

**BUDGETARY RULES AND PROCEDURES
IN EMU**

by
Vitor Gaspar*

Revised
December 1992
Working Paper n° 193

Abstract

There is a voluminous economic literature concerning budget deficits and their alleged effects on inflation, the current account balance and macroeconomic stability. The interest on budgetary rules was fostered since the Delors Report and the Intergovernmental Conference on Economic and Monetary Union. The European Union Treaty includes a procedure to avoid the occurrence of excessive budget deficits. The procedure will be initiated automatically by the violation of certain criteria ("triggers"). The purpose of this paper is to discuss the analytic foundations of the criteria mentioned in the European Union Treaty.

* Universidade Nova de Lisboa
Faculdade de Economia
Travessa Estevão Pinto
1000 Lisboa
PORTUGAL

I would like to thank António Pinto Barbosa, Carlos Tavares, Fernando Chau, António Nogueira Leite, Alfredo Marvão Pereira, Vasco Pereira, Vítor Constâncio and Pieter Stek for useful comments on earlier versions of the paper. I am particularly grateful to Luís Morais Sarmiento for his outstanding assistance. The usual disclaimers apply.

"It is critically important that we capture the 18th century wisdom (...) on checks and balances to limit the government (...) and shed once and for all the romantically idiotic notion that as [political] processes are democratic all is fair game."

J.M. Buchanan, "Constitutional Imperatives for the 1990's: the legal order for a Free and Productive Economy", Hoover Institution, 1988

1. INTRODUCTION

There is a voluminous economic literature concerning budget deficits and their alleged effects on inflation, the current account balance and macroeconomic stability. An example is given by the well known controversy on the Keynesian spending multiplier or otherwise.

During the last decades the thrust of the debate changed. First the Public Choice School under James Buchanan introduced the all-important concept of public (intervention) failure, and stressed the "categorical distinction to be made between playing the policy game within the rules of ordinary politics and engaging in the wider exercise of considering the rules themselves" (Buchanan (1989)). The Public Choice School was pioneer in exposing the fallacies of trying to analyze the merits of rules versus discretion based on the intentions and capabilities of policy makers.

Secondly this line of argument was pursued and formalized by some exponents of the new classical macroeconomics. In fact Kydland and Prescott (1977) presented an analytical framework where rules were seen as a form of commitment. Furthermore they derived the all-important result on the possible time-inconsistency of optimal plans. After Kydland and Prescott article discretion ceased to be synonymous of flexibility and, therefore, opened the possibility of rules being unequivocally superior to discretion.

These modern views are clearly exemplified by the following quotation from Buchanan, Wagner and Burton (1978):

"(...) the best action for government was simply to avoid injecting additional sources of instability into the economy. The profligacy of

government was one latent source of disturbance, and it was considered important that this government proclivity should be restrained. Avoiding such sources of instability, along with keeping debt and taxes low so as to promote thrift and saving, was the way to achieve prosperity. A balanced or surplus budget was one of the practical rules that reflected such constraints and beliefs. Such siren songs as the "paradox of thrift" were yet to come."

This quotation seems very much in line with the following remarks made in a theoretical context, by Blanchard (1984):

"The perception that deficits may hurt rather than help recovery is clearly at odds with the traditional view that deficits, although they will in general increase interest rates, will increase demand and economic activity. Although no unified or articulated "new view" has emerged, challengers of the traditional view insist on the abnormally large size of current deficits. Such deficits, they argue, may be possibly unsustainable a possibility never considered by the traditional view."

This perspective was not only of academic importance but also crucial from the viewpoint of economic policy. In fact the view of the German Council of Economic Experts has consistently been that fiscal retrenchment is a premise for sound and sustainable economic growth. The so-called "German view" on fiscal policy may (quoting Fels and Froelich (1986)) be summarized as follows:

"Fiscal consolidation had a benign impact on expectations (...) [An] important explanation is the way fiscal consolidation was actually brought about. Rather than raising taxes, the deficit was reduced by keeping a lid on expenditure growth (...) By absorbing a smaller share of GNP, the public sector room for the private sector to expand." ²

Further evidence from Denmark and Ireland (see Giavazzi and Pagano (1990)) provide a convincing basis for the policy relevance of the potential contractionary impacts of fiscal expansion.

² The examples and quotation in this paragraph are taken from Giavazzi and Pagano (1990).

Thirdly, as already clear from the quotation from Blanchard the analysis of fiscal policy was pursued within intertemporal frameworks in which the public sector budget constraint is explicitly included. This line of research was originated in the pioneer work of Robert Barro (Barro 1974).

"(...) there is no compelling evidence that EMU would have strong adverse effects on fiscal discipline, but there is no reason either to rely exclusively on market to enforce discipline, since the conditions for this discipline to be effective cannot be assumed to hold fully. Thus there is a case for addressing the risk of failures of market discipline through Community rules and procedures".

M. Emerson, (dir), 1990, "One Market, One Money: ..."

2. RULES AND PROCEDURES IN EMU.

The interest on rules was fostered since the Delors Report on Economic and Monetary Union (EMU) in the European Economic Community called for binding rules on budgetary policy:

"[In the context of Economic and Monetary Union] it would seem necessary to develop both binding rules and procedures for budgetary policy involving respectively:

- *effective upper limits on budget deficits of individual member countries; exclusion of direct central bank credit and other forms of monetary financing; limits on borrowing in non community currencies;*
- *the definition of the overall stance of fiscal policy over the medium term, including the size and financing of the aggregate budgetary balance, comprising both the national and the Community positions".*

Delors Report, 1989, p. 28.

The publication of the Delors Report and the subsequent Inter governmental Conference to revise the Treaty with a view to Economic and Monetary Union justified a voluminous literature on binding rules and procedures to ensure budgetary discipline. The list includes Barbosa (1991), Bovenberg, Kremers and Masson (1991), Bredenkamp and Depler (1990), Buiters and Kletzer (1991), Corsetti and Roubin (1991), Dornbusch (1991), Eichengreen (1990), Emerson (1990), Giovannini and Spaventa (1991), Gordon (1991), Grauwe (1990), Gros and Thygesen (1992, chapter 8), Hagen (1991), Hagen and Fraciani (1991), Isard (1989), Krugman (1990), Lamfalussy (1989), Piöeg (1991), Pohl (1989), Razin (1991) and Wyplosz (1991).

A number of arguments in favour of formal constraints on public sector deficits and financing have been put forward.

The first argument concerns the monetization of public debts and deficits. The argument may be clearly understood from Sargent and Wallace (1981). Sargent and Wallace's results may be interpreted as stating "fiscal pre-requisites" for an independent Central Bank and an independent monetary policy. In fact, assuming that the real interest rate exceeds the real growth rate ³ and given the existence of an upper bound on the stock of debt that markets will absorb, a limit on money creation implies a limit on deficits themselves. The form of this limit is given by the present discounted value of future primary surpluses which have to be at least equal to the present level of public debt. Specifically what is required is sustainability of budgetary policies given an additional condition excluding the possibility of monetary financing. Unsustainable budgetary positions would bring pressures for monetary financing therefore endangering the independence and the credibility of the European Central Bank (ECB), the monetary authority of EMU.

The second argument concerns the possibility of default. Default by a highly indebted sovereign borrower could trigger financial crisis following systemic collapse of, say, commercial banks. The danger of financial crisis brings forward the question of financial system stability and the role of ECB (if any) as a lender of last resort. Given that Central Banks have a tradition of responsibility for the maintenance of orderly financial markets there is a potential conflict ⁴.

The third argument concerns political pressures for "bailing out" a member-state in risk of insolvency. Given the existence of important externalities between member states originated, say, by the full integration of credit markets and the fact that solidarity is an important part of the philosophy of the European Communities no "no bail out" clause may be fully credible.

³ See section 3 below.

⁴ For the macroeconomic relevance of financial crisis see Bernanke (1983) and Bernanke and Blinder (1988). The protocol on the statute of the European System of Central Banks and of the European Central Bank annexed to the European Union Treaty quoted among the tasks of the ESCB (article 3.3) "...contribute to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system."

The second and third arguments point out to moral hazard problems. If there is a "lender of last resort" or a "political" bail out clause then a member state may be tempted to incur in high public debt as a means to extract transfer payments from the rest of the Community.

The fourth argument concerns the need for sound and stable macroeconomic policies as a necessary condition to ensure a favorable environment for growth and development. Sound macroeconomic policies exclude excessive budget deficits and unsustainably rising debt to GDP ratios. This argument is very closely linked to the Classical/Public Choice/German view on fiscal policy⁵.

The preceding arguments have sometimes assumed clear political overtones. They may be seen as a reflex of the position of low inflation, sound budget countries wishing to protect themselves from other less stable member-states. Nevertheless given that there is broad consensus that EMU should be an area of macroeconomic stability the important point is that exclusion of unsound budgetary policies seems to be a crucial pre-requisite.

The new Union Treaty signed at Maastrich on February, 7, 1992 laid down:

- (i) the exclusion of monetary financing (articles 104 and 104-A);
- (ii) that no member-state implicitly guarantees others' member states public debt; neither the Community itself does so (article 104-B);
- (iii) excessive budget deficits should be avoided (article 104-C).

The first two known as the principles of "no monetary financing" and "no bail out" respectively were generally accepted as binding rules having direct effect from the Treaty. The debate on rules and procedures to avoid excessive budget deficits was much more difficult.

In the Delors Report one could read (p. 24):

"In the budgetary field, binding rules are required that would: firstly; impose effective upper limits on budget deficits of individual member countries of the Community, although in setting limits the situation of each member country might have to be taken into consideration".

⁵ The shortest way to put it is due - as far as I know to Pieter Stek (1991): "stability is good for growth and in general as an incentive to the private sector".

In the debate that followed the presentation of the Report binding rules limiting the size of public debt and deficits have been criticized. The arguments put forward included:

First quoting from Kotlikoff (1986):

"(...) the deficit is an inherently arbitrary accounting construct that provides no real guide for fiscal policy. The fact that the definition of deficits is so arbitrary means that even adjusting the official numbers for inflation, increase in government assets, full employment, etc. will leave an arbitrarily defined number that has no necessary relationship to the fundamentals of government's fiscal behavior".

A number of authors have shown that the economic impact of any given budget may be reproduced with, for example, budget balance ⁶. Taking the argument to the logical extreme (as does Kotlikoff (1986)) the size of the officially reported debt also becomes meaningless ⁷.

Second a closely related argument may be derived from the Ricardian Equivalence Theorem (Barro (1974)). This result states that given some well defined assumptions, the path of real interest rates, investment, consumption and other macroeconomic aggregates will be invariant to shifts between taxes and budget deficits (see Barro (1989)).

Third the existence of rules changes the system of incentives faced by fiscal authorities significantly. This may produce significant distortions in, say, reporting practices to avoid the rules. Quoting from a recent works von Hagen (1991):

"The US experience suggest that, despite their impact on fiscal policies, fiscal restraints do little to reduce the likelihood of extreme outcomes in fiscal performance. The most significant effect of fiscal restraint is to induce governments to substitute non-restricted for restricted debt instruments, thereby reducing the relevance and

⁶ See Buiter and Kietzer (1991) for a presentation of this argument in the context of EMU. See also Kotlikoff (1986).

⁷ Boskin, Barham, Cone and Olzer (1987) present a slightly more positive approach in that they try to improve budgetary accounting procedures in the area of insurance programmes. Nevertheless they state: "There is no reasonable accrual accounting, no separate capital account and no adjustment of assets or liabilities to market value."

informativeness of data on government debt. This experience suggests that the much called-for imposition on formal restraints on individual member governments' budget policies in a future European Monetary Union does not provide an effective way to reduce the central banks' risk of being called upon as the lender of last resort".

The possibility of fiscal authorities engaging in "window dressing" calls for important efforts to harmonize and ensure transparency in public accounting.

Fourth binding rules would be unnecessary given that markets would be enough to ensure the necessary discipline. And finally binding rules would be necessarily arbitrary given that there is no clear cut recommendation on the size of public debt or deficits to be taken from Economic Theory.

Based on the weight of the opposing arguments a balance was sought on a procedure where-by a judgment by the Council of Ministers has to be passed before a deficit being labelled excessive. The qualification of a deficit as excessive is a matter for judgment. Nevertheless the judgmental procedure will be initiated automatically by the violation of certain criteria ("triggers"). Given that it may be the case that budgetary difficulties may be identified rather late by using the criteria alone the Commission will have the right (and duty) to triggering the procedure in its own initiative when it judges there to be prima facie evidence of an excessive deficit. The purpose of this procedure on the exclusion of excessive deficits is to avoid "gross errors" of budgetary policy. In this context the question of coordination of macroeconomic policies is not directly at stake. *

The criteria retained as triggers refer to the general government deficit to GDP ratio and to the public debt to GDP ratio (article 104-C, 2, a) and b)). The respect of the Golden Rule of Public Finance will be relevant for the judgment on whether or not the deficits is labelled as excessive (article 104-C, 3).

The purpose of this paper is to comment upon the analytical foundations for the

* In the treaty the issue of policy coordination is addressed in article 103. The clear distinction made in the treaty between policy coordination procedure and the excessive deficit procedure makes it clear that the need for budget discipline was not derived from the purpose of achieving an appropriate policy mix.

proposed criteria and on the significance of the chosen reference values.

3. CRITERIA FOR THE IDENTIFICATION OF EXCESSIVE DEFICITS

Trigger mechanisms provide a constructive way to guarantee an effective starting point to an "excessive deficit procedure" based on judgment. The triggers must be based on a small number of criteria to ensure the workability of the whole procedure. The purpose of this procedure is the identification of "gross errors" of fiscal policy.

The Union Treaty included as triggers for the procedure on excessive deficits, criteria relating to:

- (i) The Gross Debt to GDP ratio and its trend;
- (ii) The deficit to GDP ratio and its trend.

Furthermore there is also reference in the Treaty to the Golden Rule of Public Finance whereby the deficit should be below the amount corresponding to investment expenditures.

3.1. Criteria for Sustainability

The first of the proposed criteria is supposed to be adequate as a sustainability criterion. Following Blanchard (1990) one may identify sustainability with the following two questions:

"Can the current course of fiscal policy be sustained without exploding or imploding debt? Or will the government have to increase taxes, decrease spending, have recourse to monetization, or even repudiation?"

It is now a matter of consensus that indicators of sustainability, should be based on the dynamic government budget constraint⁹

$$\frac{dB}{ds} = G - T + iB = P + iB \quad (1)$$

⁹ See, for example, Blanchard, Chouracui, Hagemann and Sartor (1990)

where B is real debt, G is government spending on goods and services, T is taxes, P is the primary deficit and i is the nominal interest rate, and ds is used to identify the time trend.

Rewriting the budget constraint in terms of ratios to GDP (denoted by italic lower case letters):

$$\frac{db}{ds} = g - i + (i - y^*) b = p + (i - y^*) b \quad (2)$$

where y^* represents the rate of growth of nominal GDP.

It is possible to integrate (2) to give:

$$b_t = b_0 \exp \int_0^t (i_v - y_v^*) dv + \int_0^t p_v \left[\exp \int_t^v (i_v - y_v^*) dv \right] dt \quad (3)$$

Assuming asymptotic boundness on public debt, which prevents it from growing faster than the discount factor $(i_v - y_v^*)$ ¹⁰, one may write:

¹⁰ The condition that $i - y^* > 0$ is familiar from the optimal growth literature. A model in which these conditions are met is the of the well known Ramsey (1928) - Sidrauski (1967) model (see Blanchard and Fisher (1989))

$i - y^* > 0$ is interpreted as a general condition for the dynamic efficiency of the economy (see Abel, Mankiw, Summers and Zakhauser (1989), Blanchard, Chouraqi, Hageman and Sartor (1990) Burbidge (1983), Diamond (1965), McCallum (1984), Solow (1956) and Starret (1988)).

Although it seems impossible to present conclusive evidence on this matter it is worth to make three additional remarks: (i) The dynamic inefficiency associated with growth rates in excess of interest rates is associated with over investment. The existence of an inefficiency makes it possible to enjoy a "free lunch". (ii) Interest rates have exceeded rates in Germany for at least the last thirty years. If one wants to take the German Monetary Constitution as the benchmark for EMU then interest rates in excess of growth rates should be used as reference. Furthermore interest rates exceeding growth rates have prevailed for all major EC economies during the eighties and early nineties. (iii) Low interest rates have been associated with financial repression and capital controls. Financial repression hinders the efficiency of financial markets and institutions threatening economic growth and development (evidence along this lines has been presented in the World Development Report, 1989). Furthermore capital controls are, of course, excluded from EMU.

$$\lim_{t \rightarrow \infty} b_t \left[\exp \left(- \int_0^t (i_v - \gamma_v^*) dv \right) \right] = 0 \quad (4)$$

then rearranging (3) using (4) one may write:

$$b_0 = - \int_0^{\infty} p_t \left[\exp - \int_0^t (i_v - \gamma_v^*) dv \right] \quad (5)$$

Equation (5) is the intertemporal public sector budget constraint meaning that the present value of future tax collections should equal the present value of expenditures together with any obligations outstanding.

One simple indicator of sustainability is the so-called "primary gap" to GDP ratio, suggested by equation (2), and equal to $\gamma = p + (i_v - \gamma_v^*)b$, the primary deficit plus the debt to GDP ratio multiplied by the difference between the nominal interest rate and the nominal growth rate. This indicator corresponds exactly to the theoretical difference between the public debt stock in two successive time periods.

Substituting γ for $(p + (i_v - \gamma_v^*)b)$ in (2) gives:

$$\frac{db}{ds} = \gamma \quad (6)$$

and integrating to give the debt to GDP ratio in t would give:

$$b_t = b_0 + \int_0^t \gamma_t dt \quad (7)$$

If we were to substitute b_0^* (a normative reference level for the debt to GDP ratio in any

given particular country) for b_t in (4) or (6) one gets an operational version of the public sector intertemporal budget constraint that will be binding in a given and limited reference time frame.

In such a case sustainability could be assessed on the basis of the following equivalent constraints:

$$b_t^* = b_0 \exp \int_0^t (i_v - \gamma_v^0) dv + \int_0^t p_v \left[\exp \int_v^t (i_v - \gamma_v^0) dv \right] d\tau \quad (8a)$$

$$b_t^* = b_0 + \int_0^t \gamma_v d\tau \quad (8b)$$

According to the first criterion there will be *prima facie* evidence of excessive deficit if:

- a) $b_0 > 60\%$; and
- b) $\gamma_0 > 0$.

If a) and b) are met then the procedure will be triggered. It is clear from (8) that for any country with a ratio of debt to GDP in excess of 60% the procedure will only fail to be triggered if the debt to GDP ratio is projected to decrease and is in fact decreasing (that is $\gamma_0 < 0$)¹¹. It is nevertheless clear that the reference value chosen is somewhat arbitrary.

3.2. The Golden Rule

The Golden Rule of Public Finance states that a deficit should not exceed the government's investment expenditures.

To consider the analytical foundations for the Golden Rule of Public Finance it is important to introduce the distinction between the government's current and capital accounts.

¹¹ The actual drafting of the Treaty requires that the ratio be diminishing at a satisfactory pace which can be interpreted as implying a negative primary gap bounded away from zero.

For this purpose one may consider a version of equation (2) that distinguishes between public consumption (c^g), including public servant's wages and social transfers, and public investment expenditures, including infrastructure investment and capital transfers (i^g):

$$\frac{db}{ds} = c^g + i^g - t + (i - y^n) b \quad (9)$$

Furthermore since it is not easy to value public capital (in percentage of GDP) one may (following Starret (1988)) define the value of public capital (k^g) as the excess of the discounted value of the future flow of services (c^{gk}) minus the corresponding investment expenditures:

$$k^g = \int_0^{\infty} (c_t^{gk} - i_t^g) \exp\left(-\int_0^t (i_v - y_v^n) dv\right) dt \quad (10)$$

differentiating (10) one obtains :

$$\frac{dk^g}{ds} = (i - y^n) k^g + i^g - c^{gk} \quad (11)$$

Defining n as net debt (to GDP) ratio and using the identity $n = b - k$ gives:

$$\frac{dn}{ds} = (i - y^n) n + c^g + c^{gk} - t \quad (12)$$

which integrating and using a boundary assumption gives rise to:

$$n_0 = - \int_0^{\infty} (c_t^g + c_t^{sk} - i_t) \left[\exp \left(- \int_0^t (i_v - y_v^n) dv \right) \right] dt \quad (13)$$

One can consider the assumption that the consumption of investment services equals exactly the income from public capital assumed to equal the real interest rate, r , times the respective stock value:

$$c^{sk} = r k^g \quad (14)$$

This assumption means that public capital and private capital have the same rate of return.

In general the Golden Rule of Public Finance may be seen as requiring:

$$\bar{d} = d - i^g = ib + c^g - i \leq 0 \quad (15)$$

Using equation (14) to substitute c^{sk} for c^g in (12) allows one to write:

$$\frac{dk^g}{ds} = (i - y^n) k^g + i^g - r k^g \quad (16)$$

which may be re-arranged to obtain:

$$\frac{dk^g}{ds} = -y k^g + i^g \quad (17)$$

where $y = y^n - \pi$ stands for the real growth rate.

One may therefore write:

$$\frac{db}{ds} - \frac{dk^g}{ds} = \frac{da}{ds} = d - (y + \pi) b + yk^g - i^g \quad (18)$$

or, re-arranging

$$\frac{dn}{ds} = \bar{d} - yn - \pi b \quad (19)$$

From (17) and (19) one may compute the steady-state values for the public capital to GDP, k^g and public net debt to GDP ratios n_g as:

$$k^g = \frac{i^g}{y} \quad (20)$$

$$n_g = \frac{d}{y^n} - \frac{i^g}{y} \quad (21)$$

From (21) one may therefore conclude that if inflation is nil ($\pi = 0$) then $n_g = \bar{d}/y$. This proposition may be interpreted as showing that in a context of price stability the sign of the public sector net worth is determined by the sign of the budget balance excluding investment expenditures assuming that real growth rate is positive ($y > 0$).

Furthermore assuming that budget balance excluding investment expenditures prevails (i.e. $\bar{d} = 0$) then, assuming again a positive real growth rate ($y > 0$) allows one to write:

$$\begin{aligned} n > 0 &\Rightarrow \frac{dn}{ds} < 0 \\ n = 0 &\Rightarrow \frac{dn}{ds} = 0 \\ n < 0 &\Rightarrow \frac{dn}{ds} > 0 \end{aligned} \quad \wedge \quad n_g = 0 \quad (22)$$

Finally (21) also implies that in a situation in which $y, \pi > 0$ the respect for the Golden Rule ensures that the net worth of the public sector will be asymptotically positive (i.e. < 0).

The Golden Rule of Public Finance reflects the intuitive idea that public capital earning the market rate of return can be netted out from the public sector intertemporal budget constraint.

These considerations may be very important given that public assets should be netted out in the computation of the tax residual relevant for location decisions (see Barbosa (1991)). Or (as stressed in Starret (1988)) equivalently the effective future tax burden cannot be computed without a capital account.

In distinguishing between the sustainability criterion in section 3.1 and the Golden Rule of Public Finance one might argue that the first criterion addresses the possibility of liquidity crises whereas the second seeks to ensure a sound economic position for the public sector. The main criticism that one might raise against the Golden Rule derives from the practical difficulty in distinguishing between current and capital expenditure. Furthermore one might also wonder about the likelihood of the identity between private and public rate of returns on investment.

3.3. Budget Balance

The Budget Balance criterion is necessary mainly as an early warning indicator. Furthermore it acts jointly with the sustainability criterion to ensure convergence path to a bounded debt to GDP ratio as will be suggested by the simulations presented in section 4.

4. THE JOINT WORKING OF THE THREE CRITERIA

It seems useful to illustrate the joint working of the three criteria by performing simulation exercises. Given that the procedure on avoiding excessive deficits is found on gross errors it seemed appropriate to consider the case of a country with a very high debt to GDP ratio (130%) and a negative net worth (-80%), corresponding to a public capital to GDP ratio of 50%. A real interest rate of 5% will be assumed. It will be assumed further that the economy has a nominal growth rate of 5% and an inflation rate of 2%. Finally the public investment to

GDP ratio will be assumed to be 3%.

After the initial period it is supposed that all criteria relevant for the avoidance of excessive deficits are complied with.

The adjustment paths for the stock variables: debt, capital and net debt are shown in Graphs 1-A and 1-B. All variables are shown as percentages of GDP.

It should be recognized from the outset that under the above assumptions, the budget deficit to GDP criterion ensures by itself the occurrence of a negative primary gap. In fact:

$$\frac{db}{ds} = d - y^*b$$

and since $d \leq 3\%$ (in fact $d=3\%$ will be assumed) and $y^*=5\%$ and $b \geq 60\%$ one therefore has $db/ds \leq 0$. In fact it should be recognized that extremely low nominal growth rates are needed for the negative primary gap constraint to become binding.

One can see in such a case that the criteria are indeed sufficient to ensure that:

- (i) the debt to GDP declines to a ratio of 60% of GDP;
- (ii) the public sector net worth to GDP ratio improves (there is a decline in the public debt net of the value of the public sector capital as a percentage of GDP) becoming positive after 30 years (Graph 1-A) and converging asymptotically to 40% of GDP.

Furthermore the adjustment path shows a certain front loading since the adjustment is stronger in the first part of the adjustment period.

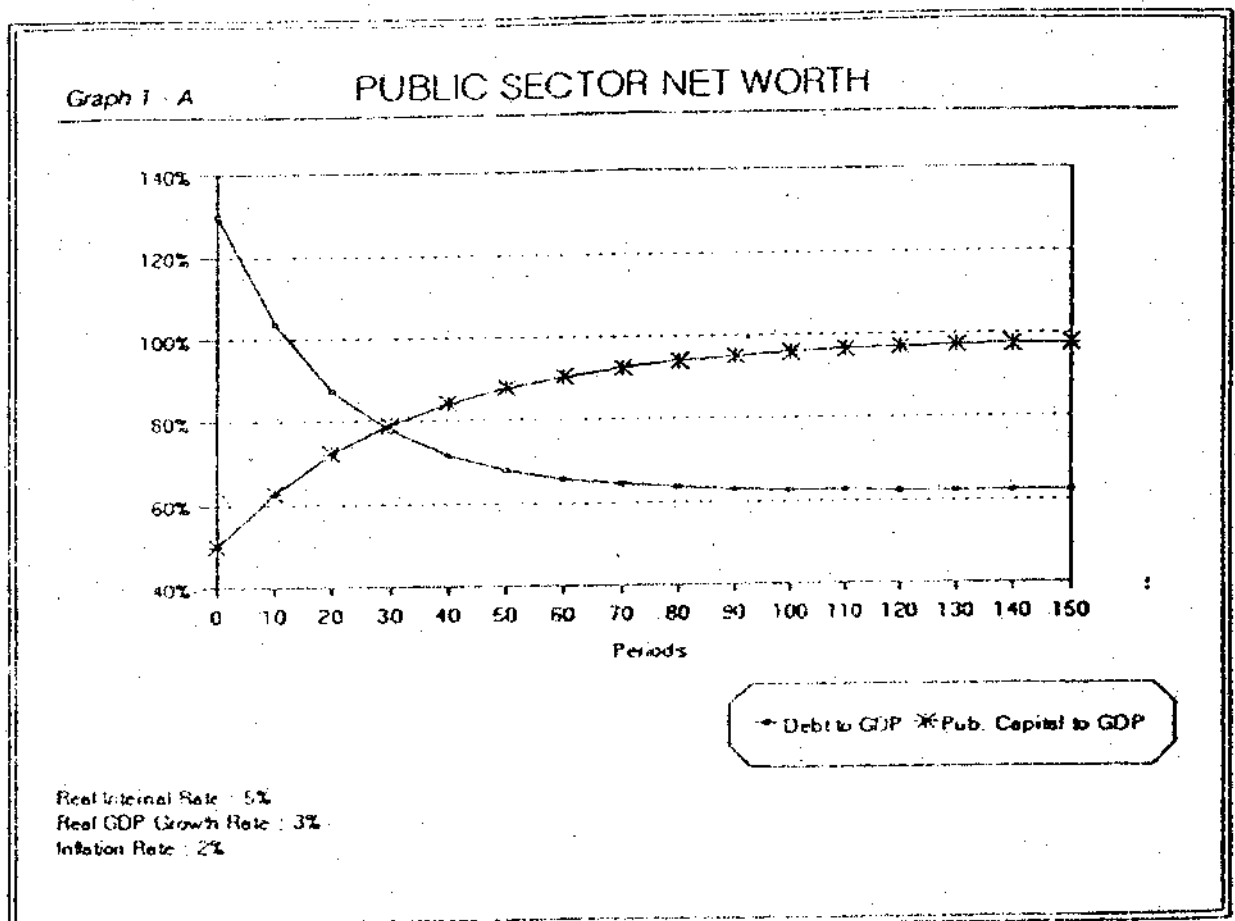
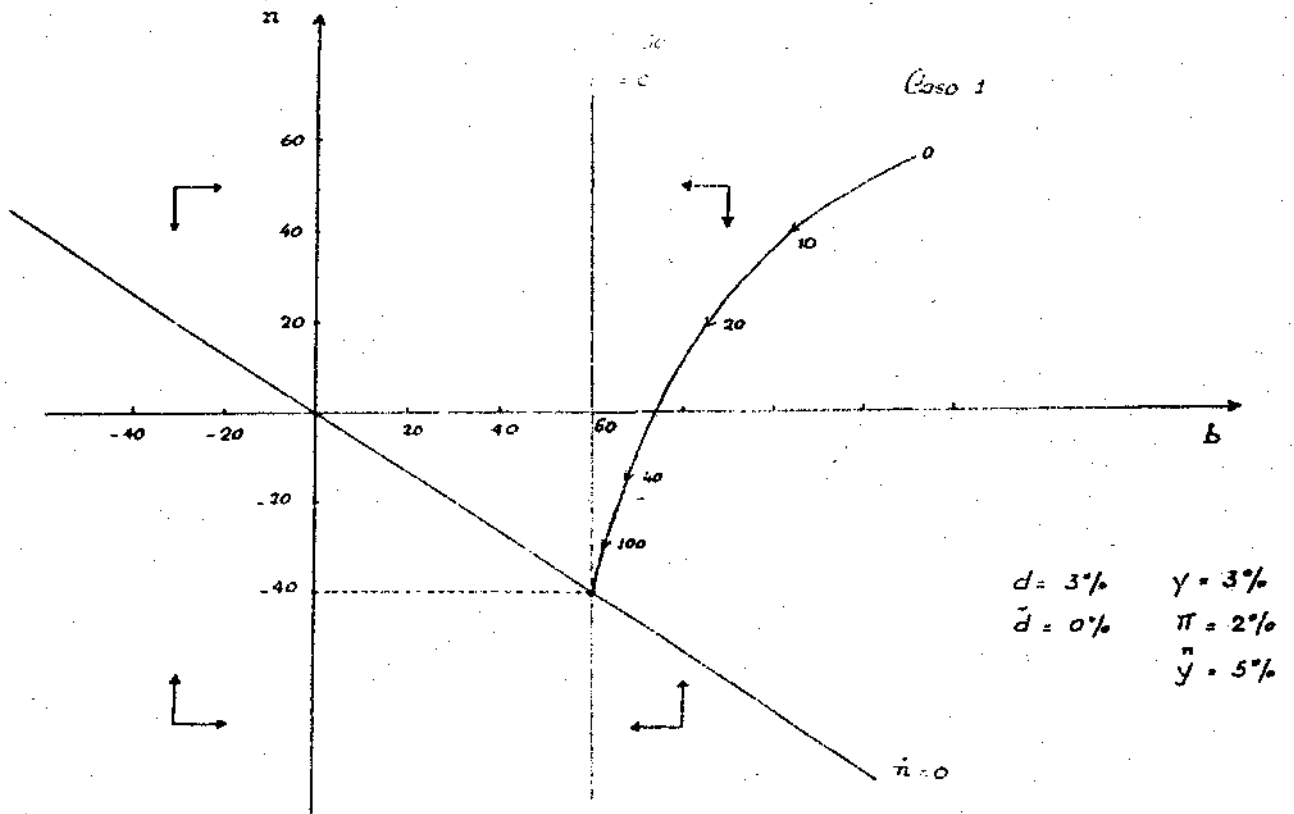
Graph 2 illustrates the impact of an increase in inflation. Given a nominal deficit to GDP ratio it is clear that an increase (decrease) in the inflation rate decreases (increases) the asymptotic public debt to GDP ratio. Since inflation does not alter the asymptotic public capital to GDP ratio it is clear that an increase (decrease) in the inflation rate increases

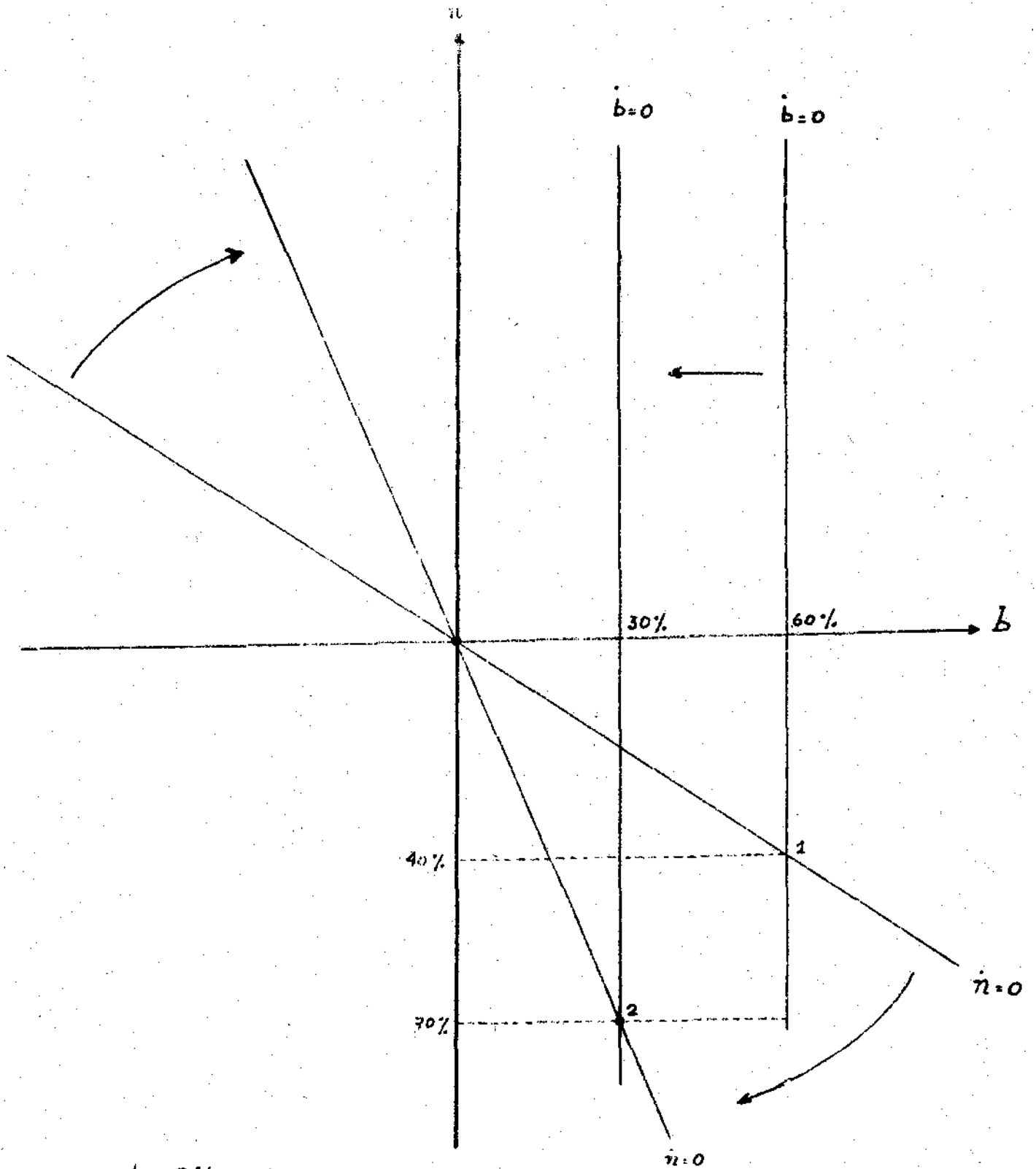
5. CONCLUSIONS

The purpose of this paper was to present some foundations for the trigger criteria for the excessive deficit procedure in EMU. In the context of this procedure the evaluation of a deficit as excessive will be made by the Council of Economy and Finance Ministers of the European Community. The working of the criteria was discussed in a deterministic framework where fluctuations were excluded by assumption. The existence of fluctuations may be nevertheless crucial for the desirability of budget limits and for the choice of reference values.

Furthermore the existence of budget rules and procedures changes the incentive structure in which government decisions on expenditure and financing are framed. The fact that decisions will be taken at the ECOFIN Council underscores the potential importance of bargaining and "horse trading" in this context. One could further note that ECOFIN has not a reputation for frequent and tough use of authority.

Given the importance of window-dressing, log-rolling/ratchet-effects, and so on one should note the repeated game character of the exercise and hope for the best...





$$d = 3\%$$

$$\tilde{d} = 0\%$$

$$y = 3\%$$

$$\pi = 2\% \rightarrow \pi = 7\%$$

$$y^n = 5\% \rightarrow y^o = 10\%$$

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