

# Patching up the Pact

## *Suggestions for enhancing fiscal sustainability and macroeconomic stability in an enlarged European Union\**

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### Abstract

The paper considers the implications for the EU accession candidates of Central and Eastern Europe of the fiscal-financial constraints imposed by the Stability and Growth Pact and the Maastricht Treaty. Our findings apply also to those current EU members whose initial conditions (e.g., infrastructure and progress in state pension reform) or other structural characteristics (e.g., demographic structure, growth potential, Balassa-Samuelson equilibrium real exchange rate appreciation) differ significantly from the EU average. We find the existing criteria to be seriously flawed and propose an alternative rule, the Permanent Balance Rule, based on a strong form of tax smoothing.

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## 1. Introduction

The purpose of this paper is to discuss the implications of the fiscal rules that govern countries in the European Union (EU) for the Central and Eastern European countries that are candidates for early EU accession. We argue that both the Stability and Growth Pact and the Broad Economic Policy Guidelines currently in place are ill-designed to address the economic realities of countries that differ significantly from the EU average as regards their expected future inflation and real GDP growth rates and their inherited stocks of environmental and public sector capital. While the issues addressed are not unique to the accession candidates, their importance is magnified because enlargement will substantially increase the structural diversity of the economies inside the European Union, and will do so in ways that are relevant to the cost-benefit balance of adherence to the current EU fiscal rules. We discuss possible reforms of the current system including the 'Golden Rule' advocated and implemented by the UK, and argue that the best framework would be a so-called 'Permanent Balance' rule.

Thirteen countries are currently candidates for accession to the European Union.<sup>1</sup> All except Turkey are formally engaged in accession negotiations. Of the twelve candidates involved in formal accession negotiations, ten (all except Bulgaria and Romania) are scheduled to become EU members by the middle of 2004.

All new EU members will automatically, upon entry to the EU, be bound by the rules of the *Stability and Growth Pact* (the Pact) and the *Broad Economic Policy Guidelines* (BEPGs). Following EU accession the new member countries will gain membership of the Economic and Monetary Union (EMU). EMU membership is now part of the *Acquis Communautaire*. Of course, a set of conditions (the Maastricht conditions, after the Treaty of Maastricht) have to be satisfied in order for the new EU members to qualify for *full* EMU membership, that is, before they are allowed to proceed to stage 3 of EMU, by locking into the eurozone through the adoption of an 'irrevocable' euro conversion rate.

The accession countries will, once they join the EU, have to present annual *Convergence Programmes* to the Commission and the Council of Ministers.<sup>2</sup> In addition to the Convergence Programmes mandated under the Pact, any new EU members will be expected to follow the annual recommendation of the Council (proposed to the Council by the Commission) on the *Broad Economic Policy Guidelines* (BEPGs).<sup>3</sup> These BEPGs go well beyond what is required by the Stability and Growth Pact both in the scope and in the detail of their recommendations, and include structural reform, employment and wage developments, in addition to

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<sup>1</sup> They are Bulgaria, the Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic, Slovenia and Turkey.

<sup>2</sup> EMU members present annual *Stability Programmes*.

<sup>3</sup> The full name is 'Broad Guidelines of the Economic Policies of the Member States and the Community.'

budgetary issues. Other than ‘naming and shaming’, no sanctions follow a failure to follow the recommendations in the BEPGs.

In this paper we demonstrate the shortcomings of the existing fiscal-financial criteria and suggest ways of amending and improving the rules of the Stability and Growth Pact so as to enhance fiscal-financial sustainability and macroeconomic stability.

We argue that the appropriate operational expression of the concepts of *sustainable* and *stabilizing* fiscal-financial policies ought to depend on certain key structural economic features. All of these features are quite intuitive and can be given simple economic justifications. Some, but not all, of these features are observable, identifiable and verifiable in a reasonably objective manner. Others involve expectations of, or plans for, the future. They therefore inherently involve judgement and elements of subjective interpretation. This inevitably means that the determination of whether a country’s fiscal-financial programme is sustainable, or whether a particular sequence of current and anticipated future deficits is excessive, cannot be reduced to a mechanical test, but will involve judgement, discussion and potential disagreement. In our view, this is not a weakness but a virtue, because it represents recognition of the basic truth that issues of fiscal-financial stability cannot be resolved without an explicit, and potentially contestable, judgement about future plans and expectations about future economic developments. In the long run, muddled honesty beats spurious precision.<sup>4</sup>

We do not argue that countries with very different real economic structures should not join together in a monetary union or that there should be any protracted delay between EU accession and EMU membership for the leading cohort of current accession candidates. To the contrary, in Buiter and Grafe (2002) we have argued for the earliest possible EMU membership for all successful EU applicants.<sup>5</sup> They will prosper, provided proper allowance is made in the design of fiscal-financial rules for marked differences in economic structure.

The remainder of this paper is organized as follows. In Section 2, we introduce the notion of fiscal sustainability and present the so-called permanent balance rules. Section 3 summarizes, for current EU member countries and the Eastern European candidate countries, the economic fundamentals that matter for the design of appropriate fiscal rules. We follow this discussion by giving an overview in Section 4 of the main fiscal rules existent inside the EU. Section 5 contrasts the permanent balance rules with the current EU rules in the light of the economic diversity surveyed in Section 3, which brings us to the conclusion.

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<sup>4</sup> Or, it is better to be approximately right than precisely wrong – a proposition attributed to many, including Amory Lovins and Warren Buffet.

<sup>5</sup> The key condition that must be satisfied for an accession candidate to benefit from joining the eurozone is that the country’s fiscal-financial programme, now and in the future, be such as to rule out any possible need for discretionary monetary financing of government financial deficits. That is, the country can make the credible commitment that it will not require recourse to the anticipated and/or unanticipated inflation taxes.

## 2. Fiscal sustainability and the *Permanent Balance Rule*

Before presenting our reform proposal we first establish formally the fiscal framework we are using and the notion of fiscal sustainability.

### 2.1 *Some simple budgetary arithmetic*

The *fiscal-financial programme* of the state consists of the rules governing the sequences of past, current and future public spending (consumption, investment, transfer payments and subsidies), tax structures and revenues (rates, exemptions, bases, allowances, deductions etc.), subsidy and transfer structures, and government borrowing. Ideally the fiscal-financial framework would apply to the consolidated general government and central bank, and an explicit distinction would be made between monetary and non-monetary public debt. However, since the existing EU fiscal framework restricts its attention to the general government, which excludes the central bank, we restrict our framework here to the general government as well. Including the central bank would be important both for countries that are not yet members of EMU and thus have independent monetary authorities and for the EMU area as a whole.

To get a full and accurate picture of the sustainability of the public finances, it is important that *all* financial assets and liabilities (that is, all contractual claims and obligations) of the general government be included and consolidated in a single, comprehensive balance sheet, and that all non-contractual expenditures and receipts also be accounted for comprehensively and fully. All off-budget expenditures and receipts (including the outlays and revenues of the state pension funds, the social security fund etc. and all off-balance sheet contingent claims and liabilities) must be consolidated and included in a single comprehensive set of accounts. For simplicity, we restrict the stylized accounting framework below to a single, (very) short maturity government debt instrument denominated in domestic currency. The notation to be used in what follows is summarized in Table 1.

Equation (1) is the budget identity of the general government. The change in the amount of nominal government debt ( $B$ ) in comparison to nominal GDP ( $PY$ ) is given by the primary deficit as a share of GDP ( $g - \tau$ ) plus interest payments on existing government debt measured as a share of GDP ( $iB/(PY)$ ). A 'dot' over a variable denotes its instantaneous rate of change.

$$\frac{\dot{B}}{PY} \equiv g - \tau + i \left( \frac{B}{PY} \right) \quad (1)$$

Using the definitions of Table 1, equation (1) can be rewritten as equation (2) or (3);  $b$  is (net) general government debt as a fraction of GDP,  $\eta$  is the general

**Table 1. Notation**


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$B$ : total stock of nominal, interest-bearing general government debt held either by the central bank, the domestic private sector or the rest of the world. For notational simplicity, we assume that the general government does not hold any financial assets, so gross general government debt is the same as net general government debt.

$g_T$ : general government transfers and subsidies as a fraction of GDP.

$g_C$ : general government consumption as a fraction of GDP.

$g_I$ : gross general government capital formation as a fraction of GDP.

$g \equiv g_T + g_C + g_I$ : total public spending as a fraction of GDP.

$\tau$ : total general government taxes and other current revenues (including payments made by the central bank to the general government) as a fraction of GDP.

$i$ : domestic instantaneous nominal interest rate on government debt.

$i^*$ : foreign instantaneous nominal interest rate.

$P$ : domestic GDP deflator.

$\pi \equiv P/P$ : domestic rate of inflation.

$E$ : nominal spot exchange rate (the domestic currency price of foreign currency).

$\varepsilon \equiv E/E$ : proportional rate of depreciation of the nominal exchange rate.

$Y$ : domestic real GDP.

$n \equiv Y/Y$ : proportional growth rate of real GDP.

$r \equiv i - \pi$ : instantaneous domestic real interest rate.

$b \equiv B/(PY)$ : ratio of gross (and net) general government debt–GDP.

$\eta \equiv B/(PY)$ : general government financial deficit as a fraction of GDP.

$s \equiv \tau - g$ : general government primary (non-interest) surplus as a fraction of GDP.

$k$ : ratio of general government capital stock to GDP.

$\delta$ : proportional rate of depreciation of the general government capital stock.

$\theta$ : gross financial rate of return on the general government capital stock.

$\tau_0$ : general government tax revenues as a fraction of GDP.

Cyclically adjusted values are denoted by tildes.

Steady state values are denoted by overbars.

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government financial deficit as a fraction of GDP,  $r$  is the short real rate of interest on general government debt,  $n$  is the growth rate of real GDP and  $\pi$  is the rate of inflation.

$$\tilde{b} \equiv g - \tau + (r - n)b \quad (2)$$

$$\tilde{b} \equiv \eta - (\pi + n)b \quad (3)$$

The usual solvency constraints, ruling out Ponzi finance by the government implies the following intertemporal budget constraint for the general government (equation (4)).<sup>6</sup>

$$b(t) \leq \int_t^{\infty} e^{-\int_t^v [r(u)-n(u)]du} [\tau(v) - g(v)] dv \quad (4)$$

The level of net debt has to be smaller than the present value of all future primary (non-interest) budget surpluses.<sup>7</sup>

For certain purposes, it is important to decompose total public spending,  $g$ , into general government *transfer payments*,  $g_T$ , general government *consumption*,  $g_C$ , and general government *gross capital formation*,  $g_I$ , that is:<sup>8,9</sup>

$$g \equiv g_T + g_C + g_I. \quad (5)$$

Likewise it can be useful to decompose total current revenues into gross *financial returns* to the government on the general government capital stock,  $\theta k$ , and other *current revenues*,  $\tau_0$ , where  $k$  is the ratio of the public sector capital stock to GDP and  $\theta$  is the gross financial rate of return on the general government capital stock, that is:<sup>10</sup>

$$\tau \equiv \tau_0 + \theta k. \quad (6)$$

Let  $\delta$  be the proportional rate of depreciation of the general government capital stock. The change in the public sector capital stock as a share of GDP,  $k$ , is given by the difference between the share of gross general government investment in GDP and the reduction in the public sector capital-GDP ratio due to capital depreciation and real GDP growth.

$$\dot{k} \equiv g_I - (\delta + n)k \quad (7)$$

<sup>6</sup> The government is engaged in Ponzi finance if its debt grows forever at a proportional rate that is equal to or larger than the interest rate. In that case, despite having a positive debt stock outstanding, the government never plans to run any primary (non-interest) budget surpluses. Such public finance 'pyramid schemes' are ruled out here.

<sup>7</sup> Equation (4) is the equivalent statement that the current debt-GDP ratio has to be no larger than the sequence of future primary surplus-GDP ratios discounted at the real interest rate minus the real growth rate.

<sup>8</sup> Public sector transfer payments include all subsidies and social security (or national insurance) benefit payments, including state pension, health and disability benefits. Social security (or national insurance) taxes or contributions are included among the taxes in the accounts.

<sup>9</sup> All public spending categories,  $g$ ,  $g_C$ ,  $g_I$  and  $g_T$ , are measured as shares of current GDP.

<sup>10</sup> Again,  $\tau$ ,  $\tau_0$  and  $k$  are measured as shares of current GDP.

Using the decompositions for government revenue (6) and expenditure (5) the general government budget identity can be written as follows:

$$\dot{b} - \dot{k} \equiv g_C + g_T - \tau_0 + (r - n)(b - k) - (\theta - \delta - r)k. \quad (8)$$

In what follows we concern ourselves with the concept of a(n) (un)sustainable debt level rather than an excessive one. Excessive debt is a broader concept than ‘unsustainable’ debt. Debt and deficits can be excessive, that is, impose greater costs than benefits, without creating a serious risk of sovereign debt default. However, debt sustainability (or long-run feasibility of the fiscal-financial programme) is a necessary condition for debt not to be excessive (or larger than optimal).

We define sustainability of a government fiscal financial programme as the absence of default risk.<sup>11</sup> A fiscal-financial programme is sustainable if it ensures the solvency of the government. Consider again the fundamental solvency constraint of the government from (5), reproduced as equation (9) below.

$$\begin{aligned} b(t) &\leq \int_t^{\infty} e^{-\int_t^v [r(u) - n(u)] du} s(v) dv \\ &\equiv \int_t^{\infty} e^{-\int_t^v [r(u) - n(u)] du} [\tau(v) - g(v)] dv \\ &\equiv \int_t^{\infty} e^{-\int_t^v [r(u) - n(u)] du} [\tau_0(v) + \theta(v)k(v) - g_T(v) - g_C(v) - g_I(v)] dv \end{aligned} \quad (9)$$

The maximum size of the primary surplus,  $s$ , is clearly bounded in theory by current national wealth and the discounted future non-asset income stream of the economy. However, this bound is clearly never binding, as this would imply that government spending henceforth is zero and that the government can tax away all national resources. Instead, the maximum size can not be bigger than the one that imposes economic, social or political costs that make default the less expensive option. Thus, fiscal sustainability usually depends both on economic and political parameters.

We define the *permanent* primary surplus–GDP ratio,  $s^p$ , as that constant primary surplus–GDP ratio whose present discounted value is the same as the present discounted value of the actual (or anticipated) future sequence of primary surplus–GDP ratios. If the relevant time horizon is infinite, this amounts to:

<sup>11</sup> One can weaken this to the requirement that default risk be below some threshold level.

$$s^p \equiv \left( \int_t^\infty e^{-\int_t^v [r(u)-n(u)]du} dv \right)^{-1} \int_t^\infty e^{-\int_t^v [r(u)-n(u)]du} s(v) dv. \quad (10)$$

Permanent values of all other flows of expenditure or receipt ratios to GDP are defined analogously. The term

$$\int_t^\infty e^{-\int_t^v [r(u)-n(u)]du} dv$$

can be interpreted as the value of a real (that is, index-linked) perpetuity whose (real) coupon grows at a proportional rate  $n$  from an initial value of one unit of output. We can then define the *permanent* (or *long-run*) real interest rate minus the *permanent* (or *long-run*) real growth rate,  $r^p - n^p$ , as that constant value of the excess of the real interest rate over the real growth rate that generates the same value for this real perpetuity as is generated using the actual (or anticipated) future values of  $r - n$ , that is:

$$r^p - n^p \equiv \left( \int_t^\infty e^{-\int_t^v [r(u)-n(u)]du} dv \right)^{-1}. \quad (11)$$

The government's intertemporal budget constraint or solvency constraint can therefore be written compactly as follows.

$$b \leq \frac{s^p}{r^p - n^p} \equiv \frac{\tau^p - g^p}{r^p - n^p} \equiv \frac{\tau_0^p + \theta^p k^p - g_T^p - g_C^p - g_I^p}{r^p - n^p} \quad (12)$$

Government solvency can be seen to depend on four crucial parameters:  $b$ , the outstanding (net) debt–GDP ratio;  $s^p$ , the permanent primary surplus–GDP ratio;  $r^p$ , the long-run real interest rate; and  $n^p$ , the long-run real growth rate. Two of these, the long-run real interest rate and the long-run real growth rate are, at most, only partly, indirectly and highly imperfectly controllable by the government. One, the initial government debt–GDP ratio, is predetermined, that is given at any point in time, but endogenous in the long run. One, the primary surplus–GDP ratio, is in principle controllable by the government. This control is imperfect and subject to important constraints, administrative and political as well as economic.



In the remainder of the paper we present fiscal rules that are supposed to ensure the solvency of a government. In doing so we do not address the question of whether there is a need to explicitly write down these rules and if they need to be enforced by some central agent (external to the national fiscal authorities) or whether instead debt sustainability is self enforcing. Clearly the authors of the EU rules were of the opinion that explicit rules are necessary. According to the rules deficits can be too large but not too small. This asymmetry does not appear to be motivated primarily by a technical economic judgement about asymmetries in the transmission mechanism of fiscal policy.<sup>12</sup> Instead, the asymmetry appears to reflect a political-economic judgement about a bias towards excessive public debt and deficits in E(MU) countries' budgetary institutions and political processes. Most of the existing EU member countries have not had national fiscal rules for the central governments, thus the bias of concern to the founders appears to be mainly driven by the fact that there are several national fiscal authorities without a central government that is able to rein in national budgets but only one central bank.

We review the main arguments brought forward for an upward bias in public debt and deficits in Buiter and Grafe (2003), but conclude that the political economy case for a bias towards excessive deficits is by no means overwhelming. Much of the theoretical work cited in support of the proposition that there is a bias towards excessive deficits is actually about a bias towards an excessive size of government, that is, about a bias towards excessive government spending and revenues, rather than about a bias towards excessive deficits, that is, an *intertemporal* bias towards postponing tax increases or expenditure cuts.

## 2.2 A reform proposal: The 'Permanent Balance' Rule

In this section we propose a simple tax rule which (1) ensures that the government's solvency is guaranteed and (2) has other attractive features, from the perspective of cyclical stabilization and the minimization of the excess burden of distortionary taxation. As shown in the literature on tax smoothing (see, for example, Barro, 1979; Deaton, 1981 or Lucas and Stokey, 1983), a constant share of taxes in GDP is optimal under admittedly restrictive conditions, that is, a constant 'average marginal tax rate' is the least-cost or efficient way of financing a given public expenditure programme, allowing for any future financial returns on the general government capital stock.<sup>13</sup>

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<sup>12</sup> The only self-evident asymmetry in the response of the economic system to very high public debt and very low debt (or very large negative debt), comes from default risk and the real cost associated with government debt default. There is no counterpart to bankruptcy and default for economic agents, including governments, that are very large ('excessive') creditors. However, for every creditor there is a matching debtor. Lower government debt means either lower domestic private financial wealth and/or lower foreign financial wealth. Private default is costly also.

<sup>13</sup> If there is a single tax with GDP as the base, the marginal tax rate should be constant over time. In a world with many different taxes and tax bases, simple rules are harder to establish.

A prudent government borrowing rule is achieved if the share of government taxes in GDP,  $\tau_0$  is kept constant<sup>14</sup> at a value,  $\tau_0^p$ , no less than the sum of the permanent public spending share in GDP (itself the sum of the permanent government transfer share, the permanent public consumption share and the permanent public investment share) plus the long-run growth-adjusted interest cost of the public debt (as a fraction of GDP), minus the permanent government capital income as a share of GDP. That is:

$$\tau_0 = \tau_0^p \geq g^p + (r^p - n^p)b - \theta^p k^p \equiv g_T^p + g_C^p + g_I^p + (r^p - n^p)b - \theta^p k^p. \quad (13)$$

This tax smoothing rule means that the *inflation-and-real-growth-adjusted permanent government budget* is in balance or in surplus. We call it the *Permanent Balance Rule*, because of its analogies with the permanent income hypothesis of household consumption. A household's permanent income is that constant level of consumption that has the same present discounted value as the actual (anticipated) future endowment stream plus initial financial wealth. If a household consumes its permanent income, that consumption level is (*ex ante*) the highest constant sustainable level of consumption over its lifetime. Our Permanent Balance Rule for the share of taxes in GDP defines it as that constant value of the share of taxes in GDP whose present discounted value (over an infinite future time horizon) equals the outstanding stock of public debt plus the present discounted value of actual government spending minus government capital income, all taken as shares of GDP.

The permanent balance rule given in (13), together with (2), (5) and (6), implies the following behaviour of the general government debt–GDP ratio:

$$\begin{aligned} b &\leq g - g^p + \theta^p k^p - \theta k + [(r - r^p) - (n - n^p)]b \\ &\equiv g_T - g_T^p + g_C - g_C^p + g_I - g_I^p + \theta^p k^p - \theta k + [(r - r^p) - (n - n^p)]b \end{aligned} \quad (14)$$

In terms of the conventionally measured general government financial deficit

$$\left( \eta \equiv \frac{\dot{B}}{PY} \equiv g - \tau + ib \right), \text{ equation (14) implies:}$$

$$\eta \leq (n + \pi)b + g_T - g_T^p + g_C - g_C^p + g_I - g_I^p + \theta^p k^p - \theta k + [(r - r^p) - (n - n^p)]b. \quad (15)$$

This rule recognises that the debt–GDP ratio will be reduced, *ceteris paribus*, by nominal income growth, that is, it is an inflation-and real-growth-adjusted measure. It can also be viewed as a modified and generalized version of the golden rule: when actual, current government consumption is above permanent government consumption, or when actual current government transfer payments and subsidies

<sup>14</sup> In a stochastic world, it would only be constant *ex ante*, or in expectation.

exceed their permanent values, the maximum amount of permitted borrowing increases *pari passu*. However, the same applies to borrowing for investment: borrowing can only safely finance public investment to the extent that current public sector investment exceeds its permanent level. Finally, the borrowing limit is relaxed (tightened) when the real interest rate is temporarily high (low) or the real growth rate is temporarily low (high).

The Permanent Balance Rule has four attractive features:

1. The Permanent Balance rule is prudent, even cautious: it has government solvency built in. If the tax rule in (13) holds with equality, the (*ex ante*) constant share of taxes in GDP is the smallest constant share of taxes in GDP that would satisfy the government's intertemporal budget constraint or solvency constraint.
2. The Permanent Balance Rule is consistent both with Keynesian arguments for counter-cyclical deficits and with neo-classical (excess burden minimizing) arguments for tax smoothing. It goes beyond them, however, by allowing for any kind of departure of current public transfer payments, public consumption and public investment spending from their long-run average or permanent levels. It also allows for the effect on public debt of departures of the current short real interest rate and the current real growth rate from their long-run or permanent values.
3. The Permanent Balance Rule allows for the effects of inflation and real GDP growth on the true burden of the public debt. It does not 'condone' inflation any more than it 'condones' real GDP growth. It simply recognises the impact of nominal GDP growth on the burden of servicing domestic-currency-denominated general government debt.<sup>15</sup>
4. The Permanent Balance Rule amends, extends and completes the golden rule by allowing fully for the degree, if any, to which public sector investment generates future cash flows to the government, either directly, say through user charges, or indirectly by the positive effect of general government capital on existing government tax bases.

Under the Permanent Balance Rule for taxes, the long-run or steady-state government debt–GDP ratio is constant *ex ante*. In a simple stochastic setting, the long-run or steady-state government debt–GDP ratio follows a random walk (see Barro, 1979).<sup>16</sup>

Conceptually, the Permanent Balance Rule is both intuitive and simple. Of course, the permanent shares in GDP of public consumption and public investment are not directly observable. Nor is the long-run growth rate directly observable. In

<sup>15</sup> Expressing the debt and primary surplus as shares of GDP is illuminating if GDP is a reasonable indicator of the government's ability to tax. If capital income taxation were residence-based rather than source-based, GNP would be a better scale variable than GDP. If taxes on domestic spending are important, aggregate spending (including imports but excluding exports) may be a more appropriate scale variable.

<sup>16</sup> Long-run means  $g_T = g_T^P$ ,  $g_C = g_C^P$ ,  $g_I = g_I^P$ ,  $r = r^P$ ,  $n = n^P$ .

some countries, with index-linked long-dated public debt, reasonable proxies for the long-run real interest rate may be obtainable. Observance of the Permanent Balance Rule would force governments to make explicit their assumptions about the long-run paths of public consumption, transfer payments and investment. That would be a positive development from the point of view of informed policy debate.

The Permanent Balance Rule implies that, as long as the growth rate of nominal GDP is positive, a higher ratio of the stock of debt–GDP would imply, other things being equal, that the government would be able to run a *larger* financial deficit. When the debt is index-linked, real income growth will, other things being equal, bring down the debt–GDP ratio. When the debt is nominally denominated, nominal income growth will, other things being equal, bring down the debt–GDP ratio. The presence of the term  $(n + \pi)b$  on the right-hand-side of equation (15) makes it clear that, for a given positive growth rate of nominal income, a higher debt–GDP ratio means that the debt–GDP ratio will be coming down faster.

The implication of the Permanent Balance rule that *ceteris paribus* a higher debt–GDP ratio permits a higher financial deficit–GDP ratio contrasts sharply with current suggestions from the EU Commission and from the UK Treasury, that countries with a higher debt–GDP ratio would, *ceteris paribus*, be expected or required to run a *smaller* deficit. The reason for the difference is that the Permanent Balance Rule has no view on the desirable long-run level of the debt relative to GDP. Its purpose is to find the ‘permanent tax rate’, that constant share of taxes in GDP that will achieve government solvency. The debt–GDP ratio only matters for what it implies for the permanent tax rate.

While the Permanent Balance Rule’s treatment of the debt–GDP ratio may be extreme, it is difficult to rationalize the opposite conclusion, that higher debt necessarily implies the need for a lower deficit, from the government solvency constraint given in equation (12) alone. From this representation of the government’s intertemporal budget constraint it follows that, for a given long-run real interest rate and a given permanent growth rate of real GDP, a higher debt–GDP ratio requires a higher *permanent primary* surplus–GDP ratio,  $s^p$ . There are quite a few slips between the cup of a larger permanent primary surplus–GDP ratio to the lip of a lower current financial deficit–GDP ratio,  $\eta \equiv -s + ib$ .

There are indeed good arguments for arguing that the level of the debt–GDP ratio matters for reasons other than, or additional to, what a higher debt–GDP ratio implies for the permanent tax rate. Sovereign default is costly. Not only does it cause arbitrary redistributions of wealth, it also destroys trust throughout the economic system and impairs the future ability of governments to borrow. Other things being equal, the risk of default is increasing in the debt–GDP ratio. The costs of sovereign default caused by an excessive debt–GDP ratio are not matched by comparable costs of ‘super-solvency’ associated with a very low or even negative debt–GDP ratio.

Thus, augmenting the permanent balance rule to take this into account makes sense. If, on *a priori* grounds, convergence to a long-run value of the debt–GDP ratio  $b^*$  is deemed desirable, the tax rule in (13) could be augmented with an ‘error

correction' term that drives the actual debt–GDP ratio towards the target debt–GDP ratio, as in equation (16).

$$\begin{aligned}\tau'_0 &= \tau_0^p + \alpha(b - b^*) \\ \alpha &> 0\end{aligned}\quad (16)$$

Under this 'Augmented Permanent Balance Rule', the financial deficit–GDP ratio would be governed by:

$$\eta \leq (n + \pi)b + g - g^p + \theta^p k^p - \theta k + [(r - r^p) - (n - n^p)]b - \alpha(b - b^*). \quad (17)$$

The steady-state value of the debt–GDP ratio would equal  $b^*$ . If the long-run value of the debt–GDP ratio were required not to exceed  $b^*$ , but could be below it, equation (16) could be replaced by the 'switching regime' tax function:

$$\begin{aligned}\tau'_0 &= \tau_0^p + \alpha(b - b^*) \\ \alpha &> 0 \quad \text{if } b > b^* \\ \alpha &= 0 \quad \text{if } b \leq b^*.\end{aligned}\quad (18)$$

The behaviour of the deficit–GDP ratio would again be given by equation (17).

The appropriate value of  $b^*$  is anybody's guess, however.<sup>17</sup>

The Augmented Permanent Balance Rule with its 'error-correction' mechanism driving the debt–GDP ratio to a long-run target level is consistent with the position of the European Commission and the UK Treasury provided the 'error correction coefficient',  $\alpha$ , which measures the strength of the imperative to get the debt–GDP ratio down, exceeds the growth rate of nominal GDP.<sup>18</sup>

### 3. Aspects of four base economic diversity among current and future EU member countries relevant to fiscal sustainability

#### 3.1 Budgetary aggregates currently restricted by the EU fiscal criteria

There are significant differences between the accession countries and current EU member countries with respect to the economic variables that are subject to the current rules governing fiscal policy in the EU – the general government deficit, the cyclically adjusted general government deficit and the gross public sector debt level (all measured as a share of GDP). Table 2 provides the data for the general

<sup>17</sup> The UK's Sustainable Investment rule (see Section 4.2) can be interpreted as setting the steady state value of the gross debt–GDP ratio at 40 percent of GDP in equation (18). Considering the experience of Belgium, Italy and Greece these past few decades,  $b^* = 0.4$  is a cautious, conservative number indeed.

<sup>18</sup> The precise condition is that  $\alpha > n + \pi + r - r^p - (n - n^p)$ .

**Table 2. General government surplus of accession countries (% of GDP)**

	1997	1998	1999	2000	2001	2002**
Bulgaria	-0.3	1.3	0.2	-0.6	1.7	-0.8
Czech Republic	-2.6	-4.5	-3.2	-3.3	-5.5	-6.0
Estonia	2	-0.4	-4	-0.4	0.2	-0.4
Hungary	-6.8	-8	-5.3	-3	-4.1	-4.3
Latvia	na	-0.7	-5.3	-2.7	-1.6	-1.8
Lithuania	-1.1	-3.1	-5.6	-2.7	-1.9	-1.5
Poland	-4.3	-2.3	-1.5	-1.8	-3.1	-5.7
Romania	-4.5	-3.2	-4.5	-4.5	-3.4	-2.9
Slovak Republic	-5.5	-4.7	-6.4	-12.8	-5.6	-4.4
Slovenia	na	-2.3	-2.2	-3.2	-2.5	-2.9
<b>Average Accession 8*</b>	<b>na</b>	<b>-3.3</b>	<b>-4.2</b>	<b>-3.7</b>	<b>-3.0</b>	<b>-3.4</b>
<b>Average Accession 10</b>	<b>na</b>	<b>-2.8</b>	<b>-3.8</b>	<b>-3.5</b>	<b>-2.6</b>	<b>-3.1</b>

*Notes:* \* Accession 8 includes all countries except Bulgaria and Romania. \*\* Data for 2002 is WEO projection.  
*Source:* Eurostat.

government financial balance – GDP ratio for the ten Eastern European candidate countries. Table 3 gives the same information for the EU countries, the USA and Japan. General government gross debt–GDP ratios for the ten Central and East European (CEE) accession candidates are given in Table 4. Table 5 gives the same information for the EU countries, the USA and Japan. Estimates of the cyclically adjusted general government deficits are not available for the ten CEE accession candidates.<sup>19</sup>

Some features of these four tables are perhaps surprising. From Tables 4 and 5 we see that the general government gross debt–GDP ratio is about twice as high for the existing EMU members as for the accession candidates. As regards the general government deficit–GDP ratios, the ranking is reversed. The eight early accession candidates from Central Europe and the Baltics (CEB) have run general government deficits at much higher levels, as a share of GDP, than the existing EMU members. For the last three years, the eight CEB countries' average general government deficit has exceeded 3 percent of GDP.

### *3.2 Differences relevant to fiscal sustainability*

In Section 3 we argued that essentially there are four parameters that matter for fiscal sustainability: the current stock of outstanding debt, the (permanent) primary

<sup>19</sup> Short time series and frequent changes to tax laws make it basically impossible to estimate the output elasticity of revenues.

**Table 3. General government surplus of EU countries (% of GDP)**

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002*
EU 15	na	na	na	na	-3.3	-1.6	-0.6	0.1	1.5	0.7	-1
EUR 12	na	na	na	na	-3.4	-1.7	-1.1	-0.4	1.0	0.1	-1.4
Austria	-2	-4.2	-5	-5.2	-3.8	-1.9	-2.4	-2.3	-1.5	0.2	-0.4
Belgium	-8	-7.3	-5	-4.3	-3.7	-2	-0.7	-0.5	0.1	0.4	-0.9
Denmark	-2.2	-2.9	-2.4	-2.3	-1	0.4	1.1	3.1	2.5	3.1	1.7
Finland	-5.6	-7.3	-5.7	-3.7	-3.2	-1.5	1.3	1.9	7	4.9	2.6
France	-4.2	-6	-5.5	-5.5	-4.1	-3	-2.7	-1.6	-1.3	-1.4	-2.1
Germany	-2.5	-3.1	-2.4	-3.3	-3.4	-2.7	-2.2	-1.5	1.1	-2.8	-2.5
Greece	-11.1	-13.4	-9.4	-10.2	-7.4	-4	-2.5	-1.9	-1.8	-1.2	0.9
Ireland	-3	-2.7	-2	-2.2	-0.2	1.2	2.4	2.2	4.4	1.5	1
Italy	-10.7	-10.3	-9.3	-7.6	-7.1	-2.7	-2.8	-1.8	-0.5	-2.2	-1
Luxembourg	2.5	4.8	4.5	2.3	2.6	3.4	3.1	3.6	5.6	6.1	5
Netherlands	-4.2	-2.8	-3.5	-4.2	-1.8	-1.1	-0.8	0.7	2.2	0.1	0
Portugal	-6	-8.9	-6.6	-4.5	-4	-3	-2.6	-2.4	-2.9	-4.1	-2.5
Spain	na	na	na	na	-4.9	-3.2	-2.7	-1.1	-0.6	-0.1	-0.3
Sweden	na	-11.6	-10.5	-7.6	-3.2	-1.5	1.9	1.5	3.7	4.8	2.4
United Kingdom	-6.5	-8	-6.7	-5.7	-4.3	-2	0.2	1.1	3.9	0.8	-0.1
United States	-5.9	-5	-3.6	-3.1	-2.2	-0.9	0.3	0.7	1.4	-0.5	-0.5
Japan	0.8	-2.4	-2.8	-4.2	-4.9	-3.7	-6.5	-7.1	-7.4	-7.1	-7.1

Notes: \* data for 2002 is WEO projection.

Source: Eurostat.

surplus, the (permanent) real interest rate and the (permanent) real growth rate. Just as with the fiscal aggregates that are subject to the current EU fiscal rules, there are currently large differences across current and future member countries in (the measurable proxies for) these four indicators. Furthermore we argue that these differences are unlikely to go away in the foreseeable future.

### 3.2.1 Primary surplus

On average the primary surplus is substantially smaller in the candidate countries than it is among the current EU countries. While the primary surplus across the current EU member countries in 2001 was 2.1 percent of GDP with only Portugal recording a deficit, the average primary surplus for the accession countries was -0.1 percent with all of the large countries except Hungary running deficits of between 1.5 and 2.6 percent of GDP.<sup>20</sup>

<sup>20</sup> Source: WEO database.

**Table 4. General government gross debt of accession countries (% of GDP)**

	1997	1998	1999	2000	2001
Bulgaria	105.1	79.6	79.3	73.6	66.3
Czech Republic	12.9	13.7	14.5	17	23.7
Estonia	6.9	6	6.5	5.1	4.8
Hungary	64.2	61.9	61	55.4	53.1
Latvia		10.6	13.7	13.9	16
Lithuania	15.7	17.1	23	24	23.1
Poland	16.5	18	24	24	23.3
Romania	46.9	41.6	42.7	38.7	38.7
Slovak Republic	28.8	28.8	40.2	45.2	44.1
Slovenia		25.1	26.4	27.6	27.5
<b>Accession 8*</b>	<b>na</b>	<b>23</b>	<b>26</b>	<b>27</b>	<b>27</b>
<b>Accession 10</b>	<b>na</b>	<b>30</b>	<b>33</b>	<b>32</b>	<b>32</b>

*Notes:* \* Accession 8 is the average of all countries except Bulgaria and Romania.

*Source:* Eurostat.

What matters for fiscal sustainability is the permanent, that is, the average expected future primary surplus rather than past surpluses. Hence it is worthwhile examining likely future changes. While this is difficult to do, there are currently two major structural concerns with respect to the evolution of the primary surplus: potentially unfunded pension liabilities and in some countries, notably the UK but also the candidate countries, the need for substantial investment in public sector capital.

#### *General government spending on pensions*

All current EU member countries as well as the accession countries traditionally relied on pay-as-you-go pension systems to secure retirement income for the old. These programmes were relatively easy to operate as long as younger generations outnumbered the older ones and productivity grew robustly, but they have become increasingly burdensome with falling fertility rates, rising life expectancy and (in much of the existing EU) disappointing productivity growth. It is widely acknowledged that under-funded pension systems will represent a major source of pressure on public spending in the years ahead. Many countries have decided to pre-empt a possible crisis by moving from the pay-as-you-go system to a partially funded pension system. This transition involves higher costs in the short term since the present working generation pays for the pensions of the already retired generations at the same time as saving for its own retirement. Since it is not fair (or politically feasible) to heap the entire burden onto one generation, countries have chosen to spread the cost over time.



**Table 5. General government gross debt for EU member countries (% of GDP)**

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
EU 15	na	na	72.0	72.8	72.3	69.4	66.4	64.3	60.6	59.7
EUR-12	65.4	72.9	73.7	74.8	74.4	71.6	68.5	66.9	63.8	62.9
Austria	57.2	61.8	64.7	69.2	69.1	64.7	63.9	64.9	63.6	63.2
Belgium	132.5	138.2	135.9	134	130.2	124.8	119.2	114.9	109.2	107.6
Denmark	66.3	78	73.5	69.3	65.1	61.2	56.2	52.7	46.8	44.7
Finland	40.6	56	58	57.1	57	54	48.8	46.8	44	43.4
France	39.6	45.3	48.4	54.6	57.1	59.3	59.5	58.5	57.3	57.3
Germany	42.9	46.9	49.3	57	59.8	61	60.9	61.2	60.2	59.5
Greece	87.8	110.1	107.9	108.7	111.3	108.2	105.8	105.1	106.2	107
Ireland	92.5	96.5	90.9	82.9	74.1	65	55.2	49.7	39.1	36.4
Italy	107.7	118.1	123.8	123.2	122.1	120.2	116.3	114.5	110.5	109.8
Luxembourg	4.7	57	5.4	5.6	6.2	6.1	6.3	6	5.6	5.6
Netherlands	77.8	79	76.3	77.2	75.2	69.9	66.8	63.1	55.8	52.8
Portugal	54.4	59.1	62.1	64.3	62.9	59.1	55	54.4	53.3	55.5
Spain	46.8	58.4	61.1	63.9	68.1	66.6	64.6	63.1	60.5	57.1
Sweden	na	na	73.8	73.6	73.5	70.5	70.5	65	55.3	56.6
UK	39.2	45.4	48.5	51.8	52.3	50.8	41.7	45.1	42.1	39.1
US	74.1	75.8	75	74.5	73.9	71.4	68.3	65.3	59.5	59.5
Japan	63.5	69	73.9	80.4	86.5	92	103	115.8	123.6	132.3

*Source:* Eurostat.

The OECD (see OECD, 2001) has tried to estimate the impact of greying populations on government spending taking into account the pension reforms already enacted. On average the EU countries spent 8.9 percent of GDP on old age pensions in 2000, which is not too different from the 8.2 percent of GDP that was spent by the three largest accession countries (the only candidate countries included in the sample), in the same year. However, in both groups there is a large variation. While the UK spent only 4.3 percent of GDP on its pension system, Italy's pension system absorbed as much as 14.2 percent of GDP. Similarly, Hungary spent 6 percent of GDP on its pension system while Poland spent 10.8 percent. Similar differences arise when projecting pension liabilities forward. While it is estimated that the Netherlands' public spending on pensions is going to rise by 5.3 percent of GDP over the next five decades, spending on old age pensions is not expected to rise at all in the UK. Within the group of accession countries, Poland's spending is expected to decrease by 2.5 percent of GDP while the Czech Republic is expected to have to spend another 6.8 percent of GDP on pensions at the peak.

**Table 6. Public spending and revenues on old age pensions (% of GDP)**

	Spending		Revenues	Deficit
	2000 Actual	Change to Peak* Projection	Change to Peak* Projection	Change to Peak* Projection
Czech Rep.	7.8	6.8	0	-6.8
Hungary	6	1.2		
Poland	10.8	-2.5	-1.2	1.3
Average	8.2	1.8	-0.6	-2.75
Austria	9.5	4.3		
Belgium	8.8	3.7	0.1	-3.6
Denmark	6.1	3.6	1.7	-1.9
Finland	8.1	4.8	-1.7	-6.5
France	12.1	4		
Germany	11.8	5	2.8	-2.2
Italy	14.2	1.7	0	-1.7
Netherlands	5.2	5.3	3.2	-2.1
Portugal	8	4.5	1.5	-3
Spain	9.4	8	0	-8
Sweden	9.2	2.2	-3.3	-5.5
UK	4.3	0	-0.3	-0.3
Average EU	8.9	3.9	0.4	-3.48
US	4.4	1.8	-0.3	-2.1
Japan	7.9	1	0.1	-0.9

*Notes:* \* Peak year is 2050 (end of simulation) except for UK and Italy (2030), the US, Sweden, Austria, Denmark and France (2035) and the Netherlands and Belgium (2040).

\*\* Other consists of the impact of changes in the employment ratio.

Average Accession is the average of Czech Rep., Hungary and Poland.

Average EU is the average of all EU countries except Luxembourg, Greece, Portugal and Ireland.

Dependency ratio is defined as the share of the population in retirement age compared to the working age population.

Benefit ratio is defined as the average pension divided by average productivity.

Eligibility ratio is the share of the retired population eligible for a pension.

*Source:* OECD (2001).

For the purpose of this paper we are interested in the impact on the primary balance of future pension liabilities. The OECD has simulated the changes in public sector deficits, assuming that other spending and revenues will stay constant. From the last column in Table 6 it becomes apparent that some countries will need much larger adjustments than others if they want to avoid a widening of the deficits. Spain's

**Table 7. Gross public fixed capital formation (% of GDP)**

	2000 actual	Average (2002–2005) projection		2000 actual	Average (2002–2005) projection
<b>Average EU 15</b>	<b>2.7</b>	<b>2.7</b>	<b>Average Accession 8</b>	<b>3.9</b>	<b>4.3</b>
Austria	1.7	1.5	<b>Average Accession 10</b>	<b>3.6</b>	<b>4.0</b>
Belgium	1.8	1.5	Bulgaria	3.7	3.8
Denmark	1.6	1.8	Czech Rep.	5.9	6.1
Finland	2.5	2.5	Estonia	3.2	3.9
France	3.0	3.0	Hungary	5.0	5.3
Germany	1.9	1.7	Latvia	4.0	5.2
Greece	4.1	4.4	Lithuania	1.9	2.3
Italy	2.6	2.7	Poland	3.1	3.8
Netherlands	3.2	3.4	Romania	1.4	1.9
Spain	3.3	3.7	Slovak Rep.	3.6	3.8
Sweden	2.4	2.3	Slovenia	4.1	4.1
Portugal	3.8	4.2			
United Kingdom	1.4	1.9			

*Source:* WEO.

deficit at the peak will widen by 8 percent of GDP in 2050 if no corrective action is taken while the deficit in Italy is going to stay basically unchanged. Similarly, without reforms the deficit of the Czech Republic is going to widen by up to 6.8 percent of GDP before 2050 while that of Poland is going to narrow by 1.3 percent.

These differences in the impact of the pension system on the public sector balance are mostly explained by how far advanced the pension reforms are and by different demographic structures. Thus, in the decomposition of changes in spending, the largest variation across countries is found in the contributions from the dependency ratio and the benefit ratio.

#### *Capital expenditure*

Both the existing capital stock and spending on public capital formation varies widely across countries. Unfortunately data on the value of the existing public sector capital stocks are hard to come by. Table 7 shows capital spending by general governments for accession countries and existing EU member countries. The variation is large both inside the existing EU but even more so among the accession countries. While Greece spent 4.1 percent of its GDP on public capital formation in 2000, Britain spent as little as 1.4 percent. In contrast, the accession countries spent 3.9 percent of GDP on average on public capital formation with the Czech Republic

spending as much as 5.9 percent of GDP. Given the state of public infrastructure in accession countries and the demands put on it by the *Acquis* and by the need to catch up with the more advanced Western European economies, the differences are unlikely to decline in the near future. Thus, the IMF expects public spending on capital formation in the east European accession countries to account for about 4.3 percent of GDP until 2005, with no substantial decline during the rest of the decade. In effect this means that all the accession countries would have to run a government current (net of investment) surplus of 4.3 percent of GDP if they were going to live by the Stability and Growth Pact with a balanced cyclically adjusted budget. This is clearly a tall order.

The variation in expected pressures on future fiscal balances is large. Take Poland and Sweden as an example. According to the OECD the deficit in the pension system will fall by 1.3 percent of GDP in Poland, while it will rise by 5.5 percent in Sweden. At the same time Sweden has a well-developed stock of public sector capital and spends on public sector around 2.3 percent of its GDP investment, which presumably represents mostly infrastructure capital depreciation and maintenance and steady-state net investment. Poland to the contrary is currently making up for past underinvestment in infrastructure and is expected to spend around 3.8 percent of GDP on public investment. Thus, once Poland has completed its catch up and public sector capital formation falls to a level similar to that of Sweden, its primary balance will *ceteris paribus* improve by 1.5 percent. Including the positive impact of the expected improvement in the balance of the pension system, it could even expect a rise in its primary surplus of 2.8 percent of GDP. Sweden on the other hand will, *ceteris paribus*, see a fall in its primary surplus of 5.5 percent.

### **3.2.2 Persistent real GDP growth and interest differentials among EMU members**

We argued in Section 3 that both the (permanent) real growth rate and the (permanent) real interest rate matter for an evaluation of debt sustainability. There are likely to be persistent and significant differences among EMU members in the growth rates of real GDP and in the rates of inflation.

#### *Real growth rates*

The eight early EU accession candidates from Central & Eastern Europe are all still very much in a catch-up phase. Following accession, there is likely to be a convergence process, taking many decades for most candidates, during which real GDP growth in these East and Central European countries systematically exceeds that in the rest of the EU.<sup>21</sup> Based on recent history, this difference could easily amount to 2 or 3 percentage points per annum for many years, which is also more or less in line with research on the rate of convergence (see, for example, Barro and

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<sup>21</sup> See Crespo-Cuaresma *et al.* (2002) for evidence that integrating the accession candidates in the EU may provide a further boost to their growth rates.

Sala-i-Martin, 1992 or Levine and Renelt, 1992). Aggregate productivity growth differentials are likely to be similar to aggregate output growth differentials, because the demographics of the existing EMU members are rather similar to those of the eight likely early accession candidates from Central and Eastern Europe. Both regions have greying populations and (in the absence of large-scale migration) stationary or declining populations in the medium term.

*Real appreciation and the implication for real interest rates*

If there is gradual catch-up of the accession countries with Euroland on a sector-by-sector basis, the relative price of non-traded goods will rise in the accession countries, since their productivity growth differential between the traded goods sector and the non-traded sectors can be expected to be larger than the corresponding Euroland productivity growth differential (see Balassa, 1964, Samuelson, 1964, 1994 and Heston, Nuxoll and Summers, 1994). A real appreciation of the candidate countries' currencies follows. In a paper prepared by the CEC5 National Banks (CEC5, 2002), a range of 'guestimates' of the Balassa-Samuelson effect for these five advanced accession candidates is presented.<sup>22</sup> They range from a low of 0.8 percent per annum for Slovenia (1993-99), to 1 to 2 percent per annum for Slovakia (with 3 percent per annum deemed a possibility in the future), 1.2 to 1.5 percent per annum for Poland, 1.9 percent per annum for Hungary and 1.6 percent per annum for the Czech Republic.

All these estimates have the obvious shortcoming that they are based on very short datasets that do not allow the authors to filter out some of the cyclical factors. Despite these shortcomings, it is not unreasonable to estimate the impact of the Balassa-Samuelson effect on the real appreciation of the Eastern European currencies against the EMU to be in the range of 1.5 to 2.5 percent per annum for the foreseeable future. Thus, with constant nominal exchange rates, this appreciation would raise annual inflation rates in accession countries by about 1.5-2.5 percent compared to those in the EMU area.

Obviously a trend real appreciation has important implications for real interest rates. Suppose the peg of an accession country's currency to the euro is perfectly credible. Frictionless international financial capital mobility would then imply that the risk-free nominal interest rate in the accession country would be the same as in the current EMU area. Given that inflation rates are likely to be higher in the accession countries under a fixed exchange rate, real interest rates will be lower than in the existing EMU area and hence the real cost of servicing the public debt in these countries is likely to be lower for a given debt level. The same implications for real interest rates would follow under a floating exchange rate regime as long as Uncovered Interest Parity holds.

The discussion implies that, at a fixed nominal exchange rate, nominal income growth in the accession countries could, for several decades, exceed that in the

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<sup>22</sup> The CEC5 countries are Czech Republic, Hungary, Poland, Slovakia and Slovenia.

existing EU members by as much as 3.5 to 5 percent per annum. From equation (3) it is clear that, for any given ratio of outstanding government debt–GDP ratio,  $b$ , a higher growth rate of nominal income,  $\pi + n$ , makes a higher government deficit–GDP ratio,  $\eta$ , sustainable, in the (loose) sense that the same future behaviour of the government debt–GDP ratio is implied. Conversely, for any given government deficit–GDP ratio, a higher growth rate of nominal income suggests that a higher government debt–GDP ratio is sustainable.

#### 4. Existing fiscal rules in the current EU: The Stability and Growth Pact, the Maastricht Treaty and the Golden Rule

There are essentially two sets of fiscal rules that apply to current EU member countries, as well as the Golden Rule used in the UK.

##### 4.1 The current EU fiscal framework

The fiscal–financial constraints of the Stability and Growth Pact and the Maastricht Treaty are best viewed as externally imposed constraints aimed at preventing each individual member country from ending up on an unsustainable, explosive path of public sector debt and deficits. The paragraph of the Pact that is operationally relevant for budgetary policy is (our emphasis added):

‘Adherence to the objective of sound budgetary positions *close to balance or in surplus* will allow all Member States to deal with normal cyclical fluctuations while keeping the *government deficit within the reference value of 3 percent of GDP*.’<sup>23</sup>

<sup>23</sup> The reference value of 3 percent of GDP for the general government financial deficit, which is inherited from the Maastricht Treaty, does not apply to the UK, unless it wishes to join EMU. This is because the UK obtained an opt-out from the obligation to join EMU (to proceed to the ‘third stage’ of the EMU process). While Denmark also has an EMU opt-out, it appears that it is required, unlike the UK, to meet the deficit criterion. For instance the Council Opinion of 5 March 2002 on the updated convergence programme of Denmark, 2001–2005, states: ‘Denmark is also expected to be able to withstand a normal cyclical downturn without breaching the 3 percent of GDP deficit reference value.’ Sweden does not have an EMU opt-out and therefore has to be able to withstand a normal cyclical downturn without breaching the 3 percent of GDP deficit reference value. It is not anticipated that any of the current or future accession candidates will be able to obtain a UK-or Denmark-style EMU opt-out, although for a while they may well have derogations, as Sweden does today, if they are deemed not to have satisfied all the convergence criteria. Despite its opt-out, the UK is required to endeavour to avoid excessive deficits, and the requirements of ‘close to balance or surplus in the medium term’ contained in the Stability and Growth Pact apply to the UK (see e.g., the ‘Council Opinion of 12 February 2002, on the updated convergence programme for the United Kingdom, 2000/2001 to 2006/7’, *Official Journal of the European Communities*, 26.2 2002, C 51/7). For a good description of the Stability and Growth Pact see European Central Bank, 1999, ‘The Implementation of the Stability and Growth Pact’, pp. 45–72.

With one qualification, these fiscal–financial constraints on permissible budgetary policies apply to all EU members, not just to EMU members. The Stability and Growth Pact constrains the financial deficit of the general government of every EU member in two ways. These constraints can be expressed as follows (cyclically adjusted variables are denoted by tildes):

$$\eta \equiv g - \tau + ib \leq 0.03 \quad (19)$$

$$\tilde{\eta} \equiv \tilde{g} - \tilde{\tau} + \tilde{i}\tilde{b} \leq 0. \quad (20)$$

The criterion in equation (19), constraining the actual financial deficit of the general government, will be called the *deficit criterion*.<sup>24</sup> The criterion in equation (20), constraining the cyclically adjusted or medium-term deficit, will be called the *cyclically adjusted deficit criterion*. For EMU candidates, but not for the existing EMU members or the existing EU members with an EMU opt-out, the further constraint applies as a condition for full EMU membership, that the general government gross stock of debt be less than 60 percent of annual GDP.

$$b \leq 0.6 \quad (21)$$

We shall refer to the criterion in (21) as the *debt criterion*.<sup>25</sup>

The reasoning behind the assignment of these three specific numerical values for the deficit and debt ceilings has to our knowledge never been made public. Indeed, the reasons for choosing *any* fixed numerical values rather than more flexible state-contingent rules have never been explained. As regards the 60 percent of GDP general government gross debt to annual GDP ceiling, it may not be a coincidence that the historical value of that ratio during 1992, the year the Maastricht Treaty was signed, happened to be 63 percent on average for the 15 EU members.<sup>26</sup> The debt–GDP ratio in 1992 was on a rising trajectory. For the 11 first-wave EMU members, the ratio peaked in 1995 at 72 percent. At the end of 2001 it stood at 59 percent.

<sup>24</sup> The three percent of GDP threshold for the general government financial deficit can be breached only in exceptional circumstances, defined as ‘severe recession’. In evaluating whether the economic downturn is severe, the Member States will, as a rule, take as a reference point an annual fall in real GDP of at least 0.75 percent. If a Member State is deemed by the European Commission and the Council of Ministers to have taken inadequate measures to address a situation where the general government deficit exceeds 3 percent of GDP, the Member State may be required to make non-interest-bearing deposits. If the failure to address the excessive deficit persists, these deposits will turn into a fine. No financial penalties are imposed as long as the general government financial deficit does not exceed 3 percent of GDP. Neither are financial fines imposed if a country is deemed by the Commission and the Council to have pursued inappropriate policies in the context of the yearly surveillance exercise, unless of course the general government financial deficit were to exceed 3 percent of GDP. Ireland was at the receiving end of such a negative assessment in 2001.

<sup>25</sup> In our notation, *b* refers to net debt. Some EU governments have significant financial assets, so their gross financial debt exceeds their net financial debt by a considerable margin.

<sup>26</sup> For the 11 EU members that formed the EMU on January 1, 1999, the 1992 figure debt ratio was 63.3 percent.

No obvious historical benchmark can be offered for the 3 percent of GDP numerical ceiling for the deficit. In 1992 the actual general government deficit–GDP ratio averaged 5.1 percent of GDP for the 15 EU members.<sup>27</sup> However, two possible explanations for the numerical ceiling have been offered. It has been suggested that, since a deficit–GDP ratio of three percent stabilizes a (net) debt–GDP ratio of 60 percent when the annual growth rate of nominal income is 5 percent, this might provide a bridge between the debt ceiling and the deficit ceiling. However, the debt criterion is defined in terms of *gross* rather than *net* debt, and five percent nominal GDP growth is probably somewhat in excess of the long-run expected growth rate of nominal GDP that the authors of the Maastricht criteria had in mind.<sup>28</sup> A second possible explanation is based on the Golden Rule that is enshrined in the German constitution, according to which the public sector deficit is not to exceed public sector investment. In the twenty years preceding the Maastricht Pact, public investment in Germany averaged around 2.3 percent of GDP rising in some years as high as 2.7 percent of GDP.<sup>29</sup> Similarly public capital formation in the EU member countries accounted for 3.1 percent of GDP on average in 1992. Thus, a three percent ceiling for the cyclically adjusted deficit is consistent with the history of the golden rule in Germany. However the application of that three percent ceiling to the actual rather than to the cyclically adjusted deficit cannot be rationalized in this manner. No economic argument has been offered for the requirement that the cyclically adjusted or medium-term general government budget be close to balance or in surplus.

Of the three numerical criteria, the debt criterion appears, based on the record thus far, to carry the least weight, both in the decision on whether a country can join EMU, or in the stability and convergence programmes that apply to all EU members.<sup>30</sup> The reason for this could well be that it is not a choice variable of the government in the short run.

#### 4.2 The UK's Golden Rule

The Stability and Growth Pact criteria do not allow for differences between current spending and general government capital formation. In the UK, one of the principles

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<sup>27</sup> Eurostat does not provide data for Sweden and Spain for 1992. The average therefore excludes these two countries.

<sup>28</sup> The target inflation rate of the European Central Bank is below two percent per annum. This inflation rate is defined in terms of the Harmonised Index of Consumer Prices (HICP), but there is no reason to expect the inflation rate of the GDP deflator to be systematically different. The long-run growth rate of real GDP in the EU 15 is unlikely to be much more than 2.5 percent per annum.

<sup>29</sup> The data is taken from the World Bank. Public Investment reached 2.7 percent of GDP in 1976 and was 2.4 percent in 1992, when the Maastricht Treaty was finalized.

<sup>30</sup> At the end of 2000, the general government gross debt–GDP ratios for Belgium, Greece and Italy all were in excess of 100 percent. All three were declining, but none of them is likely to see 60 percent anytime soon.



governing the fiscal–financial programme is the ‘cyclically adjusted Golden Rule’. According to this rule, on a cyclically adjusted basis, government borrowing should not exceed net government capital formation.

$$\tilde{\eta} \equiv \tilde{b} + (\tilde{\pi} + \tilde{n})\tilde{b} \leq \tilde{g}_I - \tilde{\delta}\tilde{k} \equiv \tilde{k} + \tilde{n}\tilde{k} \quad (22)$$

or, equivalently:<sup>31</sup>

$$\tilde{g}_C + \tilde{g}_T + \tilde{\delta}\tilde{k} - \tilde{\tau}_0 - \tilde{\theta}\tilde{k} + \tilde{i}\tilde{b} \leq 0 \quad (23)$$

There are two aspects of this rule that give grounds for concern. First, the nominal amount that can be borrowed for investment is independent of the rate of inflation, or more precisely, independent of the reduction in the real value of the outstanding stock of domestic-currency-denominated government interest-bearing debt brought about by inflation. Inflation (when it is anticipated) increases the nominal interest rate on the (domestic-currency-denominated) public debt and through that the financial deficit of the government. The higher nominal interest payments are, however, compensated for, as regards the sustainability of the government’s fiscal–financial programme, by the reduction in the real value of the domestic-currency-denominated stock of public debt outstanding. By measuring the government financial deficit at real interest rates rather than at nominal rates, we would avoid the situation that the permissible change in the real value of the public debt becomes lower when the inflation rate increases, even when the real interest rate remains constant.

The second obvious weakness of the cyclically adjusted golden rule as a guide to debt sustainability and government solvency is that the amount of borrowing that is permitted is independent of the real growth rate of the economy. Clearly, other things equal, a higher real growth rate allows more borrowing without this adversely affecting debt sustainability. On the other hand, a higher growth rate calls for a higher rate of investment simply to sustain the capital–output ratio.

This suggests that short of moving to the permanent balance rule an *inflation- and-real-growth-adjusted and cyclically adjusted golden rule* may be a better guide to sustainable public sector financing. It is given by

$$\tilde{b} \leq \tilde{k} \quad (24)$$

or equivalently by:

$$\tilde{g}_C + \tilde{g}_T + \tilde{\delta}\tilde{k} - \tilde{\tau}_0 - \tilde{\theta}\tilde{k} + (\tilde{r} - \tilde{n})\tilde{b} + \tilde{n}\tilde{k} \leq 0. \quad (25)$$

<sup>31</sup> We assume that depreciation, that is, capital consumption, is counted as current expenditure.

A country is only allowed to raise its debt–GDP ratio if the money is spent on raising the public sector capital stock to GDP ratio. For the general government deficit as a share of GDP this implies that

$$\bar{d} \leq \bar{g}^l - (\bar{\delta} + \bar{n})\bar{k} + (\bar{\pi} + \bar{n})\bar{b} \equiv \bar{k} + (\bar{n} + \bar{\pi})\bar{b}. \quad (26)$$

Thus, under the cyclically adjusted and inflation-and-real-growth-adjusted Golden Rule, the government's stock of net liabilities,  $b - k$ , with the capital stock valued at current reproduction costs, will not increase (over the cycle or in the medium and long term). The UK's cyclically adjusted golden rule is less restrictive on borrowing than the Pact's cyclically adjusted deficit criterion, as long as net public sector capital formation is positive.

Whether or not either of the two Golden Rules is prudent depends on whether, from the point of view of generating (or freeing up) a future cash flow, public sector capital formation is more like public sector debt repayment or more like public sector consumption.

In the case where public sector investment does not yield any cash income, it should be treated as consumption for the purpose of financial management. The fact that public sector capital may not yield any financial returns does *not* mean that one should never borrow to finance public sector investment, or even that one should not borrow on a cyclically adjusted basis to finance public sector capital formation. The Permanent Balance Rule implies that, other things being equal, any increase (decrease) in actual public spending relative to permanent public spending can be financed by borrowing (should be associated with an increase in net debt repayment).

## 5. The Pact versus the Permanent Balance Rule

Somehow surprisingly, of the four crucial parameters governing government solvency according to equation (12), three do not figure in any of the three deficit and debt criteria of the Stability and Growth Pact. These are the primary surplus–GDP ratio, the long-run real interest rate and the long-run real growth rate. The fourth, the (net) debt–GDP ratio, almost makes it into the debt criterion. The debt–GDP ratio of the solvency constraint is, however, a *net* debt–GDP ratio. The Maastricht debt criterion involves the *gross* debt–GDP ratio. In most of what follows we shall assume that gross and net government debt coincide.<sup>32</sup>

<sup>32</sup> In practice, governments with the same *net* financial asset position but different *gross* financial assets and liabilities would be impacted asymmetrically by the debt criterion. This makes little economic sense. This distinction is not just academic as the case of Japan demonstrates, where gross debt exceeds net debt according to some estimates by almost 100 percent.

Instead of the primary deficit  $-s$ , the real interest  $r$  and the real growth rate  $n$ , the Maastricht Criteria involve the full government deficit as a percentage of GDP,  $\eta$ . Since these are related, the deficit criterion puts some restrictions on sustainability but does so in a very crude way.

Note that:<sup>33</sup>

$$\begin{aligned}\dot{b} &\equiv \eta - (\pi + n)b \\ &\equiv -s + (r - n)b\end{aligned}\tag{27}$$

The first line of equation (27) states that the change in the general government debt–GDP ratio equals the general government financial deficit as a fraction of GDP, minus the reduction in the debt–GDP ratio due to nominal GDP growth. The second line of equation (27) states that the change in the general government debt–GDP ratio equals the primary deficit–GDP ratio plus the outstanding debt–GDP ratio times the excess of the real interest rate over the real growth rate.

We have shown in Sections 3 and 4 that both the Permanent Balance Rule and the Maastricht criteria prevent countries from entering unsustainable debt paths in most relevant cases.<sup>34</sup> If we accept the need for explicit fiscal rules in the EMU to avoid exploding national debt paths, the main concern from an economic standpoint in choosing a rule would be to ensure that fiscal policy does not lose the flexibility that is essential for macroeconomic stabilization and for accommodating differences in economic structure. In this penultimate section of the paper we demonstrate that the Stability and Growth Pact rules do not fare well under this criterion and that this will be a vital concern for the current EU candidate countries. The Stability and Growth Pact rules – unlike the (Augmented) Permanent Balance rule – do not take into account the effect of differences in real and nominal GDP growth rates on countries' abilities to sustain a given sequence of deficits. Furthermore, the Pact criteria are myopic and backward-looking, ignoring both key differences in initial conditions and foreseeable future changes in key parameters driving future public spending and revenues.

### ***5.1 The Stability and Growth Pact Rules and the Permanent Balance Rules under different nominal GDP growth rates***

Consider the first line of (27). Comparing the behaviour of two national economies with the same outstanding debt–GDP ratio, for any common deficit–GDP ratio, the

<sup>33</sup> If the government has issued foreign-currency bonds paying an interest rate  $i^*$ , equation (27) becomes:  $\dot{b} \equiv \eta - (\pi + n)b + \varepsilon\alpha b \equiv -s + (r - n)b + (i^* + \varepsilon - i)\alpha b$ . Here  $b$  is total (domestic- and foreign-currency-denominated) general government debt as a fraction of GDP,  $\alpha$  is the share of foreign currency debt in total general government debt and  $\varepsilon$  is the proportional rate of depreciation of the nominal exchange rate.

<sup>34</sup> A country's debt could still explode under the Maastricht rules if it experienced negative nominal GDP growth forever.

debt–GDP ratio of the country with the higher growth rate of nominal GDP will be falling faster. It is clear that, other things being equal, the country with the higher growth rate of nominal GDP should be able to run a larger financial deficit. The Stability and Growth Pact does not allow for this. It interferes with fiscal policy in more ways than by just preventing countries to enter unsustainable debt paths.

## 5.2 *The treatment of current and future primary deficits under different rules*

Consider two countries with the same debt–GDP ratio and the same public sector consumption programmes. Country *U* has a low initial public sector capital stock and low implicit future state pension liabilities. The government of country *U* now wishes to build up its public sector capital stock. This means it would like to set  $g_I > g_I^p$ , the permanent public investment rate. The government of country *U* ought to be able to borrow, and the (Augmented) Permanent Balance Rule would permit it to borrow.<sup>35</sup> The Stability and Growth Pact, however, would stop it from borrowing (on a cyclically adjusted basis).

Now consider country *I*, which has a large and reasonably efficient general government capital stock and can therefore scale back its public investment programme. It does however have large implicit future state pension liabilities.<sup>36</sup> For this country,  $g_I \leq g_I^p$ , and  $g_T \ll g_T^p$ . The last inequality reflects the expectation that future state pension benefit payments will exceed current levels. The Permanent Balance Rule implies that, *ceteris paribus*, country *I* should be making efforts to reduce its debt–GDP ratio now, in order to make room for these future pension obligations. The Stability and Growth Pact rules consider only the present and the past (as summarized in the outstanding stock of (gross) debt). As the rules are not forward-looking, they will not suggest any need for fiscal restraint until the high future pension payments are upon us and show up in excessive current deficits and a rising debt ratio.

If this is a serious issue for countries *U* and *I*, it could be an even more serious issue for the accession candidates. Despite eleven years of, by and large, successful transition, the infrastructure of these countries is in an often woeful state. They should be investing heavily in infrastructure ( $g_I \gg g_I^p$ ). Indeed the *Acquis* requires them to engage in such investment. Communism and central planning have also left a disastrous environmental legacy in the accession candidates. Both the *Acquis* and common sense mandate a large-scale environmental clean-up effort. It does not matter whether this expenditure is classified as public investment or public consumption. There can be little room for doubt that the accession candidates

<sup>35</sup> In the case of the UK, the catch-up investment boom in the general government sector could easily last a couple of decades.

<sup>36</sup> See European Commission (2001a) for some interesting data on future state pension scenarios in EU member states. Reform options are reviewed in McMorrow and Roeger (2002).

should, for the next couple of decades, be in a position where, at least as regards environmental expenditures,  $g_c + g_l \gg g_c^p + g_l^p$ . *Ceteris paribus*, this justifies a rising public debt–GDP ratio, according to the (Augmented) Permanent Balance Rule. The Stability and Growth Pact may, however, prevent these essential expenditures from occurring, unless they can be financed contemporaneously by cuts in other expenditures, tax increases and transfers from the EU budget.

The eight East and Central European early accession candidates have demographic structures rather like those of the existing continental EU members: birth rates are low, the population is greying and total population size is constant or declining gently. Some of them, for instance the Czech Republic also have costly unfunded state pension systems. Extrapolating current benefit entitlement and contribution rules, there will be a growing ‘social security deficit’ in the coming decades. In terms of the (Augmented) Permanent Balance rule,  $g_T < g_T^p$ . *Ceteris paribus* this should encourage the accession candidates to reduce their debt–GDP ratios now. It is of course essential that, with such large infrastructure and environmental spending programmes mandated by unfortunate initial conditions, every expenditure item and tax exemption in the general government budget be scrutinized carefully.

Finally, consider again two countries, once more labelled  $U$  and  $I$ . They are the same, except that  $U$  has a low public debt and a small public sector capital stock, while  $I$  has a high public debt and a large public sector capital stock. Assume that  $b - k$  is the same for both countries, and assume, to simplify the argument, that the net financial real rate of return on the public sector capital stock equals the risk-free real rate of interest:  $\theta - \delta = r$ . Assume that the government of country  $U$  wishes to raise both  $k$  and  $b$ , keeping  $k - b$  constant; and that the government of country  $I$  wishes to reduce both  $k$  and  $b$ , again keeping  $k - b$  constant. Under the Stability and Growth Pact, country  $U$  will not be allowed to borrow to invest, while country  $I$  is allowed to run down its capital stock and retire debt. The economics of the two cases requires them to be treated symmetrically. The (Augmented) Permanent Balance Rule handles this case gracefully. With  $g_I > g_I^p$  country  $U$  can increase its debt–GDP ratio according to the Permanent Balance Rule, and with  $g_I < g_I^p$  country  $I$  can reduce its debt–GDP ratio.

While the cyclically, inflation- and real-growth-adjusted Golden Rule takes a few steps on the road towards a robust yet flexible government borrowing rule, it fails to recognise that there are many causes for variation over time in government current spending and current receipts, ranging from the business cycle and catch-up spending following decades of under-investment in infrastructure capital, to war-related expenditures.

### ***5.3 Simulating the (Augmented) Permanent Balance Rule***

For illustrative purposes we have simulated the permanent (PBR) and the augmented permanent (APBR) balance rules for the years 2001 and 2002 (see Table 8).

**Table 8. Simulated permanent (PBR) and augmented permanent (APBR) balance rules for 2001/2 (% of GDP)**

	PBR		PBR net of pensions		APBR		APBR net of pensions		Actual deficit	
	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002
Austria			0.0	-0.6			0.6	0.1	-0.2	0.4
Belgium	0.8	1.0	2.6	2.8	-1.3	-0.9	0.5	0.9	-0.4	0.0
Denmark	0.5	0.5	1.5	1.4	1.5	1.5	2.4	2.5	-3.1	-2.0
Finland	-4.1	-4.1	-0.8	-0.8	-0.7	-0.7	2.5	2.6	-4.9	-4.6
France			1.4	1.8			2.1	2.4	1.4	3.1
Germany	-0.7	-0.1	0.4	1.0	-0.3	0.4	0.8	1.5	2.8	3.5
Greece			3.0	3.3			1.7	1.7	1.2	1.2
Ireland			4.3	3.7			6.0	5.5	-1.5	0.1
Italy	3.3	3.3	4.1	4.1	1.1	1.1	1.9	1.9	2.2	2.3
Luxembourg									-6.1	0.3
Netherlands	1.5	1.3	2.6	2.4	2.3	2.2	3.3	3.3	-0.1	1.6
Portugal									4.1	2.7
Spain	-1.2	-1.2	2.8	2.8	-0.3	-0.2	3.7	3.8	0.1	0.1
Sweden	-2.9	-3.2	-0.1	-0.5	0.0	0.1	2.8	2.9	-4.8	-1.1
UK	-0.1	0.2	0.1	0.3	1.2	1.7	1.4	1.8	-0.8	1.3
Av. EU	-0.3	-0.3	1.8	1.9	0.4	0.6	2.4	2.5	-0.7	0.6
Japan	-1.4	-1.4	-0.9	-0.9	-1.2	-1.6	-0.8	-1.2	7.1	7.5
US	0.6	0.7	1.7	1.8	1.4	1.6	2.5	2.6	0.5	3.8
Czech Rep.	-0.5	-0.7	2.9	2.7	1.6	1.4	5.0	4.8	5.5	3.9
Estonia			-0.9	-0.3			1.9	2.5	-0.2	-1.3
Hungary			6.5	5.1			6.7	5.5	4.1	9.2
Latvia			0.1	0.6			2.5	2.8	1.6	3.0
Lithuania			-0.5	-1.1			1.2	0.6	1.9	2.0
Poland	6.4	3.8	5.8	3.2	7.5	5.0	6.8	4.4	3.1	4.1
Slovak Rep.			-0.6	-0.9			2.4	2.1	5.6	7.2
Av. Acc. 8	2.9	1.6	1.9	1.3	4.6	3.2	3.8	3.2	3.1	4.0

*Source:* Own calculations using data from the WEO and IFS. See the appendix for details.

Since data for the impact of future pension liabilities is only available for a subset of countries, we also state the limits net of the expected change in the balance of the pension funds. We contrast the rules with actual deficits for the two years.

With respect to the current EU member countries the permanent balance rules are more or less in line with the current judgement of the Commission. Of the current member countries, Germany (in 2001 and 2002) and France and Austria (in 2002) ran deficits that exceed the ones permitted by the PBR and the APBR. Belgium and Italy were violating the APBR given their high net debt burdens. Spain was exceeding the PBR and the APBR in both years if we take the future impact of its pension system into account. The Netherlands, Sweden and the UK were violating the PBR in 2002 if we take future pension payment shortfalls into account. For the UK this was even true net of pension payments.

Among the accession countries deficits were exceeding those permitted under the permanent balance rule for almost all countries and both years. The exceptions are Estonia in 2002 and Poland and Hungary in 2001. However, this picture changes when we take their current low debt levels into account. According to the APBR only Lithuania and the Slovak Republic were running excessive deficits in both years, not taking future pension payment shortfalls into account. Hungary and Latvia were violating the APBR net of pensions in 2002. The Czech Republic's deficit was above that permitted by the APBR if taken net of pensions in 2001 and in both years if future pension liabilities are taken into account.

Clearly the simulation should be read with caution, given the *ad hoc* assumptions we have made. However, they show that applying the well founded augmented permanent balance rule rather than the *ad hoc* Maastricht Criteria would make a significant difference. While the effects that stem from nominal growth do not have much of an impact on accession countries at this stage (as they have very little debt), this might change in the future. The simulation also does not take into account transfers from the EU budget. With respect to the accession countries, this should have a considerable impact as these are likely to finance around two per cent of these countries' public investment programmes semi-permanently.

## 6. Conclusion

One (perhaps *the*) important virtue of the numerical fiscal–financial criteria of the Pact and the Treaty is that they are simple, 'objective' and verifiable. In principle, the determination of whether these criteria are satisfied could be a mechanical exercise, requiring neither political judgement nor significant administrative or analytical competence or sophistication. During the gestation period of the Stability and Growth Pact, there was indeed quite a bit of support for putting the process of determining compliance with the fiscal–financial criteria on 'auto-pilot'. The view that the monitoring of compliance and the imposition of penalties should be turned into a purely technical verification procedure, without any room for political discretion and negotiation, did not prevail. In many ways, this was just as well. The criteria may be precise, but as we have shown in Section 5, they may well give the wrong signals.

What the parties negotiating the Pact ultimately agreed upon were not only the three numerical ceilings, suggesting a non-discretionary procedure for verifying compliance, but also two ways of introducing elements of flexibility and discretion.

The first of these is a procedure for judging members' performance with respect to the fiscal-financial criteria that leaves the final determination of compliance to the Council (ECOFIN). By making the Council the final arbiter, the Pact has created scope for political discussion and negotiation regarding both the 'findings of fact' and the determination of sanctions and penalties. A striking example is the decision in April 2002 not to issue a formal warning to Germany and Portugal about the risk of the two countries violating the three percent deficit ceiling. This was followed in June 2002 by leniency towards France and Italy, both as regards the date by which the budget was to be close to balance or in surplus (this was postponed by one year), and as regards the meaning of 'close to balance' which now has softened to encompass a general government deficit of up to 0.5 percent of GDP.

The second element of flexibility and discretion relates to the interpretation of the requirement that the cyclically adjusted budget be 'close to balance or in surplus'. This flexibility has been mainly exploited so far by allowing countries to smooth the transition to zero cyclically adjusted budget deficits. When the rules became effective, a number of countries were close to the three percent ceiling for the budget deficit even though they were far from being in an economic downturn. Given this 'initial condition' for the deficit, these countries might have had to tighten fiscal policy in the downturn not to breach the deficit criterion. This has proven politically impossible, and a number of *de facto* waivers were improvised.

This tinkering with the criteria and the unfocussed discussions about these adjustments are undermining the credibility of the Pact. All this underlines the importance of designing a fiscal framework that takes into account, in a systematic manner, the different economic realities across countries. The time horizon over which countries are to achieve balanced budgets has been interpreted with steadily increasing flexibility. In a number of cases deadlines in Stabilisation and Convergence Programmes have been extended without any substantive economic justification being given (such as, say, unexpected developments in the duration and/or amplitude of the business cycle). In addition, the target 'close to balance or in surplus' has, in June 2002, been interpreted as compatible with a deficit of up to half a percent of GDP, and it is not at all unlikely that further relaxation is in store.

An optimal rule is both credible and flexible. Flexible need not mean opportunistic. Credible need not mean rigid and inflexible. Indeed, arbitrary and inflexible rules are not credible. Commitment is not necessarily sacrificed when a rule is made contingent on observable, verifiable events or outcomes – preferably events or outcomes that cannot be manipulated by those implementing the rule or by those judging performance under the rule.

The problem with the current 'flexibility by fudge' compromise is that there is still insufficient flexibility but there is also too much scope for opportunistic, politically motivated manipulation of the framework and the process. There is no



coherent conceptual framework to structure and focus the assessment of the likelihood and significance of one or more of the numerical thresholds being exceeded. The conditions under which warnings will be issued and penalties imposed are obscure and intensely political.

There is a need for the EU and ECB to present to the public a clear conceptual framework to motivate and explain the concepts of fiscal sustainability and excessive deficits, and to relate these fundamental notions to concrete quantitative fiscal–financial objectives (which could be time- or state-contingent) and to specific policy actions or rules. Without such a conceptual framework, it will be hard to convince a sceptical public of the economic merits of any ECOFIN decision to condone or penalize an overshooting of the numerical ceilings. Without it, not only are the Pact’s numerical criteria becoming discredited, but also the fundamental notion of fiscal–financial sustainability.

We conclude that the Stability and Growth Pact’s fiscal criteria are not well-designed to deliver their objectives of viable fiscal–financial programmes conducive to sustainable growth. The aim of preventing excessive government deficits and excessive public debt is shared by everyone. The Pact, unfortunately, is apt to lead to errors of commission as well as to errors of omission.

Strict enforcement of uniform numerical deficit and debt rules would cause serious problems even for existing EU members whose initial conditions are different from the EU average and whose medium-term growth rates and inflation rates may differ significantly from the EU average. The problem of ‘one Pact fits all’ will be even more serious for the accession candidates.

Formally revising the Stability and Growth Pact rules will not be easy. Taking the long-term view, however, the cost of sticking with a badly flawed set of rules is bound to exceed the short-term reputational damage caused by a significant redesign of the rules.

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## Appendix

### *Data and assumptions for the simulation in Table 8*

The simulation is for the financial deficit given the permanent balance rule (equation 15) and the symmetric augmented permanent balance rule (equation 17). Since the quantitative impact of pensions is only available for a subset of the countries, we also state the permitted deficits net of the impact of future pension fund shortfalls. For the augmented permanent balance rule we assume the long-term agreed debt level to be  $b^* = 0.6$  and the speed of adjustment  $\alpha$  to be 0.05. Thus, it takes about 14 years for a country to halve the initial deviation of its debt-GDP ratio from the long term agreed level. The results of the simulation are summarized in Table 8. Bold numbers indicate that a country's deficit exceeded the one permitted under the rule considered.

The permanent growth rate is approximated by the WEO's forecast for real growth for 2001–2007. The permanent real interest rate is taken from the average of the real long term bond yield in the WEO's database. The permanent real interest rate for accession countries is simulated to be 2 percent below the average for the current EU member countries.

Current growth rates, net debt figures, current real interest rates and current inflation are approximated by the WEO's estimates of real growth, net general government debt, real long term bond yields and the change in the GDP deflator. The exception is the real interest rate for accession countries. Since no comparable series is available, we have used the treasury bill rate (where available) or the money market rate given by the IFS and deflated the rates using the GDP deflator.

The impact of pension payments is approximated by half the simulated annual shortfall to the peak (see Table 6). The permanent public investment figure is the average for 2001–2007 given by the WEO for current member countries and the average of those numbers for Greece, Portugal and Spain and for the accession countries.