of limited experience, including the recent convergence toward the EMU reference value for deficits, it appears that adherence to fiscal rules can help moderate inflation and reduce interest rates, and thereby contribute to investment and growth. As noted above, in developing economies, rules that restrict government borrowing from domestic sources may, however, be associated with a significant buildup of external indebtedness. According to the experience of the U.S. states and stochastic simulations for the advanced economies, fiscal rules contribute only marginally to short-run variability in output provided they allow for the operation of automatic stabilizers. As with many adjustment episodes (including those relying on discretionary measures), fiscal rules often have been implemented through cuts in investment expenditures, tax increases, and various one-off measures, rather than through much-needed structural reform. Thus, the favorable effect of fiscal rules on growth has not been fully realized.

Nevertheless, as always, it is difficult to judge the counterfactual to fiscal rules. Since, in principle, the same results could have obtained with the implementation of sensible discretionary policy, the question that must be explored is why the latter occurred in so few cases. In an attempt to answer this, the present section discusses the political economy of fiscal rules and provides an outline of the desirable characteristics of a fiscal rule and the circumstances in which it should be adopted. The section concludes with an inquiry as to the scope for IMF involvement in this area.

Political Economy

Probably the most powerful argument for fiscal rules centers on their political economy aspects. According to this argument, democratically elected (especially coalition) governments have a built-in bias to deficits, and thereby toward redistributing income from future (mostly unborn) generations to the present generation of voters. Because of their sensitivity to electoral pressures, most of these governments are incapable of correcting the bias without a higher-order—possibly constitutional—constraint on fiscal policy.[69] The difficulty they face in taking corrective action is, of course, exacerbated in countries with aging populations and rigid social entitlements.

Similarly, it can be argued that the potential benefits of fiscal rules over discretionary policies ensue from the credibility of lasting commitment to fiscal discipline or, in other words, from the time consistency of rules in the eyes of rational private decision makers.[70] Enhanced credibility of the government (1) facilitates access to financial markets at a much lower cost for the government, as well as for all economic agents, and (2) ensures the support and confidence of the electorate. The upshot is likely to be a virtuous circle of sustained macroeconomic stability, sustained investment, and growth.

Setting statutory—preferably legal or constitutional—constraints on key fiscal performance indicators may be a necessary, but not sufficient, condition for the successful pursuit of a fiscal policy rule; that is, a formal rule, by itself, may not guarantee fiscal discipline (such a case being the Netherlands in the 1970s). For the rule to be effective and fully credible, it must be underpinned by a widely shared commitment, embraced over time by a succession of governments (of differing political persuasions), and observed as intended.[71] Such commitment is usually

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[69]For an elaboration of this argument, see Buchanan and Wagner (1977). Independently, Persson and Tabellini (1990) provide formal support to the argument in the context of a dynamic fiscal policy model that casts the government and the electorate in a principal-agent relationship.

[70]Building on the demonstration in Kydland and Prescott (1977), Cukierman and Metzler (1986) argue that a constitutional rule is necessary to ensure that a politically motivated government facing elections abides by a precommitment to fiscal discipline, and, by contrast, that an apolitical social planner who maximizes expected social welfare honors such precommitment equally without such a rule.

[71]These conditions are also essential for the successful implementation of a medium-term adjustment plan. Indeed, lack of sufficient commitment contributed, for example, to the failure of the Gramm-Rudman-Hollings Act in the United States.

either based on the memory of a past major financial crisis (as in Indonesia in the mid-1960s)[72] or inspired by a future challenge (aging population in Switzerland) or goal (creating a common currency area under EMU), and must be repeatedly confirmed in various ways by the authorities.[73] Without sufficient commitment, the authorities, in some cases with the implicit consent (collusion) of the legislature or the judiciary, may attempt to circumvent the rule through a variety of available means, most commonly by resorting to creative accounting schemes or by exploiting ambiguities in the institutional coverage of the rule.[74] Conversely, without a formal fiscal rule, commitment alone may not ensure prudent policy action; a committed but weak government may need to invoke a fiscal rule for implementing certain unpopular, yet necessary, adjustment measures.

To be fully credible, a fiscal rule must pass two tests: it must have a track record of satisfactory compliance and it must be supported by well-specified future policy measures, including, if necessary, deep structural reforms. At present, there are relatively few cases (mainly some U.S. states) that meet the first test, besides the widely adopted prohibition of central bank financing of government deficits. The second test has yet to be passed in many countries that have enacted fiscal rules.

Adherence to fiscal rules over the medium to long run would often be problematic unless major structural reforms were undertaken, most importantly in the area of mandatory social entitlement programs.[75] As reflected in the present value of net unfunded liabilities of social security systems,[76] population aging, combined with rising health care costs, poses for some advanced economies a formidable burden for future compliance with fiscal rules. To realize fully the credibility gains from fiscal policy rules in these countries, it is essential to create an early consensus for reforming public pensions and health care programs and to initiate implementation of these reforms, rather than to rely on one-off or cosmetic steps to launch the rule while postponing the actual adjustment.

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[72]Other examples include the U.S. states prior to the Civil War, and Japan and several European countries after World War II. The experience of very high inflation, external indebtedness, and contraction of output—sometimes reflected in widespread shortages—can provide the necessary resolve for the authorities, buttressed by popular consensus, to adopt fiscal rules.

[73]The success of any fiscal adjustment program requires consistency between official pronouncements and actual policy measures; see Tanzi (1994).

[74]See Kopits and Craig (1998).

[75]The critical assessment of the efforts under way in the United States to attain the balanced-budget target (not subject to a rule) in 2002, discussed in Reischauer (1997), would be even more relevant for attempts to adhere permanently to that target under a rule.

[76]See Roseveare and others (1996) and Kopits (1997).

Characteristics of a Model Fiscal Rule

The foregoing assessment of existing and proposed rules implies the principal characteristics of a model fiscal policy rule or set of rules. Ideally, a fiscal rule should be well defined, transparent, adequate, consistent, simple, flexible, enforceable, and efficient. In any case, the rule should, preferably, be fully adopted following a process of convergence.

A fiscal rule should be *well defined* as to the indicator to be constrained, the institutional coverage, and specific escape clauses, in order to avoid ambiguities and ineffective enforcement. On these grounds, for example, a rule defined in terms of the overall balance is preferable to one aimed at the current balance (requiring balance between current revenue and current expenditure), as investment expenditure suffers from both conceptual and measurement weaknesses. Also, limitations in the institutional coverage of the government budget—excluding off-budget operations and the cost of quasi-fiscal activities of public enterprises—are an invitation to leakages. It is for this reason, for instance, that the proposed deficit ceiling in Costa Rica is intended to cover the entire public sector. As an exception, however, it may be desirable to exclude social security funds from a balanced-budget rule (as it was implemented in Japan) to ensure the accumulation of surpluses to cover future contingent liabilities. Finally, the circumstances for invoking escape clauses need to be defined as precisely as possible in advance. Attempts at specifying the circumstances that permit noncompliance with the statutory limits on budget deficits have been made in the Stability and Growth Pact and in the proposed Swiss and U.S. constitutional amendments.

An essential characteristic of a durable fiscal rule is *transparency* in government operations, including accounting, forecasting, and institutional arrangements.[77] Opaque fiscal policy intentions and recourse to creative accounting or misrepresentation of the true magnitude and timing of future fiscal obligations—usually in the form of commitments and contingent liabilities—are likely to undermine the rule and the popular support that it requires. Among the countries that set a target or ceiling on the budget balance, New Zealand stands out as having the most transparent approach—with emphasis on accountability for fiscal performance—and the most likely to command the support of the electorate.

Fiscal rules should be *adequate* with respect to the specified proximate goal. If the goal is to reduce the inflation rate and the extraction of revenue from seigniorage, the rule should, as is done in many countries, restrict government access to central bank

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[77]See Kopits and Craig (1998).

financing or, as in Indonesia, prohibit domestic borrowing altogether. However, if, in addition, the objective is to avoid a buildup of external debt, then the constraint should be imposed on the budget balance as a whole. Alternatively, sustainability of the public debt–GDP ratio would require a rule expressed as a maximum and nonincreasing debt ratio—or, more precisely, as a minimum primary surplus, in proportion to GDP, that is equivalent to or larger than the projected difference between the interest rate and the growth rate in the economy.

A closely related criterion is for a set of fiscal rules to be *consistent* internally, as well as with other macroeconomic policies or policy rules. A fixed nominal exchange rate should be accompanied by an explicit restriction on monetizing budget deficits. Similarly, a currency board arrangement implicitly imposes a limitation on domestic bank financing of budget deficits. The EMU fiscal reference values for debt and deficits are numerically consistent under certain reasonable macroeconomic assumptions.[78]

Rules should be characterized by *simplicity* to enhance their appeal to the legislature and to the public.[79] This partly explains the strong political support for the proposed balanced-budget constitutional amendment in the United States, as compared, for example, with the Netherlands' structural deficit limit, which was derived from periodically updated estimates of the output gap. Similarly, prohibition is superior to limits on central bank financing of budget deficits because the latter requires fine-tuning specific numerical ceilings, usually determined as a proportion of lagged government revenue or expenditure.

Rules must be *flexible* to accommodate exogenous shocks beyond the control of the authorities. Flexibility can be obtained with balanced-budget rules defined over a medium-term horizon by requiring a structural or cyclically adjusted balance, thus permitting explicitly short-run cyclical deviations from balance, through the operation of automatic stabilizers. Such broadly defined rules were followed in the Netherlands, adopted in New Zealand, envisaged under the Stability and Growth Pact (constrained by the deficit reference value), and proposed in Switzerland.[80] In a

different context, central bank advances to the government during the year (and subject to full repayment by the end of the year) provide some flexibility under a rule prohibiting government access to central bank credit.

A fiscal rule should be *enforceable*. Country experience indicates that institutional arrangements, including penalties, vary widely across countries without a clear pattern as to which arrangement is the most effective. An implication is the need for constitutional or legal statutes, possibly accompanied by penalties for noncompliance and authority for enforcement, that are most appropriate for each country. The consequences of noncompliance, whether in the form of financial, judicial, or reputational sanctions, should be clearly agreed upon. Needless to say, implementation of the rule must be within the control of the government. However, there is a case for appointing an independent authority—a role that can be assumed ultimately by the courts—to be responsible for monitoring compliance with the rule and with the underlying accounting and procedural standards.

Most rules cannot last for long unless they are supported by *efficient* policy actions. A balanced-budget target can be met at a given time through recourse to one-off measures, such as those recently introduced by some EU member countries to converge to the EMU reference values. However, these should be regarded only as temporary stopgap measures, allowing time for the preparation and implementation of more fundamental reforms to ensure continued adherence to the rule in the future. From this perspective, as suggested above, a fiscal rule may be viewed as a catalyst for fiscal reforms that would be necessary anyway to ensure sustainability.

None of the rules reviewed in this paper combines fully all desirable attributes, partly because of the inevitable trade-offs among some of them. For example, the more flexible a rule, the less likely it is to be simple, as illustrated by various structural or cyclically adjusted balanced-budget rules. More generally, the credibility of a rule is likely to be stronger in the case of a simple, transparent, consistent, and enforceable rule. In addition, as with other rules-based policies, there is a distinct trade-off between credibility and flexibility.[81] Indeed, at the limit, a highly flexible rule borders on discretion. Subject to these caveats, the approach adopted by New Zealand and by EMU participants, as well as the rules under consideration in Switzerland, all seem to display most of the above characteristics. The case of New Zealand is remarkable for its high degree

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[78]At an annual nominal GDP growth rate of 5 percent (assuming 3 percent real growth and 2 percent inflation), in the long run, observance of a fiscal deficit limit of 3 percent of GDP will result in a public debt of 60 percent of GDP. See the derivation in Buiter, Corsetti, and Roubini (1993).

[79]See Buchanan and Wagner (1977).

[80]Consistent with the simulation results reported in Section III, Buti, Franco, and Ongena (1997) estimate that, on average, a 1 percent fall in GDP results in an increase of slightly over ½ of 1 percent of GDP in the fiscal deficit of EU countries, on the strength of automatic stabilizers. Hence, for a country targeting a balanced budget at potential output, a 5 percent shortfall from trend GDP would result roughly in a deficit equivalent to 3 percent of GDP.

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[81]As a case in point, in the area of exchange rate policy rules, under a fixed or preannounced crawling exchange rate, the wider the band around the central rate, the greater is the risk that the anchor may not be credible. See, for example, Helpman, Leiderman, and Bufman (1994).

of transparency and flexibility, perhaps at some cost in enforcement capacity and simplicity. Although in several EU member countries the EMU fiscal reference values have been pursued with less efficient policy measures, they are carefully defined, adequate, and consistent, yet sufficiently simple, flexible, and enforceable. On the other hand, the main advantage of the U.S. constitutional amendment is its simplicity, while lacking above all sufficient flexibility.

There have been a number of cases where, almost immediately following a severe financial crisis, governments have introduced a rules-based regime, including a fiscal rule, to restore severely eroded credibility. Although necessary under the circumstances, such an approach is far from ideal, in view of the likely difficulty of supporting the durability of the rule with a set of structural reforms built on broad popular consensus. By and large, it is preferable to prepare well in advance for the adoption of a fiscal rule through a carefully mapped out convergence plan. Such gradual implementation, for example, is being followed in Switzerland and Japan, where the authorities have set a budget target (balance or deficit limit) to be met in the context of a medium-term adjustment plan, prior to formal introduction of the rule. Similarly, New Zealand had followed a successful discretionary fiscal adjustment path, netting budget surpluses, over several years before enacting the rule. Somewhat less satisfactory was the recent experience of a number of EU members, where convergence to participation in EMU has been aimed at barely meeting the deficit reference value rather than the medium-term balanced-budget target specified in the Stability and Growth Pact.[82] Broadly speaking, these examples suggest that a fiscal rule with many of the above characteristics could be most effective after discretionary policy has been successful at restoring or achieving fiscal discipline. Again, however, discretionary action during convergence should, to the extent possible, consist mainly of structural reforms that will ensure the durability of the rule.

Implications for IMF Involvement

Potentially useful lessons can be derived from the experience with, or from the likely future prospects for, fiscal policy rules in a number of IMF member countries. Some of these lessons relate to IMF involvement in fiscal policy issues through surveillance, as well as financial or technical assistance.

Generally, in line with its concern for fiscal discipline, the IMF has supported fiscal policy rules adopted by member countries as long as such rules broadly conform with the foregoing characteristics of a model fiscal rule. Recently, for example, through Article IV consultation discussions with EU members, the World Economic Outlook (WEO) exercise, and consideration of special Executive Board papers, the IMF has closely monitored and encouraged convergence toward the fiscal criteria under EMU. At the same time, it has alerted the authorities to the risks involved if certain fundamental conditions for EMU participation are not in place or if automatic stabilizers are not allowed to work in the short run. Also, for instance, in the Article IV consultation discussions with Switzerland, the IMF has expressed support for the constitutional amendments under consideration.

In the context of stand-by arrangements, member countries have been encouraged to maintain or approach fiscal balance, with a view to abiding by the implicit fiscal rule under currency board arrangements (Argentina and Estonia) or in preparation for an explicit fiscal rule (Costa Rica). More often, the IMF has advocated limiting budget deficit financing to nonbank sources and, in particular, prohibiting the recourse to central bank financing.

Although on a relatively modest scale, technical assistance in public debt management provided by the IMF's Fiscal Affairs and Monetary and Exchange Affairs Departments has included recommendations for diversifying budget deficit financing to nonbank sources and phasing out financing from bank sources. In a few cases, member countries have asked the Fiscal Affairs Department to review an existing fiscal policy rule and suggest improvements.

In general, advice in this area is guided primarily by the premise that the pursuit of fiscal rectitude, aimed at underpinning sustained growth, is likely to be more beneficial to the member country in question and the rest of the world than attempts to engage in short-run international coordination of fiscal policies—through fine-tuned discretionary action—at the risk of sacrificing the country's long-run sustainability.[83] In this context, if a country chooses to adopt a fiscal policy rule, the IMF seeks to provide a balanced and realistic assessment while raising the authorities' awareness of the potential downside associated with either noncompliance or compliance through one-off measures. Above all, it is necessary to stress the importance of following a well-designed rule (with the characteristics outlined above), both in letter and in spirit. Absent the appropriate conditions, the authorities are usually encouraged to introduce a credible medium-term fiscal adjustment program.

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[82]Thus, although, in principle, the pact provides sufficient flexibility under the deficit reference value, in practice, some of these countries—because they are entering EMU with deficits close to 3 percent of GDP—are confronting the need to comply with a rigid ceiling.

[83]See, for example, Fischer (1988) and Tanzi (1989).

Only upon satisfactory performance under such an adjustment program or as part of a comprehensive and consistent set of macroeconomic policy initiatives—with or without support by the IMF—should the option of introducing a rule be seriously considered by the authorities. If possible, as suggested above, a formal rule should be implemented following a successful discretionary adjustment.[84]

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[84]For instance, this is the approach being followed by Costa Rica in preparing for the introduction of its proposed constitutional amendment.

The IMF's Fiscal Affairs Department, if requested, stands ready to comment on the design and operation of fiscal policy rules. The appropriate vehicle for the latter is technical assistance in macroeconomic fiscal management, which is already being provided to some member countries. In addition, assistance can be provided to help design or review rules for subnational governments in the context of improving the assignment of revenue and expenditure among different levels of government. Assistance in enhancing the effective operation of rules, including improving the budget process and the transparency of government accounts, is also available.

V Summary and Conclusions

A number of advanced and developing economies have adopted, or are planning to adopt, rules that impose a permanent constraint on fiscal policy—expressed as a numerical ceiling or target—in terms of summary indicators of overall fiscal performance. The rationale for fiscal policy rules (mainly in the form of various balanced-budget rules, borrowing rules, and debt rules) rests primarily on the need for macroeconomic stability, support of other financial policies, long-term sustainability, reduction of negative spillovers, and overall policy credibility. In principle, most of these objectives can be met with discretionary fiscal measures—if sought by a farsighted electorate—within the context of an annual budget or a medium-term adjustment plan. However, many fiscal consolidation programs undertaken to correct the persistent budget deficits experienced over the past two decades have been less than successful, suggesting that, although discretionary policies may be theoretically superior, well-designed fiscal policy rules may offer a useful second-best solution to counter political pressures on fiscal policymaking. Indeed, the strongest case for fiscal rules can be made on political economy grounds, namely, that the rules are useful in correcting the bias of democratically elected governments to run budget deficits and to accumulate public debt at the expense of future generations. In technical terms, a major advantage of rules-based fiscal policy over discretionary policy is time consistency.

Fiscal policy rules can be implemented under a variety of institutional arrangements. Although the statutory basis usually consists of a constitutional, legal, or treaty provision, it may be equally effective in the form of a regulation or a policy guideline. In fact, the instrument selected by a given country is largely a function of custom, legal precedent, or convention. Enforcement and monitoring of compliance preferably are to be exercised by an authority independent of the executive branch of government. There are cases, however, where the department or agency responsible for budget execution, under the authority of the ministry of finance, can be entrusted with this function if subject to sufficient public accountability and transparency. A critical aspect of a fiscal rule is the method of implementation, consisting of the following elements: whether the rule imposes only an ex ante obligation or also an ex post requirement of compliance; the availability of contingency measures during the budget execution; the provision for safeguards or escape clauses; and the effectiveness of penalties for noncompliance.

Actual experience with fiscal policy rules, albeit limited, has been mixed. Prohibition or limits on government access to central bank financing can be useful, especially in developing and transition economies, for restraining inflationary pressures. Prohibition on domestic government borrowing also can be effective, through lower interest rates, in inducing investment and contributing to sustained growth, although at the risk of increased external indebtedness. Recently, the convergence toward the EMU reference value on government deficits seems to have contributed to significant downward pressure on interest rates, especially in some highly indebted EU member countries—confirming the sensitivity of interest rates to balanced-budget rules observed in the U.S. states. However, as with many fiscal adjustment episodes (including those based on a discretionary approach), fiscal rules often have been met through cuts in investment expenditures, tax increases, and various one-off measures, rather than through lasting structural reform of public finances. Thus, given these design and operational problems, the potential contribution of fiscal rules to sustained growth has not been fully realized.

Evidence from subnational governments in the United States indicates that adherence to a balanced-budget rule has little or no influence on output variance. This finding is supported by simulations performed on advanced economies; these simulations show that the variability of output associated with a deficit ceiling or a no-deficit rule—envisaged, respectively, under EMU and the proposed U.S. constitutional amendment—is only slightly larger than in the absence of a rule with automatic stabilizers fully allowed to operate. Similarly, targeting a public debt ratio, with room for accumulation or drawdown of contingency reserves, provides sufficient flexibility.

As part of their favorable effect on sustainability, well-designed fiscal rules—as compared with discretionary policies, which lack time consistency—can confer important credibility gains, reflected in cheaper access to financial markets and in increased support from the electorate. To achieve credibility, policymakers must display commitment through compliance with the rule in a transparent manner, instead of through recourse to creative accounting or exploitation of institutional ambiguities. Credibility is created on the basis of both a satisfactory track record of compliance with the rule and commitment to future policy measures, including necessary structural reform, to support the rule.

Based on the above assessment, it is plausible to identify the principal characteristics of an ideal fiscal rule. Such a rule should be well defined as to the selected indicator, institutional coverage, and escape clauses; highly transparent; adequate with respect to the specified goal; consistent internally as well as with other macroeconomic policies; sufficiently simple in the eyes of the public; flexible enough to accommodate cyclical fluctuations and exogenous shocks; enforceable in the given environment; and supported by efficient policies, including structural reforms, rather than one-off measures. Although in some cases rules-based policies have been introduced to correct severe macroeconomic imbalances, in general it is preferable to follow a gradual convergence—through a multiyear fiscal adjustment—prior to adopting a fiscal rule.

In the context of surveillance and program design, the IMF has been inclined to support the adoption of rules by a member country in broad conformity with the above characteristics if the basic conditions for fiscal discipline already prevail. Indeed, it has been necessary to temper encouragement with caution as to the possible risks, absent such conditions. If requested, the IMF stands ready to provide technical assistance in the design and operation of fiscal policy rules, as well as in the implementation of measures to support such rules.

Appendix 1 Major Fiscal Policy Rules

This appendix surveys existing and proposed constraints on fiscal policy that can be defined as fiscal policy rules (see Section I).[85]

Budget Balance

Probably the best known fiscal policy rules are those involving balance between government revenue and expenditure. This can be specified as the overall balance, the current balance, or the operating balance to be met each fiscal year. Alternatively, it can be defined over a longer period, in terms of a structural balance or a cyclically adjusted balance.

In the postwar period, in several industrial countries, governments were subject to various balanced-budget rules. In Germany, Japan, and the Netherlands, the rule was defined in terms of the current balance—government limited to borrowing capital expenditures only—commonly called the "golden rule."[86] Subsequently, in the Netherlands, the government was committed to a structural deficit ceiling. Among developing countries, Brazil's balanced-budget requirement applies only to the central government, although certain forms of borrowing are treated as revenue.

According to the Maastricht Treaty, members of the European Union wishing to participate in Stage 3 of EMU (monetary unification, effective 1999) are required to contain their general government deficit at a level not in excess of 3 percent of GDP by 1997, following a convergence plan under way since 1992. In addition, the Stability and Growth Pact calls for "a medium-term budgetary position close to balance or surplus," subject to the 3 percentage point reference value for the deficit in any year, so as to "allow for automatic stabilizers to work, where appropriate, over the whole business cycle."[87] Largely accrual-based recording standards have been issued for this purpose, under the so-called excessive deficit procedure,[88] and compliance with this requirement will be verified ex post, after the end of the calendar year.

In New Zealand, the authorities are required to ensure that once a prudent public debt–GDP ratio (see below) is reached, it is maintained, on average, over a reasonable period of time, through balance between operating expenditure and revenue of the public sector.[89] The requirement allows for short-term cyclical deviations—albeit without specifying whether due only to automatic stabilizers or to discretionary actions as well—from the balanced-budget position. Furthermore, tax rates are required to remain stable over time, implying that the adjustment should take place on the expenditure side.

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[85]Medium-term fiscal adjustment plans that impose a constraint on a fiscal aggregate only for the duration of the government—including a fixed limit on real government expenditures introduced in the early 1980s in the Netherlands or more recently in France, and the minimum primary surplus specified in Belgium—are not intended to be permanent and thus do not qualify as fiscal rules in this paper.

[86]The term "golden rule," originated by Phelps (1961), derives from neoclassical growth theory where it is used to describe the optimal growth that gives the maximum level of sustainable consumption per person in an economy. As Musgrave and Musgrave (1989, p. 678) argue, under this concept, "efficient division of output between capital and labor is determined by market forces, such that the rate of return on investment is equated to the time preference of consumers. Budget policy in this case should provide for balance in the current budget so as not to affect the overall division between consumption and capital formation. The capital budget in turn should be loan financed so as to allocate part of savings to investment in the public sector." Following a simpler argument, borrowing for public investment can be justified under the assumption that the yield from such investment is sufficient to meet the resulting debt-service obligation. The application of this rule, however, is plagued with the difficulties of defining and measuring public investment; see Kopits and Craig (1998, Appendix II).

[87]See European Commission (1996, p. 23).

[88]See European Commission (1995).

[89]The government is legally required "to maintain total Crown debt at prudent levels by ensuring that, on average, over a reasonable period of time, total operating expenses do not exceed total operating revenues. . . . In the short term, cyclical factors may well result in temporary, and desirable, surpluses or deficits"; see New Zealand Treasury (1995, p. 1). (The major difference between the operating and the overall balance is that under the former—following accrual-based accounting—capital spending is recorded in terms of depreciation allowances.) Initially, this rule was interpreted by targeting a budget surplus, equivalent to 3 percent of GDP, consistent with the target debt ratio.

In Switzerland, the authorities have proposed constitutional amendments whereby the federal government finances would be balanced over the business cycle. The balanced-budget amendment would become effective in 2001, at which time the authorities would have achieved balance.[90] It is understood that the lower levels of government would cooperate in such an endeavor in order to halt the increase in the public debt–GDP ratio. In the United States, the balanced-budget amendment to the constitution, proposed on several occasions (in 1982, 1995, 1997) but so far rejected, would require the government to balance the federal budget each fiscal year. The rule could be waived only by a three-fifths majority of each house of Congress or in the case of an armed conflict or a threat to national security. The rule thus precludes both an explicit role for automatic stabilizers and concrete guidelines on how the rule is to be met.

A similar constitutional amendment is under consideration in Costa Rica. Intended for implementation by 1999, this amendment would limit the overall deficit to 1 percent of GDP or less. Coverage of the rule would extend to the entire public sector, including the public financial institutions, to capture sizable quasi-fiscal activities. Although details of implementation remain to be worked out, it is clear that a consensus has emerged to end the politically induced fluctuations in fiscal performance that have characterized Costa Rican public finances for more than two decades.

Among countries with federal systems, subnational levels of government in Germany and in the United States are subject to the so-called golden rule: current revenue and current spending must balance each fiscal year. Nonbank borrowing is permitted to finance investment projects under certain well-defined conditions. In Germany, most *Länder* are subject, in principle, to the golden rule. In practice, however, there has been considerable latitude in defining current and capital expenditures. Moreover, the rule is applied to the approval of the budget rather than to the execution. In the United States, all state governments (with the exception of Vermont) follow the current balanced-budget rule under varying degrees of stringency. Whereas in certain U.S. states it is sufficient to enact a balanced budget, in others it is also necessary to implement it. A number of states do not permit carryover of unspent appropriations or of payables from one fiscal year to the next to meet the rule. Some states prescribe the creation and utilization of contingency reserves, and most states impose various kinds of limits on the amounts and types of debt that may be issued.

More recently, also at the subnational level, in Canada, six provincial governments (Alberta, Manitoba, New Brunswick, Nova Scotia, Quebec, and Saskatchewan) and two territories (Northwest and Yukon) have enacted balanced-budget rules. They range in stringency from requiring actual overall balance or limiting deficits (equivalent to 1 percent of expenditures or revenues) each year to prescribing current balance over a four- or five-year period. Escape clauses, permitting deficits, can be invoked in the event of an emergency or disaster (or in one case, a significant revenue fall beyond the control of the authorities). Some governments are required to observe the rule only on an ex ante basis; for others, the obligation extends to realized budget outcomes as well.

Borrowing

Some of the oldest functioning fiscal rules consist of prohibition of or limits on government borrowing. The borrowing constraint usually specifies the source of financing (central bank or all domestic sources) and the level of government (national or subnational) to which it applies.

Most of the advanced economies and some developing economies prohibit direct central bank financing of the general government as well as the rest of the nonfinancial public sector. Under the Maastricht Treaty, such a rule went into effect at the beginning of Stage 2 for all EU member countries participating in EMU. Normally, this rule leaves the extension of short-term advances to the government to the discretion of the central bank, as evidence of the bank's independence. The rule is somewhat less commonly found in developing countries and economies in transition.[91] Under a strict variant, in Chile and Ecuador, both direct and indirect access to central bank credit is prohibited. Instead of outright prohibition, in some developing and transition economies (in the CFA franc zone, Brazil, Egypt, Morocco, the Philippines, and the Slovak Republic), central bank credit is limited to a proportion (usually between 5 and 20 percent) of government revenue in the preceding year.[92]

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[90]Under one option under consideration, the rule would require a surplus (in the form of excess revenue) in the event of an above-average GDP growth rate (above 1.8 percent a year) and allow for a deficit (in the form of excess expenditure) if growth were to fall significantly below the average rate (below 0.5 percent a year). See Switzerland, Federal Council (1995).

[91]For a comprehensive survey, see Cottarelli (1993).

[92]This proportion, which essentially limits base money creation through the financing of government deficits, is determined by the debt-servicing capacity of the government, as reflected in revenue performance. Alternatively, a few countries set the ceiling in terms of potential revenue or actual expenditure.

Perhaps a better known rule prohibiting domestic government borrowing operates in Indonesia, having been introduced in the mid-1960s in the wake of an external payments crisis and high inflation. The coverage excludes certain off-budget operations, particularly those financed with oil export receipts or borrowing from abroad.

In many countries, there are limits on borrowing by lower levels of government.[93] In a number of them, borrowing is at most permitted for investment (Germany, Switzerland, and the United States) or as a proportion of revenue (Canada) or expenditure (Korea). In some developing countries (The Bahamas and Chile), borrowing by subnational governments is not permitted; in others (Mexico), the restriction applies only to external borrowing. Recently, in some economies in transition (Albania, Bulgaria, Poland, and Romania), borrowing prohibitions have been imposed in the face of weak overall institutional controls on local government finances.

Debt

A fiscal policy rule may consist of a limit on, or a target for, the stock of public debt as a proportion of GDP. At present, under a broad definition, the following two cases can be considered rules.

In the European Union, the Maastricht Treaty calls for a ceiling on the general government gross debt, set at a reference value of 60 percent of GDP, for participation in EMU. However, there is room for interpretation, especially in determining whether a country is making sufficient progress toward the reference value. The ceiling permits using privatization revenue for gross debt reduction—even though such an operation leaves net worth, with properly valued assets, unchanged. Furthermore, excluded from the debt ceiling are publicly guaranteed liabilities contracted by the rest of the public sector or the private sector, accrued liabilities under government pension schemes, and other contingent liabilities, including unfunded social security obligations for future pensions and health care benefits.

In New Zealand, the authorities are required to announce a medium-term plan for reducing the public debt ratio to a prudent level.[94] Accordingly, the previous government declared its commitment to reduce the net public debt to 20 percent of GDP in the medium term, as well as to maintain an adequate level of public sector net worth so as to provide a buffer against future unanticipated adverse developments. Coverage of the net worth component of the target extends to all outstanding liabilities, including the net actuarial value of government employee pensions under defined-benefit schemes and other quantifiable contingent liabilities and commitments, though excluding unfunded liabilities associated with public pension programs and other nonquantifiable liabilities. In Canada, as part of balanced-budget legislation, three provinces have imposed debt-reduction requirements. These provisions are specified in terms of an explicit target (Alberta) or are to be determined by the government within broad guidelines (New Brunswick and Quebec).

Reserves

In some ways analogous to a debt rule, a fiscal rule may prescribe a target accumulation of reserves (presumably in terms of liquid assets) for a future contingency. The contingency may take the form of old-age protection, insurance for depletion of a natural resource, or insurance against an unanticipated fall in key commodity prices. Such a rule is usually limited to a target contingency reserve ratio, in the context of an extrabudgetary fund.

To provide minimum funding for future pension claims in the United States, the social security trust funds (Old-Age, Survivors' and Disability Insurance, or OASDI) are targeted to accumulate contingency reserves equivalent to 100–150 percent of annual benefit payments. According to recent projections, this threshold reserve-benefit ratio is forecast to be maintained only until about 2025, unless changes in benefits or payroll contribution rates are made. In Canada, the Canadian Pension Plan is required to reach and maintain an annual reserve-benefit ratio of at least 200 percent. Under a new financing plan, the ratio is projected to increase to 500 percent over the long term. In Germany, the public pension reserve must maintain at least one month of benefits.

Instead of setting a minimum or target level of reserves, Chile's Copper Compensation Fund is required to accumulate excess revenue from copper exports, as a function of the difference between a medium-term reference price (determined by a six-year moving average of the export price) and the current export price of copper, and of various other factors. In the event of negative price differentials, transfers are usually made from the fund's reserves to the budget.

Implicit Rules

Implicit fiscal policy rules can be broadly derived from monetary or exchange rate rules. Perhaps the

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[93]See Ter-Minassian (1996).

[94]A similar legal requirement, to maintain general government debt and contingent liabilities at prudent levels, is under consideration in Australia.

most common rule is a fixed nominal exchange rate—and, to a lesser extent, a preannounced crawling peg—which requires that the budget be kept close to balance, particularly given a fully open capital account and an undeveloped government securities market. Many IMF member countries—under the Bretton Woods system, the entire membership—have been, or currently are, relying on such an exchange rate rule, which imposes a high degree of fiscal discipline. However, the experience of Mexico, which until end-1994 held on to a preannounced crawling peg, illustrates that even a nearly balanced budget may not be sufficient to ensure the sustainability of a strict exchange rate rule when it becomes overvalued.

Much less frequent is a currency board arrangement,[95] which permits, in principle, government borrowing from the domestic banking system in addition to external and domestic nonbank sources but only at a high cost in terms of the crowding out of private activity, as the monetary expansion must be backed by foreign exchange inflows. Accordingly, in Argentina and Estonia, under recently established currency board arrangements, public finances (inclusive of privatization receipts) are to be kept close to balance, given limited access to alternative (domestic nonbank and external) sources of finance.

Other Rules

Specialized fiscal rules—not the main focus of this paper—applied to certain categories of government revenue or expenditure have their own ratio-

nale. A limitation, for example, on primary expenditure at constant prices or on the share of primary expenditure to GDP is usually driven by an effort to contain or reduce the size of government in the economy.[96] Rules requiring the earmarking of revenue for particular purposes or mandating a certain composition of expenditures over time (such as limiting defense outlays) are usually predicated on microeconomic grounds and may be difficult to maintain over an extended period.

Although rules on the composition of tax revenue or of primary expenditure may be arbitrary or inconsistent with rules encompassing aggregates, their adoption is justified in certain circumstances. Rules requiring balance between complementary outlays, for instance, on primary and secondary education—or between current (operations and maintenance) and capital expenditures on health care facilities or on highways—have a clear economic justification. The earmarking of certain user charges for the provision of specific services (for example, toll roads) or of payroll contributions for specific social insurance funds can be useful in creating both support and accountability for such programs. Rules on minimum tax rates—for example, value-added tax rates within the EU—within a federal or confederate context may be necessary to prevent undesirable tax competition among jurisdictions. In addition, explicit revenue-sharing arrangements—including apportionment rules for the corporate income tax base among subnational jurisdictions—or formula-based equalization transfers among different levels of government are intended as a distributive instrument among different tax jurisdictions.

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[95]See Baliño and Enoch (1997).

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[96]Friedman (1995) favored the U.S. balanced-budget amendment, which, as proposed in 1982, incorporated a revenue limit as a means of containing the size of government spending.

Appendix II   Macroeconomic Effects of Fiscal Restraint

An important rationale for fiscal policy rules is the elimination of the deficit bias experienced in many countries over the last two decades or so. This appendix summarizes the theoretical context and empirical findings as regards the effects of fiscal retrenchment on interest rates and growth, which are of particular relevance in ascertaining the likely consequences of fiscal rules.

At an elementary level, a hypothetical increase in government saving, in the form of reduced government purchases or lower disposable income (from higher taxes or reduced transfers), has a negative direct effect on aggregate demand. An ex ante increase in government saving leads to an increase in national saving, lower interest rates, a crowding in of private investment, and higher output in the long run.[97] As fiscal rules are expected to mitigate or remove the deficit bias inherent in the fiscal policy of the industrial countries, it is useful to examine existing empirical estimates of the macroeconomic consequences of fiscal retrenchment.

There are several factors that determine the quantity and quality of these effects, as reflected in fiscal multipliers, including monetary and exchange rate policy, openness of the economy, the form of fiscal adjustment (that is, government consumption, transfers, and taxes), and exogenous credibility effects that alter the risk of default. Standard Keynesian models with backward-looking expectations, developed in the 1970s, yield negative short-run effects, with multipliers often greater than 2 that last several years.[98] In more recently developed models that incorporate intertemporal budget constraints and rational expectations, fiscal multipliers reflect various (often opposite) effects (Table 3). Although the negative direct demand effect is still present, the total effect critically depends on the expectation of future

policy action. If fiscal adjustment is perceived as permanent, expected increases in future output, as well as expected declines in future interest rates and tax rates, tend to encourage present investment and consumption, while mitigating the withdrawal of demand. For the same fiscal shock, the multiplier can exhibit substantial variation (between negative and positive values), depending on expectations regarding the future course of policy. In general, multipliers tend to be smaller if the fiscal policy adjustment is *gradual* but *credible*. The positive credibility effects of a continuous fiscal reduction (lower long-term interest rates and higher future income growth) are anticipated and thus realized today. These points have been illustrated by two recent fiscal simulations for Germany and the United States in the context of the IMF's MULTIMOD model.[99]

In addition, the *magnitude* of a fiscal retrenchment may have an influence on its macroeconomic effects; a large fiscal adjustment is more likely to signal a change in regime and modify consumers' expectations than a small one. Through a descriptive examination of large-scale fiscal adjustment experiences over the last 25 years in OECD countries, as well as through more formal econometric tests, it has been shown that such episodes frequently result in smaller output losses than suggested by standard Keynesian models and, in a number of cases, in negative fiscal multipliers.[100] This non-Keynesian effect of large-scale fiscal retrenchment on activity cannot be systematically ascribed to monetary policy or to cross-country spillover effects, but rather it appears

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[97]In a Ricardian world, an increase in government saving resulting from an increase in taxes is exactly offset by a decline in private saving. Much of the empirical literature, however, suggests that the world is not altogether Ricardian.

[98]Bryant and others (1988) provide standardized simulations for 12 macroeconomic models.

[99]The U.S. multiplier is about 1 in the short run for the spending cut (0.7 for the tax increase), and output is 0.6 above its baseline level in the long run; see IMF (1996a, Annex I). For an illustration of the range of possible outcomes in Germany for the DM 50 billion fiscal retrenchment package, announced in the spring of 1996, see IMF (1996c, Appendix II). The simulations show that the fiscal multiplier for Germany is half that for the United States because of its increased openness. Furthermore, alterations in the speed of fiscal adjustment and the perceived credibility result in the impact multiplier varying between 0.5 and –0.25.

[100]See Bertola and Drazen (1993) and Sutherland (1995). Cour and others (1996) provide evidence of nonlinearities in the response of activity to fiscal shocks.

Table 3. Summary of Fiscal Multipliers
(Normalized to 1 percent of GDP)

Author	Simulation	Expenditure Increase		Tax Decline	
		Short term	Long term	Short term	Long term
IMF (1996b)	5 percent debt increase in the United States	1.1	−0.6	0.7	−0.2
IMF (1995b)	10 percent debt increase in the United States	. . .	. . .	0.7	−0.2
	10 percent debt increase in Italy (increase in interest premium)	. . .	. . .	0.4	−0.2
IMF (1996d)	Gradual and credible deficit increase in Germany for total of 1 percent after four years (expenditure increase, partly offset by tax increase)	−0.3	−0.7	. . .	. . .
	Same but not credible	0.1	−0.7	. . .	. . .
	Front-loaded expenditure increase	0.5	−0.7	. . .	. . .
Bryant and others (1988)	Adaptive-expectations models[1]	1.2 to 2.0	0.0 to 1.9	. . .	. . .
	Rational-expectations models[2]	0.7 to 1.6	0.2 to 0.7	. . .	. . .
Bryant, Hooper, and Mann (1993)	Adaptive-expectations models[3]	1.0 to 1.3	−0.13 to −0.01	. . .	. . .
	Rational-expectations models[4]	0.65 to 1.5	−0.09 to 0	. . .	. . .
	Monetarist rational-expectations model[5]	0.10	0.01	. . .	. . .

[1]These models include DRI (Data Resources International), Compact Model of the European Economic Commission, the World Econometric Model of the Japanese Economic Planning Agency (EPA), the Project LINK World Model, the Multi-country Model (MCM) of the Federal Reserve Board, the INTERLINK Model of the Organization for Economic Cooperation and Development, and Wharton Econometrics Forecasting Associates World Model.

[2]These models include the McKibbin-Sachs Global Model (MSG), a two-country simulation model developed in the Research Department of the IMF (MINIMOD), the Multi-country Model of John Taylor, and Patrick Minford's Liverpool Model.

[3]These models include Global Economic Model (GEM) of the National Institute for Economic and Social Research, INTERMOD of the Canadian Department of Finance, the Multi-country Model (MCM) of the Federal Reserve Board, and the U.S. Economy Model (MPS) of the Federal Reserve Board.

[4]The models include INTERMOD of the Canadian Department of Finance, MULTIMOD of the Research Department of the IMF, the Multi-country Model of John Taylor, McKibbin-Sachs Global Model (MSG), and a three-country model developed in the Division of International Finance of the Federal Reserve Board (MX3).

[5]Patrick Minford's Liverpool Model.

to reflect consumer response to the size of fiscal policy shocks.

Concerning the nexus between fiscal adjustment and interest rates, empirical findings from both reduced-form estimations and structural model simulations (Table 4) corroborate that interest rates are sensitive to a change in the public debt ratio. Specifically, an increase in government debt, equivalent to 25 percent of GDP, would result in an increase of 125 to 500 basis points in long-run interest rates.[101]

These should be regarded as a lower bound of the beneficial long-run effects that may result from debt reduction arising from the introduction of a permanent rule limiting debt or deficit ratios.[102] The understatement of the interest rate effect stems from the inability of underlying models to capture the credibility effect associated with the operation of a binding rule, in addition to the interest rate decline attributable simply to a onetime increase in government

[101]Evans (1985) and Dubois (1996) have found a very weak or nonexistent relationship between government deficits and interest rates, a result that is apparently consistent with the Ricardian hypothesis.

[102]Also, as observed by de Menil (1996), the principal difference between a change in regime—upon adoption of a rule—and an incremental change is that the implications of the new regime are internalized in the behavior of economic agents as soon as they are known, hence the importance of long-term implications of fiscal adjustment in ascertaining the effects of fiscal rules.

Table 4. Summary of the Effect of Changes in Public Debt Ratio on Long-Term Interest Rates

Author	Type of Estimation or Simulation	Change in Interest Rate Due to 25 Percent Increase in Public Debt–GDP Ratio (basis points)
Tanzi and Fanizza (1995)	Panel estimation	175
Ford and Laxton (1995)	Cross-section systems estimation (world debt as explanatory variable)	250–450
Helbling and Wescott (1995)	Estimation using aggregate world data	400–500
IMF (1996a)	MULTIMOD simulations	300
Faruqee, Laxton, and Symansky (1996)	Simulation of a structural closed-economy model	125

saving. The credibility effect of a fiscal rule on interest rates can perhaps be approximated by a reduction in the default risk premium in financial markets on the debt of a country that pursued a vigorous fiscal adjustment program to correct an unsustainable path (Denmark and Ireland in 1980s, Italy in the early 1990s). Alternatively, in an attempt to measure default risk, it was found that interest differentials on comparable government bonds among EU member countries, normalized to a common currency, rarely exceeded 50 basis points, displaying a statistically insignificant relationship between interest rates and debt ratios.[103]

Again, however, since none of these countries was following a balanced-budget or debt-reduction rule,

there appears to be a tenuous relationship between fiscal control (measured by debt levels) and default risk. Of course, the large domestic interest differentials may be influenced by the degree of fiscal control, but they are more likely to reflect inflation or exchange rate risk differentials. In yet another attempt to measure the exogenous credibility effect, similar fiscal adjustment scenarios were simulated for Italy and the United States with one important difference: the default risk premium for Italy was assumed to decline as the adjustment took place, whereas it remained unchanged for the United States. The results show that compared with the United States, fiscal adjustment in Italy would tend to appreciate the domestic currency, interest rates would decline significantly more, and output would be more buoyant.[104]

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[103]However, for U.S. states, Bayoumi, Goldstein, and Woglom (1995) found that interest rates increase between 23 and 35 basis points for every 1 percent increase in the ratio of government debt to gross state product.

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[104]See IMF (1995b) and second entry in Table 3.

Appendix III Stochastic Simulations of Fiscal Rules

A central question that arises in connection with fiscal policy rules relates to their impact on the short-term variability of aggregate output and income. To examine this question, a number of stochastic simulations, applying the IMF's MULTIMOD model, have been performed for the Group of Seven industrial countries to ascertain the effect of relevant fiscal rules. MULTIMOD, an empirically estimated macroeconomic world model subject to scrutiny both inside and outside the IMF, is well suited to analyze this question. The simulated rules are, in fact, stylized versions of the following: the proposed U.S. balanced-budget amendment; the Stability and Growth Pact under EMU, which calls for a fiscal target near balance, subject to a deficit limit of 3 percent of GDP and a debt limit of 60 percent of GDP; and the Japanese government's intention of adhering to its current balanced-budget rule in the future. Except for the U.S. proposal, all rules are assumed to allow for the operation of automatic stabilizers, under the specified constraints. This appendix consists of two parts: the first provides a description of the methodology and the second reports the simulation results.

Ordinarily, application of MULTIMOD for simulation analysis—in the context of the World Economic Outlook (WEO) exercises and Article IV consultations—is deterministic in that the residuals of the model are held constant. In the absence of policy shocks, the model tracks a baseline of endogenous variables. Such simulations are generally used to evaluate the effects of changes in a policy variable or those of exogenous shock on the values of output, exchange rates, interest rates, fiscal balance, inflation, or other endogenous variables. However, policymakers are interested not only in the short-run effects and dynamic repercussions of specified exogenous shocks but also in the variance caused by such shocks, including policy actions. From this perspective, stochastic simulations are particularly useful for comparing and evaluating various policy regimes. They can provide information on the robustness of a policy regime under plausible shocks and policy actions, consistent with historical experience.

In contrast to deterministic simulations, stochastic simulations require assumptions about the probability distribution of the residuals and, in some cases, of the exogenous variables. The probability distribution is generally derived from historical data over a sample period to produce a variance-covariance matrix of residuals or policy shocks or both. Repeated draws of residuals consistent with this probability distribution are used to solve the model. The results of these draws for the simulated endogenous variables are then evaluated by comparing key summary statistics (mean, mean-absolute error, root-mean-square error (RMSE), variance) across different policy rules.

Overall, the simulation results suggest that the largest output variability arises from strict adherence to a yearly balanced-budget rule through cuts in government consumption and is, on average, over 1 percent of GDP higher than in the baseline simulation. Not surprisingly, output variability is reduced significantly when the fiscal rule allows for the operation of automatic stabilizers. Moreover, implementation of the rule through adjustment in transfers or taxes displays a lower output variability than through adjustment in government consumption. However, operation of a flexible debt rule, if enforced, would not result in greater output variability than the baseline simulation. On balance, therefore, any increase in output variability may be outweighed by the credibility gains that ensue from fiscal rules.

Methodology

Stochastic simulations consist of repeated "trials," or draws, from a standard normal distribution of random shocks, with a mean of 0 and a variance of 1, based on a simple transformation of a variance-covariance matrix.[105] This matrix is derived from the historical error terms of the model. For each draw, the model is simulated to produce the solution val-

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[105]For a more detailed and mathematical treatment of stochastic simulations, see Bryant, Hooper, and Mann (1993).

ues for that trial. The process is repeated for successive periods until an arbitrary horizon is reached.[106] In this exercise, for each fiscal policy rule, the model was simulated 36 times for 10 years, for a total of 360 trials.[107] The simulated outcomes were then used to calculate the RMSE of key endogenous variables from their baseline paths.

The above procedure was subject to a number of modifications that affect the derivation of the variance-covariance matrix constructed with residuals consistent with the estimated equations of MULTI-MOD. Whereas the first three modifications were similar to those used in an earlier paper (Masson and Symansky, 1992) and are only briefly mentioned, the treatment of fiscal policy, unique to this exercise, is discussed in detail.

First, given numerous data revisions and six additional years of observations since the original estimation of the model, some of the original equations may not fit as well as they did in 1990. Specifically, the historical residuals are no longer truly random (white noise) residuals. As it is beyond the scope of this exercise to reestimate the behavioral equations, the residuals have been whitened before computing the variance-covariance matrix. Autoregressive equations of the raw residuals—calculated from the behavioral equations—that include a constant, their own lagged value, and a time trend were estimated and added to the model.[108]

Second, since expectations of certain variables appear in several of the estimated equations, proxies were formed using time-series techniques. The variables include human and capital wealth (which depend on expected future income) and expected fu-

ture short-term interest rates, prices, and exchange rates.[109]

Third, a specific assumption regarding exchange rate expectations—critical in the evaluation of alternative exchange rate and monetary regimes—was used for the interest parity equation. Although the residuals in the interest parity equation reflect a combination of default risk and expectation error, the model implicitly treats these residuals merely as a default premium. Although static expectation of exchange rates is somewhat inconsistent with the assumption used in other equations of the model, it is used in these simulations to reduce the size of the residuals.

Fourth, the fiscal data were redefined and equations were added to capture certain aspects of fiscal policy that are not part of the standard version of the model. In MULTIMOD, the tax variable is defined net of transfers under the assumption that transfers and taxes have the same effect on disposable income and economic activity. However, in this exercise, taxes and transfers were treated separately for several reasons: (a) taxes, especially capital and payroll taxes, tend to be more distortionary than transfers; (b) taxes tend to vary more over the cycle than transfers, the former displaying a higher elasticity with respect to income; and (c) their historical variability may exhibit significant differences. A separate equation for each fiscal variable was added to the model to incorporate their unexplained variation into the stochastic process, which represents the discretionary component of these policies. These include a government consumption equation that relates spending (as a ratio of potential output) to its lagged value, a constant, and a time trend; and similar equations for transfers and taxes, except that tax revenue is specified as a ratio of actual income. Furthermore, in the standard version of MULTIMOD, there is an intertemporal government budget constraint enforced through taxes that allows the automatic stabilizers to operate over the short term but does not allow debt to grow without limit. This equation was dropped from the model, but the nature of the stochastic shocks and the properties of the model ensure that this is not a problem in this exercise.[110]

Finally, the residuals of equations that were not critical to the analysis (such as the import of commodities) were dropped in order to reduce the magnitude of the exercise. Table 5, based on an estimation period of 1974–95, summarizes the properties

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[106]In general, the solution values for any period depend on current shocks as well as on past endogenous variables, which in turn depend on past error terms. For rational-expectations models, such as MULTIMOD, where future policy affects today's outcome, solution values can be obtained only by simulating the model over an extended future period, where the terminal date is far enough in the future that the results are independent of the terminal values (55 years, in this paper). When the model is initially solved for period 1, agents are assumed to expect no new shocks in period 2 and beyond; when the period-2 shocks are applied to obtain the solution values for period 2, agents are assumed to expect no shocks in period 3 and beyond; and so on. However, they are aware of the autoregressive nature of contemporaneous shocks.

[107]Although the choice of 360 trials was arbitrary, it is nearly the same number used in Bryant, Hooper, and Mann (1993). Furthermore, the results were invariant to a sample reduction of 50.

[108]In practice, this autoregressive process results in the loss of one or two time-series observations. A practical difficulty is that the number of residuals used in forming the covariance matrix is often greater than the number of observation periods in the historical data sample; thus the matrix cannot be straightforwardly decomposed because it is singular. However, the matrix was inverted by adding a very small number (0.000001) to every element in the main diagonal.

[109]An alternative technique to form expectations and derive the residuals is to rely on whole-model simulations. However, this is a major undertaking and our procedure is analogous to an instrumental-variables approach to this problem.

[110]Bryant and Zhang (1996) show that a rule that imposes a deficit target without a debt stock condition is possibly inconsistent with achieving a long-run steady state. However, in these experiments, the shocks are randomly distributed with zero mean and it is unlikely that the debt dynamics will be explosive.

Table 5. Estimated Autoregression of Innovations, 1974–95

$\mu = \alpha + \rho\mu_{-1} + \beta t + \lambda t^2 + e$

(Coefficient standard errors in parentheses)

	United States		Japan		Germany		United Kingdom		Canada		France		Italy	
	ρ	σ_e	ρ	σ_e	ρ	σ_e	ρ	σ_e	ρ	σ_e	ρ	σ_e	ρ	σ_e
Private consumption	0.39 (0.22)	0.010	0.07 (0.22)	0.016	0.32 (0.23)	0.023	0.43 (0.20)	0.016	0.10 (0.23)	0.018	0.31 (0.22)	0.008	0.32 (0.22)	0.012
Oil consumption	−0.02 (0.23)	0.030	−0.34 (0.22)	0.038	0.33 (0.22)	0.044	−0.47 (0.21)	0.074	−0.42 (0.21)	0.052	−0.27 (0.23)	0.062	−0.49 (0.21)	0.043
Capital stock	0.70 (0.20)	0.007	0.35 (0.22)	0.010	0.64 (0.18)	0.005	0.08 (0.24)	0.016	0.58 (0.19)	0.006	0.55 (0.18)	0.004	−0.15 (0.23)	0.015
Manufactured exports	0.41 (0.21)	0.024	−0.11 (0.20)	0.039	0.26 (0.21)	0.039	0.33 (0.22)	0.019	0.40 (0.24)	0.033	0.60 (0.15)	0.023	0.09 (0.17)	0.028
Manufactured imports	0.06 (0.27)	0.031	0.35 (0.21)	0.066	0.05 (0.22)	0.028	−0.07 (0.24)	0.022	0.37 (0.22)	0.025	−0.05 (0.22)	0.019	−0.15 (0.23)	0.022
Money	0.08 (0.22)	0.025	0.29 (0.16)	0.036	−0.09 (0.22)	0.055	0.02 (0.20)	0.077	0.35 (0.23)	0.025	−0.09 (0.22)	0.082	0.06 (0.22)	0.047
Long-term interest rate	0.63 (0.18)	0.012	0.48 (0.19)	0.008	0.54 (0.19)	0.010	0.34 (0.19)	0.012	0.64 (0.18)	0.012	0.65 (0.18)	0.012	0.62 (0.19)	0.013
GNP deflator	0.24 (0.22)	0.011	0.34 (0.22)	0.016	0.10 (0.24)	0.019	−0.14 (0.21)	0.019	0.39 (0.21)	0.011	0.18 (0.23)	0.008	0.40 (0.21)	0.009
Export deflator	0.16 (0.23)	0.028	0.04 (0.24)	0.027	−0.07 (0.24)	0.051	−0.16 (0.22)	0.020	0.20 (0.23)	0.034	0.19 (0.24)	0.015	0.33 (0.21)	0.023
Potential output	0.66 (0.18)	0.004	0.81 (0.16)	0.004	0.93 (0.08)	0.006	0.70 (0.17)	0.007	0.96 (0.16)	0.004	0.41 (0.18)	0.005	0.58 (0.15)	0.006
Government consumption	0.92 (0.99)	0.003	0.72 (0.17)	0.007	0.52 (0.19)	0.004	0.30 (0.19)	0.005	0.70 (0.19)	0.004	0.09 (0.19)	0.002	0.90 (0.10)	0.002
Tax revenue	0.42 (0.22)	0.004	0.59 (0.19)	0.010	0.56 (0.19)	0.015	0.50 (0.20)	0.011	0.52 (0.20)	0.010	0.62 (0.20)	0.008	0.58 (0.21)	0.030
Exchange rate	—	—	0.36 (0.24)	0.024	0.84 (0.21)	0.015	0.46 (0.23)	0.020	0.39 (0.20)	0.011	0.39 (0.23)	0.018	0.30 (0.19)	0.024

Notes: μ is the raw residual, μ_{-1} is the lagged residual, t is a time trend, and α, ρ, β, and λ are the estimated parameters; and σ_e is the standard error of the regression.

of the autoregressive residual equations. The standard errors in these regressions characterize the main diagonal of the variance-covariance matrix.

Although interpretation of the estimation results is straightforward, it is difficult to disentangle the relative importance of the different variables. For example, the standard error of the investment equation is relatively small, but, as it represents unexplained variation in the capital stock (which is approximately three times the size of output), this stochastic element is numerically important. In contrast, the oil consumption equation, with a large standard error, has little effect on the variance of output because of the relatively small weight of oil.

The standard errors of the coefficients of the fiscal variables have potentially important implications. The unexplained component of government consumption is smaller than that of either taxes or transfers (Table 5), reflecting more inherent variability in the latter (Figure 1). This implies that fiscal rules that are met through adjustment in taxes or transfers may have relatively smaller effects on output since this adjustment may offset the initial source of variance. Similarly, since government consumption has been historically stable, reliance on this variable to balance the budget is likely to add to output variability.

Baseline Simulation

The baseline simulation serves as a standard of comparison for the simulation of selected fiscal rules. It includes the fiscal equations, discussed above, that allow for the operation of automatic stabilizers as well as discretionary policy through the stochastic elements. As previously indicated, government consumption and transfer payments grow as a function of potential output and tax revenues of actual income. Whether fiscal rules increase or decrease total variability will depend on the relative size and persistence of exogenous fiscal policy shocks, compared with those of the other underlying shocks, and on their interplay with automatic stabilizers.

Comparison of the variability in the baseline simulation and the actual historical variability of endogenous variables[111] reveals that the baseline simulation represents a reasonable, although not perfect, characteriza-

tion of macroeconomic variability (Table 6). Thus, the baseline can justifiably be used to assess the effects of alternative fiscal rules. In general, GDP is used as the summary variable to compare the similarity of the historical variability and the baseline variability. GDP variation differs by nearly 0.5 percentage point for the United States and France and 0.7 percentage point for Italy, and is identical to its historical variability for Canada. In the case of Canada, however, GDP variability masks some more significant differences in the variability of interest rates and investment. For Germany and the United Kingdom, the baseline output variability is over 1 percentage point higher than its historical variability. Meanwhile, the baseline variability of output in Japan is 1.5 percentage points greater than its historical variability—apparently as a result of the poor tracking performance of investment in MULTIMOD. Somewhat surprisingly, the baseline in Japan shows smaller variation in the exchange rate and government deficits. One way of putting in perspective the magnitude of the difference between the historical and baseline variance is to compare them with their forecast errors. An analysis of the forecast errors for major industrial countries (IMF, 1996a, Annex I) revealed that for real GDP growth in industrial countries the average current-year RMSE was 0.72, and 1.46 for the one-step-ahead forecast, with the smallest errors for the United States and France and the largest for Germany, Italy, and Japan. These results are consistent with the differences between the historical and baseline output variations.

The historical variation in the government deficit ranges from 1.5 percent of GDP for the United States to 3.7 percent of GDP for Italy. Allowing the automatic stabilizers to work, as in the baseline simulation, results in a deficit variation similar to the historical variation for these two countries. Again, Japan tends to show the most sizable difference in deficit variation: 3 percent of GDP historically, but only 2 percent of GDP when automatic stabilizers are allowed to operate.

As noted earlier, taxes and transfers tend to show substantially more variation than government consumption, and, with the exception of the United States, taxes are more variable than transfers. On the other hand, even in cases where taxes historically have been more variable than transfers, they are not necessarily more unpredictable, as seen in the baseline (Japan and Canada); meanwhile, government consumption remains less variable than the other two fiscal variables.

Comparison of Fiscal Rules

Six policy simulations were performed: (1) balanced budget enforced through government con-

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[111]The historical variation is calculated as the variation in growth rates or as a ratio of GDP over the period 1974–95. On the other hand, the simulation results, which were run over a future time horizon, are reported as the RMSE deviations from the WEO baseline. Although these constructs are not identical, they are conceptually similar since the simulations were run over a future time period, with relatively constant growth rates, constant interest and exchange rates, and variables that are a fixed share of GDP. In our simulations, the RMSE was preferred to the variance since the same WEO baseline is used over and over again in the repeated samples.

Figure 1. General Government Revenue and Expenditure
(In percent of GDP)

Legend: Revenue — Primary expenditure — Consumption — Transfers — Interest payments

United States

Japan

Germany

Canada

France

Italy

United Kingdom
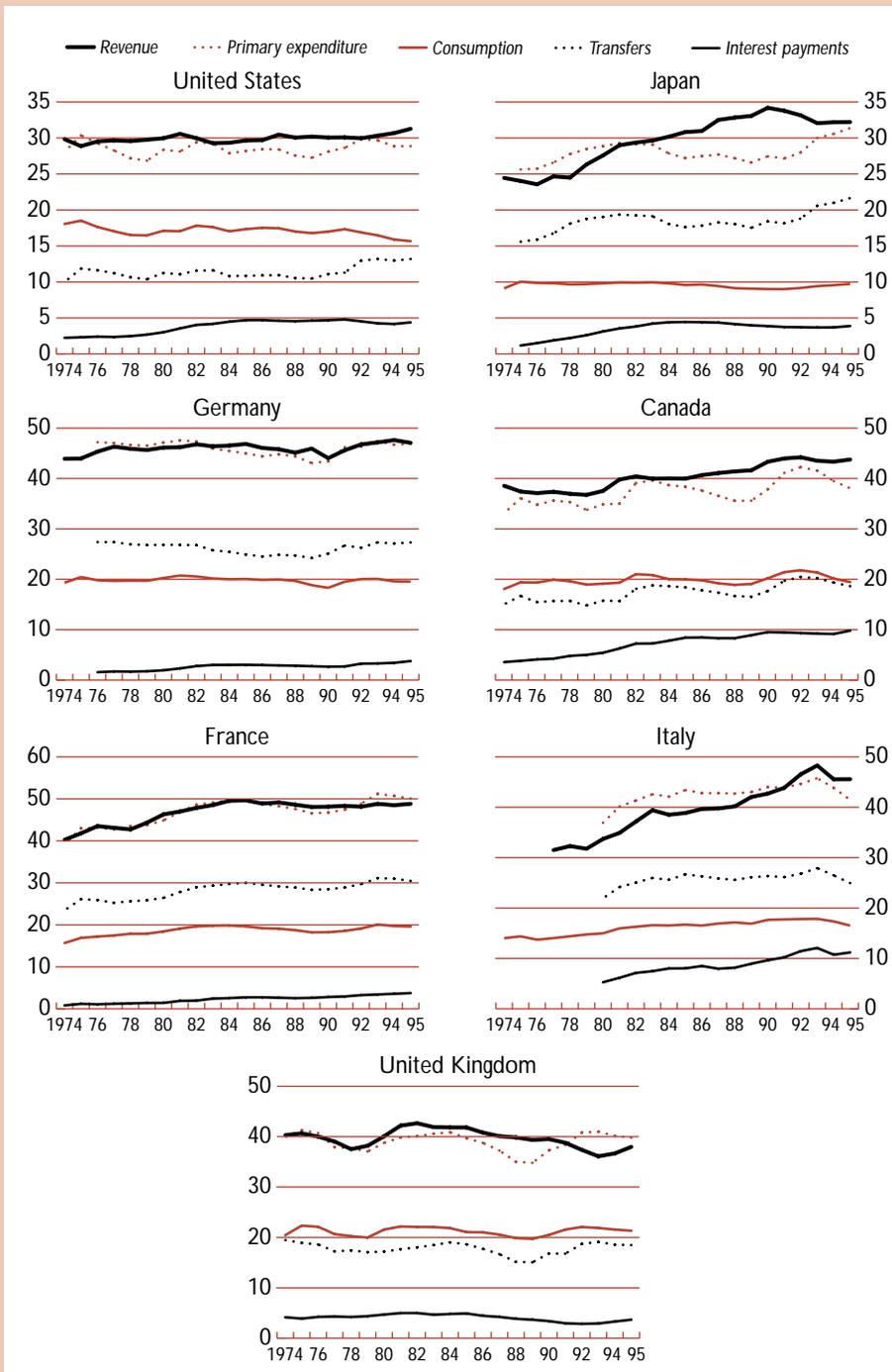
Source: International Monetary Fund, World Economic Outlook database.

Table 6. Variability of Endogenous Variables Under Alternative Fiscal Rules
(Root-mean-square error, in percentage terms)

| | | | Policy Simulations | | | | | |
| | | | Balanced-budget target | | | | | |
	Actual (1974–95)	Baseline Simulation	Government consumption adjustment (1)	Transfer adjustment (2)	Tax adjustment (3)	No deficit (4)	Deficit ceiling (3 per-cent of GDP) (5)	Debt target (6)
United States								
GDP	2.12	1.78	2.60	1.89	1.92	1.97	1.83	1.82
Long-term interest rate	2.21	1.40	1.16	1.34	1.32	1.33	1.34	1.22
Inflation	2.42	1.28	1.58	1.31	1.30	1.45	1.35	1.38
Exchange rate ($/LC)	—	—	—	—	—	—	—	—
Government consumption	0.87	0.53	1.33	0.55	0.55	1.48	0.64	0.71
Tax revenue	0.59	0.45	0.47	0.45	1.41	0.50	0.45	0.44
Transfers	1.00	0.57	0.73	1.17	0.61	0.63	0.59	0.60
Fiscal balance	1.52	1.57	—	—	—	1.61	1.26	1.01
Government debt	11.39	6.61	2.13	1.53	1.55	7.32	5.26	3.71
Japan								
GDP	1.61	3.29	5.22	3.58	3.61	3.85	3.58	3.21
Long-term interest rate	1.91	1.25	1.24	1.21	1.18	1.43	1.20	1.17
Inflation	2.30	2.30	2.84	2.35	2.35	2.54	2.43	2.32
Exchange rate ($/LC)	11.17	9.45	7.54	8.91	8.42	8.59	8.48	7.40
Government consumption	1.45	1.01	2.00	1.06	1.06	1.62	0.83	0.82
Tax revenue	3.52	1.11	1.10	1.09	2.20	1.14	1.10	1.09
Transfers	1.60	1.45	1.87	1.65	1.53	1.59	1.52	1.47
Fiscal balance	3.08	2.11	—	—	—	2.02	1.70	1.81
Government debt	9.56	6.51	1.54	1.09	1.10	8.50	4.76	4.56
Germany								
GDP	1.93	3.06	3.93	3.16	3.13	3.30	3.13	3.04
Long-term interest rate	1.22	1.98	1.79	1.91	1.87	2.11	1.99	1.98
Inflation	1.17	1.52	1.89	1.55	1.55	1.70	1.61	1.63
Exchange rate ($/LC)	11.41	8.78	7.09	8.43	7.63	7.62	8.09	7.32
Government consumption	1.60	0.65	2.67	0.68	0.68	1.66	1.04	0.96
Tax revenue	2.32	1.52	1.59	1.53	2.31	1.58	1.52	1.51
Transfers	1.77	0.98	1.60	1.96	1.15	1.26	1.13	1.15
Fiscal balance	2.79	2.37	—	—	—	2.04	1.95	1.75
Government debt	14.47	8.83	2.89	2.08	2.10	9.32	7.45	6.09
Canada								
GDP	2.32	2.34	3.02	2.44	2.45	2.46	2.35	2.35
Long-term interest rate	2.05	1.64	1.71	1.64	1.62	1.81	1.67	1.72
Inflation	3.18	1.78	1.99	1.79	1.79	1.88	1.82	1.80
Exchange rate ($/LC)	4.13	8.21	7.64	8.11	8.04	7.97	8.02	7.68
Government consumption	1.18	0.65	1.82	0.67	0.67	1.25	0.55	0.80
Tax revenue	2.53	0.96	0.94	0.93	1.90	0.96	0.95	0.93
Transfers	1.71	1.01	1.24	1.22	1.06	1.09	1.05	1.05
Fiscal balance	2.37	1.70	—	—	—	1.55	1.42	1.19
Government debt	21.27	6.79	2.84	2.47	2.48	7.45	5.90	4.22
France								
GDP	1.44	1.97	3.33	2.15	2.19	2.41	2.09	2.08
Long-term interest rate	2.53	1.47	1.30	1.40	1.36	1.53	1.47	1.36
Inflation	3.81	2.09	3.33	2.25	2.22	2.47	2.17	2.36
Exchange rate ($/LC)	12.29	8.78	7.09	8.43	7.63	7.62	8.09	7.32
Government consumption	0.79	0.44	1.91	0.49	0.50	1.03	0.42	0.41
Tax revenue	2.77	0.92	0.91	0.88	1.78	0.87	0.88	0.88
Transfers	2.08	0.89	1.37	1.19	0.98	1.06	0.93	0.96
Fiscal balance	2.33	1.64	—	—	—	1.37	1.49	1.33
Government debt	10.08	6.34	4.02	2.93	2.81	6.72	6.03	5.53

Table 6 *(concluded)*

			Policy Simulations					
			Balanced-budget target					
	Actual (1974–95)	Baseline Simulation	Government consumption adjustment (1)	Transfer adjustment (2)	Tax adjustment (3)	No deficit (4)	Deficit ceiling (3 per-cent of GDP) (5)	Debt target (6)
Italy								
GDP	2.07	2.76	4.51	2.99	3.00	3.35	3.13	3.30
Long-term interest rate	2.83	2.14	1.99	2.08	2.05	2.19	2.14	2.02
Inflation	5.20	2.55	4.40	2.73	2.72	3.35	3.10	3.80
Exchange rate ($/LC)	12.84	8.78	7.09	8.43	7.63	7.62	8.09	7.32
Government consumption	0.94	0.55	4.79	0.57	0.58	3.81	2.77	3.50
Tax revenue	5.02	3.58	3.51	3.61	3.60	3.39	3.51	3.52
Transfers	1.34	1.69	2.16	3.55	1.79	1.91	1.87	1.96
Fiscal balance	3.70	4.00	—	—	—	4.64	3.89	2.03
Government debt	22.23	16.16	11.92	7.53	7.29	19.20	16.95	13.20
United Kingdom								
GDP	2.11	3.33	5.94	3.78	3.81	4.44	3.93	3.69
Long-term interest rate	2.17	1.78	1.47	1.68	1.63	1.74	1.70	1.66
Inflation	5.57	3.34	5.21	3.59	3.57	4.19	3.72	3.92
Exchange rate ($/LC)	10.26	8.78	7.09	8.43	7.63	7.62	8.09	7.32
Government consumption	2.77	0.91	2.59	1.02	1.02	1.72	1.02	0.71
Tax revenue	1.83	1.21	1.14	1.16	2.48	1.17	1.18	1.17
Transfers	1.18	1.17	1.69	1.83	1.27	1.44	1.34	1.26
Fiscal balance	3.13	2.44	—	—	—	1.87	1.91	2.04
Government debt	8.49	8.37	5.21	3.59	3.50	8.86	7.38	7.39

Note: LC = local currency.

sumption adjustment; (2) balanced budget enforced through transfer adjustment; (3) balanced budget enforced through tax adjustment; (4) no-deficit rule, but allowance for automatic stabilizers when in surplus; (5) a 3 percent of GDP budget deficit ceiling with allowance for automatic stabilizers below the ceiling; and (6) debt target, with allowance for short-run debt accumulation or drawdown. All the rules, except (2) and (3), are assumed to be met through adjustment in government consumption. The rules are stylized in that they are binding and are always realized ex post. However, rules (4) through (6) allow for the operation of automatic stabilizers, namely, downward in (4) and symmetrically in (6), whereas (5) is symmetric up to the ceiling. The debt rule (6) represents the closest approximation to the "tax-smoothing" function of government. Although it allows the automatic stabilizers to work, this rule also attempts to offset the debt buildup that can occur over the cycle and effectively adds a stock condition to the debt target rule. This is analogous to the discussion in the monetary literature, where it is recognized that an inflation rule (deficit) allows for "drift" in the price level (debt).

There is no metric used in this paper to compare the various regimes. Conceptually, a welfare or utility measure could be used, but the results would depend upon subjective weighting of the mean and variance of different endogenous and policy variables. Rather, Table 6 lets the reader compare the various regimes. The discussion below concentrates on output variability because it is associated with some important costs, including, for example, macroeconomic uncertainty and permanent unemployment if the labor market can be characterized with hysteresis.[112] To put the RMSE comparisons in perspective, relative to the baseline simulation, for example, the 0.8 percentage point increase in output variability in the United States under simulation (1) may be viewed as large since it represents a 30 per-

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[112]Except for the simulation with an asymmetric policy objective, the average deviation from the baseline is nearly zero (and always less than 0.2 standard deviation from zero). This is not surprising since the nonlinearities in MULTIMOD are relatively small and the shocks are taken from a random normal distribution. Therefore, the discussion that follows concentrates on differences in variability.

cent increase in variability. On the other hand, this difference could be considered small if compared with the average RMSE of WEO forecasts of GDP for the major industrial countries.

Several general conclusions can be drawn from the results (Table 6). First, relative to the baseline with the automatic stabilizers operating, when tight deficit control is implemented through adjustment of government consumption, in simulation (1) it tends to raise the variability of output, on average, by 1.4 percentage points, representing a 50 percent increase. This rule increases output variability from a low of just under 0.7 percentage point in Canada, and 0.85 in the United States and Germany, to substantially over 1 percentage point in France, and around 2 percentage points in Italy, Japan, and the United Kingdom. This increase in variability is the result of not allowing the automatic stabilizers to operate, as well as of following a procyclical policy, which more than outweighs the variability introduced through the stochastic elements of discretionary policy. However, the countries that exhibited the smallest increase in output variation generally have a more stable fiscal policy in the baseline (Canada, France, and United States), which limits the need for fiscal offset. Prices, which tend to be procyclical in the baseline, also exhibited more variability under the strict balanced-budget rule. Additionally, with government saving less variable, long-term interest rates were more stable under rule (1) than in the baseline.

The no-deficit rule, under simulation (4), which represents an asymmetric implementation of a strict expenditure-enforced deficit target, exhibits reduced variation relative to the comparable symmetric rule in (1). Although, on average, this simulation shows the second highest output variability, it is only, on average, 0.5 percentage point greater than in the baseline and less than 0.25 for over half the countries. This implies that a balanced-budget rule, if realistically implemented in an asymmetric fashion, might add little additional variability to output while providing a surplus bias to fiscal policy.[113]

The debt rule, given in (6), combines the tax-smoothing role of fiscal policy with long-term debt reduction and control. The automatic stabilizers are allowed to work over the short run as long as the stock of public debt remains relatively stable. This represents a pragmatic rule in that the speed at which a country must achieve a debt target is not precisely given. By letting the automatic stabilizers work, this rule offsets demand fluctuations, but, with one eye

on debt control, it also avoids irresponsible fiscal policy. Under this fiscal rule, output variability is nearly identical to the baseline for most countries, with two countries showing reduced variability. Only in the case of Italy does debt stabilization show significantly more variation than when the automatic stabilizers are allowed to operate freely. This is largely owing to the high debt stock, which makes debt stabilization difficult over the short run.[114]

A comparison of fiscal rules based on the instrument of compliance suggests that adjustment in taxation or transfer payments tends to produce less variance than adjustment in government consumption. This appears to be inconsistent with the findings of Alesina and Perotti (1995) and McDermott and Wescott (1996), who conclude that successful fiscal policy is achieved through expenditure control. These results can be viewed, however, as providing partial support to those findings. Historically, tax ratios tend to show more variation than government consumption ratios (Figure 1). Therefore, if variation in the tax burden is an explanation for the variability of deficits, then achievement of a balanced budget through tax adjustment would remove a source of macroeconomic variability. Although tax variability in (3) is greater than in the baseline, in most countries it shows a significantly smaller increase in variation than government consumption did when the deficit target was achieved with spending adjustment. For Italy, in particular, tax variation is almost identical to the baseline and output variability is similar, implying that deficit variation is due to both discretionary tax policy and the automatic stabilizers. Only for the United States does the amount of tax variation increase significantly, and this is more a reflection of a relatively stable tax ratio in the baseline.

The general finding that output variability under tax or transfer adjustment is only modestly different than in the baseline partly reflects the undoing of a variable tax policy but also reflects the moderate Ricardian properties of MULTIMOD, indicating that tax changes have more muted effects on output than changes in government consumption. When deficit targets are achieved through changes in transfer payments, the results are remarkably similar to the regime where deficit targets are achieved through taxes. This partly reflects the similarity in tax and

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[113]Although not shown in Table 6, deficits are a little more than 1 percent of GDP lower and debt is over 7 percent of GDP lower than in the baseline scenario.

[114]If the debt rule is defined on a yearly basis in terms of the ratio of debt (D) to actual GDP (Y), it has the potential to be unstable for countries with a large debt stock. In this case, the output effect of contractionary fiscal policy (the second term) might outweigh the direct decline in D:

$$\Delta \left(\frac{D}{Y}\right) \cong \frac{D}{Y_{-1}} - D_{-1} \, \Delta \, Y.$$

transfer variability in the baseline. In countries where taxes in the baseline show more variability than transfers (Germany), output variability tends to increase with transfer adjustment. The opposite occurs when transfers are more variable (the United States); when they are similar (Canada), the differences in these regimes are minimal. Additionally, relying on transfers rather than taxes tends to reduce output variation since transfer payments usually have less distortionary effects on private behavior than tax changes do.

The results of the deficit ceiling simulation (5) are similar to the baseline simulations, as the former can be regarded as a balanced-budget target, allowing for automatic stabilizers to operate symmetrically. Only in the case where the deficit target is breached is a strict fiscal reaction required and thus do the results show some reduction in the variance of debt. Given the variance in output in the baseline case,

there are few occasions when the fiscal authorities would have to offset the automatic stabilizers to achieve the target.[115]

Finally, monetary policy is largely ignored in the analysis. The baseline assumes that exchange rates are fixed within EMU and that other countries target a stable money growth path. However, to the extent that fiscal policy has constrained the flexibility of monetary policy, moving to a fiscal rule has the potential to give increasing flexibility to monetary policy to stabilize output. Analysis of this important issue, nonetheless, is beyond the scope of this paper.

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[115]This finding is consistent with Masson (1996), Buti, Franco, and Ongena (1997), and IMF (1996c), which examine the implications of the EMU Stability and Growth Pact for EU member countries. Those studies conclude that the probability of violating the 3 percent ceiling is very small if the government targets a structural fiscal position near balance.

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