

***Two Naked Emperors?** Concerns about the Stability & Growth Pact and Second Thoughts about Central Bank Independence**

WILLEM H. BUTTER[†]

Abstract

This paper addresses two sets of issues relevant to current and prospective future E(M)U members: the consequences of the Stability & Growth Pact for fiscal-financial sustainability and macroeconomic stability, and some risks associated with operational independence of the central bank. To be effective as a lender of last resort or to stabilise demand when short nominal interest rates are close to their zero lower bound, the central bank must coordinate and cooperate with the fiscal authorities. Central bank independence is unlikely to survive if such coordination and cooperation are not forthcoming.

JEL classification: E31, E61, E62, E63, F33, F41, F42, H62, H87, E32, E42.

I. INTRODUCTION

This paper deals with some fiscal, financial and monetary issues facing countries contemplating membership in EMU, the European Economic and Monetary Union. The relevance of some of the issues raised is not restricted to current and prospective EMU members, however. This applies particularly to the discussion

*With apologies to Hans Christian Andersen.

[†]Chief Economist, European Bank for Reconstruction and Development (EBRD); Centre for Economic Policy Research (CEPR); and National Bureau of Economic Research (NBER).

This paper was given as the 2003 IFS Annual Lecture. The views and opinions expressed are those of the author. They do not represent the views and opinions of the European Bank for Reconstruction and Development.

of the risks associated with some of the contemporary implementations of operational independence of the central bank, the second set of issues considered in this paper.

The Stability & Growth Pact issues addressed in the first part of the paper are relevant both to the UK, Denmark and Sweden — the three current EU members that do not belong to the euro area — and to the candidates for EU accession — the ten countries virtually certain to join in 2004, the two that hope to join in 2007 and the five to ten further countries that may join at some yet-to-be-determined later time.¹

The focus in this paper is on financial sustainability and macroeconomic stabilisation. I will not address the microeconomic incentive effects of alternative tax, benefit and subsidy structures, or the problems created for national fiscal policy by the international mobility of tax bases (financial capital, enterprises, corporate headquarters, owners of capital, workers and consumers) and of benefit/subsidy seekers (persons and enterprises). There are many important and unresolved issues there, involving tax competition, regulatory competition and other dimensions of systems competition (see Sinn (2003)). A key issue for the EU, and indeed for the wider global community, is whether the prevailing lack of cooperation and coordination of tax rates and bases, benefit eligibility and regulatory standards represents a race to the bottom and a lowest-common-denominator outcome or should instead be viewed as a welcome constraint on the self-aggrandising ambitions of national fiscal and regulatory Leviathans.

Some may be surprised that a lecture given at the Institute for *Fiscal Studies* contains so much discussion of monetary policy issues. This reflects my view that, from the point of view of both positive and normative theories of macroeconomic management, it makes no sense to distinguish between monetary and fiscal policy, unless one defines monetary policy as whatever the Bank of England (the central bank) does and fiscal policy as whatever the Treasury (the ministry of finance) does. I hope to convince you that, for some important purposes, those definitions would not be enlightening. Both monetary and fiscal policy are subsets of intertemporal public finance. They should be treated in an integrated manner.

The point that monetary and fiscal policy are inextricably intertwined has relevance well beyond the EMU and the EU, before or after accession. It is relevant for any country where the central bank may be called upon to act as the lender of last resort and where the Treasury may be called upon to recapitalise the central bank. It is also relevant for any country that faces the threat or the reality of unwanted deflation and the zero-bound problem for monetary

¹The lecture this paper is based on was given on 30 June 2003, almost a year before the EU enlargement with 10 new members on 1 May 2004.

management through short nominal interest rates. The USA faces the first and Japan the second of these contingencies.

Let me emphasise that this paper is not intended as an attack on central bank operational independence. I believe that an operationally independent central bank makes practical sense, provided it does not lead to poor communication, lack of cooperation and absence of coordination between the central bank and the ministry of finance. For reasons that are not well understood, central bank operational independence can act as a commitment device that renders possible the design and implementation of more consistent, far-sighted monetary policy than would have been the case without independence, especially when excessive inflation is the dominant macroeconomic problem.² Where communication, cooperation and coordination between central bank and ministry of finance are seriously impaired, however, central bank independence may do more harm than good. The costs of non-cooperation are apt to be especially serious if the dominant macroeconomic problem is unwanted deflation. Defenders of operationally independent central banks must recognise that operational independence presupposes a willingness of the central bank to communicate, cooperate and, where appropriate, coordinate its actions with the Treasury.

In Section II, I address some of the key financial sustainability and macroeconomic stabilisation issues faced by countries contemplating membership in EMU. In Section III, I outline the importance of a unified approach to intertemporal (or dynamic) public finance issues that encompasses the conventional fiefdoms of fiscal and monetary policy.

II. THE STABILITY & GROWTH PACT

The following notation is used:

B is the stock of general government nominal interest-bearing debt held outside the central bank, with nominal interest rate i ; D is the stock of general government debt held by the central bank; the total stock of general government interest-bearing debt is $B^s \equiv B + D$; R^* is the stock of official foreign exchange reserves, with nominal interest rate i^* ; G is real general government spending on current goods and services and on transfers and subsidies; T^p is the real value of the tax payments by the domestic private sector to the general government; T^{cb} is the real value of taxes paid by the central bank to the general government; $T^s \equiv T^p + T^{cb}$ is the real value of total general government tax receipts; H is the real value of the transfer payments made by the central bank to the private sector ('helicopter drops'); $T \equiv T^p - H$ is total taxes received by the state, i.e. the consolidated general government and central bank; Θ is the total gross

²See McCallum (1995, 1997a and 1997b).

financial returns earned by the general government on the general government capital stock; P is the general price level and $\pi_t \equiv (P_t/P_{t-1}) - 1$ the rate of inflation; E is the value of the spot nominal exchange rate (the domestic currency price of foreign exchange); Y is real GDP and $n_t \equiv (Y_t/Y_{t-1}) - 1$ the growth rate of real GDP; the domestic real interest rate, r , is defined by $1 + r_t \equiv (1 + i_t)/(1 + \pi_t)$; M is the nominal stock of base money; the backward difference operator is Δ , i.e. $\Delta M_t \equiv M_t - M_{t-1}$. All asset stocks are end-of-period. We also define the following stocks and flows as ratios of GDP: $b_t^g \equiv B_t^g/P_t Y_t$, $g \equiv G/Y$, $\theta \equiv \Theta/Y$ and $\tau^g \equiv T^g/Y$; the general government financial deficit as a fraction of GDP is δ ; the general government primary (non-interest) budget surplus as a fraction of GDP is $\sigma \equiv \tau^g + \theta - g$.

All EU members — not just EMU members and would-be EMU members — are required to satisfy the Stability & Growth Pact requirement that, over the medium term, the general government budget be close to balance or in surplus. The quantification of ‘medium term’ and ‘close to’ is, of course, subject to interpretation and negotiation. For current and future accession candidates, EMU membership is part of the ‘Acquis’. There will be no further opt-outs of the kind obtained by the UK and Denmark. When current and future accession candidates join the EU, they will have derogations from participation in the euro system until all the conditions for full EMU membership have been met. Among these conditions are the deficit and debt ceilings of the Maastricht Treaty.

The Stability & Growth Pact and Maastricht Treaty fiscal-financial constraints are specified in terms of the general government financial deficit as a fraction of GDP, δ , and the gross general government debt as a fraction of GDP. In what follows, I assume for simplicity that the general government does not have any financial assets, so gross and net financial debt as a fraction of GDP, b^g , are the same. Cyclically adjusted or ‘medium-term’ quantities are denoted by tildes. Permanent quantities, to be defined below, are denoted by overbars.

The medium-term close-to-balance or in-surplus requirement can be written as

$$(1) \quad \tilde{\delta}_t \equiv \tilde{g}_t - \tilde{\theta}_t - \tilde{\tau}_t^g + \frac{i_t}{(1+n_t)(1+\pi_t)} b_{t-1}^g \leq 0.$$

The Maastricht EMU membership deficit criterion is a general government financial deficit below 3 per cent of GDP (except in exceptional circumstances, including conditions of severe recession), i.e.

$$(2) \quad \delta < 0.03.$$

I will refer to this as the ‘3 per cent rule’.

The Maastricht EMU membership debt criterion is a (gross) general government debt to annual GDP ratio below 60 per cent, i.e.

$$(3) \quad b^g < 0.60.$$

This will be referred to as the ‘60 per cent rule’.

From the general government’s budget identity, we obtain the following equation for the evolution of the general government net debt to GDP ratio:

$$(4) \quad \begin{aligned} b_t^g &\equiv g_t - \theta_t - \tau_t^g + \left(\frac{1+r_t}{1+n_t} \right) b_{t-1}^g = -\sigma_t + \left(\frac{1+r_t}{1+n_t} \right) b_{t-1}^g \\ &\equiv \delta_t + \frac{1}{(1+n_t)(1+\pi_t)} b_{t-1}^g. \end{aligned}$$

The government is solvent — that is, its fiscal-financial programme is sustainable — if the outstanding debt is no greater than the present discounted value of current and future primary (non-interest) surpluses, i.e. the following intertemporal budget constraint holds for the general government:

$$(5) \quad b_{t-1}^g \leq \sum_{j=t}^{\infty} \prod_{s=t}^j \left(\frac{1+n_s}{1+r_s} \right) (\tau_j^g + \theta_j - g_j) = \sum_{j=t}^{\infty} \prod_{s=t}^j \left(\frac{1+n_s}{1+r_s} \right) \sigma_j.$$

I define the permanent discount rate, or the permanent excess of the real interest rate over the growth rate of real GDP, $(\bar{r} - \bar{n})/(1 + \bar{n})$, as follows:

$$(6) \quad \frac{\bar{r} - \bar{n}}{1 + \bar{n}} \equiv \frac{1}{\sum_{j=t}^{\infty} \prod_{s=t}^j \left(\frac{1+n_s}{1+r_s} \right)}.$$

It can be interpreted as the long-run average real interest rate minus the long-run average real growth rate of GDP.

For any flow variable, expressed as a share of GDP — for example, σ — we define its permanent value, $\bar{\sigma}$, as that constant value of the variable whose present discounted value (using the real interest rate net of the growth rate of real GDP as the discount rate) is the same as the present discounted value of the actually planned or expected future values of the variable. For example,

$$(7) \quad \bar{\sigma} \equiv \left(\frac{\bar{r} - \bar{n}}{1 + \bar{n}} \right) \sum_{j=t}^{\infty} \prod_{s=t}^j \left(\frac{1+n_s}{1+r_s} \right) \sigma_s.$$

The general government's solvency constraint in (5) can now be rewritten compactly as

$$(8) \quad b_{t-1}^g \leq \frac{\bar{\tau}^s + \bar{\theta} - \bar{g}}{\left(\frac{\bar{r} - \bar{n}}{1 + \bar{n}}\right)} = \frac{\bar{\sigma}}{\left(\frac{\bar{r} - \bar{n}}{1 + \bar{n}}\right)}.$$

The general government is solvent if its outstanding debt (as a fraction of GDP) does not exceed its permanent primary surplus (as a fraction of GDP) divided by its permanent discount rate, i.e. divided by the permanent real interest rate minus the permanent growth rate of real GDP.

I will now compare a sensible and rather simple fiscal-financial rule — the so-called Permanent Balance Rule proposed by Buiter and Grafe (2003 and 2004) — with the Stability & Growth Pact and Maastricht fiscal rules (see also Buiter (2003a and 2003b)).

The Permanent Balance Rule is a tax-smoothing rule. The share of general government tax revenue in GDP, τ^s , is kept constant at the lowest value that will guarantee that the government's solvency constraint or intertemporal budget constraint is necessarily satisfied, i.e. the actual share of taxes in GDP is set equal to the permanent tax share that just satisfies (5) or (8) with equality, i.e.

$$(9) \quad \tau_t^s = \bar{\tau}^s = \bar{g} - \bar{\theta} + \left(\frac{\bar{r} - \bar{n}}{1 + \bar{n}}\right) b_{t-1}^g.$$

Under the Permanent Balance Rule, the general government debt to GDP ratio evolves as follows:

$$(10) \quad \Delta b_t^g \equiv g_t - \bar{g} - (\theta_t - \bar{\theta}) + \left(\frac{r_t - n_t}{1 + n_t} - \frac{\bar{r} - \bar{n}}{1 + \bar{n}}\right) b_{t-1}^g$$

and the government financial deficit as a share of GDP is given by

$$(11) \quad \delta_t \equiv \left(\frac{(1 + \pi_t)(1 + n_t) - 1}{(1 + \pi_t)(1 + n_t)}\right) b_{t-1}^g + g_t - \bar{g} - (\theta_t - \bar{\theta}) + \left(\frac{r_t - n_t}{1 + n_t} - \frac{\bar{r} - \bar{n}}{1 + \bar{n}}\right) b_{t-1}^g.$$

The permissible deficit, as a share of GDP, under the Permanent Balance Rule is the sum of the following components: first, the reduction in the debt to GDP ratio brought about by nominal income growth, $\left(\frac{(1 + \pi_t)(1 + n_t) - 1}{(1 + \pi_t)(1 + n_t)}\right) b_{t-1}^g$; second, the excess of current total general government spending (on

consumption, investment and transfer payments) over permanent general government spending, $g - \bar{g}$; third, the excess of permanent financial returns on general government capital over its current level, $\bar{\theta} - \theta$; fourth, the excess of current interest payments over their permanent level, $\left(\frac{r_t - n_t}{1 + n_t} - \frac{\bar{r} - \bar{n}}{1 + \bar{n}} \right) b_{t-1}^g$.

Fiscal-financial sustainability and macroeconomic stability are the declared objectives behind both the Stability & Growth Pact fiscal-financial rules and the Permanent Balance Rule. How well does their design reflect these objectives?

Contrasting the Stability & Growth Pact fiscal-financial rules in (1), (2) and (3) with the permissible deficit under the Permanent Balance Rule given in (11), the following differences should be noted:

1. Because the Permanent Balance Rule allows for any departures of current public spending from permanent public spending, it automatically allows the automatic fiscal stabilisers to operate, and in a symmetric fashion. The rule requires tax revenues to be unit elastic with respect to current GDP. For current or aspiring EMU participants, the Stability & Growth Pact's close-to-balance or in-surplus rule (equation (1)) only permits the automatic fiscal stabilisers to operate if the 3 per cent rule and the 60 per cent rule are not binding constraints. Operating the economy on average at a budget deficit level that is sufficiently low to reduce the risk of hitting the 3 per cent of GDP deficit ceiling to an acceptable level is likely to imply a sequence of deficits that has strange long-run properties (see point 2).
2. In an economy with positive nominal GDP growth, the close-to-balance or in-surplus rule implies that the long-run general government debt to GDP ratio will be either zero or negative. Despite some well-known theoretical intertemporal public finance contributions that imply that the state should be a net financial creditor in the long run (see, for example, Chamley (1986)), I view these long-run implications of the Stability & Growth Pact as unattractive.

The Permanent Balance Rule implies that, in the long run (in steady state), the net debt to GDP ratio is constant. In a stochastic world, it would behave like a random walk. This implies that it would exceed any given finite debt to GDP ratio limit in finite time with probability 1. For those who are worried by this, an Augmented Permanent Balance Rule has been proposed by Buiters and Grafe (2003 and 2004) which adds to the permanent tax share of the Permanent Balance Rule, given in (9), a term representing a partial adjustment from the current debt to GDP ratio to the target debt to GDP ratio, b^g , whenever the current debt to GDP ratio exceeds the target level, i.e.

$$(12) \quad \begin{aligned} \tau_t^g &= \bar{g} - \bar{\theta} + \left(\frac{\bar{r} - \bar{n}}{1 + \bar{n}} \right) b_{t-1}^g + \alpha (b_{t-1}^g - b^{g^*}) & \text{if } b_{t-1}^g > b^{g^*}, \alpha > 0; \\ \tau_t^g &= \bar{g} - \bar{\theta} + \left(\frac{\bar{r} - \bar{n}}{1 + \bar{n}} \right) b_{t-1}^g & \text{if } b_{t-1}^g \leq b^{g^*}. \end{aligned}$$

The permissible general government financial deficit as a share of GDP is given by (11) if $b_{t-1}^g \leq b^{g^*}$ and by the following otherwise:

$$(13) \quad \delta_t \equiv \left(\frac{(1 + \pi_t)(1 + n_t) - 1}{(1 + \pi_t)(1 + n_t)} + \frac{r_t - n_t}{1 + n_t} - \frac{\bar{r} - \bar{n}}{1 + \bar{n}} - \alpha \right) b_{t-1}^g + g_t - \bar{g} - (\theta_t - \bar{\theta}) + \alpha b^{g^*}.$$

3. The Stability & Growth Pact fiscal-financial rules do not allow for economically relevant, observable differences among countries in economic structure and initial conditions. Some of the key ones are the following:

- *Growth rates of real GDP.* Both the Permanent Balance Rule in (11) and the general government's intertemporal budget constraint in (5) or (8) suggest that a higher growth rate of real GDP makes a larger debt to GDP ratio and a larger financial deficit to GDP ratio sustainable. Many EU accession candidates start from much lower levels of per-capita income and productivity than existing EU members. If the hoped-for and expected catch-up or real convergence actually takes place, they could have higher real GDP growth rates than existing EU members for many years — even decades.
- *Inflation rates.* Both the Permanent Balance Rule in (11) and the general government's intertemporal budget constraint in (5) or (8) show that, when general government debt is nominally denominated, a higher inflation rate makes a higher general government deficit and debt to GDP ratio sustainable. With a common nominal interest rate, a higher inflation rate means a lower real interest rate. This means that, for a given permanent primary surplus (as a share of GDP), a higher debt ratio is sustainable or that, for a given debt ratio, a lower permanent primary surplus ratio is sustainable. Accession countries experiencing real convergence will, because of the Balassa–Samuelson effect, tend to have appreciating real exchange rates (Balassa, 1964; Samuelson, 1964 and 1994). With a common currency, this implies that they will have higher inflation rates. With common nominal interest rates, real risk-free interest rates will therefore be lower in countries in the process of real catch-up and convergence. Even without a common currency, the real interest rate of countries undergoing real convergence and real exchange rate appreciation will be lower as long as uncovered interest parity (UIP) holds.

- *Initial capital stocks.* The eight transition countries among the ten EU accession candidates for 2004 all suffer from inadequate infrastructure and badly depleted environmental capital. The UK's public infrastructure, especially in the areas of public transport, schools and hospitals, shows the effects of decades of neglect and is now the worst among the industrial countries. Both the eight transition countries among the ten 2004 EU accession candidates and the UK recognise the need for a period of exceptionally high infrastructure investment. Like all temporarily high public spending items, a temporary increase in the public investment to GDP ratio should be financed by borrowing according to the Permanent Balance Rule. This is desirable both for tax efficiency reasons (smoothing the average marginal tax rates over time lowers the excess burden of taxation) and for intertemporal fairness reasons: the benefits from the public investment will be long-lasting; the burden should not just be borne by current taxpayers or current beneficiaries from other forms of public spending. Borrowing is an efficient way of shifting the burden of financing public spending to future generations.

The Stability & Growth Pact rules do not allow for borrowing to finance a *temporary* splurge in public investment. If public investment yields a financial return to the government, either directly, or indirectly by raising economy-wide productivity and thus boosting the tax base for income taxes, VAT etc., the Permanent Balance Rule allows for temporary borrowing if the early financial returns are less than the permanent financial returns — this would be reflected in a negative value of $\theta - \bar{\theta}$. The Golden Rule, favoured by the UK government, which states that the cyclically corrected general government *current* budget must not be in deficit, is too permissive, as it permits borrowing for public investment even if investment (as a share of GDP) is at its permanent level. Much, probably most, general government investment never yields any positive financial returns to the government, so not too much should be expected from the term $\theta - \bar{\theta}$. From a financial point of view, general government investment should therefore not be treated differently from public consumption.

- *Demographics.* All current and aspiring EMU members are experiencing low (and often still declining) birth rates and increasing life expectancy. This has resulted in a steady and continuing rise in the ratio of economically inactive older citizens to economically active citizens. Combined with generally disappointing productivity growth in the EU, this means that it will not be possible to fund, at the levels currently envisaged in laws and regulations and expected by the citizenry, the state pensions and other benefit entitlements currently financed out of social security contributions, unless there is some combination of a significant

increase in contribution rates and an increase in the period for which contributions have to be paid. Alternatively, there could be an increase in the age at which benefit entitlement starts, a reduction in the replacement ratios (the generosity of the state pension and other social security benefits relative to the average wage) or other restrictions on benefit entitlement. Raising other current taxes, cutting other current public expenditure items or postponing the necessary revenue increases or spending cuts by borrowing complete the menu of options. The Permanent Balance Rule handles this as a situation in which current transfer payments are below their permanent value: $g < \bar{g}$. Other things being equal, this calls for smaller deficits or larger surpluses. The Stability & Growth Pact criteria are myopic and therefore have nothing to say on this matter, until at some later time, the financial consequences of a failure to match social security outlays to contributions are reflected in an actual increase in the budget deficit that threatens to violate the deficit or debt ceilings.

4. The Permanent Balance Rule is *symmetric*. The Stability & Growth Pact is not. The Permanent Balance Rule requires temporary windfalls to be saved. If current spending is below permanent public spending, the general government deficit must be reduced (or the surplus increased). The Stability & Growth Pact deficit rules include no requirement that favourable revenue surprises and temporary low spending levels be used for debt retirement. It is 'memoryless': you do not build up credit towards larger future permissible deficits by running larger surpluses today. Of course, a simple net debt to GDP ceiling would be an alternative mechanism for giving countries an incentive to pay off debt during favourable periods. It is ironic that the 60 per cent (gross) debt to GDP ceiling, the only one among the three fiscal-financial constraints of the Stability & Growth Pact constraints that allows current and past fiscal restraint to be credited towards enhanced future fiscal elbow room, is the one that has been least emphasised since 1992.³ It is encouraging that recent proposals by the Commission seem to indicate a more prominent role for the debt to GDP ratio.

³The debt criterion should be reformulated as a net debt criterion. Financial assets and liabilities should be valued at the present discounted value of future debt service rather than at notional values, to correct for concessional assets and liabilities.

The authors of the Stability & Growth Pact gave quite a few hostages to fortune through the ambitious name they bestowed on their offspring. The jury is still out on whether the Pact has made a positive contribution to either stability or growth in the EU and EMU. The marked, and necessary, improvements in the fiscal positions of a number of EU countries during the second half of the 1990s are almost certainly attributable either to a domestic imperative or to the desire to join EMU (in 1999 for the 11 original EMU members and in 2001 for Greece). The failure of the three largest EMU members to consolidate their fiscal stabilisation gains after 1999, after EMU membership had been secured, supports this interpretation. The fact that the UK and Denmark, which have opt-outs from EMU and therefore from the 3 per cent rule, have maintained a sustainable fiscal position and have not in fact produced general government deficits in excess of 3 per cent of GDP is also supportive of the view that lasting fiscal virtue can only be achieved if it is based on a domestic consensus and that it cannot, except under exceptional and inherently transitory circumstances, be imposed externally.

As regards the accession candidates, the 'Acquis' requirement that they become full members of EMU (although not until they have satisfied all the criteria) and the manifest benefits to these very small and highly open economies of being part of the euro area (assuming they have achieved fiscal-financial sustainability) may well induce fiscal stabilisation efforts, prior to EMU entry, that would not have been forthcoming without the lure of EMU membership. This would be a good thing, even if the fiscal consolidation efforts are not sustained once full EMU membership has been achieved. The recent slide towards loss of fiscal control in the four Visegrad countries underlines the importance of designing effective mechanisms for achieving fiscal-financial sustainability and macroeconomic stability. The experience with the Stability & Growth Pact since 1999 suggests that these mechanisms will have to be created and enforced at the national level rather than at the level of the EU or the EMU.

As regards the UK, in the short run, given the obvious need for a period of catch-up investment in public infrastructure, the Golden Rule is less unnecessarily restrictive than the Stability & Growth Pact's close-to-balance or in-surplus rule. As a permanent feature of the fiscal landscape, however, the Golden Rule is not obviously superior to the close-to-balance or in-surplus rule. Should the UK decide to join EMU, the 60 per cent gross debt rule is unlikely to constrain the UK government's fiscal-financial programme in the foreseeable future, as the UK's Sustainable Investment Rule requires the (net) general government debt to annual GDP ratio not to exceed 40 per cent. The 3 per cent rule could become a binding constraint if growth were to disappoint further.

III. SHOULD WE HAVE SECOND THOUGHTS ABOUT CENTRAL BANK INDEPENDENCE? ‘NO, UNLESS ...’ VS. ‘YES, UNLESS ...’⁴

Monetary policy concerns the liquid corner of intertemporal public finance — the corner with the potentially high-frequency, low-cost, policy instruments: the short nominal interest rate, the nominal exchange rate or the monetary base. It is a small but important part of public finance; its importance should be neither understated nor exaggerated. What matters for economic performance is the fiscal-financial-monetary programme of the consolidated general government and central bank. The determination of the rules governing the behaviour of the fiscal-financial-monetary instruments may be institutionally centralised or decentralised in varying degrees. In the UK, the setting of the Repo rate and the management of the liquid end of the financial balance sheet of the state (the monetary base, some ‘public deposits’, part of the foreign exchange reserves, some government securities and some ‘other securities’) have been delegated to the Bank of England. The UK Debt Management Office does the remainder of the central government’s portfolio management — this used to be part of the remit of the Bank of England.

Operationally independent central banks have become a common feature of the macroeconomic landscape.⁵ Few, if any, central banks are ‘goal independent’ as regards the ultimate goals they pursue. In the UK, the price stability objective of the Bank of England is enshrined in the Bank of England Act. In the euro zone, the ECB’s price stability mandate is laid down in the Maastricht Treaty and its successors. The three objectives of the Federal Reserve Board — maximum employment, stable prices and moderate long-term interest rates — are laid down in the Full Employment and Balanced Growth Act of 1978 (aka the Humphrey-Hawkins Act).⁶ The Bank of Japan’s objectives — the stability of the financial system and price stability — are laid down in the Bank of Japan Law.

Some central banks also have publicly announced proximate or operational objectives. In the case of the Bank of England, the proximate objective — currently a symmetric inflation target of 2.5 per cent per annum for the RPIX

⁴Arguments similar to those made in Section III have also been made by Sims (2003). His paper demonstrates, using a full-fledged dynamic monetary model, that the ability of the monetary authority to achieve its inflation target depends on the combined fiscal capacity (that is, intertemporal resource-extracting capacity) of the central bank and the general government.

⁵Operational independence sometimes rests on tradition and convention rather than having a legal or constitutional basis. The Federal Reserve Board is a creature of Congress. Its operational independence is based neither on statute law nor on common law, but on tradition and convention. The Bank of England’s operational independence rests on the Bank of England Act and that of the Bank of Japan on the Bank of Japan Law. The operational independence of the European Central Bank (ECB) is grounded most securely in the Maastricht Treaty, and will become part of the new EU Constitution.

⁶The Act actually expired in mid-2000. Although the Federal Reserve chairman is no longer required to testify before the Senate and Housing Banking Committees, nonetheless, the semi-annual testimonies continue.

index — is set by the Chancellor of the Exchequer.⁷ The ECB defines the quantitative operational expression of its price stability objective itself; currently, it is an annual inflation rate of less than but close to 2.0 per cent on the HICP index. Neither the Federal Reserve Board nor the Bank of Japan has quantitative operational targets for inflation or any other variable.

Regardless of the degree of de-jure and de-facto operational or goal independence of the central bank, the balance sheet and the profit and loss account of the central bank are not independent of those of the rest of government. They are part of the balance sheet and profit and loss account of the state, for all practical purposes the consolidated general government and central bank.⁸ The fact that the balance sheet and profit and loss account of the central bank are inextricably intertwined with those of the general government manifests itself in a number of different ways.

First, the operating profits of the central bank are transferred automatically to the Treasury.⁹ In a number of countries, this is formally underlined by the fact that the central bank is a joint stock company all of whose shares are held by the Treasury. This is, for instance, the case in the UK.¹⁰ However, the fact that the central bank is, from a financial point of view, an integral part of the state does not depend on the formal legal niceties of stock ownership. The Federal Reserve System is an independent entity within the US federal government.¹¹ The ECB is owned by the national central banks (NCBs) that make up the EU's European System of Central Banks (ESCB). The NCBs themselves have a variety of formal ownership structures, but their balance sheets and profit and loss accounts are all effectively integral parts of the consolidated financial accounts of the nation state to which they belong. The Bank of Japan's capital is 100 million yen, subscribed by both the government and non-governmental persons, in exchange for subscription certifications (shares), with the government providing no less than 55 million yen.

⁷The RPIX is the retail price index excluding mortgage interest payments. On 10 December 2003, the Chancellor of the Exchequer changed the Bank of England's inflation target to 2 per cent per year for the consumer price index (CPI), formerly known as the harmonised index of consumer prices (HICP).

⁸From the perspective of macroeconomic management — fiscal-financial-monetary sustainability and macroeconomic stabilisation — the appropriate treatment of state-owned enterprises (SOEs) and similar publicly owned bits of the enterprise sector is in principle clear but in practice often complicated. If and to the extent that they represent contingent general government liabilities or assets, their accounts should be consolidated with those of the general government.

⁹The ECB distributes its profits to its shareholders, the national central banks. The national central banks distribute their profits to the respective ministries of finance.

¹⁰The Bank of England is a body corporate incorporated by Royal Charter pursuant to the 1694 Act. The Bank was nationalised by the 1946 Act and its capital stock transferred to the Treasury.

¹¹The stock of the 12 regional Federal Reserve Banks is owned by (private) member banks. Ownership of a certain amount of stock is, by law, a condition of membership in the System. The stock may not be sold or traded or pledged as security for a loan; dividends are, by law, 6 per cent per year.

Second, the national Treasury 'stands behind' the national central bank. What this means is that resources of the general government, in particular its capacity to tax, now and in the future, can and will be used, if required, to recapitalise a central bank whose financial net worth has been depleted to an undesirable extent. Even when the Treasury is the sole shareholder of the central bank, there is no de-facto limited liability. If it has the necessary resources, the ministry of finance (Treasury) can, at its discretion, assume part or all of the (contingent and/or deferred) liabilities of the central bank.

There is also a flip side to this implicit or explicit guarantee of the balance sheet of the central bank by the ministry of finance, which manifests itself when the ministry of finance tries to appropriate (part of) the assets of the central bank. For a while, the central bank may be able to resist a claim on its assets by the Treasury. The Bundesbank did this in 1997 when the German federal government attempted to raid (the revaluation of) the Bundesbank's gold and official foreign exchange reserves in an attempt to improve its chances of meeting the Maastricht Criteria for EMU membership.¹² The National Bank of Poland attempted to resist a raid on its assets in 2003, as the Polish ministry of finance attempted to appropriate a part of (the capital gains incurred on) its foreign exchange reserves.¹³ Ultimately, a determined government will be able to overcome such obstacles, be they conventions, laws or constitutional arrangements.

Because of the exceptional status of certain of the financial liabilities of the central bank (typically currency) as legal tender, the central bank can create any amount of liquidity at negligible cost and virtually instantaneously. The central bank is therefore the agency of the state with the short-term 'deep pockets'. Such 'short-term deep pockets' are all that is required for a central bank to be able to confront a liquidity crisis (say a run on the commercial banks) that is not expected to turn into a solvency crisis for a significant part of the banking/financial system.

However, if in the view of the central bank and the government, the banking/financial system requires a permanent capital injection, it may not be possible for the central bank to do this on its own without recourse to monetary injections that would result in excessive inflationary pressures. In that case, provided the comprehensive balance sheet (that is, the intertemporal budget constraint, including future revenue-raising capacity and public spending obligations) of the general government is sufficiently robust, the Treasury can recapitalise the central bank and thus prevent excessive inflation resulting from a financial rescue operation by the central bank. The Treasury, the agency of the state with the capacity to tax, has the long-term deep pockets that complement the short-term deep pockets of the central bank.

¹²See Duckenfield (1999) for a most interesting statement by the Bundesbank on this matter.

¹³The National Bank of Poland was successful in resisting the Treasury's raid on its foreign exchange reserves.

The argument thus far is easily formalised and made precise with a stylised set of accounts for the central bank and the ministry of finance. For simplicity, I ignore the financial return the general government may earn on the general government capital stock, i.e. I assume $\Theta = 0$.

The central bank has the monetary base, M , (currency plus commercial bank reserves with the central bank) on the liability side of its financial balance sheet.¹⁴ On the asset side, it has the stock of international foreign exchange reserves, R^* , earning a nominal interest rate i^* , and the stock of domestic credit, D , which, for simplicity, is assumed to consist solely of central bank holdings of nominal, interest-bearing Treasury bills.¹⁵ Define $\tau = T/Y$.

Equation (14) is the budget identity of the general government and equation (15) that of the central bank.¹⁶ For notational simplicity, I assume that the central bank is exceedingly frugal and does not require any current outlays to function.¹⁷

$$(14) \quad \frac{B_t + D_t}{P_t} \equiv G_t - T_t^p - T_t^{cb} + (1 + i_t) \frac{B_{t-1} + D_{t-1}}{P_t}.$$

$$(15) \quad \frac{M_t}{P_t} - \frac{D_t}{P_t} - E_t \frac{R_t^*}{P_t} \equiv T_t^{cb} + H_t - (1 + i_t) \frac{D_{t-1}}{P_t} - (1 + i_t^*) E_t \frac{R_{t-1}^*}{P_t} + \frac{M_{t-1}}{P_t}.$$

The usual solvency constraints, ruling out Ponzi finance by both the government and the central bank, imply the following intertemporal budget constraints for the general government (equation (16)) and for the central bank (equation (17)).¹⁸

$$(16) \quad \frac{B_{t-1} + D_{t-1}}{P_{t-1}} \equiv \sum_{j=t}^{\infty} \prod_{s=t}^j \left(\frac{1}{1 + r_s} \right) (T_j^p + T_j^{cb} - G_j);$$

¹⁴For simplicity, all of the monetary base is treated as non-interest-bearing.

¹⁵For simplicity, I consider only short-maturity bonds. Generalisations to longer maturities, index-linked debt or foreign-currency-denominated debt are straightforward. In many transition countries and developing countries, the central bank also holds private sector debt instruments among its assets and interest-bearing, non-monetary liabilities among its liabilities.

¹⁶Note that the familiar proposition that the change in the monetary base equals domestic credit expansion plus the value of the change in the stock of foreign exchange reserves is correct if and only if the central bank makes no *after-tax* profits, i.e. its before-tax profits, $i_t \frac{D_{t-1}}{P_t} + E_t i_t^* \frac{R_{t-1}^*}{P_t} - H_t$, are paid as taxes to the Treasury or

ministry of finance: $\Delta M_t \equiv \Delta D_t + E_t \Delta R_t^*$ iff $T_t^{cb} \equiv i_t \frac{D_{t-1}}{P_t} + E_t i_t^* \frac{R_{t-1}^*}{P_t} - H_t$.

¹⁷ Allowing for this would require the addition of C_t^{cb} , real consumption spending by the central bank, on the right-hand side of equation (15).

¹⁸For simplicity, I assume that uncovered interest parity (UIP) holds, i.e. $1 + i_t = (1 + i_t^*) E_t / E_{t-1}$.

$$(17) \quad -\left(\frac{D_{t-1} + E_{t-1}R_{t-1}^*}{P_{t-1}}\right) \equiv \sum_{j=t}^{\infty} \prod_{s=t}^j \left(\frac{1}{1+r_s}\right) \left(-T_j^{cb} - H_j + \frac{\Delta M_j}{P_j}\right).$$

Summing (14) and (15) gives the budget identity of the state, i.e. of the consolidated general government and central bank:

$$(18) \quad M_t + B_t - E_t R_t^* \equiv P_t(G_t - T_t) + M_{t-1} + (1+i_t)B_{t-1} - E_t(1+i_t^*)R_{t-1}^*.$$

Summing (16) and (17) gives the intertemporal budget constraint of the state:

$$(19) \quad \frac{B_{t-1} - E_{t-1}R_{t-1}^*}{P_{t-1}} = \sum_{j=t}^{\infty} \prod_{s=t}^j \left(\frac{1}{1+r_s}\right) \left(T_j - G_j + \frac{\Delta M_j}{P_j}\right).$$

TABLE 1

Central Bank Financial Balance Sheet

<i>Assets</i>	<i>Liabilities</i>
<i>D</i>	<i>M</i>
<i>ER*</i>	
	<i>W^{cb}</i>

TABLE 2

General Government Financial Balance Sheet

<i>Assets</i>	<i>Liabilities</i>
	<i>D</i>
	<i>B</i>
	<i>W^g</i>

TABLE 3

**Financial Balance Sheet of the State
(consolidated general government and central bank)**

<i>Assets</i>	<i>Liabilities</i>
<i>ER*</i>	<i>B</i>
	<i>M</i>
	<i>W^s</i>

Consider the financial balance sheet of the central bank in Table 1, that of the general government in Table 2 and that of the state in Table 3.

The central bank's financial net worth, $W^{cb} \equiv D + ER^* - M$, is the excess of the value of its financial assets, general government debt, D , and foreign exchange reserves, ER^* , over its monetary liabilities, M . Note that, in principle, there is nothing to prevent W^{cb} from being negative. Financial net worth excludes the present value of anticipated or planned future non-contractual outlays and revenues (the right-hand side of (17)). It is therefore perfectly possible for the central bank to survive and thrive with negative financial net worth. This might, however, require the central bank to raise so much real seigniorage, $\Delta M_j / P_j$, $j \geq t$, through current and future nominal base money issuance that, given the demand function for real base money, unacceptable rates of inflation would result. The financial net worth of the general government, $W^g \equiv -(D + B)$, is negative for most governments. The financial net worth of the state (the consolidated general government and central bank), $W^s \equiv W^g + W^{cb} = ER^* - B - M$, is also likely to be negative for most countries. None of this need be a source of concern, unless the gap between the outstanding contractual non-monetary debt of the state and the present discounted value of the future primary (non-interest) surpluses of the state, $\tau_j - g_j$, $j \geq t$, is so large that it either cannot be filled at all (the maximum value of the discounted future real seigniorage stream is too low) and the state defaults, or can only be closed at very high rates of inflation.

The only intertemporal budget constraint that ought to matter — that is, the only one that would matter in a well-managed economy — is that of the consolidated general government and central bank, given in (19). Its breakdown into the general government's intertemporal budget constraint (equation (16)) and the central bank's intertemporal budget constraint (equation (17)) is without macroeconomic interest, unless there is a failure of cooperation and coordination between the monetary and fiscal authorities, i.e. between the central bank and the Treasury.

Following Rogoff (1985), there is a by now quite extensive literature on undesirable (welfare-reducing) cooperation. Most of this relates to cooperation between independent national monetary authorities, but cooperation between monetary and fiscal authorities can be addressed using the same framework. The analytical core of the argument is an application of the theory of second-best. If there is more than one distortion in the economy, policies that do not eliminate all distortions fully need not be welfare-improving. Cooperation between national monetary authorities need not be welfare-improving if national monetary authorities do not cooperate with, or cannot credibly commit themselves vis-à-vis, domestic wage or price setters such as trade unions.

The coordination and cooperation problem I consider here is not one of lack of credible precommitment vis-à-vis the domestic private sector. Rather, it concerns the inability or unwillingness to cooperate between a monetary and a

fiscal authority, each of which may severally be perfectly capable of precommitment vis-à-vis the private sector.

There are two instances in which cooperation between the monetary and fiscal authorities is essential. The first case occurs when the (threat of) a serious banking crisis or financial crisis with systemic implications forces the central bank to act as a lender of last resort, and the problem turns out to be (or becomes), for a significant portion of the banking/financial system, a solvency crisis as well as a liquidity crisis. It could happen that recapitalising the insolvent banks or financial institutions with just the financial resources of the central bank (including a given sequence of net payments to the government, T^{cb}) would require the central bank to engage in excessive base money issuance, which would result in unacceptable rates of inflation. As long as the resources of the consolidated general government and central bank are sufficient, the Treasury should either recapitalise the central bank (if the central bank recapitalised the private banking/financial system in the first instance) or directly recapitalise the banking/financial system. In the accounts set out above, this would amount to one or more large negative realisations of T^{cb} .

Special problems occur when the insolvency of (part of) the financial system is due to an excess of foreign-currency liabilities over foreign-currency assets. In that case, the Treasury, in order to recapitalise the central bank (or some other part of the financial sector directly), has to be able to engineer both an internal fiscal transfer and an external transfer of resources of the required magnitude. If the external credit of the state is undermined, this may only be possible gradually, if and as the state can lay claim to (part of) the external current account surplus of the nation.

In the usual nation state setting, a single Treasury or national fiscal authority stands behind a single central bank. Unique complications arise in the EMU, where each national fiscal authority stands financially behind its own national central bank but no fiscal authority stands directly behind the ECB. The lender-of-last-resort function in the EMU is assigned to the NCB members of the ESCB (see Padoa-Schioppa (1999), Goodhart (1999) and Lastra (2000)). This will work fine when a troubled or failing bank or other financial institution deemed to be of systemic importance has a clear nationality, as most EMU-area-domiciled banks and other financial institutions do today. Likewise, banks that are subsidiaries of institutions domiciled outside the EMU area will be the responsibility of their respective central bank (be it the Bank of England, the Federal Reserve System or the Bank of Japan) and of the national fiscal authority that stands behind each of these central banks.

Trouble arises when EMU-area-domiciled banks emerge that do not have a clear national identity — say banks incorporated solely under European Law. As there is no fiscal authority, national or supranational, standing behind the ECB, who would organise and fund the bail-out and recapitalisation of such a ‘European bank’? It is as yet unclear whether this potential vulnerability will, in

due course, be remedied by the creation of a serious supranational fiscal authority at the EMU level that would stand behind the ECB, or by implicit or explicit agreements between the ECB, the NCBs (the shareholders of the ECB) and the national fiscal authorities.

The second set of circumstances when cooperation and coordination between the monetary and fiscal authorities are essential is when an economy is confronting the need to avoid unwanted deflation or, having succumbed to it, to escape from it. In principle, the potential benefits from cooperation between the monetary and fiscal authority apply to stabilisation policy in general — that is, to counter-inflationary as well as to counter-deflationary policies. The issue is particularly urgent, however, when deflation is the enemy and conventional monetary policy has run out of steam.

Faced with deflation, the central bank on its own can cut the short nominal interest rate — the primary monetary policy instrument in most economies with a floating exchange rate. It can engage in sterilised foreign exchange market operations. If there are reserve requirements imposed on commercial banks or other financial institutions, they can be relaxed, as can the collateral standards in Repos and the eligibility requirements that must be met by potential counterparties.

Once the short nominal interest rate is at the zero floor, conventional monetary policy is effectively exhausted. The central bank can then engage in generalised open market purchases, monetising the outstanding stock of non-monetary public debt, of all maturities, nominally denominated or index-linked, held outside the central bank. Once all outstanding public debt has been absorbed by the central bank, it could turn its attention to the purchase and monetisation of private securities, from foreign-currency-denominated securities, to stocks and shares, land, property or contingent claims. Clearly, such socialisation of private wealth would be subject to all kinds of moral hazard, adverse selection and governance problems.

Should this too fail to boost aggregate demand and end deflation, the monetary authority on its own has one remaining exotic instrument and the combined monetary and fiscal authorities have one conventional but truly effective instrument. The unconventional instrument is to lower the zero floor on nominal interest rates (which is a result of the zero nominal interest rate paid on currency and often on all base money), by paying a negative nominal interest rate on base money. For commercial banks' reserves with the central bank, paying a negative nominal interest rate is technically and administratively trivial. Imposing a 'carry tax' on currency is administratively cumbersome and intrusive, but not impossible. Silvio Gesell (1916) recommended it many years ago, and as great an economist as Irving Fisher (1933) thought the proposal had merit (see also Goodfriend (2000) and Buiter and Panigirtzoglou (2001 and 2003)).

There is, however, a very conventional policy alternative. Milton Friedman referred to it as (base) money dropped from a helicopter (Friedman, 1969). If the

recipients of this largesse do not expect it to be reversed (in present-discounted-value terms) in the future — that is, if they do not expect the helicopter drop of money to be followed by a vacuum cleaner sucking up the currency notes again — this would, at a given price level, represent an increase in the real net wealth of the private sector (see Buiter (2003c)). Because base money does not have to be redeemed *ever*, it does not constitute an effective liability of the state. The increase in net private wealth is also in the most liquid form possible.

An example of a helicopter drop, in the UK context, would be for the Governor of the Bank of England to issue a £1,000 cheque, drawn upon the Bank of England, to every man, woman and child in the country. On the balance sheet of the Bank, this would show up as an increase in the stock of base money and a corresponding reduction in the financial net worth of the central bank. In its budget constraint, it would be a one-off transfer payment to the private sector (H in our notation).

Would it work? If the money rain is not expected to be reversed in present value, it surely would. It does not rely on the strength of the intertemporal substitution effect in private consumption or on the interest sensitivity of private investment demand. All that it requires is that aggregate consumption today is a normal good. If the wealth effect is weak and the £1,000.00 cheque does not do the job, the Governor can add zeros in front of the decimal point on the cheque until the private consumer surrenders and goes out and spends.

Unwanted deflation ('bad deflation') is deflation that occurs in response to contractionary demand shocks. Bad deflations are likely to be characterised by excess capacity, low profitability, falling employment and a weak stock market. Private investment is likely to be both depressed and unresponsive to reductions in the cost of capital. It therefore makes sense under such conditions to view the stimulation of consumer demand (through a helicopter drop of money) as the natural means for combating deflation by strengthening aggregate demand. The helicopter drop is also not dependent on the presence of a sound banking sector and effective financial intermediation. This makes it an even more attractive policy option in a country such as Japan, which combines 'bad deflation' with a major non-performing loan problem in the banking sector.

*1. When Cooperation between the Monetary and Fiscal Authorities Is Essential:
(1) Generalised Open Market Purchases*

Most central banks can buy and sell most securities issued by the general government, and are permitted to buy or sell foreign exchange reserves; however, many or even most central banks are not permitted, by law or custom, to buy and sell private financial sector instruments such as corporate bonds or stocks and shares. Whenever the central bank is not permitted to buy a particular financial instrument (private or public, domestic or foreign), the economically equivalent outcome can be achieved by the general government (typically the

Treasury or the ministry of finance) buying that financial instrument and borrowing from the central bank to finance that purchase. The central bank can then monetise the transaction.

In the euro area, the ECB and the other members of the ESCB are not permitted to extend credit directly to the general government sector or to purchase general government securities directly (in the primary issue market). However, the economically equivalent result can always be achieved by the general government selling its debt instruments in the market and the central bank purchasing the same amount of general government debt in the secondary market.

*2. When Cooperation between the Monetary and Fiscal Authorities Is Essential:
(2) Helicopter Drops of Money*

Technically, if the central bank could make transfer payments to the private sector, the entire Friedmanian helicopter money drop could be implemented by the central bank alone. At time t , there would be a large increase in $H(t)$ financed by increasing the monetary base ('printing money'). The central bank would be acting as a fiscal agent of the state.

The legality of such an implementation of the helicopter drop of money by the central bank alone would be dubious in most countries with clearly drawn institutional boundaries between the central bank and the ministry of finance or the Treasury. The central bank would be undertaking an overtly fiscal action, which is normally the exclusive province of the Treasury or the ministry of finance. In most industrial countries, legal considerations or convention impose the constraint that the central bank cannot make transfer payments to the private sector (or levy taxes on it), i.e. $H_t \equiv 0$. An economically equivalent (but less entertaining) implementation of the helicopter drop of money would be a temporary tax cut (or a one-off transfer payment) implemented by the general government, financed through the sale of government debt to the central bank, which then would monetise the transaction. If the direct sale of general government debt to the central bank (or central bank lending to the general government) is prohibited (as it is for the countries that belong to the euro area), the monetisation of the government tax cut or transfer payment could be accomplished by the general government financing the tax through the sale of interest-bearing debt to the domestic private sector or to the overseas sector, with the central bank purchasing that same amount of interest-bearing debt in the secondary markets.

How likely is it that the monetary-fiscal policy coordination required to effectively counter deflation will be forthcoming? In key areas of the industrial world, the prospects do not appear too bright.

In the USA, coordination of monetary and fiscal policy is very difficult to achieve in practice, because the political-institutional process through which

federal fiscal policy is designed, voted and implemented is too cumbersome, slow and unpredictable to make discretionary fiscal demand management policy a tool that can be effectively coordinated with the Fed's monetary policy. US federal fiscal policy is not made — it happens. If the timing and magnitude of the effects on aggregate demand of fiscal policies driven mainly by efficiency, redistributive or ideological considerations happen to be conjuncturally appropriate, this is by luck rather than design. The three-cornered fiscal tag-wrestling matches between the White House, the House of Representatives and the Senate do not provide an effective institutional vehicle for delivering coordinated fiscal and monetary policy. Beyond the operation of the automatic fiscal stabilisers, there is little evidence in the past three decades of the effective intentional rather than accidental use of fiscal policy for stabilisation purposes, let alone of coordinated stabilisation with the monetary authority.

In Japan, under the previous Governor of the Bank of Japan, central bank independence appeared to be interpreted in a way that effectively precluded cooperation and coordination (and at times probably even communication) with the ministry of finance. While things have improved with the appointment of the new Governor, it will be some time before the legacy of mistrust is overcome.

In the UK, the odds on timely and effective coordination of monetary and fiscal policy appear to be better, although there has not yet been a real test. It is also important to realise that communication, cooperation and coordination need not lead to better policies. Before Bank of England independence in 1997, monetary and fiscal policy were both under the control of the Treasury. In addition, British governments could (and still can) make drastic and radical changes in fiscal policy at very little notice — indeed, more swiftly than anywhere else in the industrial world. Despite this *prima-facie* extremely favourable institutional setting for the coordinated use of monetary and fiscal stabilisation policy, the design and implementation of macroeconomic stabilisation policy in post-Second-World-War and pre-Bank-of-England-independence Britain are generally reckoned to have been among the worst in the industrial world.

The euro area shares most of the problems of coordination and cooperation between the monetary and fiscal authorities found elsewhere in the industrial world. Inevitably, it also faces some special and unique problems when it comes to the coordination of monetary and fiscal policy. In the euro area, public communication between the ECB and the finance ministries consists of each side lecturing the other on the performance of their duties, with the ECB admonishing finance ministers and ministers of economic affairs on the need for tighter fiscal policy and enhanced structural reforms, and the finance minister (sometimes assisted by the minister of the economy or the prime minister) reminding the central bank to boost economic activity through lower interest rates. While this is an old tradition, it hardly qualifies as communication. One hopes that private communications are more productive.

Furthermore, the ECB, like many other new or newly operationally independent central banks, appears to interpret its independence in a way that makes it less likely that a particular course of action will be adopted, regardless of its intrinsic merits, if that course of action has been recommended by a finance minister or minister of economic affairs. What appears to motivate such a response is the central bank's concern with its reputation for being able and willing to act independently. As it is conceivable that finance ministers occasionally get it right, this response of the central bank is not optimal. It is true that only costly signals can be credible, but it should be possible to come up with a signal that is costly to the central bank without being costly to the economy as a whole. Central bank independence means that no one, including a minister of finance (Ecofin or the euroXII group of finance ministers), can instruct and compel the central bank to pursue a particular course of action. It does not mean that the central bank does not answer the phone when a finance minister rings. Independence is perfectly consistent with regular communication, cooperation in the pursuit of congruent objectives and coordination of policies.

The unique problem faced by the euro area when it comes to the coordination of fiscal and monetary policy is the logistic challenge of coordinating the actions of the ECB with those of 12 (and soon more than 12) national fiscal authorities, each one of which is subject to a different set of national constraints on its ability to act in a timely and appropriate manner. This 'technical' coordination problem will remain, even when the will to cooperate is there, until a serious supranational (federal) fiscal authority is created in the EMU. Such a development is most unlikely in the foreseeable future.

Does this mean that a candidate for full EMU membership should strive to stay outside the monetary union arrangements until a workable framework for EMU-wide coordination of monetary and fiscal policy has been established? Not necessarily. The net effect of these 'communication, cooperation and coordination' problems on the cost-benefit analysis of adopting the euro depends on two factors: first, the likelihood of the occurrence of either a financial calamity requiring a fiscal bail-out of the central bank or of a conjunctural emergency calling for closely coordinated fiscal and monetary stabilisation policy; and second, the ability and willingness of the existing (pre-EMU) national fiscal authorities to provide the necessary fiscal bail-out or conjunctural impulse.

Of the eight East and Central European transition countries that are scheduled to accede to the EU in 2004, the four largest are, to varying degrees, in serious fiscal trouble, with large and unsustainable public sector financial deficits and strong political opposition to public spending cuts and tax increases. In one of these countries — the Czech Republic — the large government budget deficits of the past two years have, in part, mirrored one-off (one hopes) budgetary outlays associated with the recapitalisation of insolvent commercial banks. Only a

solvent fiscal authority can supply the option of a non-inflationary means of recapitalising an insolvent banking system or financial sector.

The other argument for a willing and capable fiscal back-up for the monetary authority is the likelihood of the need for a combined monetary and fiscal 'helicopter drop' of base money to counter a deflationary threat. In this case, the fiscal capability test is not stringent at all. Even a borderline insolvent fiscal authority can do the job of providing a temporary tax cut or increase in transfer payments. Since the resulting increase in the financial deficit of the consolidated fiscal and monetary authorities is financed entirely by printing base money, the solvency of the state will not be adversely affected. Indeed, if the helicopter drop is successful in boosting economic activity, tax revenues could rise and the solvency of the state would be enhanced.

For the three existing non-EMU EU members, each of which has a solvent national fiscal authority, the effect of the 'communication, cooperation and coordination' argument on the net benefit from euro adoption is, on balance, negative. Despite this, the overall net balance of EMU membership benefits over costs continues, in my view, to be in favour of the earliest possible adoption of the euro. For the UK, Bank of England independence has led to a better performance than would have been likely under continued UK monetary independence but with monetary policy determined by the Treasury, as it was before 1997. The unpredictable, intractable and unmanageable behaviour of the sterling–euro exchange rate since 1997 has, however, contributed significantly to the unbalanced character of the UK's economic performance during this period, which systematically favoured the internationally sheltered sectors at the expense of the internationally exposed sectors. Full participation in EMU since 1999 would have made for a more sectorally balanced growth performance.

3. Back to the Stability & Growth Pact: Debt and Deficit Constraints Should Apply to the Non-Monetary Financial Liabilities of the State

The macroeconomic implications of government debt issuance depend on whether the debt is purchased by the general public (including the rest of the world) or by the central bank. By issuing fiat base money (often with legal tender status), the state, through its agent the central bank, borrows at a zero nominal interest rate, using liabilities that will never have to be redeemed. These monetary liabilities of the state have a unique role in the determination of the general price level and in maintaining financial stability. All this is lost sight of when we consider just the general government sector, which excludes the central bank.

An implication of this line of argument is that both the Stability & Growth Pact deficit criteria, which involve the general government financial deficit and gross financial debt, and the Golden Rule and Sustainable Investment Rule, which are specified in terms of, respectively, the general government's cyclically

corrected current deficit and the general government's net financial debt, involve the wrong deficit and debt concepts.¹⁹ The public sector financial deficit that matters is the financial deficit of the consolidated general government and central bank minus the increase in the stock of base money.²⁰ The public debt that matters is not the gross financial debt of the general government, but the non-monetary net financial debt of the consolidated general government and central bank.

The proposition that public debt and deficit constraints, targets or performance criteria should be specified in terms of the non-monetary debt of the consolidated general government and central bank, and of the financial deficit of the consolidated general government and central bank net of any increase in the base money stock, does not ignore the lessons of Sargent and Wallace's 'unpleasant monetarist arithmetic' (Sargent and Wallace, 1981) that, while inflation may always and everywhere be a monetary phenomenon, (base) money growth is ultimately a fiscal phenomenon. For a given primary (non-interest) financial deficit (as a proportion of GDP) of the consolidated general government and central bank, a higher ratio of net non-monetary public debt to GDP will tend to raise the need for future real seigniorage revenue. Unless we are on the wrong side of the seigniorage Laffer curve, higher real seigniorage requires a higher growth rate of the nominal stock of base money and, sooner or later, a higher rate of inflation.

Concerns about sovereign default and about financial crowding-out, which are functions of the current and anticipated future path of the net non-monetary liabilities of the state, should not be mixed up with concerns about excessive future inflation or deflation. A single set of public debt and deficit limits is unlikely to address both default and crowding-out issues and inflation/deflation issues.

In advanced industrial countries with a sophisticated financial sector, the stock of base money represents a small share of the broader monetary aggregates (M1, M2, M3, M4, M16 etc.) and is small relative to annual GDP. In the UK, at the end of 2002, M0 was 3.8 per cent of 2002 GDP and the change in M0 over

¹⁹The same holds true for the debt criterion that must be satisfied by aspiring EMU members. Gross general government debt is to be below 60 per cent of annual GDP.

²⁰Seigniorage, ΔM , and interest saved through the ability to issue non-interest-bearing base money, iM , are related as follows:

$$\lim_{N \rightarrow \infty} \sum_{j=1}^N \prod_{s=j+1}^N \left(\frac{1}{1+i_s} \right) \Delta M_j \equiv \lim_{N \rightarrow \infty} \sum_{j=1}^N \prod_{s=j+1}^N \left(\frac{1}{1+i_s} \right) i_j M_{j-1} + \lim_{N \rightarrow \infty} \prod_{s=1}^N \left(\frac{1}{1+i_s} \right) M_N - M_{t-1}.$$

The present discounted value of current and future seigniorage equals the present discounted value of future interest payments saved, plus the difference between the present discounted value of the terminal stock of base money and the currently outstanding stock of base money. In any given period, however, the values of seigniorage and of interest saved can be quite different from each other.

the year was all of 0.21 per cent of GDP.²¹ Under deflationary conditions, however, it is not the historical magnitude of the stock of base money that matters, but the ability of the monetary authorities to increase it, effectively instantaneously and costlessly, by any amount. The ability to engineer the mundane, real-world counterpart of Milton Friedman's helicopter drop of money through a base-money-financed temporary tax cut or transfer payment aimed directly at the household sector is dependent on the willingness of the central bank to issue irredeemable base money. If such willingness is not forthcoming, and if the cost of unwanted deflation is judged sufficiently high, the ministry of finance could issue its own version of base money — irredeemable Treasury bearer notes.²² This should, however, be the remedy of last resort, as it would present the public with direct evidence of a breakdown of communication, coordination and cooperation between the ministry of finance and the central bank. This could seriously damage private sector confidence.

It is important to note that nothing in the argument so far implies any particular view on whether or not the central bank should be operationally independent (or operationally and target independent) from the general government. It does point to the fact that the central bank's financial balance sheet, profit and loss account and intertemporal budget constraint are integral parts of the financial balance sheet, profit and loss account and intertemporal budget constraint of the state. Coordination of fiscal and monetary policy is not an optional extra. Without it, central bank operational independence can do more harm than good, especially during times when deflation rather than inflation is the main policy challenge. The central bank is always an agent of the state, even if it is not an agent of the government.

IV. CONCLUSION

Both the EU accession candidates, for whom EMU membership is part of the 'Acquis', and the existing EU members that have either opt-outs (the UK and Denmark) or derogations (Sweden) from EMU membership will benefit from the reconsideration that is under way of the fiscal-financial performance criteria of the Stability & Growth Pact. They would be well advised to participate actively in this revision process.

It has become clear, even to its most ardent supporters, that the Pact's arbitrary and rigid design provides a ready-made excuse for ignoring its restrictions to all those who consider themselves unduly constrained by them.

²¹Source: *Monetary and Financial Statistics*, April 2003, and Office for National Statistics. The money stock data are not seasonally adjusted.

²²In the USA, so-called US notes, issued by the Department of the Treasury since the Legal Tender Act of 1862, are part of the stock of US currency. Like Federal Reserve notes (authorised by the Federal Reserve Act of 1913), they are non-interest-bearing irredeemable bearer notes and constitute legal tender. They were issued until 21 January 1971. Those that remain in circulation are obligations of the US government.

Adherence to the Stability & Growth Pact rules would almost surely guarantee fiscal-financial sustainability, but would do so at the expense of macroeconomic stability and the efficient intertemporal allocation of public spending and taxation. These disadvantages of the Pact have now become so patently obvious that the Pact's enforcement is becoming impossible. A fiscal rule that is not credible and is honoured more in the breach than in the observance undermines the very principles it is intended to promote. If the new Pact that will eventually emerge, whether through liberal reinterpretation of the existing rules or through a formal revision of the rules, is to fare better than its predecessor, its operating characteristics should be closer to those of the Permanent Balance Rule outlined in Section II. It is clear that, as presented, the Permanent Balance Rule is not an operational fiscal-financial rule. Despite this, it does provide a useful benchmark against which the operating characteristics of the new Pact should be evaluated.

As regards the question asked at the beginning of Section III, 'Should we have second thoughts about central bank independence? "No, unless ..." versus "Yes, unless ..."', my present answer is 'No, unless ...'. Operational independence of central banks has paid dividends in many countries facing the seemingly intractable challenge of eliminating excessive inflation and preventing its recurrence. The recent re-emergence, after almost 60 years, of deflation as a serious actual or potential policy challenge in the major industrial nations of the world has provided an important and necessary reminder that operational independence of the central bank does not mean that the central bank lives on an island — far from the madding crowd. The central bank's financial balance sheet, profit and loss account and intertemporal budget constraint are always and everywhere integral parts of the financial balance sheet, profit and loss account and intertemporal budget constraint of the state, i.e. of the consolidated general government and central bank. The central bank is always an agent of the state, even if it is not an agent of the government.

When faced with the reality or threat of unwanted deflation, and especially when faced with the reality or threat that its traditional key instrument, the short-term nominal interest rate, will become ineffective because it is close to or at its zero lower bound, cooperation between the central bank and the ministry of finance is essential. Generalised open market purchases may require their active cooperation. The implementation of real-world versions of the deflation-killer of last resort — Milton Friedman's helicopter drop of money — requires the cooperation of the central bank and the fiscal authorities. If central bank independence, misinterpreted as requiring lack of communication, cooperation and coordination with the fiscal authorities, were to prevent effective anti-deflationary policies from being implemented, the inevitable consequence, following an unnecessary period of deflation and stagnation, would be the end of central bank independence. Those who believe, as I do, that operationally independent central banks can enhance the quality of monetary policy design and implementation can only hope that those in charge of the key central banks will

- (1997a), 'The credibility of the European Central Bank: comments', in S. Collignon (ed.), *European Monetary Policy*, London: Pinter.
- (1997b), 'Crucial issues concerning central bank independence', *Journal of Monetary Economics*, vol. 39, pp. 99–112.
- Padoa-Schioppa, T. (1999), 'EMU and banking supervision', lecture given at the London School of Economics, 24 February.
- Rogoff, K. (1985), 'Can international monetary cooperation be counterproductive?', *Journal of International Economics*, vol. 18, pp. 199–217.
- Samuelson, P. A. (1964), 'Theoretical notes on trade problems', *Review of Economics and Statistics*, vol. 46, pp. 145–54.
- (1994), 'Facets of Balassa–Samuelson thirty years later', *Review of International Economics*, vol. 2, pp. 201–26.
- Sargent, T. J. and Wallace, N. (1981), 'Some unpleasant monetarist arithmetic', *Quarterly Review, Federal Reserve Bank of Minneapolis*, vol. 5, no. 3, pp. 1–17.
- Sims, C. A. (2003), 'Limits to inflation targeting', Princeton University, mimeo, 17 March.
- Sinn, H-W. (2003), *The New Systems Competition*, Yrjö-Jahnsson Lectures, Oxford: Basil Blackwell.

recognise that without effective communication, cooperation and coordination with the fiscal authorities, central bank independence does not deserve to, and will not, survive.

REFERENCES

- Balassa, B. (1964), 'The purchasing power parity doctrine: a reappraisal', *Journal of Political Economy*, vol. 72, pp. 584–96.
- Buiter, W. H. (2003a), 'How to reform the Stability and Growth Pact', *Central Banking*, vol. 13, no. 3, pp. 49–58.
- (2003b), 'Ten commandments for a fiscal rule in the E(M)U', *Oxford Review of Economic Policy*, vol. 19, no. 1, pp. 84–99.
- (2003c), 'Deflation: prevention and cure', National Bureau of Economic Research, Working Paper no. 9623.
- and Grafe, C. (2003), 'Reforming EMU's fiscal policy rules: some suggestions for enhancing fiscal sustainability and macroeconomic stability in an enlarged European Union', in M. Buti (ed.), *Monetary and Fiscal Policies in EMU: Interactions and Coordination*, Cambridge: Cambridge University Press.
- and — (2004), 'Patching up the Pact: suggestions for enhancing fiscal sustainability and macroeconomic stability in an enlarged European Union', *Economics of Transition*, vol. 12, pp. 67–102.
- and Panigirtzoglou, N. (2001), 'Liquidity traps: how to avoid them and how to escape them', in W. F. V. Vanthoor and J. Mooij (eds), *Reflections on Economics and Econometrics: Essays in Honour of Martin Fase*, Amsterdam: De Nederlandsche Bank NV.
- and — (2003), 'Overcoming the zero bound on nominal interest rates with negative interest on currency: Gesell's solution', *Economic Journal*, vol. 113, pp. 723–46.
- Chamley, C. (1986), 'The welfare cost of capital income taxation in a growing economy', *Econometrica*, vol. 54, pp. 607–22.
- Duckenfield, M. (1999), 'The Goldkrieg: revaluing the Bundesbank's reserves and the politics of EMU', *German Politics*, vol. 8, pp. 113–37.
- Fisher, I. (1933), *Stamp Scrip*, New York: Adelphi Company.
- Friedman, M. (1969), 'The optimum quantity of money', in M. Friedman, *The Optimum Quantity of Money and Other Essays*, Chicago: Adline Publishing Company.
- Gesell, S. (1916), *Die Natuerliche Wirtschaftsordnung durch Freiland und Freigeld*, Bern: Rudolf Zitzman Verlag; available in English as *The Natural Economic Order*, Peter Owen Ltd, London, 1958.
- Goodfriend, M. (2000), 'Overcoming the zero bound on interest rate policy', *Journal of Money, Credit and Banking*, vol. 32, pp. 1007–35.
- Goodhart, C. (1999), 'Recent developments in central banking: some special features of the Monetary Policy Committee and of the European System of Central Banks', Monnet Lecture, Dublin, 14 October.
- Lastra, R. (2000), 'The division of responsibilities between the European Central Bank and the national central banks within the European System of Central Banks', *Columbia Journal of European Law*, vol. 6, pp. 167–80.
- McCallum, B. T. (1995), 'Two fallacies concerning central bank independence', *American Economic Review, Papers and Proceedings*, vol. 85, pp. 207–11.