



IMF Working Paper

Evaluating Designs for a Fiscal Rule in Bulgaria

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Abstract

The enhanced Stability and Growth Pact calls on euro area members and aspirants to set boundaries to fiscal deficits through high-level legislation. A limit on the deficit, such as the deficit ceiling in Bulgaria's organic budget law, serves to protect solvency. The recent crisis clearly indicated that the key challenges are not only to contain the deficit but also to avoid a procyclical stance during upswings and to build a buffer for rainy days. Ideally, fiscal policymaking is guided by a fiscal rule that adapts through the economic cycle. This paper lays out the objectives of fiscal rules and analyzes how these objectives can be met in Bulgaria through either a growth-adjusted balance rule or an expenditure rule complemented by a deficit ceiling.

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I. INTRODUCTION

Recent initiatives to strengthen fiscal governance have put the spotlight on the introduction and strengthening of fiscal rules in the European Union. In March 2011, the European Council agreed on a package of measures that mandates the implementation of national fiscal rules for member states as part of an “Enhanced Stability and Growth Pact”:

Participating Member States commit to translating EU fiscal rules as set out in the Stability and Growth Pact into national legislation. Member States will retain the choice of the specific national legal vehicle to be used, but will make sure that it has a sufficiently strong binding and durable nature (e.g. constitution or framework law)²

The agreement has reinvigorated efforts in numerous EU countries to develop national fiscal rules and translate them into national legislation.

Fiscal rules are used with increasing frequency to limit discretionary policymaking and control the “fiscal alchemy” that underlies capricious fiscal policies (Leeper, 2011). The empirical literature has identified a deficit bias commonly explained by governments’ shortsightedness. Rogoff (1990) shows that the electoral cycle causes myopia, induces pre-election largesse, and reduces interest in addressing long-term or structural deficits. In addition, the “common-pool problem” may aggravate the bias as (competing) demands by special interest groups get accommodated in the policymaking process while the budgetary impact of their demands is not fully internalized (Debrun and Kumar, 2007).

Yet, rules-based policymaking gives rise to several problems, in particular at the implementation level. *First*, given the powers of politicians in rulemaking and—in most cases—the lack of a disciplining mechanism, any rule can be revoked. In extreme cases, rules have motivated “creative” accounting, off-budget operations, and reduced transparency, thereby undermining policy credibility. *Second*, rules—especially deficit and debt ceilings—usually lead to a procyclical stance, particularly in bad times, as they constrain discretion. Rules that overcome these limitations are relatively complex and harder to communicate and implement, not least owing to measurement problems of underlying fiscal variables. *Third*, most rules affect headline deficits or debt and can adversely impact the structure of spending. For instance, to achieve a deficit target, adjustments are more likely to be made in easy-to-cut capital spending that may promise high social returns, with a potentially negative impact on long-term growth prospects (Blanchard and Giavazzi, 2004).

In Bulgaria, fiscal policy has been bound by the currency board introduced in 1997. Since then, the country has built a strong track record of prudent fiscal policy, in part guided by policy objectives with differing purposes (see Table 1). To maintain the coverage of reserve

² See European Council 24/25 March 2011 Conclusions, available at <http://www.european-council.europa.eu/council-meetings/conclusions.aspx> (April 5, 2011).

money under the currency board arrangement, a fiscal reserve is monitored with reserve floors determined in the annual budget law. The government has also committed to limit budget expenditures to 40 percent of GDP. Finally, as mandated by the European Commission, Bulgaria sets annual medium-term budget objectives as part of its Convergence Program.

Table 1. Overview of Existing Fiscal Commitments

Rule	Introduction	Definition	Commitment
Debt ratio	2002	General government debt not to increase if the debt ratio exceeds 60 percent of GDP	Legal
Fiscal reserve	2004	Maintenance of a minimum fiscal reserve	Legal
Expenditure ratio	2006	General government expenditure not to exceed 40 percent of GDP	Political
Medium-term budget objective	2011	Medium-term objective of a structural deficit of 0.6 percent of GDP by 2014	Supranational (European Union)
Financial Pact	2012	Deficit limit of 2 percent of GDP, expenditure under the Consolidated Fiscal Program not to exceed 40 percent of GDP	Legal

Source: IMF staff.

Notwithstanding the absence of strong binding rules in the past, fiscal prudence has prevailed in Bulgaria. By running sizable surpluses prior to 2008, Bulgaria reduced its public debt stock and accumulated sizable fiscal savings. During the crisis, the buffer served Bulgaria well in maintaining the credibility of the currency board and financing a cyclical deficit. Yet, expansions of current spending during the upswing (such as public wage hikes, social spending, and healthcare) could not be reversed quickly enough. As the cyclical downturn intensified, the government started to cut into capital expenditures (unless funded by the EU) to keep the overall fiscal balance in check. In light of the low stock of public investments, this practice could have negative implications on potential growth in the long run.

In parallel with efforts to enhance fiscal discipline at the EU-level, the authorities started considering the possibility of a fiscal rule. In February 2011, a first proposal—dubbed “Financial Stability Pact”—was floated, including a rule that would improve the fiscal balance depending on GDP growth. In June 2011, after broad consultations, the parliament introduced a rule in the organic budget law which limits the overall deficit to 2 percent of GDP and caps expenditure at 40 percent of GDP starting in 2012. The deficit ceiling presents a simple and transparent rule aiming at enhancing the credibility of fiscal policymaking. However, considering the cyclical nature of Bulgaria’s economy and, in particular, the high elasticity of revenues during a downturn, the 2 percent ceiling could at times prove

challenging. To credibly commit to the ceiling and to avoid procyclical tightening, the authorities would need to run tight budgets, including a significant surplus during good times, to leave enough cushion room once conditions deteriorate. In absence of a binding commitment, this will be politically challenging. Also, with expenditures forecasted to remain below 36 percent of GDP during the forecasting horizon, the expenditure cap is currently not imposing a binding constraint.

The authorities have signaled interest in developing the current rules into a more complete fiscal framework. This paper tries to make a contribution to the debate. Fiscal policymakers have to continuously resist demands to expand spending. In the medium term, because of population aging, pressures to raise healthcare standards and pension payments can be expected to intensify. At the same time, the currency board and the political commitment to comply with the Stability and Growth Pact (in anticipation of entry to the Exchange Rate Mechanism II, ERM II) require continued fiscal responsibility. Bulgaria would thus benefit from a fiscal rule that provides policymakers with binding guidance throughout the cycle and copes well with the structural changes facing the economy.

The analysis may be of broader interest in the region, where national fiscal rules are becoming more widespread. In 2008, Hungary introduced a Fiscal Responsibility Law that included a debt rule along with an independent fiscal watchdog, although the watchdog was dismantled soon after. Poland implemented an expenditure rule for discretionary spending in its 2011 budget and is considering passing a permanent fiscal rule. Serbia passed amendments to the Budget System Law in 2010 to include a growth-contingent fiscal rule.

II. FISCAL RULE 101: OBJECTIVES, PRINCIPLES, AND PRECONDITIONS

By introducing a fiscal rule, authorities deliberately limit their discretion in fiscal policymaking and become accountable for their compliance with a set of fiscal rules. The following general principles help to identify characteristics of the most suitable rules design. Also, certain preconditions need to be met to minimize transitional distortions and maximize the efficiency of the rules.

A. Objectives

Fiscal rules aim to ensure fiscal sustainability and anchor expectations (IMF, 2009). Fiscal sustainability implies the achievement or maintenance of a sustainable debt level including contingent liabilities. Rules that bind fiscal policy help to guide expectations, thereby allowing economic agents to optimize their behavior, and lead to a Pareto-optimal outcome. Secondary objectives include facilitating a countercyclical fiscal stance, shielding policymakers from the influence of special interests, or limiting government size.

In case of Bulgaria, a fiscal rule should not only pursue fiscal sustainability, but also support the currency board arrangement and enable eventual entry to the euro area. The latter

requires compliance with the Maastricht criteria of a ceiling on the deficit at 3 percent of GDP and on debt at 60 percent. At the same time, the fiscal rule should support the currency board arrangement. The central bank's inability to "create" money limits Bulgaria's capacity to finance its cash deficit. Therefore, the authorities have set aside a buffer in the form of a fiscal reserve. While maintaining the reserve is more an asset-liability management task than a fiscal issue, the fiscal rule could limit the budgeted deficit to an amount compatible with the available drawdown from the reserve.

As secondary objective, a fiscal rule for Bulgaria should allow for countercyclical fluctuations, i.e., provide support to the economy in downturns and cool the economy during upswings. Given the above-mentioned currency board arrangement, fiscal policy remains the main policy tool to influence output. Therefore, the countercyclical dimension is more important in Bulgaria than in economies with independent monetary policy.

B. Principles, Trade-offs, and Options

In pursuit of the above objectives, the design of a fiscal rule should be consistent with a few basic principles (IMF, 2009):

- ***Fiscal rules should provide a stable anchor for fiscal policymaking.*** The rule should provide binding targets for budgetary aggregates and form an integral part of the budgeting process and subsequent appropriations throughout a prolonged period.
- ***Fiscal rules should be unambiguous and transparent.*** The rule should be clearly defined and easy to communicate. The authorities' compliance with the rule should be easy to monitor.
- ***The design of fiscal rules should provide for an appropriate fiscal stance throughout the cycle.*** Given that the rule can only be effective in anchoring expectations if it provides a binding constraint to fiscal policymaking through multiple budget cycles, the design needs to take into account cyclical fluctuations of the economy or other structural changes. At the same time, the rule should allow fiscal policy to assume a limited countercyclical stance and to respond to unexpected (temporary) shocks.
- ***Fiscal rules should be supported by a clear institutional framework.*** The implementation of fiscal rules requires the establishment of an institutional framework that includes the provision of necessary statistical inputs, a rule-compliant budgeting process, and enforcement measures.

Considering the above objectives and principles, developing a numerical formula for a fiscal rule requires numerous trade-offs. *First*, there is a trade-off between simplicity and universality. The simpler the rule, the easier it is to communicate and monitor, and the less room for loopholes and creative circumvention. At the same time, the fiscal outcomes of a

parsimonious rule might not be desirable under all circumstances. Therefore, it is important to subject the design of a rule to simulations of different kinds of economic shocks. *Second*, there is a trade-off between unambiguity and flexibility. While only a binding rule can help to anchor expectations and maintain fiscal sustainability, unforeseen circumstances may justify the deviation from the rule. In the concrete instance of the global financial crisis, the extent of the shock triggered in some cases policy responses that required policymakers to amend or abandon the rule.

The gist of any fiscal rule lies in its numerical specification. The numerical specification can target one or more fiscal variables, as follows:

- ***Budget balance rules.*** Budget balance rules specify a target level of the fiscal balance and mainly serve the objective of fiscal sustainability. Rules that specify the overall balance, the structural balance, the cyclically adjusted balance, or the balance “over the cycle” cause the debt-to-GDP ratio to converge to a certain equilibrium. Rules that specify the change in the balance or rules for part of the balance, such as a primary balance rule or the “golden rule,” which excludes capital expenditures, do not under ordinary circumstances lead to a convergence to a certain debt level.
- ***Debt rules.*** Debt rules provide a numerical target or a ceiling for public debt as a percent of GDP and, like budget balance rules, mainly serve the objective of fiscal sustainability. A debt rule is the most direct way to control the debt ratio, but can under certain circumstances require sizable ad-hoc fiscal adjustments. Debt rules may be combined with budget balance rules (as in the Maastricht criteria), although it is necessary to carefully assess their consistency.
- ***Expenditure and revenue rules.*** Expenditure rules usually assign limits to total, primary, or current spending in absolute terms, growth rates, or in percent of GDP. As such, expenditure rules can help to limit the size of the government or possibly to impose a countercyclical expenditure policy, but do not *per se* serve fiscal sustainability unless combined with a revenue, debt, or balance rule. Revenue rules are rare and mostly used to pursue secondary objectives, such as boosting revenue collection or limiting tax increases.

C. Preconditions

Necessary preconditions for the application of a fiscal rule include sufficient budget controls and incentives that are well aligned to comply with the rule. Public financial management systems must ensure that reliable and timely measures of budgetary aggregates are available and monitored and that remedial actions can be introduced to meet the fiscal target. While there is room for improvement, Bulgaria has already put in place the necessary controls over its cash budget. Budget planning follows a top-down approach with a medium-term fiscal framework spanning four years, as well as a three-year budget forecast, and is emulated in a budget law. However, a fiscal rule should avoid further complicating the budget planning

process, which already consists of national strategic policy documents, the National Reform Program, and the EC Convergence Program.

Aligning policymakers' incentives to comply with the rule can be achieved through external review and penalties for non-compliance. In line with empirical evidence (see Debrun et al., 2008), a fiscal rule is effective only when the benefit of compliance outweighs its cost. Transparency and external review are key to achieving credibility and encouraging compliance. For instance, an independent fiscal council or auditors can review compliance with the rule and report to the parliament. Publication of the outcomes extends the reach of external review to the ballot box. Some countries successfully implemented binding correction clauses that trigger automatic adjustments for slippages in future budgets (e.g., Switzerland and Germany) or during the current fiscal year (e.g., Belgium). However, such automatism deprive the parliament of part of its budget prerogatives. Also, judicial review is sometimes invoked. Ultimately, high public credibility and visibility of the fiscal rule seem to be the most common and effective enforcement mechanisms, imposing an adverse reputational penalty on the government if it reneges on the rule.

III. CRITERIA FOR THE EVALUATION OF FISCAL RULES

Using the objectives and principles laid out in the previous section, this section elaborates numerical formulations of the key objectives of a fiscal rule for Bulgaria. As mentioned above, these objectives include the *fiscal goals* of (i) fiscal sustainability, (ii) reserve maintenance, and (iii) countercyclicality, as well as the *institutional goals* of (iv) transparency and unambiguity, and (v) guidance. While the formulations below are tailored to Bulgaria, they can be easily applied to other countries.

A. Fiscal Sustainability

Fiscal sustainability requires limiting fiscal deficits in order to contain debt and stabilize debt ratios over the long run. Given that the overall balance initiates a rise in the debt level, it can be shown that either variable can serve as target. Formally, public debt d in period t depends on the existing debt d_{t-1} and the overall fiscal balance b_t , all measured in percent of nominal GDP,

$$d_t = \frac{1}{1+\gamma_t} d_{t-1} - b_t,$$

where γ_t is the nominal GDP trend growth rate. Each equilibrium debt level d^* is associated with a certain equilibrium overall balance b^* (Escolano 2010):

$$b^* = \frac{-\gamma}{1+\gamma} d^*.$$

Box 1. Adjustment to shocks under a balance rule

Formally, if a shock forces the overall balance to diverge from equilibrium overall balance b^* by b_s for one period, the debt ratio would change from the equilibrium debt level d^* to $(d^* + d_s)$:

$$d^* + d_s = \frac{1}{1+\gamma_t} d^* - (b^* + b_s),$$

where γ is the nominal growth rate. To converge back to d^* in N periods, the equilibrium budget balance would need to be adjusted during the N adjustment periods by b^{adj} , using a first order approximation justified for low γ :

$$b^{adj} = -\frac{1}{(1+\gamma)^N} b_s.$$

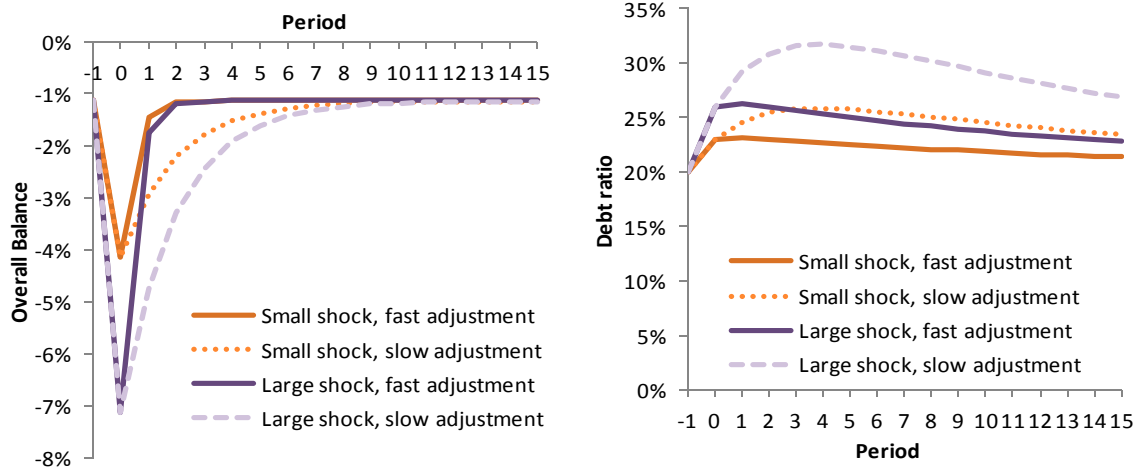
For example, imagine a shock that changes the budget balance by -2 percentage points in one year and a fiscal rule that mandates the return to the pre-shock debt level within 4 years. The resulting adjustment in the year following the shock would amount to almost 2.5 percentage points to run a balance that is 0.4 percentage points higher than the equilibrium balance.

To reduce the swings in the overall balance and smooth the adjustment path, the balance rule could mandate a proportional adjustment for each period, so that

$$b_t = b_{t-1} + a(b_{t-1} - b^*),$$

where b^* is the equilibrium overall balance and $-1 < a < 0$ is a shock adjustment factor. Both the balance and debt will return to their equilibrium level at a speed that depends on the adjustment factor. The figure below illustrates adjustment paths for a shock to the overall balance of -3 percent (small shock) and -6 percent (large shock) at $t = 0$ and fast adjustment ($a = -0.9$) versus slow adjustment

($a = -0.4$). Underlying the example is a steady nominal growth rate of 3 percent and an equilibrium balance of 1.1 percent, corresponding to an equilibrium debt ratio of 20 percent.



Therefore, a fiscal rule that targets a certain overall balance implies a debt level to which it converges in the long run (assuming that the nominal trend growth rate remains constant). As illustrated later, even a change or miscalibration of the nominal trend growth rate would lead to convergence.

An argument could be made that debt servicing costs are exogeneous and therefore not within the discretion of the government, and that the rule should target the equilibrium primary balance instead of the overall balance. However, given Bulgaria's currently low debt level and low interest costs, no major difference obtains between targeting the primary or the overall balance.

The most important advantage of a balance target over a debt target is its provision for a smoother adjustment path after a shock. If a shock pushes the debt ratio beyond the desired level, a debt rule could require a large adjustment of the fiscal balance, thereby causing volatile swings in the overall balance. By targeting a balance, a smooth adjustment path can be achieved whereby the speed of convergence to the pre-shock debt level can be controlled by an adjustment factor (see Box 1).

B. Reserve Preservation

In the particular case of a currency board country, the fiscal rule should be consistent with the objective of maintaining the currency arrangement. A fiscal rule that does not consider the requirements of the currency board is not objective consistent and could even be legally challenged. In Bulgaria, the currency board arrangement is anchored in central bank law and the Bulgarian National Bank (BNB) is mandated to hold an equivalent amount of gross international reserves equal to or exceeding aggregate monetary liabilities. Absent the BNB's ability to expand the monetary base to enable interim deficit financing, agents may want to maintain sufficient buffers of their own. For this purpose, the maintenance of a minimum fiscal reserve is legislated in the budget law to support eventual budgetary funding needs. The amount varies between about 5 to 10 percent of GDP, with the floor set at BGL4.5 billion (5.7 percent of GDP) in 2011.

Ensuring the availability of sufficient funds to execute the budget even under adverse circumstances is an asset-liability management (ALM) task. The use of a fiscal rule would present a mismatch between instrument and target variables. For example, a rule that targets a certain fiscal reserve would be similar to a debt rule whereby a reserve floor is set instead of a debt ceiling, and the target variable is the overall balance including below-the-line net budget financing. Such a rule would imply that the budget offsets shocks to financing, leading, for instance, to a tighter fiscal stance when the funding target is missed. In a crisis, where a recession is coupled with lower available funding, such a rule could impose a fiscal tightening, whereas during a boom with ample capital inflows, the rule may signal room for fiscal loosening. Instead, the ALM operations could be guided by a rule for the fiscal reserve separate from the fiscal rule.

Given these considerations, the reserve preservation content of the fiscal rule is better limited to a consistency check in form of a stress test: even in a worst case scenario, the fiscal reserve should be sufficient to fund the budget for a certain period. A multi-year downturn during which market access is lost is chosen as worst case scenario. Formally, let $p = 95\%$ mark the lower bound of the overall balance with a probability of 95 percent and T_L the period of time during which the available buffer in the Fiscal Reserve Account (denoted ω_{FRA}) is the only source of funding. The condition that the overall balance B_t needs to fulfill can be formulated as

$$\sum_{t=1}^{T_L} B_t | p < \omega_{FRA}.$$

This formulation does not take into account below-the-line transactions. A complete consistency test would thus need to include assumptions about rollover rates.

C. Countercyclicality

Countercyclical fiscal policy strives to support growth during economic slowdowns and to counter overheating during expansion phases. Thus, countercyclical policy goes beyond the effect of automatic stabilizers, i.e., the intrinsic cyclical swings of the budget balance at unchanged policies. Hence, fiscal policy is countercyclical when the cyclically adjusted balance is negative (positive) as long as the output gap is negative (positive). However, to compensate for the lagged effect of fiscal policy, an alternative definition looks at turning points. In that case, the stimulus is phased out as soon as the recovery is on the way, or phased in when growth starts slowing. This paper uses both definitions.

By definition, a structural balance rule would allow automatic stabilizers to work and would result in a cyclically neutral fiscal stance through the cycle. A structural balance rule can be approximated as

$$b_t = b^* + \delta \alpha_t,$$

where b^* is the equilibrium overall balance, α_t is the current output gap, and $0 < \delta < 1$ is a cyclical adjustment factor, whereby a δ close to the expenditure ratio would result in an approximately neutral stance throughout the cycle (Escolano, 2010). Note that a miscalibration of the output gap (i.e., the output gap does not exhibit symmetry over the course of a cycle so that $\sum \alpha = 0$) leads to a divergence from the desired equilibrium overall balance b^* .

Alternatively, a balance rule can be supplemented with an adjustment that is a function of the economic cycle. Using the change in the output gap as adjustment function allows for early countercyclical action at the turn of the cycle. Formally, a countercyclical balance rule can be formulated as

$$b_t = b^* + \delta(\alpha_t - \alpha_{t-1}),$$

where b^* is equilibrium overall balance and the $0 < \delta < 1$ is the countercyclical adjuster. Applying a first order approximation, the difference in the output gap can also be expressed as the difference between current nominal GDP growth γ_t and trend nominal growth γ , which leads to the growth-based balance rule (see IMF, 2009):

$$b_t = b^* + \delta(\gamma_t - \gamma).$$

D. Transparency and Unambiguity

While this paper focuses on the design of a numerical fiscal rule, a few institutional aspects are worth mentioning. First, there is an obvious tradeoff between the parsimony of a fiscal rule and its operational effectiveness. Inherent difficulties in quantifying potential output or the cyclical adjustment can lead to miscalibrations, undermine public confidence, and even invite gaming behavior. The institutional setup can help mitigate such risks. For instance, an independent fiscal council can provide reliable economic statistics as well as forecasts and explain them to the public, making the use of more complicated concepts more acceptable.

Second, a comprehensive fiscal rule is more transparent and less ambiguous. A fiscal rule can be applied only to selected budget items, excluding interest payments, cyclically sensitive expenditures, or capital expenditures from coverage of the rule. The motivation for selective coverage is either the nature of those expenditures (which may lie outside the control of the government) or their purpose (which may supersede the objective of a fiscal rule, as in the case of growth-enhancing or self-financing capital expenditures). A similar trade-off exists for whether the rule should apply to all levels of government whereby the central government may have limited expenditure control on local governments and data is reported only with a long lag. The drawback of selective coverage is its reduced transparency and limited effectiveness in reaching the target of fiscal sustainability. Also, selective coverage may provide opportunities for gaming the rule (such as re-labeling current expenditures as capital expenditures).

E. Guidance

A fiscal rule is effective only if it provides operational guidance to policymakers and anchors expectations. Thus, the chosen design of a fiscal rule needs to create a binding constraint in a way useful for developing and executing fiscal budgets. Rules that demand excessive fiscal effort, for instance by mandating an overly ambitious fiscal adjustment, or that are too lax to exert a disciplinary effect, are ineffective in guiding fiscal policy. Setting binding rules throughout the economic or electoral cycle is challenging. For instance, a budget balance rule with partial adjustment for past slippages may encourage an incoming government to cause a one-off deficit in excess of the fiscal rule in its first year in order to gain more breathing space in subsequent years, including prior to the next election. Thus, rules need to prescribe binding yet realistic fiscal targets that take into account the political economy and are suitable for a wide range of economic circumstances.

IV. ALTERNATIVE NUMERICAL DESIGNS OF A FISCAL RULE IN BULGARIA

Recent trends in Eastern Europe have converged toward two dominant designs for fiscal rules: balance rules that include a cyclical component and expenditure rules combined with a debt brake. The latter has been seen as particularly suitable for converging economies, where improved revenue collection and higher demands for public services tend to inflate the public sector (Bakker and Gulde, 2010). The following section introduces each rule and discusses different variants and specifications.³

A. The Growth-Adjusted Balance Rule

A countercyclical balance rule combines an overall balance target with a countercyclical adjustment to shocks. As mentioned before, the direct imposition of a balance target could trigger abrupt adjustments to a non-cyclical shock. A correction term for deviations from the balance target can be used to smooth the adjustment, as discussed in Box 1. As output gap forecasts suffer from measurement problems, a more easily observed measure, such as the deviation of nominal output growth from its trend, can be deployed as proxy.

The following formulation of a growth-adjusted balance rule has precedents (it was discussed for Turkey and implemented in Serbia) and could be suitable for Bulgaria. The rule can be spelled out as

$$b_t \geq b_{t-1} + a(b_{t-1} - b^*) + \delta(\gamma_t - \gamma^*),$$

where b^* is the target overall balance, γ the nominal GDP growth rate and γ^* the nominal GDP trend growth rate, $-1 < a < 0$ is a shock adjustment factor, and $0 < \delta < 1$ is the countercyclical adjuster. Under this formulation, the annual change in the budget balance is equal to a fraction of the divergence from the overall balance target and a cyclical component (which is itself a fraction of the difference between expected growth and trend growth). The use of nominal rates of GDP growth triggers a change in the fiscal stance not only in response to a real growth shock, but also to a change in the inflation rate. This intensifies the countercyclical effect in case of demand shocks. The rule should be seen as minimum overall balance, i.e., fiscal policy can be chosen to be tighter than the rule prescribes.

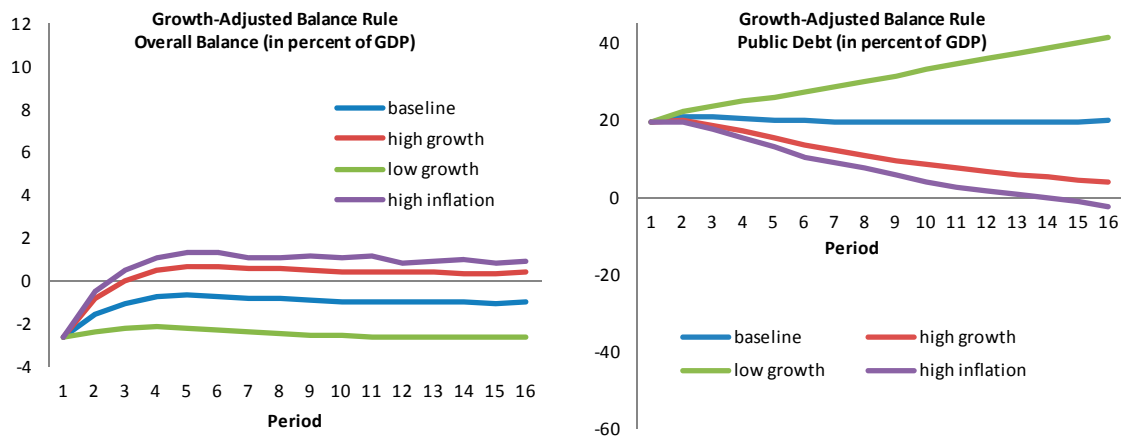
For Bulgaria, the nominal trend growth rate is estimated at 5.6 percent. With this rate of growth, a deficit target of 1 percent locks in the level of public debt at about 20 percent of

³ This section does not discuss the deficit and expenditure ratio ceilings introduced by the authorities given that they do not provide binding guidance over the economic cycle and thus not the kind of rules that can meaningfully be assessed with the above criteria. However, the deficit ceiling is consistent with the objective of debt sustainability.

GDP. This deficit target is close to the medium-term budget deficit of 0.6 percent of GDP as specified in the EU Convergence Program. The adjustment parameters are chosen as -0.5 and 0.5, respectively. This implies that any deviation from the balance target is halved in the following budget year. Given Bulgaria's expenditure ratio of about 40 percent, the cyclical factor of 0.5 suggests a slight countercyclical effect beyond the working of automatic stabilizers. As Bulgaria's historic elasticity of the budget balance to nominal growth is also about 0.5, the rule would not mandate a different cyclical reaction of fiscal policy than in the past. The rule would allow for a deficit of more than 2 percent in certain cases (e.g., a downturn of more than 1.4 percentage points from the equilibrium). In such cases, the deficit ceiling of 2 percent, already in place, would become the binding constraint.

What would be the effect of a shift in the macroeconomic parameters? Given that the parameters of the rule should not frequently be changed, the rule should perform well even when the underlying trend growth changes. Figure 1 shows the path of the overall balance and debt ratio when real trend growth or inflation turn out to be different from the baseline (see Box 2 for details on the forecasting methodology). Under a growth-adjusted balance rule, shifts in potential nominal growth imply that the balance target changes by $(-\delta/\alpha \cdot \Delta\gamma^*)$. In Figure 1, the baseline scenario envisages 2.6 percent real growth and 3 percent inflation. If real growth rises to 4 percent, the balance target changes from -1 percent to a 0.4 percent surplus and public debt converges to about 4 percent. The mechanism works symmetrically if growth is lower, and in the same way for higher or lower than assumed inflation.

Figure 1. Growth-adjusted Balance Rule: Sensitivity



Source: IMF staff. The baseline scenario is 2.6 real growth and 3 percent inflation. Real growth changes to 4 (1) percent in the high (low) growth scenario. Inflation changes to 5 percent in the high inflation scenario.

B. The Expenditure Rule with Deficit Ceiling

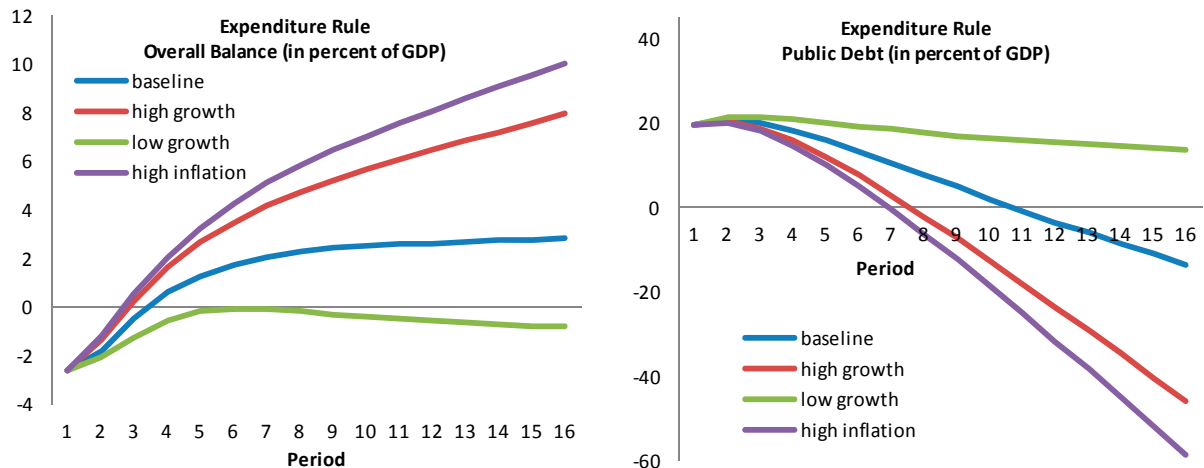
Expenditure rules are the most widespread type of fiscal rule (IMF, 2009). The main advantage of an expenditure rule is that it targets the fiscal variable central to the budgeting process and subject to considerable discretion. This is particularly relevant for a converging country like Bulgaria where spending pressure is strong, collected revenue is volatile, and independent monetary policy is absent. Combining the expenditure rule with a deficit ceiling ensures debt sustainability and prevents the expenditure rule from being undermined by tax policy. Such a rule is composed of two equally binding minimum conditions:

Condition 1: $E_t \leq (1 + \varphi)E_{t-1}$

Condition 2: $b_t \geq \max(b_\varphi, b^*)$

where E is the nominal expenditure, φ its nominal trend growth rate, b_φ the forecasted budget deficit given the expenditure rule and factoring in planned revenue-side measures, and b^* the floor for the overall balance. While in many countries the target variable is real expenditure growth, choosing nominal growth is easier to operationalize and, as argued before, more appropriate given Bulgaria's currency board.

Figure 2. Expenditure Rule with Deficit Ceiling: Sensitivity



Source: IMF staff. The baseline scenario is 2.6 real growth and 3 percent inflation. Real growth changes to 4 (1) percent in the high (low) growth scenario. Inflation changes to 5 percent in the high inflation scenario.

For Bulgaria, the rule is parameterized by using a nominal expenditure growth limit of 5.6 percent, which is in line with medium-term nominal trend growth of GDP. Given that the forecast for nominal growth—driven by the recovery—is currently running at above 5.6 percent, the overall balance would drift into a surplus and stabilize as growth converges to its

medium-term forecast (see Figure 2).⁴ If nominal growth stays permanently higher (lower) than 5.6 percent, the resulting balance would become increasingly positive (negative) under the rule. Thus, the expenditure rule is not immune against exogenous shifts in growth or inflation levels.

Setting condition 2 to a deficit ceiling of 2 percent would be consistent with the deficit limit currently in place. Yet, as pointed out above, the deficit ceiling is fairly tight and may require sizable adjustments in case of a severe shock; this could be achieved through a narrowly defined escape clause.

V. ASSESSMENT OF FISCAL RULE DESIGNS

This section evaluates the above rules against the five objectives set out in Section III.

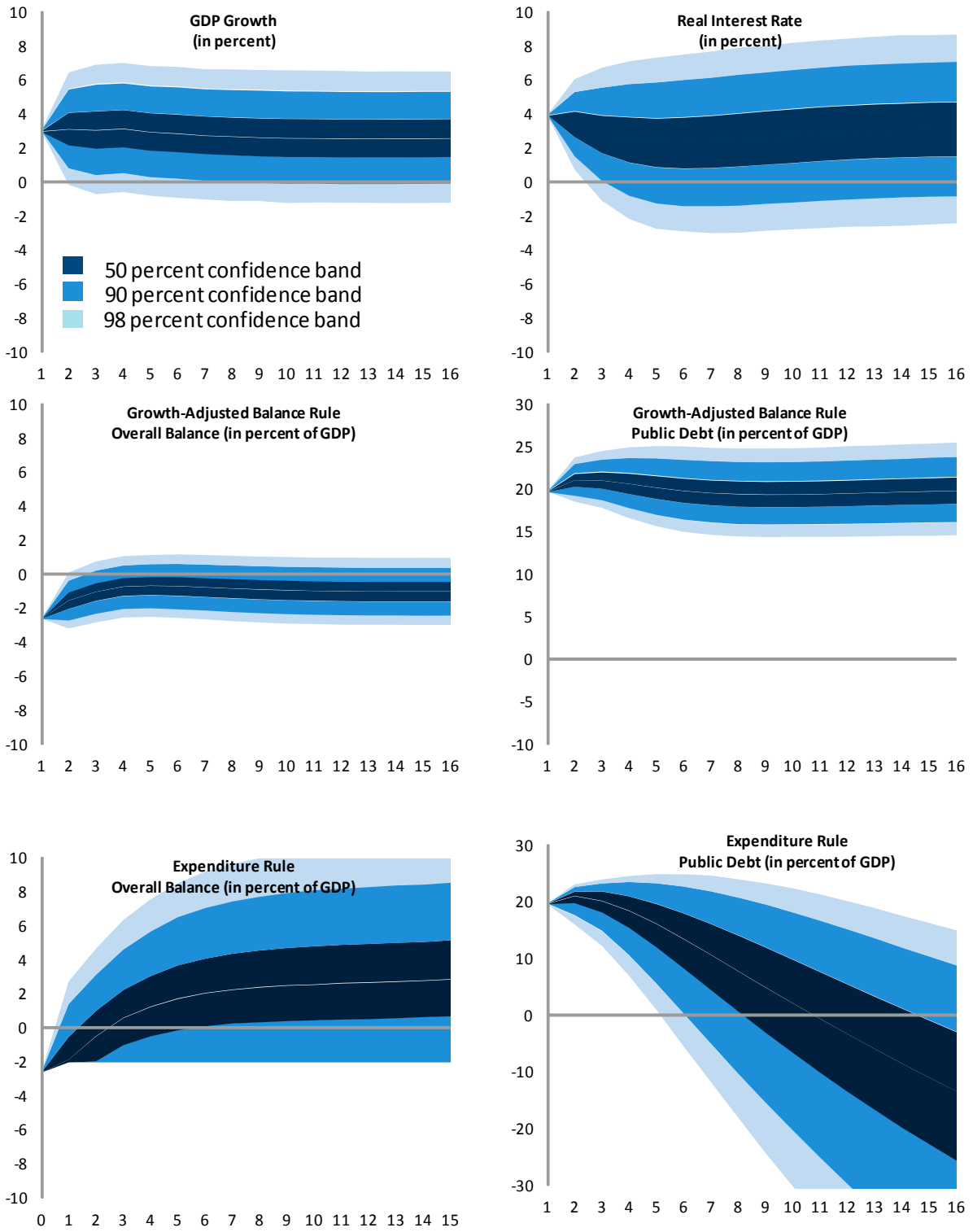
A. Fiscal Sustainability

Both rule options preserve the sustainability of the deficit and the public debt in the long run. As shown above, the chosen parameterization of the rules exhibits steady or declining debt ratios for different discretionary choices of key macroeconomic variables. For the growth-adjusted balance rule, the deficit converges to the set target of 1 percent and debt to the equilibrium level of about 20 percent of GDP in the baseline scenario. The expenditure rule likely leads to a surplus, and a debt level declining toward a net asset position. By using a vector autoregression (VAR), the long-term dynamics of a more complete set of macroeconomic variables can be estimated for different bands of confidence. Box 2 describes the methodology which derives long-term forecasts of the output gap, interest rates, and real effective exchange rates. Results have to be treated carefully given the short history of macroeconomic data in Bulgaria and the possible structural breaks presented by the recession of 2008-10. The long-term paths for growth and interest rates and the resulting balance and debt paths for the rules are shown in Figure 3.

While both rule designs eventually lead to a convergence level for the overall balance consistent with the current 2 percent deficit rule, the expenditure rule—given its starting point—would result in a tighter stance and a declining debt ratio in the long run. The VAR simulation demonstrates the width of the confidence bands of fiscal outcomes. Despite its cyclical adjustor, the growth-adjusted balance rule would firmly anchor the overall balance in a narrow range of about 4 percent of GDP around the target balance. While the deficit limit of 2 percent under the expenditure rule dictates a binding lower boundary, the expenditure constraint can lead to sizable surpluses given the large standard deviation of GDP outcomes

⁴ In the simulations, a historic average of 1.1 for revenue buoyancy in response to the output gap is used.

Figure 3. Long-term Forecast and Confidence Bands



Source: IMF staff estimates.

in Bulgaria. If strict adherence to the rule is assumed and trend growth does not weaken permanently, the rule could impose large fiscal surpluses which may be economically and politically difficult to justify.

Box 2. VAR-based Long-term Forecasting of Macroeconomic Variables

This paper uses an unrestricted VAR model to generate a forecast and shocks. The VAR estimates the relationship between Bulgaria's output gap, real interest rates, and real effective exchange rates (reflecting Bulgaria's competitiveness) using quarterly data from 1998 to 2010 (51 observations), following the introduction of a currency board in Bulgaria in 1997. The VAR produces a one-period ahead forecast of $Y_t = (y_t, r_t, z_t)$, a vector of endogenous variables where y is the output gap, r is the real interest rate, and z the log of the real effective exchange rate. Based on historic data including two lags ($k = 2$), a matrix of coefficients, γ_k , is estimated by

$$Y_t = \gamma_0 + \sum_k \gamma_k Y_{t-k} + \xi_t$$

where $\xi \sim N(0, \Omega)$ is a vector of well-behaved error terms (see Hamilton, 1994, pp. 291ff).

Besides using the forecasted value, the variance-covariance matrix of residuals Ω describes the joint statistical properties of the contemporaneous shocks.

We use the variance-covariance matrix to model different shocks to the baseline forecast. First, repeated simulations of random shocks are generated to generate confidence bands around the central forecast. Second, we use the variance-covariance matrix to impose isolated two-standard deviation shocks on each variable during the first forecasting periods and derive the resulting path of the endogenous variables.

GDP growth is derived using a potential growth rate of 2.6 percent as baseline, consistent with the temporarily slower path assumed for 2010-16, but alternative growth scenarios are also estimated. Given the definition of the balance rules, GDP is the only directly needed input parameter. For the expenditure rule, revenues are estimated assuming an elasticity of 1.1 to the output gap, equal to the empirical average in Bulgaria during 2000-10 and close to the standard assumption for unity elasticity.

B. Reserve Preservation

Results from the VAR-based simulation are also used to identify the worst case scenario which is used to determine the funding implied by the fiscal rules. Given that the fiscal reserve was in the past used to fund a budget deficit, it would be conceivable that the available fiscal reserve is used in a worst case scenario where other funding sources are scarce. However, it is noted that the reserve does not have the only purpose to backstop fiscal funding needs. Also, a large part of the fiscal reserve, such as the Silver Fund, is not intended

to be used for budgetary needs. whether the level of the fiscal reserve can finance the rule-implied deficit.

Bearing these caveats in mind, the resulting funding need in a worst case scenario is compared to the level of the fiscal reserve that prevailed at end-2010. The applied worst-case scenarios are the 1 or 5 percent worst outcomes in a VAR-based simulation for a cumulative 3-year period, an arbitrarily chosen time horizon during which the deficit is high and new funding cannot be obtained. Table 2 shows that the resulting new borrowing need can amount to up to 9 percent of GDP, roughly equivalent to the amount in the Fiscal Reserve Account (FRA) as of end-2010. (Current levels of the FRA are closer to 7 percent of GDP.) It is important to keep in mind that the FRA may also be needed to fund other below-the-line operations. Ideally, the calculation would also take into account debt amortizations. Given the average remaining maturity of Bulgaria's general government debt of 7 years, the average annual rollover need amounts to about 3 percent of GDP. However, even during a crisis a partial rollover or new sources of funding may be forthcoming.

Table 2. Overall Balance in Worst Case Scenarios

Overall balance <i>(3 years cumul., in percent of GDP)</i>	Confidence band	
	95 percent	99 percent
Growth-adjusted balance rule	-7.6	-8.9
Expenditure rule	-6.6	-6.6
Memorandum item:		
FRA <i>(end-2010, in percent of GDP)</i>	8.5	

Source: IMF staff estimates.

C. Countercyclicality

With the parameters proposed for the growth-adjusted balance rule, the budget would accommodate the automatic stabilizers in the short term, but—depending on the shock—would have to reverse fairly quickly to the target balance. In contrast, the cyclical effect of the expenditure rule cannot be easily inferred from examining the formula. Most of the budget cyclicality originates on the revenue side (which is not bound by the rule), so automatic stabilizers on the revenue side remain unconstrained. However, certain cyclical expenditure items, such as spending on unemployment benefits, will be constrained by the rule. These items are comparatively small in Bulgaria, but may gain in importance in the future. Overall, the ceiling on the deficit of 2 percent is the element that most strictly limits the countercyclical effect of the expenditure rule during severe downturns.

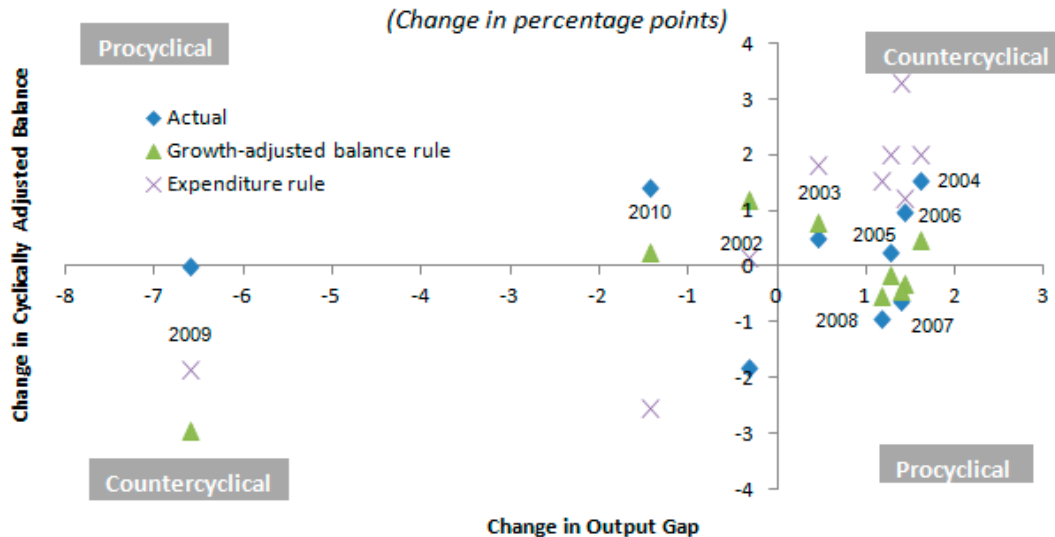
Given the limited insight that can be inferred from the rule's formulations, empirical methods are being used to gauge its cyclical behavior. Using data from the past cycle, either rule would have reduced the procyclicality vis-à-vis the actual fiscal stance. Figure 4 illustrates

this by plotting changes in the cyclically adjusted balance against changes in the output gap. The quadrants of the chart indicate the cyclical stance, following a definition in which procyclical policy consists of a tightening (loosening) of the cyclically adjusted balance (i.e., after allowing for automatic stabilizers) when growth is below (above) trend, and vice versa. This definition focuses on the forward looking cyclical stance assuming that trend growth is persistent, i.e., the output gap follows a pattern of longer-term swings (rather than random jumps).

The result shows that during the pronounced boom-bust cycle in Bulgaria only the expenditure rule would have acted strictly countercyclical, in particular with regard to the prolonged upswing (see upper right quadrant in Figure 4). The main reason for this was the buoyant revenues during the prolonged phase of expansion, allowing the government to increase spending significantly while still running an overall surplus. For instance, while GDP expanded at a pace of 4.1 percent per year in real terms during 2001-10, the public wage bill increased by 8.8 percent, pensions by 5.7 percent, and healthcare by 12.0 percent.

During the downturn, both rules act countercyclically in the year of the shock (2009). However, the stimulus of the growth-adjusted balance rule is quickly phased out. Given the contraction of revenues, which imposed a moderation of expenditure growth, the expenditure rule would accommodate larger and more prolonged deficits, bounded only by the absolute deficit limit.

Figure 4. Cyclically Adjusted Balances During the Boom-Bust Period 2002-10

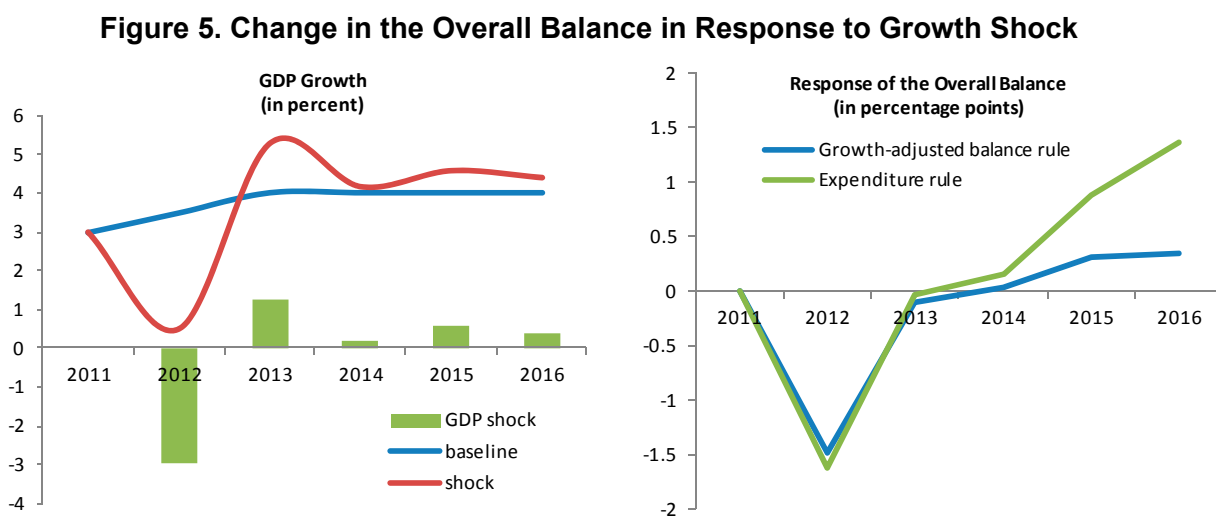


Source: IMF staff estimates.

For a forward looking analysis, a shock to the output gap is applied to forecasted macroeconomic variables. The baseline forecast is taken from the World Economic Outlook for the period to 2016. A shock to the output gap by two standard deviations would lower the

growth rate by about 3 percentage points, a less severe shock than experienced in 2009. In such a scenario, the growth-adjusted balance rule and expenditure rule allow for a deficit about 1.5 percent of GDP wider than in the baseline scenario, translating into an approximately cyclically neutral stance (Figure 5). In the year following the shock, historic patterns would suggest that the economy recovers strongly with above-baseline growth, somewhat more robust than the recovery after 2009. In that case, the rules would impose a tighter fiscal stance in line with higher growth.

Additional simulations of other shocks, such as on interest rates, have a small or negligible impact on growth and fiscal deficits and thus are not shown here. Analyses of different cyclical patterns and shocks largely confirm the previous finding that the expenditure rule is tighter during upswings. Both rules allow for automatic stabilizers whereas the absolute deficit ceiling under the expenditure rule sets a binding constraint in severe downturns.



Source: IMF staff estimates.

D. Transparency and Unambiguity

As has been argued, the rule must be comprehensive but simple enough for the general public to be able to understand and monitor it. The more convoluted formulation of the growth-adjusted balance rule is probably less easy to grasp than the two simple constraints contained in the expenditure rule. Yet, both rules refrain from using ambiguous input variables, such as the output gap, where measurement errors may occur. While there are benefits of using estimates of the output gap (or the absorption gap during times of significant current account imbalances; see IMF, 2007), their estimates are likely to be surrounded by significant uncertainty. Using inflation and growth, two key macroeconomic indicators, makes the rule easier to disseminate and allows for direct comparison with other sources of forecasts, thus also exposing the authorities' economic forecast to greater public scrutiny. A transparent budget process, with published milestones, such as that proposed in the Convergence Program 2011-14, will also foster transparency.

The use of overall balance targets or overall expenditure growth limits maximizes transparency and clearly defines the boundaries for fiscal policy. Given the liquidity constraint implicit in the currency board arrangement, it is appropriate to use the broadest available aggregate of the fiscal accounts, the overall deficit. Yet, the case could be made for excluding certain items, in particular public investments and grants (such as receipts from EU Structural and Cohesion Funds). Investment spending tends to exhibit a particular seasonality (with expenditures clustered at year-end). While there are different reasons for the underexecution of this budget item, it is apparent that spending from the capital budget is largely discretionary and can be easily cut to meet certain deficit targets as the end of the fiscal year draws closer. It would be detrimental if a fiscal rule would debase the delicate balance between fiscal responsibility and improving the country's stock of public investments. Hence, capital expenditures (and offsetting grants) could be excluded from the balance and expenditure rules, and the balance target could be adjusted accordingly.⁵ However, the benefits of removing restrictions from capital expenditures have to be weighed against the loss in comprehensiveness and credibility.

E. Guidance

A rule earns most credibility if it provides guidance to policymakers and is most likely to be adhered to. As the expenditure rule does not bind revenue, the guidance it provides is less comprehensive than the balance rule.⁶ Also, the 2 percent deficit ceiling may be difficult to adhere to during severe one-off shocks and may warrant an exit clause. These issues highlight the fine balance between guidance—both to policymakers and the public—and flexibility of a rule and warrant further analysis.

It is difficult to embed in fiscal rules effective enforcement or correction mechanisms against slippages. The convergence term of the growth-adjusted balance rule represents built-in correction mechanisms that automatically trigger an adjustment for any deviation from the target. High credibility is likely to remain the most effective enforcement mechanism. Establishing such high credibility may require time, therefore the adaptability of either rule with regard to shifts in the macroeconomic parameters that may occur over time are important. Credibility can also be bolstered by a fiscal board or other independent institution that reviews the budget and reform proposals and provides an opinion in case the rule is being violated. The Netherlands presents an example of such an institution with a broad and effective mandate.

Other safeguard mechanisms relate to the correction for ex-post deviations and forecasting errors. While the expenditure rule is not contingent on macroeconomic forecasts, the growth-

⁵ Capital expenditures accounted for 4.9 percent of GDP on average in 2001-10, and grants for 1.8 percent.

⁶ However, the authorities have contemplated subjecting direct tax rates to a parliamentary supermajority, which would curtail their discretion for policymaking through revenue measures.

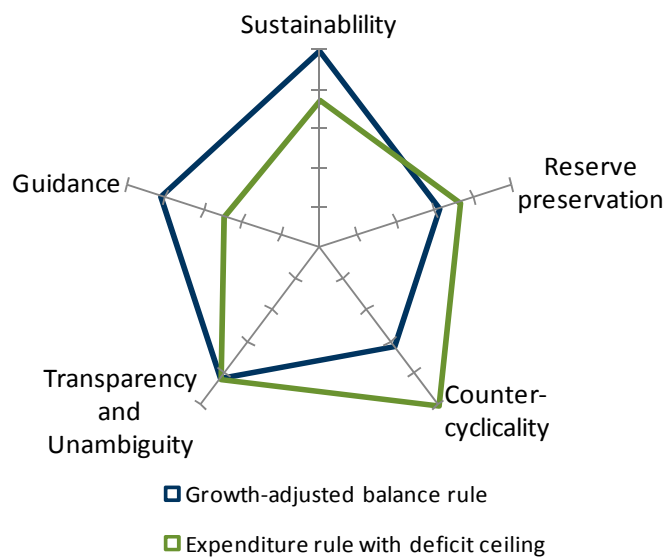
adjusted balance rule would result in a miscalibration if the growth forecast were to be revised. Therefore, the budget procedure has to include the possibility to revise budget targets in light of faltering growth. Sweden, for instance, includes expenditure buffers to compensate for possible revisions to the forecast. In Switzerland, deviations from the rule are accumulated in a notional account and, if they reach a certain threshold, must be compensated for in future budgets.

VI. CONCLUSION

The European Commission's recommendation to strengthen fiscal frameworks through durable and binding fiscal rules has been endorsed by the Bulgarian authorities. Bulgaria has already taken steps towards its implementation by introducing a deficit rule and an expenditure ceiling into the organic budget law. While this meets the minimum criteria envisioned by the European Commission, it could be complemented by building an even stronger and durable fiscal framework.

This paper discusses general options for the design of a fiscal rule to complement the current deficit ceiling. While there are many possible variants, it focuses on two alternative specifications: a *balance rule* which targets an overall balance to preserve Bulgaria's current low debt level and includes a cyclical adjustment to allow for some degree of countercyclical fiscal policies; and an *expenditure rule* that constrains expenditure growth—in particular during upturns—and limits the overall deficit in a downturn.

Figure 6. Scorecard of Alternative Designs



Source: IMF staff calculations.

Each rule is assessed against the achievement of five objectives. The scorecard in Figure 6 illustrates the results. Both rules are calibrated in a way to achieve the most eminent objective of maintaining fiscal sustainability. The growth-adjusted balance rule does so by including a deficit target of 1 percent. Absent an explicit deficit target, the expenditure rule is calibrated using a limit for nominal expenditure growth of 5.6 percent. This calibration results in higher surpluses and a declining debt ratio, leaving sufficient buffer to maintain debt at current levels if growth falls below the forecasted trend rate. Both rules are also tight enough to preserve the fiscal reserve and sustain deficits during a period of market distress. For instance, a fiscal reserve of about 9 percent of GDP (i.e., close to end-2010 levels) would be sufficient to finance the deficit for more than a year of high deficits. Yet, the fiscal rule is not a debt management tool, therefore it would be necessary to take into account contingent liabilities and refinancing requirements, among other below-the-line operations. To this end, a complementary funding rule could be introduced to ensure a sufficient liquidity buffer in the fiscal reserve account. Both rule designs also score high on transparency and unambiguity. The main benefit of the growth-adjusted balance rule is its comprehensive coverage of the entire budget, making it easy to calculate and evaluate the rule and the consistency of the authorities' policies with it. The expenditure rule is similarly easy to evaluate and may be most useful to anchor fiscal expectations around the 5.6 percent nominal expenditure growth rate.

When it comes to providing a countercyclical impulse and guidance, the two rules exhibit different focus. The growth-adjusted balance rule includes an explicit adjustment for growth shocks, and thus provides clear guidance for fiscal policymaking through the entire cycle. While automatic stabilizers are allowed to work, the convergence to the target balance leads to a fairly rapid phasing-out of countercyclical deviations from the target balance. Thus, the rule is strongly binding and limits fiscal discretion. While accommodating a somewhat countercyclical reaction, the swings in the budget are fairly contained. While parameters could be chosen differently to allow for larger variation, the current formulation is chosen to reinforce the conservative approach fiscal policymakers in Bulgaria have chosen in the past.

In contrast, the expenditure rule is highly countercyclical during upswings, allowing the build-up of buffers that proved so important for Bulgaria during the past crisis. During downturns, the expenditure growth condition is likely to lose its binding character, and the deficit ceiling of 2 percent becomes the relevant constraint. Thus, the rule is likely to leave more room for discretionary policies during downturns. At the same time, revenue-side policies, such as changing tax rates, are outside the scope of the rule. While the authorities are very committed to provide a stable business environment, in particular with regard to direct tax rates, the rule does not guide revenue-side policies and thus remains partial.

The deficit ceiling, introduced into the organic budget law in June 2011, is a natural complement to the expenditure rule. While it is cautioned that the deficit ceiling of 2 percent is fairly tight given the cyclical nature of Bulgaria's economy, the expenditure rule is well suited to mandate a high enough balance during upswings to contain a cyclical deterioration

of the overall deficit to 2 percent. The growth-adjusted balance rule could also be combined with such a deficit ceiling. However, there is a possibility of conflicting outcomes in severe downturns whereby the deficit ceiling mandates a much tighter fiscal stance against the spirit the countercyclicality embedded in the growth-adjusted balance rule.

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