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EMU AND GREECE: ISSUES AND
PROSPECTS FOR MEMBERSHIP*

by

Miranda Xafa
Princeton University and
the International Monetary Fund

Discussion Paper #155

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Discussion Papers in Economics

Woodrow Wilson School
of Public and International Affairs

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Abstract

This paper examines the feasibility of Greece's membership in
the European Monetary Union (EMU), given the size of the
required adjustment to a sustainable fiscal position. The
Delors Committee Report on the EMU proposed limits on budget
deficits to ensure that the independence of the European
Central Bank is preserved. Underlying this concern is the
moral hazard issue that could arise if the European Central
Bank were viewed by private creditors as a lender of last
resort. The paper uses a simple analytical framework to
compute the financeable deficit in Greece under alternative
macro targets. It is argued that, from Greece's perspective,
its early inclusion in the EMU and consequent loss of revenue
from seigniorage and the inflation tax would increase
considerably the deficit reduction required to reach a
sustainable fiscal position. Even the first stage of monetary
union -- joining the EMS -- would lack credibility in the
absence of a substantial reduction in the fiscal deficit to a
level compatible with a reduction in inflation to the EC
average level. From the broader perspective of the EC, the
paper suggests that the moral hazard issue may arise
independently of the EMU, just by virtue of membership in the
EC.

EMU and Greece: Issues and Prospects for Membership

Section 1 summarizes the issues discussed in this paper. Section 2 provides an overview of policies and performance in Greece relative to the rest of the EC in the 1980s. Section 3 presents a simple framework used to assess the sustainability of fiscal deficits in Greece given a set of macroeconomic targets. Section 4 presents estimates of the financeable deficit under different target inflation rates based on an estimated money demand equation. Concluding remarks are presented in Section 5.

1. Introduction

The EC's recent initiative to integrate its market for goods, services, labor and capital, has been accompanied by progress toward establishing a monetary union within the EC. As part of this process, the European Council appointed a Committee to study and propose concrete stages leading to monetary union. The Delors Committee Report (1989) proposed a three-stage approach to full monetary union. The first two stages involve the gradual elimination of all barriers to free capital mobility within the EC and greater coordination of monetary policies among EC members under the present system of separately managed currencies. Stage one would involve the participation of all EC members in the exchange rate mechanism of the EMS, including those who do not presently participate (Greece, Portugal and the United Kingdom). Stage two would require coordination of monetary policies and an

understanding that exchange rate realignments would be made only in exceptional circumstances. Full unification would be achieved in stage three, which involves the transfer of monetary management to a European System of Central Banks (ESCB) and a single EC currency.

The issue of European monetary integration has received considerable attention from policymakers and academics much before the Delors Commission Report was issued, insofar as the desirability establishing a nominal anchor by joining the EMU can be assessed on the same basis as the desirability of joining the existing European Monetary System (EMS). The issues addressed include the desirability of fixed nominal exchange rates in the presence of independent demand or supply shocks that affect member countries asymmetrically; and concerns about an overly restrictive fiscal policy under an exchange rate system anchored on the Deutschmark (see Van der Ploeg, 1989, for a summary of the advantages and disadvantages of European monetary union).

This paper focuses on the narrower issue of the feasibility of fixing the nominal exchange rate in an EC country with a large fiscal deficit which is the source of money creation and above-average inflation.[1] This issue arises, to various extents, in all

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[1] Even if the European Central Bank is less conservative than the Bundesbank, so that the EC average inflation rate rises, the EMU would imply lower inflation for EC countries with above-average inflation rates.

the Southern European countries, but is particularly relevant to Greece, which has the highest inflation rate and fiscal deficit among the EC countries. Dornbusch (1988) advocates a "crawling peg" under which the currencies of the Southern European countries would gradually depreciate vis-a-vis the nothern countries in order to maintain competitiveness. Underlying his proposal is the concern that the loss of revenue from monetization under the EMU would require a fiscal adjustment in the Southern European countries to ensure the sustainability of their public debt. If the loss of revenue from monetization cannot be easily made up through other revenue sources (because a larger black economy reduces the tax base), it may be preferable to accomodate the existing inflation differential through currency depreciation. This argument is strengthened if some of the Southern European countries start from an unsustainable fiscal position: for these countries, the loss of revenue from monetization under the EMU adds to the deficit reduction required to attain a sustainable fiscal position.

Gros (1988) has argued that the crawling peg proposal overlooks the benefits of low inflation and monetary discipline that the EMU anchor would entail. France has reaped these benefits by pegging to the Deutschmark since 1986 and "importing" the German inflation rate. A tight fiscal stance and a clear signal that the French monetary authorities will not accommodate any wage settlements that emerge from the negotiating table contributed to the success of

this policy.   Among the Southern European countries, Spain has opted to reap the credibility gains associated with the Bundesbank's past performance by joining the EMS in 1989.   Italy, whose currency has tended to depreciate in past EMS realignments, has recently narrowed its fluctuation band in the EMS and eliminated all remaining exchange controls.   Portugal remains outside of the EMS, but acts as if it is in, by targeting a reduction in the inflation rate toward the EC average.   By contrast, monetary policy in Greece remains severely constrained by the size of the fiscal deficit.   Sections 2-4 of this paper provide an overview of policies and economic performance in Greece in the 1980s compared with the rest of the EC, and use a simple framework to assess the fiscal adjustment required to reach a sustainable fiscal position under different inflation targets.

While the credibility gains of pegging to a low-inflation currency area are no doubt substantial, a credible commitment to join the EMS or the EMU requires a sustainable fiscal position. If the size of the required adjustment to sustainability is very large, this commitment will not be credible.   Moreover, a trade-off will arise between the gains from disinflation and the resulting loss of revenue from inflation. Although the government budget constraint exists independently of the exchange rate regime chosen, this constraint becomes more severe if governement revenues from inflation are foregone, as noted above.   Additional costs would be incurred if the -- yet unspecified -- timetable for

implementation of the EMU is short. Branson (1990) points out that
if the output cost of rapid disinflation is high, it may be
preferable to join the exchange rate arrangements after the rate
of inflation has been reduced to the range of existing members.

Another issue that arises in the context of the EMU is the
required degree of fiscal policy coordination through the various
stages of EMU and the need for systemic limitation of the fiscal
autonomy of member states. The Delors Committee Report proposed
limits on budget deficits of member countries "to the extent that
this was necessary to prevent imbalances that might threaten
monetary stability" (Article 59). The underlying presumption is
that the preservation of price and financial stability in the EMU
requires a regulatory framework to prevent overlending and
overborrowing: Private creditors may not base their lending
decisions on country risk analysis alone if they perceive the ESCB
as a lender of last resort. Although an analysis of the moral
hazard issue in the EMU is beyond the scope of this paper, section
2 of the paper notes that Greece has had access to spontaneous
external financing from international capital markets on a larger
scale than countries in a similar situation which are not members
of the EC (Mexico and Turkey are chosen as examples). It could
thus be argued that the moral hazard issue may arise independently
of the existence of the EMU; all that is required is that private
creditors perceive that the EC will "stand behind" any of its
members through the provision of financing and guarantees.

The Delors Committee proposal to impose limits on budget deficits was accompanied by a recommendation to apply to Community loans (as a substitute for the present medium-term financial support facility) "terms and conditions that would prompt member countries to intensify their adjustment efforts" (Article 59). Because the substitution of EC resources for market-based lending would shift the risk of default from individual member countries to the EC as a whole, the EC would undertake to monitor and contain fiscal imbalances through some form of conditionality. The financial stability of the EMU could still be threatened under this risk-transfer scheme depending on how strictly this conditionality is imposed. The experience with the existing EC medium-term financial support facility shows that the degree of adjustment undertaken ultimately depends on the member country. France, which used this facility in 1983, overperformed with respect to the macroeconomic targets specified and repaid the EC loan early; Greece, which used the facility in 1985, is now facing larger macroeconomic imbalances than in 1985.

2. Economic policies and performance in Greece in the 1980s

The period since 1981, when Greece joined the EC, is characterized by a marked divergence in both policies and performance relative to the rest of the Community. Since 1981, Greek economic policy has pursued the sometimes contradictory

objectives of growth, price stability, and social equity. The authorities' growth strategy relied on expansionary fiscal and incomes policies, while policies in the rest of the Community generally aimed at disinflation and fiscal consolidation. The need to finance budget deficits averaging 14 1/2 percent of GDP in the 1980s gave rise to a sharp increase in external and internal public debt and to a sustained increase in money growth well in excess of the EC average. The inflation differential with the EC thus widened in the 1980s, leading to continued depreciation of the nominal effective exchange rate. Throughout the 1980s the announced inflation targets were consistently exceeded -- as were the announced budget targets. Expansionary financial policies in Greece did not elicit a sustained output response; on the contrary, they crowded out private investment, with the result that GDP growth in the 1980s slowed considerably more than in the EC as a whole.

Chart 1 compares Greece's growth and inflation record to the EC average in the 1970s and the 1980s. GDP growth in Greece fell from an above-average annual rate of 4 3/4 percent in the 1970s to a below-average 1 1/2 percent in the 1980s. Similarly, the divergence of inflation rates between Greece and the EC became much more marked; inflation in Greece was only marginally above the EC average in the 1970s, but rose to three times the EC average in the 1980s.

Macroeconomic policies in Greece in the 1980s can be assessed with reference to three periods: An initial phase of expansionary fiscal and incomes policies in 1981-85, the 1986-87 stabilization phase, and the period since 1988 which has been characterized by adjustment fatigue and pre-election spending, followed by a sequence of coalition governments since mid-1989. The initial rise in budgetary outlays reflected discretionary increases in social benefits and public sector wages, and was accompanied by a sharp increase in minimum wages which affected wage settlements in the private sector. These policies contributed to large increases in the fiscal and external deficits (Charts 2 and 3) as most of the stimulus benefited Greece's trading partners. Real wages rose considerably faster than productivity, reducing profit margins and the incentive to invest and produce (Chart 4). This trend continued until 1985, when the current account deficit peaked at 10 percent of GDP and a stabilization program was undertaken, supported by a $2 billion loan from the EC.

The 1986-87 stabilization program was successful in reducing somewhat the fiscal and external deficits -- though by less than the amount targeted -- but not on a lasting basis. First, it relied entirely on a sharp reduction in wages through a modification of the wage indexation scheme, and on the implicit "taxation" of oil products by not passing on to consumers the benefit of the oil price decline in 1986. But the reduction in real wages was achieved by compressing the wage scale to protect

lower incomes. Continued compression in the wage scale could not be sustained without reducing the incentive to work and acquire new skills; its microeconomic effects were thus negative and made the policy counterproductive over the medium term. Similarly, there was no lasting reduction in public expenditures or increase in revenues: the fiscal revenue from the taxation of oil products has dissipated as oil prices rose in the world market since 1987 with no corresponding increase in the domestic price of oil products. Second, the stabilization program attempted to correct the macro imbalances without paying attention to the efficiency of resource use. Addressing long-standing structural weaknesses caused by over-regulation of private sector activities would have helped increase private investment and the output response to demand stimulus. These structural issues are discussed later in this section.

The adjustment effort was abandoned in 1988 in favor of a more "growth-oriented" policy. There was a renewed fiscal expansion accompanied by wage increases well in excess of productivity. As was the case in the 1981-85 period, the relaxation of financial policies had an only transitory impact on GDP growth, while compounding the underlying disequilibria through further increases in the public debt relative to GDP. A stabilization in the debt/GDP ratio would have required a primary fiscal surplus. Instead, the primary deficit remained in deficit throughout the 1980s; its servicing has therefore been achieved through further

borrowing, causing the deficit to feed on itself. The primary deficit resumed its upward trend in 1988 and rose to 8 percent in 1989 -- the same level that was reached in 1985, just before the stabilization program was undertaken (Chart 2). But because the stock of public debt was considerably higher in 1989 than in 1985, the total deficit (including interest payments) rose well above the previous peak reached in 1985. The deficit amounted to just over 21 percent of GDP in 1989 and the total net public debt rose to almost 100 percent of GDP, about a third of which is foreign debt.

Throughout the 1980s, external conditions were favorable to Greece. Oil prices declined sharply and EC net transfer payments started flowing in (mainly agricultural subsidies under the CAP) in growing amounts. Exchange rate policy essentially accommodated the inflation differential between Greece and its trading partners. Two successive devaluations, in 1983 and 1985, did not have a lasting impact on the real exchange rate in the absence of a sustained reduction in the fiscal deficit. The trade deficit peaked in 1985 at 18 percent of GDP, and its subsequent reduction under the 1986-87 stabilization program was due entirely to the decline in oil prices on the world market (Chart 3). The current account deficit similarly peaked at about 10 percent of GDP in 1985; its subsequent reduction was due mainly to rising EC transfer payments and an increase in private transfers attracted by high nominal interest rates and the perception that the authorities

would not devalue again following two devaluations in 1983 and 1985. This perception waned in 1989, when there was a further sharp increase in the current account deficit fueled by a reduction in private transfers, stagnating exports, and booming imports, which may partly reflect capital flight through under-invoicing of exports and over-invoicing of imports.

Gross external public debt rose to an estimated $19 billion at end-1989, equivalent to 35 percent of GDP (Chart 5). The debt service ratio has tripled since the begining of the decade to 30 percent of foreign exchange receipts in 1989. These figures exclude military debt and short-term debt, and they also exclude some $11 billion of foreign currency liabilities of the Greek banking system (only a portion of which is subject to reserve requirements). These liabilities are owed to domestic residents and can therefore be considered a domestic rather than a foreign liability.

Foreign borrowing in Greece has financed public and private consumption rather than investment (Chart 6). The shares of both public and private investment in GDP fell sharply in the 1980s, with a brief interruption under the 1986-87 stabilization program. Rising interest payments on external debt have become larger than the inflows of workers' remitances since 1985, causing GNP to exceed GDP for the first time in the post-war period.

The bulk of Greece's external debt is due to commercial banks. Since 1989, foreign financing has shifted away from bank borrowing toward ECU-linked bond issues, which carry an interest rate of about 100 basis points above the risk-free rate. As these issues have been oversubscribed, Greece's access to financial markets seems to have remained intact -- albeit at a higher price -- despite an external imbalance which would appear excessive on the basis of any intertemporal optimization model. On a cross-country basis, Greece's external position in 1989 was similar to that of non-EC members which have experienced debt servicing difficulties in the past.

Subject to the caveats that apply to cross-country comparisons of external positions,[2] Charts 7 and 8 compare Greece's external position with that of Mexico in 1982 and Turkey in 1979. Both countries experienced liquidity crises in those years, followed by debt rescheduling and concerted lending packages or syndicated balance of payments support loans. The charts show that the ratio of external debt to GDP and the debt service ratio in Greece is comparable, if not higher, than in these countries at the peak of their liquidity crises. The maintainance of access to external

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[2] Cross-country differences in the openess of the economy and in the growth of foreign-exchange receipts can have an impact on the ability to service debt, although this would be reflected in different debt ratios to some extent. Differences in saving rates could similarly affect debt servicing ability. The maturity structure of external debt could also play a role by precipitating a liquidity crisis.

financing in Greece, in contrast to Mexico and Turkey, may also partly explain why the inflation rate in Greece has remained well below its level in the other countries during their liquidity crises.

This raises the moral hazard issue: To what extent has Greece's membership in the EC (which coincided with the adoption of unsustainable fiscal policies in 1981) helped preserve access to financial markets? This question cannot be answered on the basis of the information contained on charts 7 and 8 alone. But the maintainance of access to external financing in the face of ever-growing disequilibria in the 1980s suggests that capital markets may not base their lending decisions on country risk analysis alone; they may be more willing to lend to an EC member than to non-members in similar circumstances if they perceive the EC as a lender of last resort through its medium-term support facility or other means. If so, the case for the Delors Committee proposal to impose limits on budget deficits in the context of the EMU would be strengthened.

Turning to structural issues, it should first be noted that budgetary outlays in Greece do not adequately capture the size of the government in terms of its impact on the economy. Numerous regulatory impediments to market entry, exit and competition raise the cost of producing goods and services, thus shifting the burden of government intervention from taxpayers to consumers and

producers. By contrast, over the past decade most OECD countries have reassessed the cost of direct and indirect government involvement in the management of productive activities; they now perceive the role of government to be the improvement in the functioning of markets and the creation of an economic environment that is conducive to risk-taking and rapid adjustment to changes in market conditions. Indeed, this view underlies the EC internal market program which is, in effect, a massive deregulation program.

The resulting trend toward deregulation and privatization in virtually all OECD countries in the 1980s is not apparent in Greece. The economy remained highly regulated through price, credit, and exchange controls. Public utilities as well as air and rail transport remained government monopolies, promoting overstaffing and inefficiency. In addition, the state continued to be heavily involved in industrial production by controlling 56 manufacturing firms, accounting for about a third of industrial output, in which state-owned banks have a controlling interest. Cumulative losses of these firms since 1983 are estimated at $1.2 billion (3 percent of GDP), not counting numerous loan capitalizations which have reduced the profitability of state-owned banks. These losses should in principle be added to the fiscal deficit to get a more complete picture of the size of the required fiscal adjustment. Although direct intervention by the government in the pricing and employment policies of these firms has not been conducive to a turnaround in their profit position,

about half of them have been declared non-viable even in the
absence of restrictive government regulations which limit their
profitability.

Another area in which the efficiency of resource use could be
improved is the tax system, which is far from neutral in its
resource allocation effects. The OECD notes the large divergence
between tax rates, which remain at or above the OECD average, and
tax receipts relative to the taxable base, which are below the OECD
average because of numerous exemptions and tax benefits granted to
both households and corporations (OECD, 1990). The tax base is
further reduced by statutory exemptions for some groups (e.g.
farmers, who are not subject to income tax) and inadequate
enforcement of tax laws for others (e.g. professionals who
routinely understate their incomes). In addition to its resource
allocation effects, a broadening of the tax base and a removal of
tax exemptions would make any stabilization program more even-
handed and therefore more easily sustainable.

3. Fiscal deficits and macroeconomic targets

This section presents an analytical framework that can be used
to calculate the sustainable deficit given certain macroeconomic
targets. The framework draws on the theoretical literature
relating public deficits to inflation (Phelps, 1973; Fischer, 1982;
Buiter, 1983; Drazen and Helpman, 1987), and on the framework used

by Anand and Wijnbergen (1988 and 1989) to assess the sustainability of fiscal policy in Turkey.

We start with the budget constraint of the public sector relating public spending to available sources of financing:

(1) $D + iB + i* B* E = \Delta B + \Delta B* E + \Delta DCg$

On the LHS of (1) is the public sector deficit (PSBR): The primary deficit D, plus interest payments on domestic (B) and foreign (B*) debt. E is the nominal effective exchange rate and i and i* are the domestic and foreign nominal interest rates. On the RHS of (1) are the financing items, which consist of changes in domestic and foreign debt plus domestic credit to the public sector by the Central Bank, ΔDCg.

To consolidate the public sector with the Central Bank, to which a portion of government expenditures may be shifted through accounting practices, we can introduce a simple Central Bank balance sheet identity:

(2a) $M = C + RR$

(2b) $M = DCg + NFA* E - NW$

Base money M equals currency in circulation C plus required reserves RR on the liability side of the Central Bank balance sheet

(equation (2a)), and it is also equal to domestic credit to the government plus net foreign assets minus the Central Bank's net worth NW on the asset side (equation (2b)). Assuming that the Central Bank earns no interest on its loans to the government, Central Bank profits will be equal to interest earned on foreign exchange reserves, i* NFA* E.[3] Subtracting these profits from the PSBR, and its counterpart, ΔNW, from from the increase in government liabilities in equation (1) yields:

(3) $D + iB + i* B* E - i* NFA* E = \Delta B + \Delta B* E + \Delta DCg - \Delta NW$

Noting from (2b) that $\Delta DCg = \Delta M - \Delta NFA* E + \Delta NW$ at any given exchange rate E, and substituting in (3) yields:

(4) $D + iB + i*(B* - NFA*)E = \Delta B + (\Delta B* - \Delta NFA*)E + \Delta M$

Equation (4) establishes a direct link between the fiscal deficit on the LHS and base money, on which the inflation tax is levied, on the RHS. The equation thus considers the inflation tax on the monetary base as fiscal revenue accruing to the government.

Next, we express equation (4) in real terms, noting that E = ep/p* (where e is the real effective exchange rate). It is also

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[3] Gains or losses on foreign exchange reserves due to exchange rate movements, which also affect Central Bank profits, are introduced at a later stage in the analysis. At this stage it is assumed that the exchange rate remains fixed.

useful to decompose the nominal interest rate, i, into a real component, r, and an inflation component, $\dot{p}$. Using lower-case letters to denote real variables:

$$(5) \quad d + (r+\dot{p})b + (r*+\dot{p}*)(b* - nfa*)e = \Delta b + (\Delta b* - \Delta nfa*)e + \Delta M/p$$

where $i = r+\dot{p}$ and $i* = r*+\dot{p}*$.

A final adjustment that needs to be made is to include in equation 5 capital gains or losses on the net foreign debt due to changes in the real exchange rate. These losses can be expressed as $\Delta e(b* - nfa*)$, or equivalently as $\dot{e}(b* - nfa)e$. Adding this expression to both sides of equation 5, and using the identity:

$$(6) \quad \Delta[(b* - nfa*)e] = (\Delta b* - \Delta nfa*)e + \dot{e}(b* - nfa*)e$$

to simplify the RHS, we get:

$$(7) \quad d + (r+\dot{p})b + (r*+\dot{p}*+\dot{e})(b* -nfa*)e = \Delta b + \Delta[(b* -nfa*)e] +\Delta M/p$$

Equation (7) states that the fiscal deficit in real terms equals changes in the real value of domestic and foreign debt plus revenue from monetization (the "tax" levied on the monetary base). A depreciation in the real exchange rate ($\dot{e} > 0$) as part of a stabilization program raises the cost of servicing the foreign debt in domestic currency terms and correspondingly reduces the primary

deficit, d, compatible with the available financing under different macro targets.

The last term in equation (7), which represents the portion of the deficit financed through inflation, can be decomposed in two parts: seigniorage, $\Delta m = \Delta(M/p)$, and the inflation tax, $\dot{p}m$. Although these terms are often used interchangeably to refer to total revenue accruing to the government through inflation, it is useful to distinguish between the two insofar as revenue from seigniorage depends primarily on the growth rate and accrues to the government even in the absence of inflation, while revenue from the inflation tax depends primarily on the inflation rate.

Some authors have suggested that a further adjustment needed to establish a link between the fiscal deficit and the authorities' inflation target is the adoption of an "operational" deficit concept (Anand and van Wijnbergen, 1990). It is now widely accepted that in an inflationary environment, interest payments partly reflect compensation for the erosion of the real value of the outstanding debt; they thus constitute an implicit repayment of principal which represents a financing item and should be excluded from the fiscal deficit.[4] Netting out of the fiscal

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[4] The rationale for the exclusion of the inflation component of interest payments from the fiscal deficit is that its impact on aggregate demand is different from the impact of other components of fiscal spending: insofar as it merely safeguards the real value of existing wealth without increasing it, it is more likely to be saved than spent. This argument implicitly assumes that the inflation component of interest payments can be refinanced on

deficit the inflation component of interest payments yields the so-called operational deficit, which equals the conventional deficit as defined on the LHS of equation (5) minus $\dot{p}b$ and $\dot{p}*(b* - nfa*)$; correspondingly, Δb and $(\Delta b* - \Delta nfa*)$ would be defined as <u>net</u> of the inflation component of net government borrowing on the RHS. However, it has been argued that this may give a misleading picture of the sustainability of fiscal deficits under any of the following behavioral assumptions: (a) money illusion causes holders of domestic debt to spend rather than save the inflation component of interest payments, thus fueling inflation under a policy of monetary accommodation, (b) inflation is perceived to increase the risk of default, thus causing bond holders to demand a higher real premium; if so, the inflation component of interest payments cannot be refinanced on existing terms, and (c) a highly liquid domestic debt is used as a substitute for money (Tanzi et al, 1987). While the third argument can be expected to be relevant only in situations of hyperinflation in which debt is replaced for money for transactions purposes, the first two could plausibly apply to relatively low-inflation countries. It can thus be argued that although in an inflationary situation the conventional fiscal deficit may overstate the size of the required adjustment, the operational deficit will almost certainly understate the size of that adjustment. The calculations shown in the next section are therefore carried out on the basis of the conventional deficit.

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existing terms; if not, then it will have an impact on real interest payments and thus on the operational deficit.

The next step needed to compute the sustainable deficit given certain macro targets is to incorporate these targets in equation (7). Sustainability is usually defined with reference to the scale of borrowing to which it gives rise and the terms of such borrowing: a sustainable deficit is one that can be financed through borrowing at market rates indefinitely. An additional constraint on the financeable (as opposed to sustainable) deficit is introduced if the authorities target a reduction in the inflation rate, which limits financing through money creation.

An increase in total debt relative to GDP cannot be sustained indefinitely without a rise in borrowing costs, crowding out of the domestic private sector, and eventual loss of access to financing if there is a perceived risk of default. Accordingly, two constraints must be introduced in equation (7), namely, stabilization of the internal and external debt relative to GDP. These constraints can be expressed as:

(8a) $\Delta b = \dot{y}b$

(8b) $\Delta[(b* - nfa*)e] = (\dot{y}-\dot{e})(b* - nfa*)$

where $\dot{y}$ is the growth rate of real GDP. Incorporating (8a) and (8b) in (7) and noting that revenue from seigniorage, Δm, will equal $\dot{y}m$ in the steady state, yields:

$$(9) \quad d + (r+\dot{p})b + (r*+\dot{p}*+\dot{e})(b* - nfa*)e = \dot{y}b + (\dot{y}-\dot{e})(b* - nfa*) +$$
$$+ (\dot{y}+\dot{p})m$$

Equation (9) states that the primary deficit plus interest payments on domestic and foreign debt must equal new borrowing compatible with the maintainance of the existing internal and external debt/GDP ratios, plus revenues from monetization (with all variables expressed in real terms). A debt strategy involving a reduction in debt relative to GDP would obviously reduce the financeable deficit further.

It is clear from equation (9) that if r, r* > $\dot{y}$, the deficit will rise faster than available sources of financing, ceteris paribus. It is also clear that a real depreciation ($\dot{e}$ > 0) will unambiguously reduce the financeable deficit by raising the local currency value of interest payments on external debt on the LHS, and also by reducing the new external debt that can be contracted at a constant debt/GDP ratio on the RHS. The opposite policy (real appreciation, i.e. $\dot{e}$ < 0) would alleviate the financing constraint in the short term for any given primary deficit, but would undermine confidence in the sustainability of exchange rate policy over the medium term.

The last term on the RHS of (9) must be evaluated at its equilibrium value, i.e. at the point where the supply of real balances, m, equals the demand for real balances at the inflation

rate targeted by the authorities. To ascertain what this level is, we need an estimate of the demand for money function. We turn to this in the next section.

4. Money demand, inflation revenues, and fiscal sustainability

This section derives estimates of the financeable deficits in Greece under alternative target inflation rates and assuming that internal and external debt remain constant relative to GDP at their 1989 levels. Variants of this scenario are presented based on different GDP growth rates and different assumptions about movements in the real exchange rate.

The following Cagan-type specification of the demand for base money is used:

(10) $m = a_0 \, y^{a_1} \, e^{a_2 c}$

where m=M/p are real money balances, y is real income, and c is the expected return (or negative opportunity cost) of holding money, which is a function of the expected rate of inflation, $\overset{\bullet}{p}{}^e$, or the nominal interest rate on interest-bearing assets, i, whichever is higher. Deposit rates in Greece have remained negative in real terms throughout the 1980s, and should thus not affect the demand for base money. Alternative financial assets offering market-related returns did not exist until 1985, when T-bills and bonds

of short maturity carrying positive real returns started being sold
to the nonbank public, while deposit rates continued to be set
administratively. The following equation was therefore estimated
over the period 1977:2 to 1988:1:

$$(11) \quad \ln m_t = -5.66 + 0.54 \ln y_t - 0.52 \dot{p}_t - 0.71 \text{ DUM} + 0.72 \ln m_{t-1}$$
$$\quad\quad\quad (-6.04) \quad (6.77) \quad\quad\quad (-1.41) \quad (-3.06) \quad\quad (9.15)$$

$$\bar{R}^2 = 0.753$$
$$DW = 2.07$$
$$SEE = 0.053$$

When the rate of inflation increases, the demand for money
normally diminishes (or velocity rises), eroding the base on which
the inflation tax is levied. The coefficient on the expected
inflation rate (assumed equal to the actual rate) thus has the
expected sign. A dummy variable was introduced to capture the
effect of the introduction of T-bill sales to the nonbank public
since 1985:3. The dummy is significant and has the expected
negative sign, indicating that the introduction of a financial
asset with a positive real return has reduced the desired money
holdings at any given inflation rate and real income level; a
higher inflation rate would thus be required to derive any given
amount of revenue from the inflation tax. Finally, the estimated
money demand equation assumes a partial adjustment of actual money
balances to their desired level, captured by the lagged real money
balances term, m_{t-1}. When the (administratively set) deposit
interest rate is inserted in equation (11), it is not significant
either individually or jointly with $\dot{p}$.

Using the target values for internal and external debt growth incorporated in equation (9), the elasticity estimates obtained from equation (11), and estimates of inflation revenues derived from the banking system, we can now estimate the sustainable deficit corresponding to different target inflation rates.

Table 1 compares the actual and sustainable deficit in Greece in 1989 at the present inflation rate of 18 percent.[5] The actual public sector deficit reached 21.3 percent of GDP, about one fourth of which was financed through revenues from monetization. At the same inflation rate, stabilization of the internal and extenal debt relative to GDP would have required a deficit of only 7.3 percent at the actual growth rate of 2 percent. Underlying this estimate is the assumption that the real appreciation which occurred in 1989 cannot be sustained without undermining confidence in the consistency between fiscal and monetary policy.

Turning to projected outcomes, Table 2 shows the estimated financeable deficit at different inflation rates, assuming the domestic and external debt stabilize at their end-1989 level. At a 2 percent growth rate, stabilization of the external debt at its end-1989 level of 33 percent permits external financing of 0.7 percent of GDP per year. Similarly, stabilization of the domestic

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[5] The figures presented in Tables 1-3 are expressed as a percent of GDP. This involves a staigtforward normalization of equation (9) using real GDP.

debt at its end-1989 level of 65 percent permits domestic borrowing of 1.3 percent of GDP per year.

The third possible source of financing, monetization, provides the revenues shown on Table 2 at different target inflation rates. This is broken down in two parts: Ceteris paribus, GDP growth permits an increase in real money balances with no impact on inflation. This is revenue from seigniorage. In Greece this can be estimated at 0.3 percent at a growth rate of 2 percent and inflation at 18 percent. A lower inflation rate would increase the demand for real balances at any given real income level, thus raising the revenue from seigniorage. The second source of revenue from inflation is the inflation tax levied on money balances. Inflation reduces the demand for real money balances at any given real income level. However, moneyholders must build up their nominal money balances to offset to some degree the erosion of their real balances through inflation. This buildup in money balances represents revenue from the inflation tax. As long as we are operating on the left side of the inflation tax Laffer curve, revenue from the inflation tax will rise with the inflation rate, and correspondingly decline in a period of disinflation. Revenue from this source in Greece is estimated to decline from 5.3 percent of GDP at the current inflation rate of 18 percent to 1.9 percent of GDP at an inflation rate of 6 percent.

On this basis, the financeable deficit is estimated at 4.4 percent of GDP at the EC average inflation rate of 6 percent. A higher growth rate would ease the debt burden by permitting higher borrowing at constant debt ratios and by providing greater revenues from seigniorage. By contrast, a real depreciation would reduce the deficit that can be financed at any given inflation and growth rates by raising the cost of debt service in local currency. The financeable deficit based on different assumptions about growth, inflation and real depreciation are shown on Table 3. At the present inflation rate of 18 percent, the required deficit reduction amounts to 14 percent of GDP. A doubling of the growth rate would reduce the required reduction to just under 10 percent of GDP. By contrast, a 4 percent real depreciation would raise this reduction to nearly 16 percent of GDP at the present growth rate.

The estimates presented above do not depend on how long it takes to reach a sustainable fiscal position. The cost of waiting is reflected only in the rise of interest obligations relative to GDP that will occur if the constraints on debt accumulation are not observed. A rise in interest obligations would make it more difficult to reduce the fiscal deficit because it implies a correspongly larger reduction in the primary deficit relative to GDP.

Broadly similar conclusions about orders of magnitude for the required adjustment are reached by Catsambas (1990). Using a financial programming framework based on alternative "inflation target-required deficit" simulations, his analysis confirms the tradeoffs presented in tables 2 and 3. Clearly, changes in growth and inflation rates will affect not only the sustainable deficit but also the actual deficit, through changes in the taxable base and in cyclical components of spending. A higher growth rate will reduce the actual deficit relative to GDP, while a lower inflation rate will have an ambiguous effect depending on the degree of indexation of the tax and financial systems and the strength of the "Tanzi effect".

5. Conclusions

This paper has used a simple framework to evaluate the size of the fiscal adjustment required to reach a sustainanble fiscal position Greece. The discrepancy between the actual and sustainable deficit is estimated at 14 percent of GDP at the present inflation rate of 18 percent and growth rate of 2 percent. A credible commitment to join the EMS -- as required under the first stage of EMU -- would require a further reduction in the fiscal deficit to a level compatible with a reduction in inflation to the EC average level. Opting for a "hard currency" policy would entail a loss of revenue from monetization estimated at 3 percent of GDP. This revenue loss would raise the size of the required

fiscal adjustment by an equivalent amount. These figures provide a basis for evaluating the feasibility and desirability of joining the EMU -- or for estimating the compensation required (say, through the EC regional and social funds) to make up for the foregone inflation revenues.

The analysis presented here could be extended by addressing the moral hazard issue in greater depth. It has been suggested in this paper that Greece has had greater access to external financing compared to other debtors with a similar external position outside the EC. This would indicate that the moral hazard issue may arise even in the absence of EMU, just by virtue of membership in the EC. If so, the case for systemic limitation of fiscal autonomy under the EMU would be strengthened.

Chart 1

Greece and EC:
GDP Growth

In percent

| | Greece:GDP growth | EC:GDP growth |
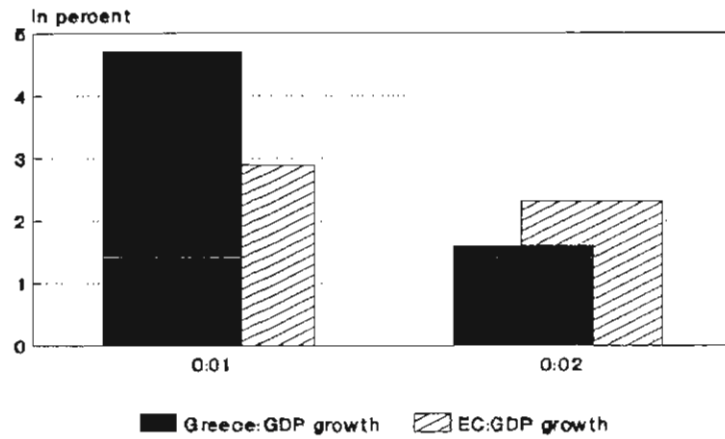
Source: EC Commission, European Economy

Inflation rates

In percent

| | Greece: Inflation | EC: Inflation |
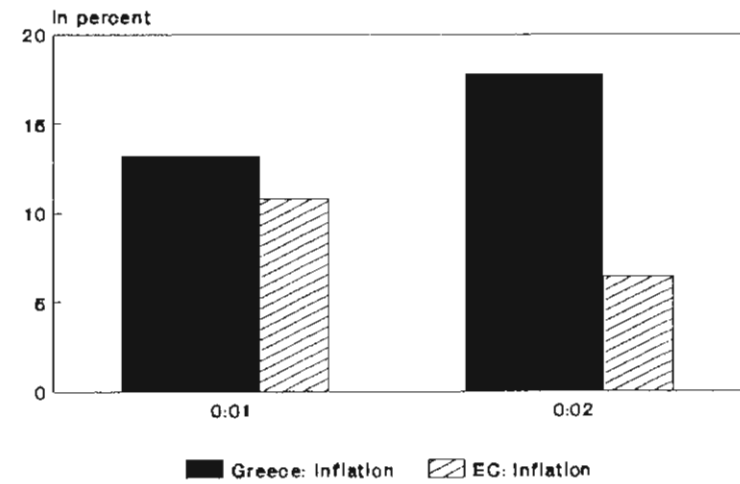
EC Commission, European Economy.

Chart 2

Total Net Public Debt
(in percent of GDP)

In percent of GDP

| | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 |

☐ Net Internl Debt/GDP   ▧ Net Externl Debt/GDP
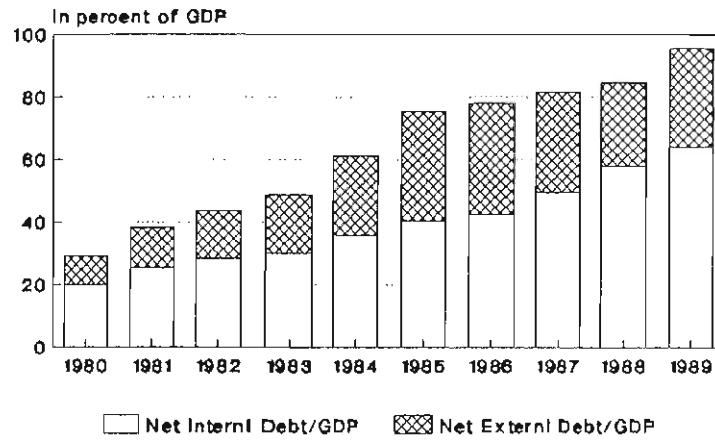
Sources: Bank of Greece and World Bank.

PSBR and Interest Payments
(in percent of GDP)

1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989

■ Interest/GDP   ▨ NonInterest PSBR/GDP
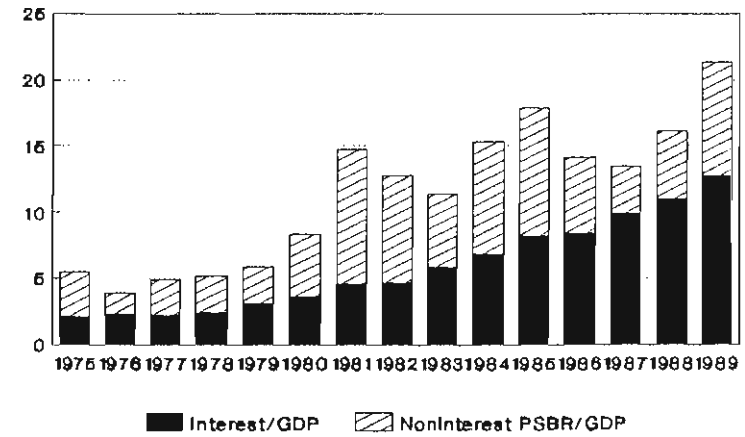
Source: Bank of Greece.

Chart 3

Trade Deficit
(in percent of GDP)

Oil Deficit ▨ Nonoil Deficit —×— Oil Price ($/barrel)
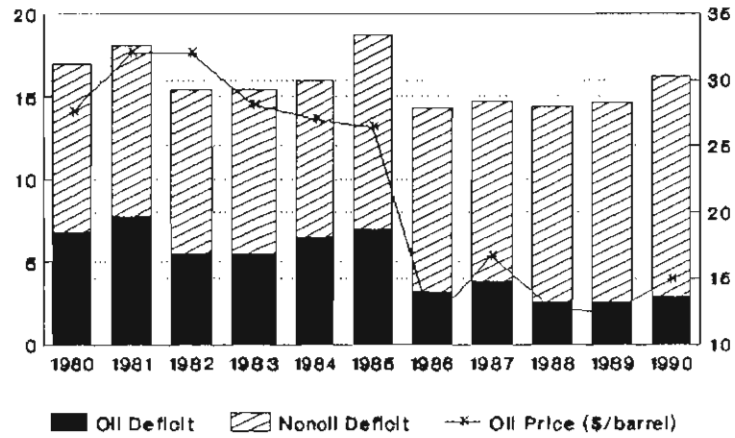
Source: Bank of Greece and IFS.

Current Account Deficit
(in percent of GDP)

Incl. EC transfers ▨ EC transfers
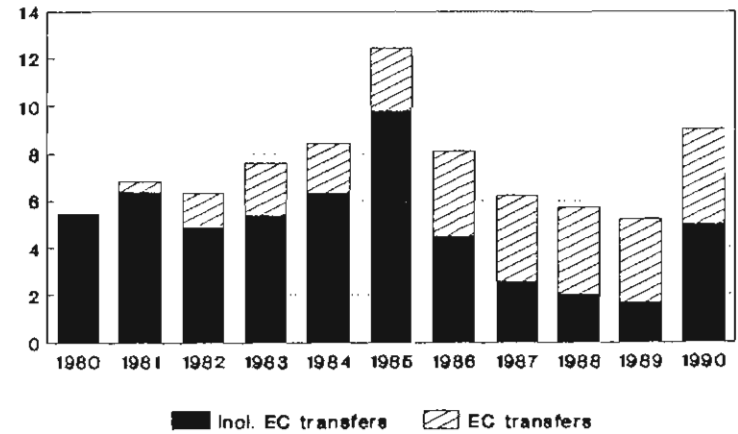
Source: Bank of Greece.

Chart 4

Wages and Productivity
(in percent)

In peroent

—— Real wage   —△— Produotivity   ▭ Private Investmt/GDP
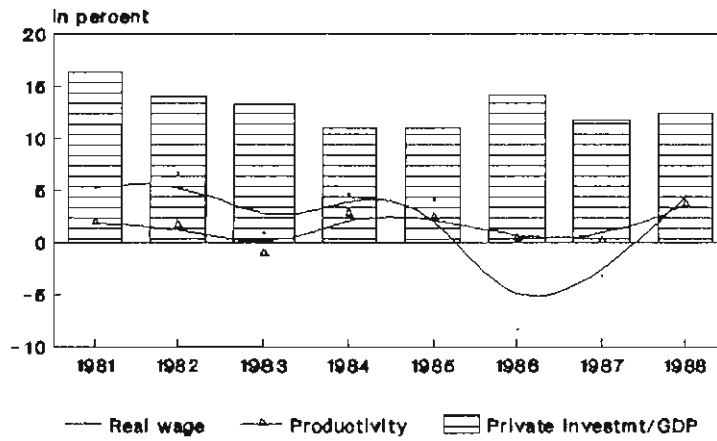
Source: OECD

Nominal and Real Exchange Rate
(index, 1985=100)

—— Real Effeotlve Rate   —+— Nomlnal Effeot. Rate
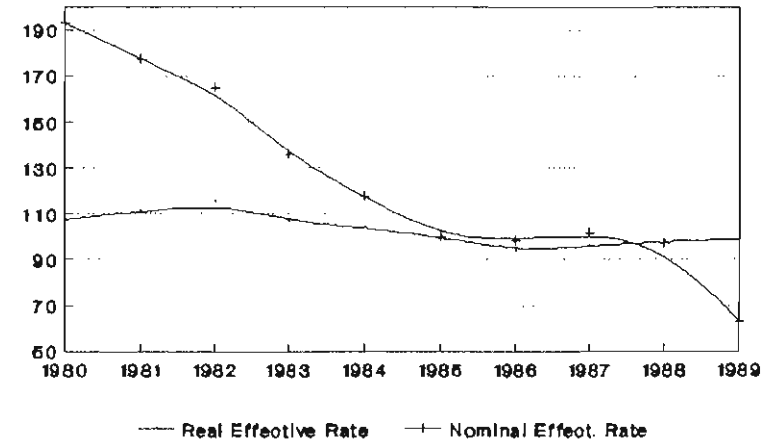
Source: IMF

Chart 5

External Public Debt
(medium/long term)

In billions of U.S. dollars   In percent of GDP

⊠ External Debt   —*— External Debt/GDP
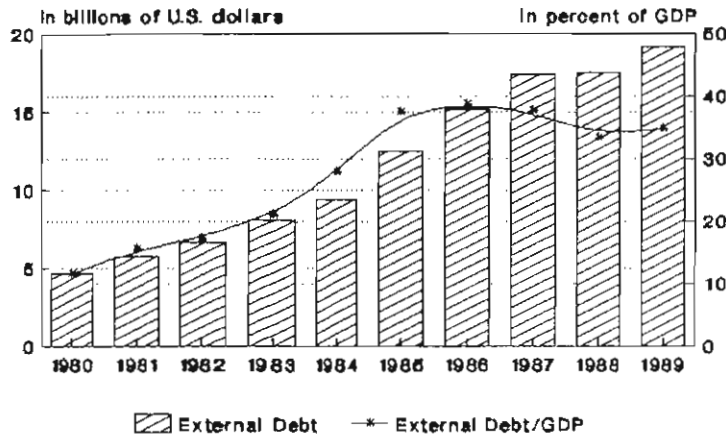
Source: Bank of Greece and World Bank.

External Debt Service
(in percent of exports)

■ Debt Service Ratio   ⊠ Interest/Exports
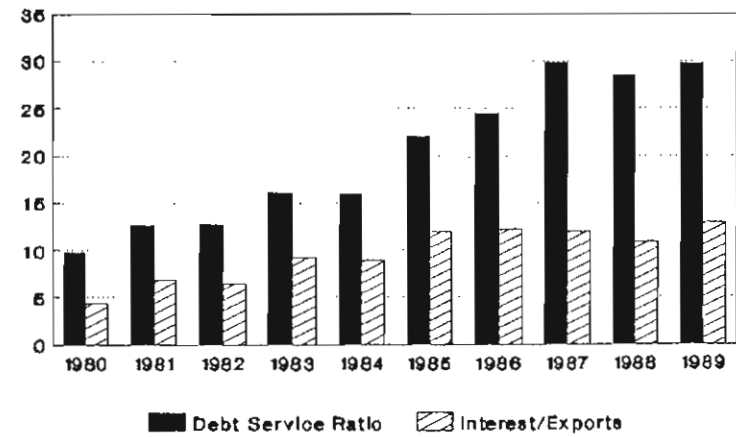
Source: World Bank and Bank of Greece

Chart 6

Ratio of Investment to GDP
(in percent of GDP)

Private Inv/GDP   Total Inv/GDP
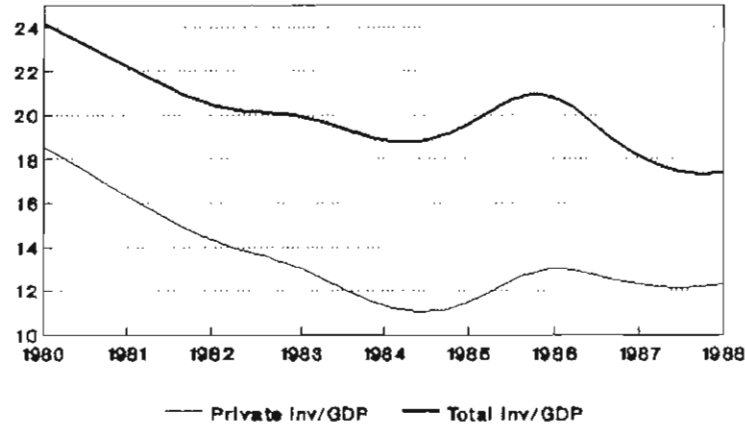
Ratio of Consumption to GDP
(in percent of GDP)

Private Cons/GDP   Total Cons/GDP
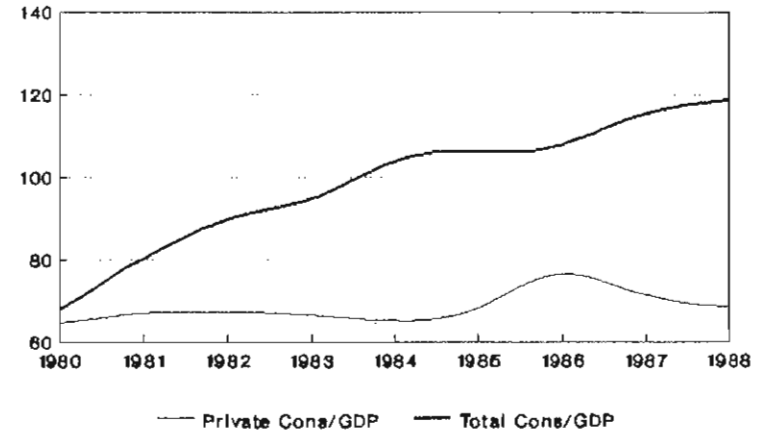
Ratio of Imports and Exports to GDP
(in percent of GDP)

Imports/GDP   Exports/GDP
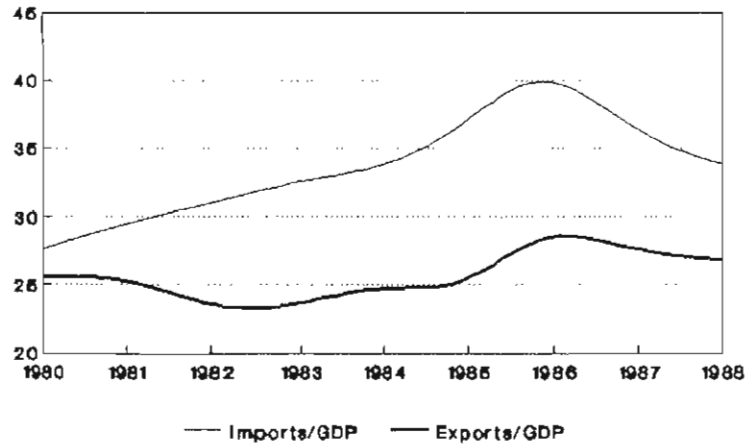
Ratio of Net Factor Income to GDP
(in percent of GDP)

NFI/GDP
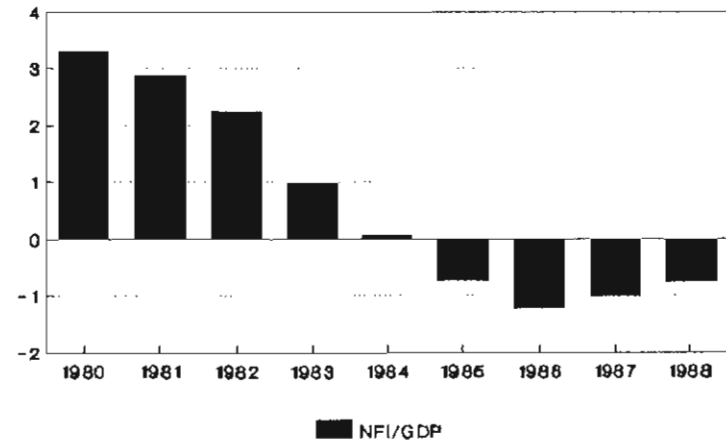
Chart 7

Greece and Mexico:
External Debt, 1989 and 1982

In percent of GDP

■ Greece:Debt/GDP,1989   ▨ Mexico:Debt/GDP,1982
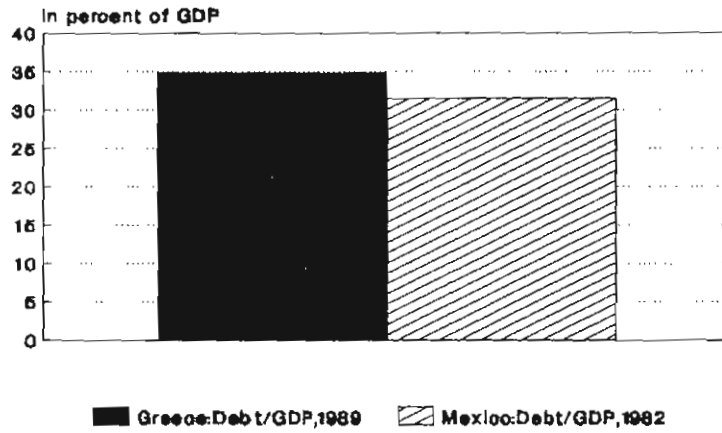
World Bank and Bank of Greece

Greece and Mexico:
Debt Service Ratio, 1989 and 1982

In percent of Exports

■ Greece:DSRatio,1989   ▨ Mexico:DSRatio,1982
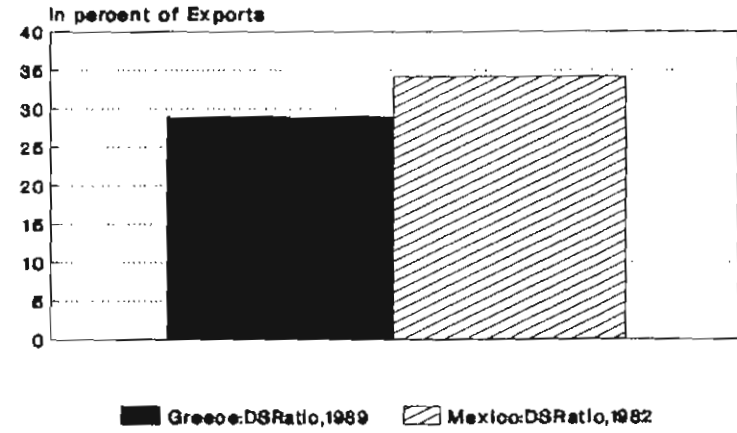
World Bank and Bank of Greece

Chart 8

Greece and Turkey:
External Debt, 1989 and 1978

In percent of GDP

■ Greece:Debt/GDP,1989   Turkey:Debt/GDP,1978
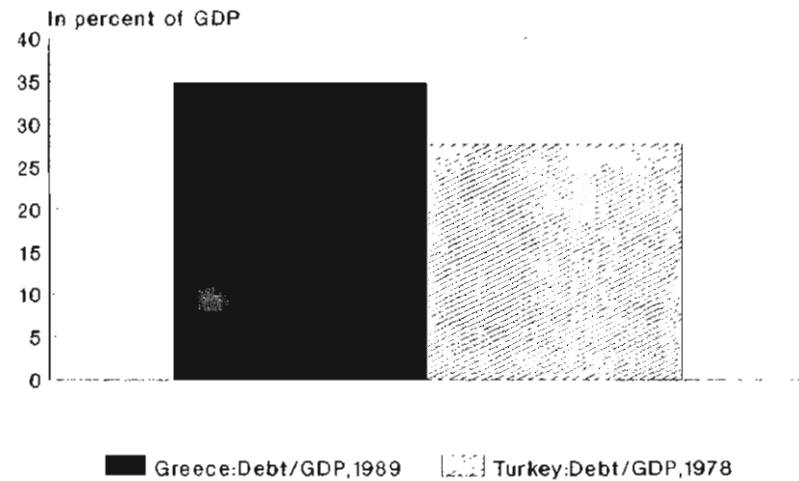
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Greece and Turkey:
Debt Service Ratio, 1989 and 1978

In percent of Exports

■ Greece:DSRatio,1989   Turkey:DSRatio,1978
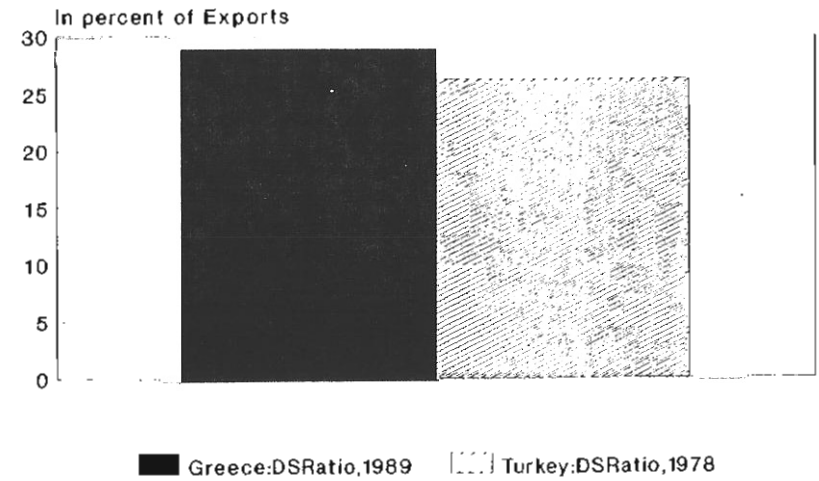
World Bank and Bank of Greece

Table 1

Greece: Actual and Sustainable Deficit in 1989
(in percent of GDP)

	Deficit	
	Actual	Sustainable[1]
Revenues from monetization	5.6	5.6
Seigniorage	0.3	0.3
Inflation Tax	5.3	5.3
Domestic borrowing	13.3	1.1
Foreign borrowing	2.4	0.6
At fixed e	(3.2)	(0.6)
Capital gain (-)/loss (+)	(-0.8)	(--)
Total financing	21.3	7.3

[1]Assumes GDP growth and inflation at their actual levels of 18 and
2 percent, respectively, and stabilization of both domestic and
external debt relative to GDP at their end-1988 levels.

Table 2

Greece: Financeable Deficit Under Different Inflation Targets[1]
(in percent of GDP)

	$\overset{\bullet}{p} = 18$	$\overset{\bullet}{p} = 12$	$\overset{\bullet}{p} = 6$
Revenues from monetization	5.6	4.0	2.4
Seigniorage	0.3	0.4	0.5
Inflation Tax	5.3	3.6	1.9
Domestic borrowing	1.3	1.3	1.3
Foreign borrowing	0.7	0.7	0.7
Total financing	7.6	6.0	4.4

[1]Assuming GDP growth at 2 per cent, no change in the real exchange rate, and stabilization of both domestic and external debt relative to GDP at their end-1989 levels.

Table 3

Greece: Required Deficit Reduction Under Alternative Macro Targets
(in percent of GDP)

		$\dot{y} = 2,\ \dot{e} = 0$	
Inflation target	18	12	6
Required deficit reduction	14	15 1/2	17
		$\dot{p} = 18,\ \dot{e} = 0$	
Growth target	2	3	4
Required deficit reduction	14	12	10
		$\dot{y} = 2,\ \dot{p} = 18$	
Real depreciation target	0	2	4
Required deficit reduction	14	15	16

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