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CENTER DISCUSSION PAPER NO. 654

SHOULD WE WORRY ABOUT THE FISCAL NUMEROLOGY OF MAASTRICHT?

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Should We Worry About The Fiscal Numerology of Maastricht?

Abstract.

The paper reviews and evaluates in a non-technical manner the economic and political arguments for and against the two fiscal convergence criteria written into the Treaty of Maastricht and its Protocols. In order to qualify for full membership in Economic and Monetary Union (EMU) net general government borrowing may not exceed three percent of GDP and general government gross debt may not exceed sixty percent of GDP. The paper concludes that the adoption of the two universal fiscal reference values is arbitrary, that is without theoretical or practical foundation. It reflects the triumph of central bank (especially Bundesbank) fiscal-political dogma over economic reasoning and common sense. Attempts to meet these fiscal norms would result in unnecessary hardship for a number of countries and in a deflationary fiscal stance for the EC as a whole.

JEL Classification Numbers: 431, 432, 423, 320, 325.

Keywords: EMU; convergence; public debt and deficits; coordination; externalities; political economy.

(1) Introduction.

The beast may only have one number, 666, Maastricht has two, 3 and 60. The Treaty of Maastricht and the protocols attached to it contain a number of convergence criteria that must be satisfied by member states in order to qualify for full membership in the Economic and Monetary Union (EMU). This paper analyses the two quantitative criteria for avoiding and correcting "excessive government deficits". Net borrowing by the general government sector may be no higher than 3 percent of GDP and general government gross debt may not exceed 60 percent of GDP. By comparison, the Dutch government had a deficit of 4.4 percent of GDP in 1991 and its gross debt at the end of 1991 is estimated at 78.4 percent of GDP. Table 1 shows the situation for all twelve EC member states in 1991.

Table 1
General Government Debts and Deficits in the EC, 1991.

	General Government Gross Debt % GDP	General Government Net Borrowing % GDP
Germany	43.6*	1.9*
France	47.2	1.5
Italy	101.2	9.9
U.K.	43.8	1.9
Belgium	129.4	6.4
Denmark	66.7	1.7
Greece	96.4	17.9
Ireland	102.8	4.1
Netherlands	78.4	4.4
Spain	45.6	3.9
Portugal	61.6	5.4
Luxembourg	6.9	-1.9
EC Average	60.3**	4.1**

*West Germany, 1990.
**1990
Source: EC

It is apparent from Table 1 that only France, the UK and Luxembourg win for Europe on both fronts (in Germany the government deficit for 1991 will almost certainly be higher than 3 % of GDP).

The two hard quantitative norms are to some extent qualified, softened and rendered fuzzy by the surrounding text. If the deficit is above its reference value, here need be no cause for alarm as long as the deficit-GDP ratio has declined substantially and continuously and does not exceed the reference value by too much on the proposed accession date. Exceptional and temporary excesses of the actual over the reference ratio are also permitted. If the debt-GDP ratio is too high, there will be sanctions only if the ratio is not sufficiently diminishing and not approaching the reference value at a satisfactory pace (it does not say for whom the pace should be satisfactory). Policy makers may allow for the relationship between the government deficit and government investment, and indeed for all other relevant factors, including the medium-term economic and budgetary position of the member state.

When a member state fails to comply with the recommendations of the Council of Ministers, a number of sanctions may be invoked. The European Investment Bank may be invited to reconsider its lending policy to the member state. The member state may be required to make a non interest-bearing deposit with the Community. Fines may be imposed. When a member state is in the fiscal dog house, it may not vote in the Council of Ministers on issues related to EMU (except presumably on issues such as the exchange rate regime between its own currency, which will perforce continue to exist, and the ECU, the common currency of the full EMU members). It will not be able to appoint representatives to the Governing Council of the European Central Bank (ECB) or to its Executive Board.

(2) Where do these reference values come from?

Where do these two fiscal criteria come from? As regards the debt-GDP reference value, one "explanation" is that 60 percent of GDP is approximately the average value of this ratio for the twelve Community members in 1990-91. This is not true for the deficit-GDP reference value. Its average value during 1990 was 4.1 percent of GDP. In 1991 it will also be significantly above the reference value of 3 percent.[1]

With a bit of goodwill, the two reference values can be said to be compatible with a stationary long-run equilibrium, based upon the status quo of the (mythical) average EC member. For instance, without monetary financing and with a growth rate of real GDP of 3 percent per annum and an inflation rate of 2 percent per annum, the reference values of 60 percent and 3 percent are consistent with a stationary equilibrium.[2]

It should be obvious (but unfortunately does not appear to be so) that elevating these reference values (or indeed any reference values) to international norms or standards is unadulterated economic nonsense, and dangerous nonsense to boot. The average current value of the debt-GDP ratio or the average-current-value-minus-a-bit of the deficit-GDP ratio have no normative significance whatsoever. With equal (lack of) justification one could have chosen the numbers 12 (the number of the apostles) and 42 (the answer to the question about life, the universe and everything[3]). At the risk of belaboring the obvious, I briefly review fourteen economic arguments.

(1) The debt criterion is defined in terms of the nominal or face value of *gross* rather than of *net* government debt. Government assets therefore are not counted, not even financial assets and other quite readily marketable, liquid assets. There is no good reason for taking so restrictive a view of the government balance sheet[4]. In the Netherlands, government assets such as

those accumulated by the ABP (Algemeen Burgerlijk Pensioenfonds) to fund future civil service pensions are sufficient to bring net government debt down to less than 60 percent of GDP. Not counting such public sector assets biases the comparison of the Netherlands, where civil service pensions are funded, with countries that pay for civil service pensions using an unfunded scheme. Table 2 shows that the differences between net and gross debt can be sizable.

Table 2.
EC General Government Gross and Net Debt, in 1990.

	Gross Debt % GDP		Net Debt % GDP
	(EC)	(OECD)	(OECD)
Germany	43.6*	43.9	24.1
France	46.6	47.1	25.4
Italy	98.6	103.8	100.9
U.K.	42.8	36.7	30.0
Belgium	127.3	131.5	121.3
Denmark	66.4	59.6	27.3
Greece	93.7	85.2	NA
Ireland	103.0	113.0	NA
Netherlands	78.3	79.8	59.3
Spain	44.5	45.3	32.7
Portugal	68.2	NA	NA
Luxembourg	7.3	NA	NA

*West Germany.
**On a SNA basis except for the UK and Greece where the data are based on national methods.
Sources: EC and OECD Economic Outlook.

(2) By elevating the European average of the debt-GDP ratios and a number below the European average of the deficit-GDP ratios to the status of *one-sided* or *asymmetric* norms (values above the norm are not permitted, values below the norm are), fiscal policy in the EC will subject to a contractionary bias during the next few years. There is no mention in the Treaty of the need for a less restrictive average stance of monetary policy to compensate for

this deflationary fiscal bias.

(3) The automatic fiscal stabilizers ensure that the government deficit rises in a slump and falls during a boom. According to the Maastricht Treaty and protocols, cyclical variations in the government deficit centered on the reference value of 3 percent would not be permitted, since cyclical excesses of the actual deficit over the reference value would be temporary but certainly not exceptional. In order not to exceed the 3 percent ceiling on a regular basis, the deficit will have to cycle around an average value of less than 3 percent of GDP. This reinforces the contractionary bias of the deficit norm during the transitional period.

(4) For those who favor a Keynesian approach to the determination of the level of economic activity, the average monetary-fiscal policy "mix" for the Community as a whole (in relation to the mixes in North America and Japan) are a concern. Maastricht is silent on this issue.

(5) The Treaty refers, without mentioning it by name, to the "golden rule" of government financing: balance the current budget and borrow no more than the amount of capital formation. The German negotiators were especially keen on this "rule for virtuous borrowing". The practical problems associated with any attempt to distinguish consumption spending from investment are well known. "Current" expenditures on education, such as teachers salaries are an obvious example. Even if that problem has been overcome, the "golden rule" for government financing makes no sense and can lead to bad policy choices.

First, there is nothing wrong with borrowing to finance consumption expenditures, even if we ignore possible Keynesian benefits in economies with widespread capacity under utilization. As long as the borrower realizes that ceteris paribus future consumption will have to decline in present value by as much as current consumption increases, there is no prima facie reason to

second guess his intertemporal choices. One of the most important papers in the post World War II economics literature (Samuelson [1958]) introduced the consumption-loan model; this in now at the center of most interesting dynamic macroeconomic modeling. Consumption smoothing when income is variable and/or uncertain is optimal according to the permanent income-life cycle hypothesis.

The bias against consumption loans by the government that underlies the golden rule of government finance is an example of what in Britain used to be called the Treasury view, but should today be called central bank economic ideology. Central bankers, whose Weltanschauung permeates and dominates the sections of the Treaty dealing with EMU, tend to possess a paternalistic puritan streak that compels them to exhort others to choose consumption tomorrow over consumption today. In my view, such personal or group idiosyncrasies should not be allowed to interfere with the free expression of private and public intertemporal choices, unless they are backed up with a convincing demonstration that major market failure has resulted in saving rates lower than the social optimum.

Second, many socially useful and desirable government investment projects do not, either directly (say, through user fees) or indirectly (say, by boosting the tax base) increase the future balance of receipts over non-interest expenditures by an amount at least equal in present discounted value to the cost of the projects. In that case financing by borrowing must sooner or later be supplemented by policies to raise revenues or cut non-interest expenditures. The social rate of return on a government investment project need bear no relation to its effect on the government's future cash flow[5]. To the extent that the government does not appropriate (directly or indirectly) the returns to public sector investment, the "golden rule" of public sector financing may be an recipe for weakening the public

sector balance sheet that can ultimately lead to insolvency. Therefore, government investment can be financed safely through borrowing only if this investment will in the future reduce the primary government deficits by enough to compensate for the higher interest payments associated with the borrowing.

(6) The neoclassical theory of the optimal use of distortionary taxes suggests that temporary (exogenous) increases in expenditures and temporary (exogenous) reductions in the tax base should be reflected in temporary government deficits and permanently higher tax rates. A simple special case of this theory implies that under the optimal tax rule the public debt will follow a "random walk" [6]. This means that the optimally chosen value of the public debt will, in due course, exceed or fall below any imaginable value, no matter how high or low. The number 60 (or any other number) does not have special significance in this approach (see e.g. Barro [1979]).

The strict random walk result relies on very restrictive assumptions and should not be taken seriously. It has been referred to only to underline that even those approaches to positive economics and to economic policy design that are furthest removed from the Keynesian paradigm, can come up with prescriptions for the behavior of public debt and deficits that are orthogonal to the Maastricht rules.

(7) Countries with a higher growth rate of real GDP can ceteris paribus safely support a higher deficit-GDP ratio. Do the authors of the Maastricht Treaty assume that henceforth all member states will have the same growth rates of real GDP?

(8) The same holds in principle for countries with a higher rate of inflation. We can expect that, if and when the member states of the EC have a common currency, there will be no sizable permanent national or regional differences in inflation rates [7]. Until we get to that point, however, there

are likely to be differences. The inflation convergence criterion permits inflation up to 1.5 percent per annum higher (during the year before EMU judgment day) than the average of the three countries with the lowest rate of inflation [8].

More generally, it is strange that the government deficit norm makes no allowance for the distinction between nominal and real interest rates on the public debt.

(9) There is no apparent relationship between the two budgetary norms and the criteria commonly used by economists to evaluate the solvency of the government. The government is said to be solvent if the nominal or face value of the public debt held outside the central bank is no greater than the present discounted value of the future expected primary government surpluses plus the present discounted value of the future expected increases in credit extended to the government by the central bank (see e.g. Buiter [1983]). An equivalent solvency criterion is that the present discounted value of government debt very far in the future will ultimately be non-positive [9]. There is no relationship between these solvency criteria and the debt or deficit norms of Maastricht.

(10) One often hears references to so-called "external effects" of government budget deficits (see e.g. the clear discussion in Bovenberg et. al. [1991] and the much less clear discussion in Commission of the European Communities [1991]). If, for instance, the German government finances its deficit in the capital markets, this will ceteris paribus raise real interest rates in Germany and in all countries tied to Germany through efficient capital markets [10]. From this premise, which is non-controversial (unless one is a believer in Ricardian equivalence) it is then inferred quite illegitimately, that such negative external effects must be opposed and, if

possible, avoided altogether. Both the designation "external effects" and the characterization "negative" reflect sloppy thinking.

When I increase my purchases of bananas in a competitive market with an upward-sloping banana supply schedule, the price of bananas will rise. This is good news for all those who are long in bananas (net banana exporters) and bad news for all those who are short in bananas (net banana importers). The increase in the price of bananas is exactly what ought to happen if the market system is to do its job of allocating resources efficiently. The price increase inflicted by me on other banana buyers and sellers is what economists call a **pecuniary externality**. It is to be distinguished sharply from **technological externalities**, effects of one agent's actions on the consumptions sets, utility functions or production functions of other agents for which no appropriate price is charged. In complete competitive markets, no adverse efficiency consequences are associated with pecuniary externalities. They are merely another word for general market interdependence. As is clear from the banana example, the price changes will have distributional consequences. If these are undesirable, policy makers are free to do something about that with the most effective redistribution instruments at their disposal.

What is true for bananas is also true for government debt. When a government finances a deficit in the capital markets and interest rates rise, this is good news for creditors everywhere and bad news for debtors everywhere[11]. If this form of redistribution is undesirable, governments are free to respond appropriately. It is extremely unlikely, that the best way to achieve the desired redistribution is by forbidding budget deficits above a certain level. Note that it is also quite irrelevant whether the deficits under consideration finance public consumption or productive public

investment.

There are theoretical arguments for the international coordination of virtually every aspect of budgetary policy, with the exception of government deficits and government debt. Public consumption and investment may have technological external effects that render coordination desirable in principle (the practical problems of productive international coordination are an important subject in their own right, which cannot be addressed here). It is also well-known that the uncoordinated setting of national distortionary taxes, transfers and subsidies can lead to Pareto-inefficient outcomes, that is outcomes that are inferior for all parties involved to some other technically feasible outcome. The examples of international tax competition, of national subsidy races and of the competitive dismantling of national welfare systems in order to attract foreign direct investment come to mind.

With government borrowing things are different. There already is an international coordination mechanism, the international financial markets. Why does Brussels insist on encumbering with international quantitative norms the one corner of budgetary policy where there is no case for international coordination? The much-vaunted principle of subsidiarity has been trampled quite blatantly.

Of course, national governments can, as part of their macroeconomic planning procedures, specify intermediate targets and hard or soft rules and norms for their entire fiscal instrumentarium, including the tax burden, marginal tax, transfer and subsidy rates, public consumption and investment, government deficits, government debt and monetary growth. Such intermediate targets, norms and rules should prescribe (or proscribe) actions at a particular time, in a particular place and given a particular state of nature. They should be contingent or conditional. One would therefore not expect to

find them written into a national constitution or international treaty as a set of fixed numbers. Moreover, as regards government deficits or debt, there is no efficiency case for international coordination of national targets, norms or rules. That is what we have international financial markets for.

(11) Another assertion one hears quite frequently is that with a fixed exchange rate (and a fortiori with a common currency), national governments that issue debt denominated in the common currency will not be subject to effective discipline and restraint by the financial markets. This argument has very little going for it.

Assume that EMU is a fact and that a common currency (the ECU) has been adopted. If for instance the German government, unwilling to face paying the price of German unification, were to continue with the issuing of massive amounts of debt (now denominated in ECUs), it would in due course have to pay a growing sovereign risk premium in its ECU interest rate. In addition, and more important in practice, it would sooner or later encounter credit rationing. It would be unable to sell debt in any currency and at any rate of interest.

The disappearance of the national currency implies that exchange rate risk disappears as a source of national interest differentials. Other forms of risk (especially sovereign default risk) will continue to be priced in the market and to be reflected in quantitative constraints on borrowing.

For the proper functioning of the national and international credit markets it is necessary that the member states of the EMU (and the supranational organs of the Community) make it absolutely clear and credible, that national debt is and remains the exclusive obligation and responsibility of the national government in question and of those who, now or in the future, pay taxes to this government [12]. The same is of course true without EMU and

without a common currency. Whether or not such a commitment against debt bail outs can be made credible is a practical political issue. Experience shows that this is not difficult in practice. For instance, in the US this has long been the case for the debt of individual states and of local government units.

I see no reason to believe that intra-Community international solidarity will be strengthened by EMU, or that EMU will strengthen the bargaining power of debtor governments vis-a-vis creditor governments. What, after all, can post-EMU debtor governments threaten creditor governments with that they cannot threaten them with today? That they would abandon EMU and restore their national currencies? How does this threaten creditor governments? That they would default or some or all of their internally or externally held debt? That option is equally available with or without a common currency, and the costs to the defaulter are well-known.

If, for instance, the German government were to default on its obligations towards creditors resident in Germany, this would be a strictly German problem; at the very least the defaulting government would pay at the next election. If German government non-performance were at the expense of creditors resident in other EMU countries, there should be no special obligation for the non-German governments or for the supranational Community agencies to compensate the losers. One would of course expect the other national, regional or supranational authorities and the non-German private sector to impose the usual sanctions for foreign sovereign default: no further credit; current transactions on a cash-in-advance basis only; attachment of German official assets abroad etc.

If a national government debt default threatened to have adverse *systemic* effects, say for the functioning of the community-wide financial system (or for a key part of it like the banking system or the payments system), the

damage can be limited (and serious damage avoided altogether) through cooperative action by the national governments of the other Community countries and the supranational bodies. Such concerted systemic support need not imply ,de jure or de facto, that the defaulting government is relieved of its debt burden. Consider for instance the case where a large chunk of the defaulting national government's debt is held by that nation's banking system. The European System of Central Banks (ESCB) and the European Central Bank (ECB) can play the "lender of last resort" function without "taking over" the debt of the defaulting government and without raising the trend rate of growth of the nominal money stock in the EC as a whole.

(12) Then there is the argument, that the fiscal norms are necessary to render it impossible (or at any rate unlikely) that the new ESCB will effectively be forced to monetize the budget deficits of countries without fiscal discipline (Greece, Italy, Belgium, Ireland, Germany since unification). This is a special case of what was discussed under item (11).

The formal independence of the proposed ESCB and ECB vis à vis the governments of the member states and the supranational authorities of the European Communities is greater even than the formal independence of the Bundesbank today. This holds for the appointment procedures for members of the Executive Board and Governing Council and for the absolute ban on overdrafts and other credit facilities with the ESCB and ECB for all EC, national, regional, local and other public authorities. The ban on direct purchases of government debt instruments by the ESCB is of course meaningless, since "indirect" purchases (that is all purchases of debt instruments in the secondary markets) are permitted.

The one major formal blot on the ESCB independence banner is the vague and confusing verbiage in the Treaty concerning the powers of the Council of

Ministers over the common external exchange rates. Central bank independence requires that the central bank be in charge of exchange rate policy. If the Council of Ministers were to have any powers over exchange rate determination other than the ability to determine just the broadest possible features of the exchange rate regime or system (fixed versus managed floating etc.), then the independence of the ESCB would be seriously undermined. Would the Council of Ministers for instance have the authority to decide that the value of the ECU should be fixed in terms of some basket of non-ECU currencies? If the answer is "yes", the independence of the ESCB would be vacuous, unless the ESCB can assume a leadership role vis à vis the central banks of the rest of the world, more or less like the Bundesbank today within the EMS.

Note, however, that these limits on formal independence also apply in spades to today's most independent national central bank, the Bundesbank. It had at most an advisory role in the process leading to the German government's early support for EMU and a common currency. It was completely ignored when Chancellor Kohl opted for accelerated monetary unification of the two German states and picked an exchange rate for the West German and East German marks.

Even if a central bank is *formally* completely independent of the executive and legislative powers, it remains possible that its *effective* or *substantive* independence is severely restricted by other agents (such as the ministry of finance) who can maneuver it into a position where its domain of choice is very limited. While this is in principle a possibility with the ESCB, it will not be relevant in practice because after EMU any national fiscal authority will be in a considerably weaker position vis à vis the new ESCB, than it is today vis à vis its own national central bank. The ESCB will remain the "leader" in the monetary-fiscal game of chicken (see Sargent [1986, pp. 19-39]) at least until the supranational institutions of the EC are as

strong relative to the ESCB as today's national Treasuries are in relation to their national central banks

(13) By borrowing instead of covering its expenditures with current taxes, the government engages, given the structure of taxation and transfer payments in countries like the Netherlands, in redistribution from the younger (working) current generations and from future generations to the current older (retired) generations. At given (intertemporal) relative prices, this boosts aggregate consumption today, at the expense of current saving and therefore (barring Keynesian miracles) at the expense of consumption tomorrow. It is important to realize that the government can, through its budgetary instruments, achieve exactly the same redistribution and exactly the same stimulus to current consumption with a balanced budget (see e.g. Buiter and Kletzer [1992b]). The government deficit and the government debt must be seen in the context of the sum total of redistribution mechanisms between generations.

Is it appropriate to set norms cooperatively in Europe for intergenerational redistribution and for redistribution between creditors and debtors (when intergenerational redistribution changes intertemporal relative prices)? I am not aware that this has been the subject of intergovernmental discussion at the EC level. Indeed, there is little or no consensus on these issues within national economies. Even if cooperative determination of intergenerational and debtor-creditor redistribution were on the EC menu, it still remains a mystery why identical norms are prescribed for countries that differ in private sector saving behavior, in investment behavior, in the structure of government revenues and outlays, in demographic structure and in 749 other relevant respects.

(14) Finally, it should be clear that the budgetary norms are neither

necessary, nor sufficient, nor useful for satisfying the other convergence criteria in the Treaty of Maastricht (those with respect to inflation, interest rates and exchange rates).

The conclusion is unavoidable that the primitive fiscal norms in the Maastricht Treaty are arbitrary and without any theoretical or practical foundation. Attempts to satisfy these criteria are likely to be damaging.

(3) What happens if the Netherlands tries to satisfy the fiscal norms of Maastricht?

In order to answer this question, I use a simple formula based on the government budget identity (for details see the Appendix). One possible policy to achieve the debt norm post-haste will be not be considered further. That is a capital levy on the holders of government debt, the legal face of debt default.

The first question that can be answered easily with this formula is the following. Starting from an initial debt-GDP ratio, b_0, of 0.79 (seventy nine percent of GDP), how long would it take the Netherlands to satisfy the Maastricht debt-GDP norm, b_0^*, of 0.6 (sixty percent of GDP) if it were to satisfy immediately and continuously the Maastricht deficit-GDP norm, d^*, of 0.03 (three percent of GDP)?

In order to perform the calculations we need two further data: a projection of the growth rate of nominal GDP, g, (assumed constant) and a projection of the credit extended by the central bank to the government in the future as a fraction of GDP, s. I refer to this as seigniorage[13]. It is assumed to be constant in the calculations that follow.

What are reasonable values for the growth rate of nominal GDP and for seigniorage? The average growth rate of nominal GDP for the Netherlands over

the period 1984-1991 was 4.4 percent per annum (real GDP growth over the same period was 2.3 percent per annum). I shall therefore start with a 4 percent annual growth rate for nominal GDP. As the results of the calculations are less painful the higher the growth rate of nominal GDP, I shall repeat them for g = 5.0% and g = 6.0%.

I have estimated credit extended to the government by the Dutch central bank somewhat crudely by subtracting total official foreign exchange reserves from total central bank assets and differencing the resulting series. The average value of s during the nine years 1982 to 1990 was a minuscule 0.11% (just over one tenth of one percent of GDP). This value is used throughout, but nothing much would change if it were doubled or set to zero.

The value of t, the number of years until the debt norm is satisfied is given in Table 3.

Table 3

How long until the Netherlands satisfies the debt reference value?

b^*	b_0	d^*	s	g	t
% GDP	% GDP	% GDP	% GDP	% p.a.	No. years
60.0	79.0	3.0	0.11	4.0	∞
60.0	79.0	3.0	0.11	5.0	45.31
60.0	79.0	3.0	0.11	6.0	15.96

Explanation:

b^*: Reference value of public debt as a percentage of GDP.
b_0: Actual value, at the beginning of 1992, of public debt as a percentage of GDP.
d^*: Reference value of the government deficit as a percentage of GDP.
s: Credit extended by the central bank to the government as a percentage of GDP.
g: Annual percentage growth rate of nominal GDP.
t: Number of years until the reference value is achieved.

With a 4% per annum growth rate of nominal GDP, the Netherlands would never achieve the debt norm, even if it were to satisfy the deficit norm forthwith. In the long run the debt-GDP ratio would asymptotically approach 72.25%. The growth rate of GDP must be at least 4.82% per annum if the debt norm is to be achieved.

With a 5% per annum growth rate of nominal GDP, the debt norm can be satisfied in a little over 45 years. With a 6% per annum growth rate of nominal GDP the debt target is achieved in just under 16 years. While it is nice to know that the Netherlands will be ready in the year 2037 or 2008, it would be a bit late to play a role in EMU. The second phase of EMU begins on January 1, 1994. The third and last phase begins no earlier than 31 December 1996 and no later than January 1, 1999.

How small is the constant deficit (as a fraction of GDP) that will enable the Netherlands to satisfy the debt norm on December 31, 1996 or on January 1, 1999? Table 4 provides some illustrative calculations. t^* is the number of years (5 or 7) until the Netherlands reaches the debt norm. d is the government deficit (as a percentage of GDP) required to reach the debt target.

Table 4.

How large a deficit will bring the Netherlands to the debt target on time?

b^*	b_0	t^*	s	g	d
% GDP	%GDP	No. years	% GDP	% p.a.	% GDP
60.0	79.0	5.0	0.11	2.0	-2.30
60.0	79.0	5.0	0.11	4.0	-0.92
60.0	79.0	5.0	0.11	5.0	-0.23
60.0	79.0	5.0	0.11	6.0	0.45
60.0	79.0	7.0	0.11	2.0	-1.22
60.0	79.0	7.0	0.11	4.0	0.16
60.0	79.0	7.0	0.11	5.0	0.84
60.0	79.0	7.0	0.11	6.0	1.53

Explanation (see also Table 3).

t^* : Number of years until the debt reference value must be reached.
d : Required government deficit as a percentage of GDP.

The figures in Table 4 would be alarming if the Netherlands actually were to feel obliged to satisfy the debt norm by the end of 1996 or the beginning of 1999. With a 5 % annual growth rate of nominal GDP the Dutch government would have to produce a surplus of 0.23% of GDP in order to wear the winner's wreath of laurels at the beginning of 1997. If the target date is two years later, a deficit of 0.84% of GDP is permitted. Both figures (fortunately) are politically quite out of the question.

If the Netherlands were to succeed in getting inflation down to zero while keeping the growth rate of real GDP at 2% per annum, the result would be budgetary disaster. If the debt norm is to be achieved by the end of 1996, a budget surplus of 2.3% of GDP is required. If D-day is the beginning of 1999, a surplus of 1.22% of GDP will be required. It is true that the lower rate of inflation will be reflected in lower nominal interest rates. The required reduction in the primary deficit implied by the debt target is therefore

smaller than the reduction in the deficit (which includes nominal interest payments on the debt). Much of the Dutch public debt has quite a long maturity, however, and the reduction in the interest bill will therefore initially be much smaller than the reduction in short nominal interest rates times the value of the debt.

If the Netherlands were to try to satisfy the Maastricht debt norm, there would have to be severe cuts in public spending or large increases in tax rates. This would also have to happen very swiftly. The associated costs cannot be justified with commensurate benefits. The restructuring of public expenditure and revenue in the Netherlands (which has been going on for years) should continue as planned, without paying attention to the distractions of Maastricht. Fear of sanctions need not deter the Dutch policy makers, since the relevant clauses in the Treaty contain enough ambiguities to keep the Council of Ministers occupied for the next 50 years.

It is obvious that countries like (in ascending order of seriousness) Ireland, Belgium, Italy and Greece have serious budgetary problems. In the case of Greece, with its staggering "flow" problem, it is indeed hard to see any economically feasible strategy for restoring budgetary equilibrium that would command a political majority, unless a partial (de jure or de facto) internal debt default is included in the package. It may be called a "debt consolidation", with an "interest moratorium", but the economic essence will be that of a debt repudiation.

We do not need the Maastricht norms to tell us that a country is in trouble, and by being so obviously infeasible in the case of the four countries just mentioned, the Maastricht norms may actually weaken the case for fiscal retrenchment where it is necessary.

It is regrettable that a serious Treaty runs the risk of having its

overall credibility undermined because it contains a few arbitrary numbers. The authors of the Delors Report, although also in the grip of the same central bank fiscal-political prejudices, at least had the good sense not to come up with precise figures for debt and deficit targets [14]. It is very unfortunate that this restraint was abandoned in Maastricht. It appears that this was the political price that had to paid to keep the German negotiators (looking over their shoulders at the Bundesbank) happy [15]. Whatever the reason, the price is too high.

(4) Conclusion.

We should only worry about the fiscal numerology of Maastricht if the Netherlands (or any other country) were to take the two quantitative reference values seriously and if budgetary policy were to be directed at the achievement of the debt and deficit targets. Fortunately there is no compelling reason to shoot ourselves in the foot in this manner.

The benefits of a common currency are small (see Commission of the European Communities [1990]). Compared with a system of credibly fixed exchange rates between national currencies, these benefits consist in the saving of transaction costs associated with the replacement of several national currencies by the ECU, and in the opportunity for competing somewhat more effectively with the Yen and the US dollar as international reserve and vehicle currencies. For individual member states the distribution of the internal and external seigniorage of the ESCB–ECB is also important. The costs and benefits of the non-monetary aspects of economic union (the single market, economic aspects of the protocol on social policy) are independent of the success or failure of monetary union.

The costs of a common currency are non-negligible. These consist mainly

in the costs of any system of irrevocably fixed exchange rates in comparison with a flexible exchange rate regime. Each member state loses the opportunity of pursuing an optimal nationally differentiated inflation policy. Since the EC members differ greatly in their ability to levy non-inflation taxes, this restriction on the national fiscal policy arsenals may well be serious for some countries.

In addition, the larger and less open member states lose a mechanism that enables them to achieve necessary changes in international relative prices and costs more rapidly and with less costs than would be possible through variations in relative national nominal costs and prices. As far as I know, no-one has even demonstrated that the twelve member countries of the EC form an "optimal currency area".

With a common currency, national exchange rate adjustments and nationally differentiated monetary policy disappear from the stabilization arsenal. The importance of flexibility in the use of the remaining national stabilization instrument, national fiscal policy, is correspondingly enhanced. Debt and deficit ceilings impair that flexibility and with it each member state's ability to respond to nationally differentiated shocks. Futhermore, the debt and deficit ceilings do nothing to ensure an appropriate aggregate fiscal-monetary mix for the EC as a whole.

For a small, highly open economy like the Netherlands, which has had a fixed exchange rate with the D-mark for many years, it will make very little difference whether it adopts a common currency (the ECU) or holds on to its national currency and maintains a fixed exchange rate with the ECU. If the price of a single European currency is the fiscal strait-jacket of Maastricht, it would be better to forgo monetary union.

Appendix

Some simple debt arithmetic.

The following symbols and definitions are used. b is the ratio to GDP of government debt held outside the central bank; B^C is the stock of nominal government debt held by the central bank; b^C is the ratio to GDP of government debt held by the central bank; $\tilde{\delta}$ is the ratio to GDP of the government primary (non-interest) deficit, excluding profits of the central bank appropriated by the government; δ is the ratio to GDP of the government primary deficit, including central bank profits; d is the ratio to GDP of the government deficit, including interest payments; θ is the ratio to GDP of central bank profits appropriated by the government; i is the nominal interest rate on government debt; R is the stock of official foreign exchange reserves; i^* is the interest rate on official foreign reserves; e is the nominal spot exchange rate; c is the cost, as a fraction of GDP, of running the central bank; Y is real GDP; p is the GDP deflator; g is the growth rate of nominal GDP; s is the ratio to GDP of the change in credit extended to the government by the central bank ("seigniorage"). We assume that the government appropriates all central bank profits. It follows that: $s \equiv \frac{\dot{B}^C}{pY}$; $\theta \equiv ib^C + \frac{i^* eR}{pY} - c$; $\delta \equiv \tilde{\delta} - \theta$; $d \equiv \delta + i(b + b^C)$.

The government budget identity can be written as:

$$\text{(A1)} \qquad \dot{b} \equiv [i - g]b + \tilde{\delta}(t) - \theta + ib^C - s \equiv -gb + d - s.$$

The solution to equation (A1) is

$$\text{(A2)} \qquad b(t) = b(o)\exp[-\int_o^t g(u)du] + \int_o^t \{\exp[-\int_v^t g(u)du]\}[d(v) - s(v)]dv$$

$b(o) = b_o$ is the initial value of the ratio to GDP of government debt (excluding debt held by the central bank). If the growth rate of nominal GDP is constant, equation (A2) simplifies to

$$(A3) \qquad b(t) = b_o \exp[-gt] + \int_o^t \{\exp[-g(t-v)]\}[d(v) - s(v)]dv$$

The first question we can answer with the aid of equation (A3) is: if from now on (now is t = 0) the Netherlands were to stick to the Maastricht norm for the deficit ($d(v) = d^* = 0.03$), then how long would it take until the country would also satisfy the Maastricht norm for the debt ($b(t) = b^* = 0.6$)? If seigniorage, s, is also constant, the answer to that question is given by equation (A4).

$$(A4) \qquad t = -\frac{1}{g}\ell n\left[\frac{b^* - \left(\frac{d^* - s}{g}\right)}{b_o - \left(\frac{d^* - s}{g}\right)}\right]$$

The answer to the question as to how small should be the constant deficit-GDP ratio, d, if the country has to satisfy the Maastricht norm for the Government debt-GDP ratio, b^*, by a given target date, t^*, is given by equation (A5).

$$(A5) \qquad d = g\left[\frac{b^* - b_o e^{-gt^*}}{1 - e^{-gt^*}}\right] + s$$

If the Maastricht norm is for the ratio to GDP of total general government debt, including the debt held by the central bank, the arithmetic is even easier. Let $\bar{b}$ be the total debt to GDP ratio, that is $\bar{b} \equiv b + b^c$. It follows that

$$(A6) \qquad \dot{\bar{b}} \equiv (i - g)\bar{b} + \delta$$

or

$$(A7) \qquad \dot{\bar{b}} \equiv -g\bar{b} + d$$

By setting $s \equiv 0$ in formulas (A4) and (A5), they can be made to apply to total government debt. In Table 3, the time interval until the debt norm is reached will be slightly longer. In Table 4, the deficit required to bring the Netherlands to the debt target in a given period of time will be slightly lower. Equations (A6) and (A7) should not be allowed to obscure the fact that borrowing from the central bank is effectively interest-free, since the government appropriates the profits of the central bank. This becomes apparent when we rewrite (A7) as

$$(A7') \qquad \dot{\bar{b}} \equiv -g\bar{b} + ib + \tilde{\delta} - \frac{i^{*}eR}{pY} + c$$

Assume (as seems likely) that c is independent of b^{C} and ignore the small income-from-international-reserves component $\frac{i^{*}eR}{pY}$. Past general government borrowing from the central bank instead of from the general public causes the current government deficit, $d \equiv \tilde{\delta} - \frac{i^{*}eR}{pY} + c + ib$, associated with any given non-central bank primary deficit, $\tilde{\delta}$, and any given nominal interest rate, i,[16] to be smaller than it would otherwise have been.

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Footnotes

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[1]For the twelve EC members the average debt-GDP and deficit-GDP ratios were as follows (source: EC).

	General Gvt. Gross Debt % GDP	General Gvt. Net Borrowing % GDP
1981	45.5	5.3
1982	50.3	5.5
1983	53.3	5.3
1984	56.4	5.3
1985	59.1	5.2
1986	60.0	4.8
1987	61.5	4.2
1988	61.0	3.7
1989	60.3	2.9
1990	60.3	4.1

[2]In a stationary continuous time equilibrium, the constant ratio to GDP of government debt held outside the central bank, b, the constant ratio of the government deficit to GDP, d, the constant growth rate of nominal GDP, g and the constant ratio to GDP of credit extended to the government by the central bank, s, have the following relationship to each other: $b = \frac{d - s}{g}$

[3]See Douglas Adams [1982] **Life, the Universe and Everything.** Some experts argue that the correct answer is 54.

[4]It is important to distinguish between the market value of public sector assets (on the assumption that they are transferred to private ownership) and their "continuation value" (the present discounted value of their contributions to the future primary (non-interest) surpluses of the government should they remain government-owned). Both valuations can differ from their social value.

[5]In calculating the social rate of return on a public sector investment project, one should of course allow for the costs associated with any unavoidable distortionary financing of the project.

[6]According to this theory the ratio of distortionary taxes to GDP (sometimes referred to rather mysteriously as the "average marginal tax rate") equals the sum of the average expected future value of the ratio of exhaustive public spending to GDP and the permanent cost of servicing the current debt (as a fraction of GDP). Let b be the public debt-GDP ratio, r the instantaneous real rate of interest, n the instantaneous growth rate of real GDP, γ the ratio of exhaustive public spending to GDP and τ the ratio of distortionary tax receipts to GDP. For simplicity seigniorage is ignored.

The government budget identity can be written as $\dot{b} \equiv (r - n)b + \gamma - \tau$. Define

permanent public spending by

$\gamma^p(t) \equiv [\int_t^\infty \{\exp[-\int_t^s (r(u)-n(u))du]\}ds]^{-1} \int_t^\infty \{\exp[-\int_t^s (r(u)-n(u))du]\}\gamma(s)ds$ and

permanent debt service by $\rho^p(t)b(t)$ where

$\hat{\rho}(t) \equiv [\int_t^\infty \{\exp[-\int_t^s (r(u)-n(u))du]\}ds]^{-1}$. The theory implies that the optimal value of τ, $\hat{\tau}$ say, is given by

$\hat{\tau}(t) = \gamma^p(t) + \rho^p(t)b(t)$. It follows that $\dot{\hat{\tau}} = 0$, that is $\hat{\tau}$ is (expected to remain) constant or follows a random walk. The increase in the public debt-GDP ratio is then given by $\dot{\hat{b}}(t) = \gamma(t) - \gamma^p(t) + [r(t)-n(t)-\rho^p(t)]b(t)$. If the current value of public spending equals its permanent value, and if the excess of the instantaneous real interest rate over the instantaneous real growth rate equals the excess of the long-run real interest rate over the long-run real growth rate, then the public debt also follows a random walk.

[7]If there are persistent national differences in productivity growth rates in the non-traded goods sectors, national inflation differences can persist even with a common currency.

[8]It is regrettable that the inflation convergence criterion rules out the use of EMU by a member country to imporove its anti-inflationary reputation and posture, just as the EMS is often argued to have done for countries like Italy and France.

[9]See e.g. Hamilton and Flavin [1986] and Buiter and Patel [1992]. In Buiter and Kletzer [1992 a,b] we argue that this solvency criterion is too strict in growing economies. We suggest that the present discounted value that should ultimately stay non-positive is the real debt discounted at the sum of the real interest rate and the real growth rate.

[10]The counterfactual to the borrowing is current tax financing using the most broadly-based, least distortionary taxes. The effect on the interest rates of other countries is most easily appreciated when there are credibly fixed exchange rates or a common currency. It is also quite likely to be true, however, if the exchange rate floats. Exchange rate risk need not be affected appreciably by the choice between current taxes and borrowing.

[11]In Buiter and Kletzer [1991a,b], we develop this argument at greater length, both at a non-technical level (Buiter and Kletzer [1991b]) and at a technical level (Buiter and Kletzer [1991a]).

[12]International mutual insurance against this form of sovereign risk cannot be effective due to "moral hazard" problems.

[13]We need the seigniorage projection only if the debt under consideration is general government debt held outside the central bank. If the debt total and the debt norm refer to general government debt including that held by the central bank, no seigniorage projections are required. Tables 3 and 4 with s equal to zero would give slightly higher values of t (the length of the period until the debt norm is reached) and slightly lower values of d (the value of the deficit required to reach the debt norm at a specific future date).

[14]See Committee for the Study of Economic and Monetary Union (Delors Committee) [1989].

[15]A Machiavellian interpretation of the Bundesbank's advocacy of infeasible debt norms is that they are hoped and expected to delay EMU, and especially the move to a common currency, until well into the next century and perhaps to prevent it from occurring altogether. One motivating factor could be the universal bureaucratic trait that no organization ever cooperates enthusiastically and wholeheartedly with a venture that will result in its demise. Second, German monetary officials must realize that they will never be as influential in the ESCB and the ECD following EMU and with a common currency, as they are today in the EMS with the D-Mark. By contrast, French and Italian monetary officials can anticipate an increase in their influence following EMU, after many frustrating years of subordination to the Bundesbank in the EMS. This may account for their continued enthusiasm for EMU.

[16]The nominal interest rate on government debt, i, need not stay the same under alternative financing modes. In a complete analysis, the extent to which past monetary financing raises the current expected inflation rate and the extent to which higher expected inflation raises the current nominal interest rate must also be considered.