PSL Quarterly Review, vol. 66 n. 266 (2013), 291-324

The growth of public debt in Italy: past experience, perspectives and policy problems*

LUIGI SPAVENTA**

I. Introduction

1. Chart 1 shows the behaviour of the total stock of debt of the Italian State sector and of its two major components, as ratios to GDP, since 1961. The total stock (upper line) includes debt to the public and to financial intermediaries, foreign debt and debt to the Bank of Italy.

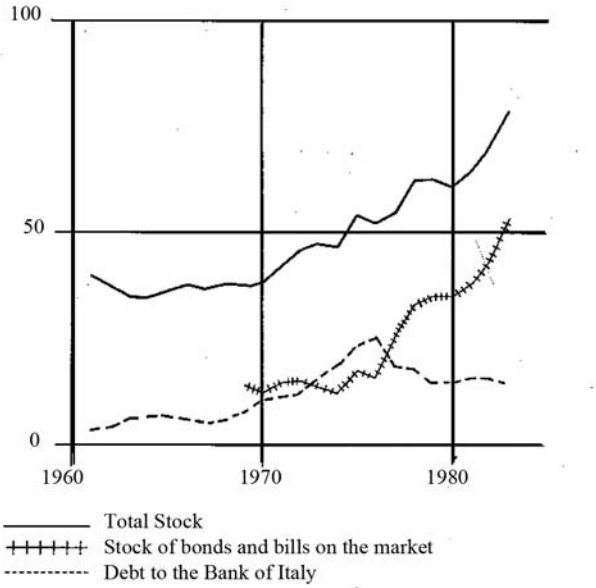
The latter (broken line) consists of State bills and bonds purchased by the Bank and to a smaller extent of the accumulated overdrafts of the Treasury on a special account: its counterpart is the stock of monetary base created for the Treasury.[1] Foreign debt, though growing in recent years, only amounted to 2.6% of the total and little more than 2% of GDP at the end of 1983. The importance of postal savings has steadily declined since the early Seventies, reaching 10.6% of the total and 8.3% of GDP in 1983. The stock of short-term Treasury bills and bonds in the hands of the public and financial intermediaries is represented by the crossed line in the chart.

* Originally published in *Banca Nazionale del Lavoro Quarterly Review*, vol. 37 n. 149, June 1984, pp. 119-149.

** This article is a much modified version of a paper presented at a seminar held under the auspices of the International Seminar in Public Economics of the University of California, Santa Cruz, under the cosponsorship of UCSC and the Bank of Italy. The author is grateful to the Research Division of the Bank of Italy for help in data finding and to Dr. Cesarano, also of the Bank of Italy, for useful comments.

[1] The monetary base created for the Treasury includes some other minor items. Until 1975 Treasury bills could be used by commercial banks for compulsory reserve requirements: the bills used for this purpose should therefore be considered as part of the base created for the Treasury; in chart 1 they are not included in the total of bonds and bills on the market.

Figure 1 – *Ratios of stock of debt to GDP*
(end of year data)



Data on growth rates at current and constant prices and on changes in ratios to GDP of total debt and its major components by subperiods are summarized in table 1. The whole of the increase in the ratio of total debt occurs after 1970: as the growth rate of the economy declines, that of debt at constant prices steps up. There are no reliable data for the stock of bonds and bills on the market prior to 1970. The remarkable growth of their ratio to GDP is concentrated in the last seven years of the following period, while the opposite happens for the ratio of the debt towards the Bank of Italy. The growth of total debt since 1970 has proceeded in steps, with big jumps followed by short pauses at a new higher level; after 1976, the growth of debt on the market has been more continuous, with points of inflection quite unrelated to the steps of the total stock.

2. In the past decade several countries have experienced large

deficits and a rapid growth of public debt.[2] This fact, as well as the debate on the effectiveness of fiscal policy, has drawn attention to problems relating to deficits, their financing and the long-run consequences of a growing stock of interest-bearing debt.

The size of deficits is influenced by inflation, whereas the causation from deficits to inflation largely depends on the extent to which they are monetized. The need to provide inflation-corrected measures of deficits is now accepted, while it has been debated whether there exists a relationship between deficits and money creation.[3]

The effects of debt financing raise more numerous and more complex problems. Of course, if Barro's equivalence theorem is accepted, there is little more to say: debt-financed deficits will not affect either the level of activity or wealth or interest rates. Barro's propositions, however, represent an extreme view, or, more accurately, an extreme version of views which had been debated in more acceptable terms long before Barro: not only by Ricardo, but, in the Thirties, by the Italian school of public finance, whose apparently forgotten contributions anticipate much of the recent debate.[4]

If Barro's views are not accepted or when a Barro *régime* does not apply, several issues arise beside those of the effects of money-financed or bond-financed deficits on the level of activity. There is a problem of sustainability of growing debt/GDP ratios caused by persisting bond-financed deficits: even when such ratios converge to limiting values, their

[2] See OECD (1983; 1984). The only major country where the debt/GDP ratio declined between 1970 and 1983 was the UK.

[3] Amongst the more recent contributions to the problem of inflation correction of deficits, see Buiter (1982), Miller (1982), Miller and Babbs (1982), Cuckierman and Mortensen (1983), compute and compare corrected data for budget deficits, saving ratios, corporate debt for five EEC countries. For Italy, see Cotula and Masera (1980), Centro Europa Ricerche (1982), Salvemini (1983), Artoni (1983), Reati (1984).

For the debate on whether there is causality between deficits and money creation, see Barro (1978), Niskanen (1978), Hamburger and Zwick (1981), Blinder (1982), all referring to the US experience. For Italy, see Willet and Laney (1978), Demopoulos, Katsimbris and Miller (1983).

[4] See Barro (1974; 1978), De Viti De Marco (1961), and Buchanan (1965), for a good account of the Italian debate.

Table 1 – *State sector debt: growth rates and changes in ratios to GDP (on end-of-period stocks)*

	1961-70	1970-76	1976-82	1970-82	1961-82
Total debt					
Average annual growth rates					
– in nominal terms	10.3	22.8	26.1	24.4	17.9
– at constant 1970 prices	5.3	8.6	7.3	7.9	6.6
Cumulative change in the ratio to GDP	–1.8	14.2	17.9	32.1	30.3
Bonds and Bills on the market [(a)]					
Average annual growth rates					
– in nominal terms	–	17.1	41.8	28.9	–
– at constant 1970 prices	–	3.6	20.7	11.8	–
Cumulative changes of:					
ratio to GDP	–	3.5	27.6	31.1	–
ratio to total debt	–	–2.2	31.4	29.2	–
Debt to the Bank of Italy					
Average annual growth rates					
– in nominal terms	24.9	33.8	11.6	22.3	23.4
– at constant 1970 prices	19.3	18.4	-5.0	6.0	11.5
Cumulative changes of:					
ratio to GDP	7.3	14.6	–9.3	5.3	12.6
ratio to total debt	19.6	19.3	–24.8	-5.5	14.1
Memorandum items:					
Average annual growth rates:					
– GDP deflator	4.7	13.1	17.5	15.3	10.6
– GDP at constant prices	5.4	3.0	2.2	2.6	3.8

(a) Including the Treasury bills held by the commercial banks for compulsory reserve requirements until 1975.

growth may cause severe strains to the financial stability of the system.[5] It is debated whether debt accumulation affects the level of interest rates: as the latter certainly affects the former, the possibility is that of a (potentially unstable) feedback process. Consideration of these and other problems has led to the re-examination of the relative merits of monetary and bond financing in situations of conflict between fiscal and monetary policy. The efficiency of a strict *k*-percent rule under these conditions has been questioned with reference both to short-run stabilization targets and, especially, to the effects of future monetization of the debt as the amount of bonds held by the public approaches some upper bound.[6]

3. Many such issues are to a large extent unsettled. Failing a sharp change in present trends, the Italian case may provide a future test for some of the extreme possibilities which have been debated. Though, as said above, a fast growth of debt has been common to a number of economies, amongst the industrialized countries Italy now ranks first for the debt/GDP ratio, which is expected to increase more than elsewhere in the next years.[7]

The purpose of this paper is to survey the Italian experience with reference to some of the issues listed above. It has no ambition to test conflicting views – not least because the effects of some financial and policy innovations are too recent and because of the poor quality of some data. Its more limited scope is to draw on past experience and, more important, to assess future prospects in order to discuss some problems regarding both fiscal and monetary policy.

In the next section I shall examine debt formation in the past, with reference to borrowing requirements, their composition and their adjusted measure. In the third section I shall consider the financing policies pursued by the authorities and the changes in the composition, ownership

[5] The first precise formulation of the problem is by Domar (1957); the problem also received extensive treatment in the literature on foreign debt. See also OECD (1984).

[6] On the desirability of 'bondism' for stabilization policy, see Smith (1982). On long-run consequences see Sargent and Wallace (1981), Sargent (1982).

[7] Italy ranks third after Ireland and Belgium. The fastest growth of the debt/GDP ratio since 1910 has occurred in Japan, but starting from a very low level. For data and projections see OECD (1984) and the last section of this article.

and cost of debt. In the fourth section I shall examine possible future developments and some connected policy problems.

II. The formation of debt

4. It is convenient, for the discussion of this and the following sections, to set out at the start the simple algebra of debt formation.

Let D be the nominal stock of debt, which we suppose for simplicity to consist only of interest-bearing debt, B, and the monetary base issued to finance the Treasury, H^T. Let F be the borrowing requirement, the sum of a borrowing requirement net of interest expenditures, A, and of interest payments $I = rB$, where r is the average rate of interest. Let p be a price index, which we may for the moment consider as the GDP deflator. Dots denote change over time and small letters ratios to GDP. π is the rate of inflation and $\mu = H^T/F$ the coefficient of monetization of the deficit; g is the nominal growth rate of GDP.

Then:

$$\dot{D}/Y = \dot{B}/Y + \dot{H}^T = f = a + i \tag{1}$$

$$\frac{(\dot{D/p})}{Y/p} = \dot{D}/Y - \pi d = f - \pi d \tag{2}$$

$$\frac{(\dot{D/p})}{Y/p} + \pi h^T = \frac{(\dot{B/p})}{Y/p} + \frac{\dot{H}^T}{Y} = f - \pi b = a + (r - \pi)b \tag{2'}$$

$$\dot{d} = \dot{D}/Y - gd = f - gd \tag{3}$$

$$\frac{(\dot{B/p})}{Y/p} = \dot{B}/Y - \pi b = f - (\dot{H}^T/Y) - \pi b = (1-\mu)f - \pi b = a + (r-\pi)b - \mu f \tag{4}$$

$$\dot{b} = (1-\mu)f - gb = a + (r-g)b - \mu f \tag{5}$$

Expression (1) gives the conventional measure of nominal borrowing requirement as a ratio to GDP and of its financing by means of changes in the nominal stocks of interest-bearing debt and monetary base. In times of inflation such measure, as has repeatedly been stressed in the

literature,[8] is severely biased as it includes nominal interest payments which merely represent anticipated amortization of the outstanding debt in real terms. As a result, the uncorrected flows of (1) (no matter whether divided by the GDP or by a price index, p) are not consistent with changes in real stocks, as can be seen from (2). To achieve such consistency, the loss caused by inflation to the real value of outstanding liabilities should be subtracted from the nominal borrowing requirement. It also follows that the uncorrected measure may give a misleading idea of the evolution of the public sector's financial situation when, as is often the case, the inflation rate and the nominal cost of debt change in the same direction but not by the same amount: when, say, the latter falls less than the former, we have, *ceteris paribus*, a nominal improvement but a real deterioration of the deficit.

Expression (3) measures the change in the debt/GDP ratio and provides therefore a 'growth correction' as well as an inflation correction (g, the nominal growth rate being the sum of the real growth rate and of the inflation rate) for the borrowing requirement.

The inflation correction implied in (2) extends to the entire stock of debt, including that to the Bank of Italy, and thus subtracts also the inflation tax on the stock of monetary base. It may however be desirable to confine the inflation correction only to the stock of interest-bearing debt on the market. The stock of monetary base issued for the Treasury can only conventionally be considered as debt. This is best seen by consolidating the Treasury with the Central Bank: there is then no proper liability corresponding to the monetary base issued by the Central Bank for the Treasury, this being the essence of the power of seigneurage. The inflation tax on monetary base cannot therefore be considered as an anticipated amortization of the corresponding debt, as the latter never has to be paid back. Further, to the extent to which the inflation rate depends on the rate of money creation, the correction on the entire debt, as given by (2), introduces a large element of policy discretion in the

[8] See the literature cited in note 3 and especially Cuckierman and Mortensen (1983). Inflation accounting of public deficits has found little or no place in official documents: the reason probably being that dramatization of the deficits better serves the political purpose of finding consensus for reducing the growth of public expenditure.

determination of the corrected deficit, for a given value of *f* or of *a*. This arbitrariness is removed in expression (2'), where the borrowing requirement is corrected for the loss in real value of the stock of interest-bearing debt, but not for that of the monetary base.[9]

Expressions (4) and (5) show the change over time of the real stock of interest-bearing debt (as a ratio to current GDP) and of the ratio of that stock to GDP. Such changes depend not only on *a*, on past stocks, and on the inflation and growth rates, but also on μ, which reflects current policy decisions on the financing of the deficits. The expressions are useful to examine the determinants, and the consequences, of the growth in interest-bearing debt and we shall use them later for this purpose, but cannot be considered as meaningful alternative measures of the inflation-corrected deficit.

5. I have used expression (2') as a measure of the inflation-corrected borrowing requirement. Two further problems must however be considered. A first problem arises because in Italy the interests paid on the bonds and bills held by the Central Bank are not wholly refunded to the Treasury.[10] A consolidation of the Treasury with the Central Bank would in principle solve the problem, but consolidated accounts are neither available nor easy to construct.[11] Inclusion in *A* of all the interests paid to the Bank would clearly lead to an over-estimation of this variable: put in another way, such payments, no matter how they are financed, imply a negative creation of monetary base.[12] Exclusion of all such interests from *A*, on the other hand, leads to an underestimation of the variable when, as is the case in Italy since 1975, the Central Bank pays

[9] A higher rate of money creation, caused by a higher rate of monetary financing of the deficit and causing a higher inflation rate, π, would imply a lower value of *b* for the same value of *d.* Unlike in (2), the corrected deficit would remain more or less unaltered in (2').

[10] Interests on Treasury bills and some medium-term Treasury certificates are refunded to the extent to which they exceed the interests paid by the Central Bank to commercial banks on compulsory reserves (at the fixed rate of 5.5%); other interests are not refunded.

[11] Cuckierman and Mortensen (1983) perform such consolidation: they recognize that it "involves a certain amount of qualified estimation," but do not specify how the "reclassification of the central bank with the government sector" was made.

[12] In the statistics of monetary base this is reflected not in the figure of the base created for the Treasury, but in the "other sectors" item: it follows that the former figure is always slightly overvalued.

interests to the commercial banks on their compulsory reserves. It thus appears correct to include in A only that part of interests paid by the Treasury to the Bank of Italy which is then paid by the latter to commercial banks on compulsory reserves – a sum which may be taken to represent the cost of seigneurage.

A further problem arises because the stock of interest-bearing debt grows during the year, but only end-of-year values are available. Measuring the loss in the real value of assets due to the average inflation rate of the current year, π_t, on the stock at the end of the previous year, B_{t-1}, neglects the loss on the debt issued over t. A much used empirical device to allow for this is to multiply π_t for the average of B_t and B_{t-1}:[13] the only justification for such device is that of a rough rule of thumb. A third method,[14] which I have followed, allows to take into account the changes in the stock of debt over the period by considering the changes in the real value of stocks at end-of-period prices. Let p' be the end-of-period price index, while p is the average yearly index. In finite terms, we shall have:

$$\frac{(D_t / p_t') - (D_{t-1} / p'_{t-1})}{Y_t / p_t} = f_t - \left[\frac{p_t - p'_{t-1}}{p'_{t-1}} \cdot \frac{D_{t-1}}{Y_t} + \frac{p'_t - p_t}{p'_t} \cdot \frac{D_t}{Y_t} \right] \qquad (1')$$

where the expression in brackets is the inflation correction (obtained by adding and subtracting $D_t = D_{t-1} + F_t$. When the correction is applied only to the interest-bearing debt, we have:

$$\frac{(B_t / p_t') - (B_{t-1} / p'_{t-1})}{Y_t / p_t} + \frac{\dot{H}_t^T}{Y_t} = f_t - \left[\frac{p_t - p'_{t-1}}{p'_{t-1}} \cdot \frac{B_{t-1}}{Y_t} + \frac{p'_t - p_t}{p'_t} \cdot \frac{B_t}{Y_t} \right] \qquad (2'')$$

which is the method I have used, with the further correction for the interests paid to the Bank of Italy.[15]

---

[13] This is done, for example, by Cuckierman and Mortensen (1983) and by Eisner and Pieper (1984).

[14] The method was first used by Cotula and Masera (1980).

[15] There is a further difficulty, as the data available on the stock of interest-bearing debt on the market are at book-values, which are less than the redemption values since the issue price of bonds is less than the redemption price. This causes on the one hand an underestimation of the inflation loss and, on the other, an underestimation of interest payments, as, for bonds, the latter do not include the difference between issue and redemption prices.

6. Table 2 provides some basic data, for selected years, on deficits and borrowing requirements for the public and the State sector. The solid line in chart 2 shows the unadjusted ratio to GDP of the State sector borrowing requirement. Data on the public sector are given in the table not only because the series is longer,[16] but also because many transfer items of the State sector accounts receive their proper allocation between current and capital expenditures in the public sector consolidated budget. As the difference between deficit and borrowing requirement is represented by the acquisition of financial assets, the latter is relevant for the formation of gross debt (to which table 1 and chart 1 refer), while the former is the flow giving rise to net debt. For reasons of availability of data and because a large part of the financial assets acquired by the State have, to say the least, a very dubious nature, I shall only consider the borrowing requirement and the gross debt.

A marked deterioration of the State and the public sectors' financial position occurred at the beginning and again in the middle of the Seventies. Without even attempting an analysis of the causes of this development,[17] two phases can be distinguished. In a first phase, while the expenditure/GDP ratio rose near to the levels of other industrialized countries, the revenue ratio rose very little because the tax burden remained stagnant. In a second phase, revenues rose very substantially, as a result partly of a tax reform, partly of discretionary measures attempting to chase ever-growing deficits, and, to no little extent, of the effects of rising inflation on real marginal tax rates. This rise was not however sufficient to keep pace with the growth of expenditures. The latter is swollen by the increase of interest payments, which is much faster than that of current and total expenditure and accelerates in later years. Since 1976, the growth of revenues has exceeded that of final expenditure net of interest payments: omitting the latter, the current budget goes back to a small surplus.

As was pointed out above, however, mere subtraction of interest

[16] A series from 1960 is published in Cotula, Masera and Morcaldo (1983). A revised series, which also includes estimates for 1983, has been prepared by G. Morcaldo who kindly made it available to me.

[17] For a careful long-run analysis, see Cotula, Masera and Morcaldo (1983).

Table 2 – *Ratios to GDP x 100*

	1961	1970	1976	1982	1983[(a)]
Public sector					
1. Revenues	30.6	32.4	34.3	42.3	45.4
2. Final expenditures	31.7	36.5	44.1	55.4	58.9
3. Current deficit (b)	+3.5	+0.4	–4.9	–7.3	–7.2
4. Total deficit (b)	–1.0	–4.0	–9.7	–13.1	–13.6
5. Borrowing requirement (b) (c)	–1.7	–6.4	–10.4	–16.0	–16.3
State sector					
6. Total deficit (b)	–	–	–6.6	–12.5	–13.5
7. Borrowing requirement (b)	–1.4	–5.1	–9.3	–15.4	–16.5
Interest payments					
8. of the public sectors	1.5	2.0	4.8	8.6	9.5
9. of the State sector	–	–	3.6	8.2	8.9
Inflation losses on bills and bonds and on postal savings (d)					
10.	1.0	1.6	4.9	6.5	7.4
Public sector					
11. 3 + 8	+5.0	+2.4	–0.1	+1.3	+2.3
12. 4 + 8	+0.5	–2.0	–4.9	–4.5	–4.1
13. 5 + 8	–0.2	–4.4	–5.6	–7.4	–6.8
14. 3 + 10	+4.5	+2.0	0	–0.8	+0.2
15. 4 + 10	0	–2.4	–4.8	–6.6	–6.2
16. 5 + 10	–0.7	–4.8	–5.5	–9.5	–8.9
State sector					
17. 6 + 9	–	–	–3.0	–4.3	–4.6
18. 7 + 9	–	–	–5.7	–7.2	–7.6
19. 6 + 10	–	–	–1.7	–6.0	–6.1
20. 7 + 10	–0.4	–3.5	–4.4	–8.9	–9.1

(a) Data for 1983 are provisional; (b) A + sign indicates a surplus, a – sign a deficit; (c) Net of deposits with the banking system; (d) Inflation losses are the same for the public and the State sectors as there are only very minor differences in the stock of bonds and bills and no difference in the stock of postal savings.

Source: see note 16; Banca D'Italia, *Relazione annuale*, various years.

payments can be a seriously misleading measure of real deficits and real budget movements, as, depending on the behaviour of real interest rates, it may under or overestimate the size of the inflation adjustment and the changes in the real interest burden.

Inflation losses on bonds and bills on the market and on postal savings exceed nominal interest payments on the whole debt of the State sector for each year between 1973 and 1981. Owing to the sharp increase in real interests on bonds and bills, total real interest payments become positive as from 1981. The series of real interests on bonds and bills and on postal savings is given in table 3.

It is thus clear that mere subtraction of interest payments overstates the real deficit or borrowing requirement until 1981 and understates them after that year. Further, if we compare the inflation-corrected balances and the net-of-interest balances in table 2, we see that between 1976 and 1982, owing to the increase in real interest payments, the former deteriorates far more than the latter (which actually improves for the deficits of the public sector).

Table 3 – *Real interests*, *Ratios to GDP x 100 (1) and ratios to nominal interests* (2)

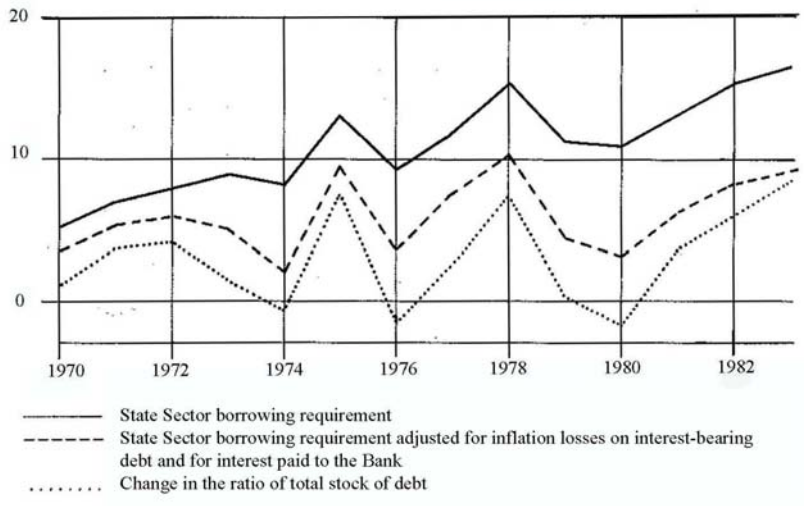
	Postal savings		Bonds and bills		Total	
	(1)	(2)	(1)	(2)	(1)	(2)
1973	-0.9	-2.1	-1.2	-1.2	-2.0	-1.5
1974	-1.7	-4.2	-2.1	-1.8	-3.8	-2.4
1975	-0.7	-1.2	-0.6	-0.5	-1.3	-0.7
1976	-1.4	-3.1	-1.8	-1.4	-3.2	-1.8
1977	-0.7	-1.7	-0.5	-0.2	-1.2	-0.4
1978	-0.6	-1.0	-0.3	-0.1	-0.9	-0.2
1979	-1.0	-1.5	-1.4	-0.4	-2.4	-0.6
1980	-1.2	-2.0	-1.8	-0.4	-3.0	-0.6
1981	-0.9	-1.7	-0.1	-	-1.0	-0.2
1982	-0.6	-1.1	+1.2	+0.2	+0.6	+0.1
1983	-0.6	-1.1	+1.0	+1.0	+0.4	+0.1

Source: for nominal interests, data in Salvemini (1984).

The broken line in chart 2 shows the adjusted ratio of the State sector borrowing requirement to GDP, obtained by subtracting the inflation losses on bonds and bills on the market and on postal savings from the unadjusted figure; from 1973, also the interests paid to the Bank of Italy net of those paid to commercial banks on compulsory reserves are subtracted.[18] The dotted line shows the changes in the total debt/GDP ratio (as in (3), above), and includes therefore not only inflation adjustment on *total* debt, but also growth adjustment.

The inflation losses are high and growing over the period, so that the inflation-corrected ratios of borrowing requirement to GDP are substantially lower than the ratios in nominal terms.

Figure 2 – *Ratios to GDP*



[18] In tables 2 and 3 and in chart 2 the inflation loss has been computed according to (2") and, until 1976, also on the Treasury bills held by the commercial banks for compulsory reserves. Data on the interests paid to the Bank of Italy are taken from Salvemini (1984), and are not available before 1973: there is therefore a slight overvaluation of the adjusted borrowing requirement for 1970-1972. The price indices are the yearly and the last quarter GDP price deflators. Data for 1983 are provisional. The decline in real interests between 1982 and 1983 is mostly caused by the increase in medium-term certificates at the expense of Treasury bills: with current accounting procedures this implies a postponement to next year of some interest payments.

Even the corrected ratios, however, have remained on average very high since the early Seventies. The improvement, in recent years, of the underlying trend of revenues and expenditures net of interest payments has been offset by the rising real interest burden: this process is not surprising, in view of the growth of debt and of the return of real interest rates to positive levels.

7. There can be little doubt that the fall in the growth rate which has occurred since the early Seventies (from an average 5.4% in 1961-1970 to 3% in 1970-1976 to 2.2% in 1976-1982) and the more troubled cyclical conditions have greatly contributed to increased deficits and to the fast growth of debt; hence a problem of cyclical correction of the budget balances.

Cyclical correction in the period under consideration becomes however a somewhat problematic exercise, especially in a high-inflation, small open economy like Italy. First, since 1973 Italy has twice suffered a drastic deterioration of the terms of trade, more severe than for most other countries. Adjustment to such shocks, which have depressionary effects both on the demand and on the supply side, requires an increase in real net exports at the expense of internal demand and a corresponding adjustment in real incomes. In such conditions, the composition of demand is relevant to assess the posture of fiscal policy, but is neglected in the exercises of cyclical correction.

Second, since the early Seventies lower growth rates have been associated with higher inflation rates. While the real growth rate fell, the growth rate of *nominal* GDP rose. Cyclical correction neglects the effects of high inflation on the share to GDP of the revenues from personal income taxation, which have been particularly marked in Italy.[19]

Third, the very notion of 'high employment output' becomes elusive in the case of a small open economy where the feasible growth rate is constrained by the balance of payments. The current balance, in turn, depends not only on internal conditions of demand and competitiveness,

[19] This was the result not only of higher inflation but also of the very progressive structure of the personal income tax in the middle-income brackets. In OECD (1983), the changes in real marginal rates due to inflation are considered, if not corrected, as discretionary measures which are assumed to persist.

but also on the cyclical situation of the economy's major trading partners. Thus for Italy the difference in growth rates with respect to other European economies is a better explanatory variable of movements of the current balance than, say, the exchange rate.[20] Further, the years of high employment usually taken as a yardstick for defining cyclical corrections, i.e. 1973-1974 and 1979-1980, are also years when the Italian growth rate exceeds that of the rest of Europe, there are heavy current deficits, and inflation accelerates.

Neglect of these factors casts doubts on the significance of the measures of cyclical correction. Such measures, moreover, differ according to different sources.[21] It is of course true that the peaks in chart 2 correspond to years of low or negative growth and the troughs to years of high growth: some measure of cyclical adjustment would thus alter the pattern displayed by the chart. We are however left with two facts. First, if we consider the borrowing requirement, even when we add a cyclical correction (as, for instance, computed by the OECD) to the inflation adjustment, we still face an uninterrupted series of deficits. Second, the growth of the gross debt ratio has also been almost uninterrupted for thirteen years: the fall in 1974, 1976 and 1979 was largely due to the effect of higher inflation on the real stock – inflation losses are higher in those years and real interests (see table 3) at their lowest. We thus conclude that the growth of debt was mainly due to a structural deterioration of the budgetary situation. As the stock of debt grows, it then becomes far more difficult to change course, as we shall see later.

III. The financing of the deficit and the composition and cost of debt

8. There is no reason to presume the existence of a simple and stable relationship between public deficits and money creation, especially in a relatively small and very open economy, like Italy. Willet and Laney's conclusion that "attempts to explain the relative importance of [wage

[20] See Izzo and Spaventa (1981), for some empirical evidence.
[21] See OECD (1983; 1984), Giavazzi (1984), Eisner and Pieper (1984).

growth, deficits or other variables for money creation] will have to rely on careful judgemental analysis of monetary authorities behaviour on an episodic basis" remains wise counsel.[22] The effects of deficits on money growth will depend, among other things, on whether the target selected by the monetary authorities is a monetary aggregate or some wider credit aggregate; on the exchange rate *régime* and on the extent of interventions; on whether more reliance is placed on administrative controls or on the operation of the markets; on the development of financial markets and the availability of suitable debt instruments.

After the Sixties, Italian monetary policy went through several phases in its relationships with fiscal policy − each qualified by a different *régime* in terms of attitudes, reactions of the public, choice of targets and instruments. With some (but perhaps not over-misleading) simplification, three main phases can be distinguished: one of more or less peaceful coexistence between fiscal and monetary policy; one of forced wedlock, in which monetary policy lost its autonomy; the present one (the most interesting in view of its effects on the debt) when targets and instruments have been changed to vindicate again such autonomy.

9. During the Sixties the financing of the State borrowing requirement did not pose particular problems. Deficits in relation to GDP were relatively low and the economy was growing fast, so that in 1970 the total debt/GDP ratio was lower than in 1961. Though the Bank of Italy concurred substantially to the financing of the deficits (its share on total debt more than trebled between 1961 and 1970), this had little or no effect on the inflation rate. Treasury bills were held almost exclusively by commercial banks, who were allowed to use them as compulsory reserve. Postal saving was an important source of financing while investment in long-term State bonds by the non-banking public was made attractive by a policy of pegging nominal rates at a relatively stable level, which insured a more variable but still positive real yield.[23]

---

[22] Willet and Laney (1978). For the USA see the literature cited in note 3; for an international comparison see Demopoulos, Katsimbris and Miller (1983).

[23] The average interest rate on long-term State bonds was 6.3% between 1961 and 1969, with a standard deviation of 0.64; on medium-term bonds the rate was 5.41, with a standard deviation of 0.27.

In the early Seventies this idyllic picture of low deficits, high growth, safe and profitable investment in Government paper changed drastically. There was a steep increase in the deficit. There was a steep, and unexpected, rise in the inflation rate, which trebled between 1972 and 1974, entering the still lasting, but then unforeseen, double-digit era. Difficulties in the financing of the Treasury had begun earlier, when, at the turn of the decade, the Bank of Italy had to abandon the policy of pegging interest rates; they increased as inflationary expectations became rooted and interest rates, though rising somewhat, failed to keep pace with current and expected inflation.

The difficulty of providing non-monetary financing of the deficits because of the unwillingness of the public to subscribe new bond issues was compounded by a steep increase in the deficit/GDP ratios. As a result, the major task of monetary policy became that of insuring the monetary financing of whatever part of the borrowing requirement could not be financed on the market: the larger part, not surprisingly, considering that real interest rates, though with wide oscillations, were consistently kept at negative levels.[24] The change which occurred in the early Seventies is illustrated by the data of table 4 (coefficients of monetization of the deficit, μ, ratios to GDP of the creation of monetary base for the Treasury, μf, and growth rates of total adjusted monetary base, $\dot{H}/Y$) and by chart 3 on real interest rates.

The following years are a period of somewhat uneasy transition towards a third phase, the proper beginning of which can be placed between 1980 and 1981. An important step to create anew the conditions for non-monetary financing of the Treasury was taken in 1976, when short-term

[24] A comparison of the targets set under the EEC policy program (stipulated for the concession of a medium-term loan) and actual outcomes provides further evidence of the loss of control of fiscal and monetary policy: in 1975 the financing need of the Treasury overshot the target by 120%; in 1976 the creation of monetary base for the Treasury was more than twice that initially forecast in spite of the fact that the target for the borrowing requirement was more or less observed. See Spaventa (1983).

Table 4 – *Coefficients of monetization of the borrowing requirement and creation of monetary base*

Years	μ		μf		Years	μ	μf
	(a)	(b)	(a)	(b)			
1961-1968	22.4	31.2	0.6	0.8	1977	-17.9	-2.1
1969	62.5	66.6	1.9	2.0	1978	15.2	2.3
1970	84.9	85.4	4.3	4.3	1979	1.4	0.2
1971	24.4	32.3	1.7	2.2	1980	27.0	2.9
1972	28.0	43.5	2.2	3.4	1981	25.9	3.4
1973	62.6	70.3	5.6	6.3	1982	17.5	2.7
1974	73.6	76.4	6.0	6.2	1983(c)	4.5	0.7
1975	54.4	33.3	7.1	4.4	(d)	0.8	0.1
1976	66.8	62.4	6.2	5.8			

(a) Not including the Treasury bills for reserve requirements.
(b) Including the Treasury bills for reserve requirements.
(c) Including bills sold by the Central Bank to the commercial banks taking over the Banco Ambrosiano and deposited by the latter with the Central Bank to obtain refinancing at 1%.
(d) Not including the bills of note (c).

	Total adjusted monetary base	
	Quarterly averages of annual growth rates	Standard deviation
1967/I – 1970/IV	8.98	1.56
1971/I – 1974/IV	14.95	3.24
1975/I – 1979/IV	17.49	2.76
1980/I – 1983/IV	13.80	1.66

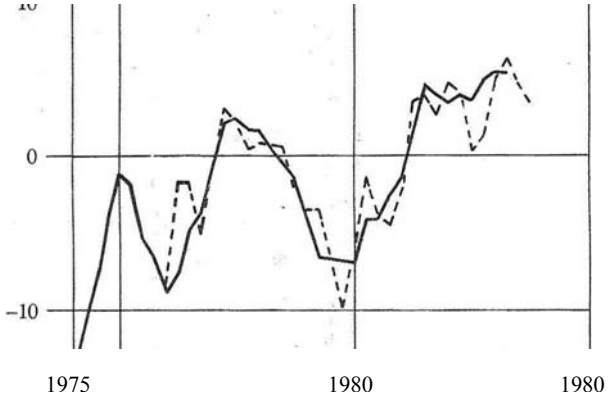
Source: Bank of Italy.

Treasury bills were first offered to the non-banking public and were extremely well received as acceptable substitutes of other liquid assets with lower yield. The banks' demand for State bonds and bills also increased as a result of the administrative controls on the growth of their loans adopted as a means to achieve the target on total domestic credit (TDC).[25]

[25] Ceilings to bank loans not only increased the demand for State debt, but also made it more stable, as a switch of the public's preference from State debt to deposits would to a large extent be matched by an increase in the share of debt held by the banks.

A different and more incisive approach came however to replace the combination of credit targets and administrative controls. It became evident that, as the initial targets for the State borrowing requirement were invariably overshot by large amounts, this led to systematic overshooting of the overall TDC target. Further administrative controls

Figure 3 – *Average of quarterly annualized inflation rates from t to t+3 for bonds and from t to t+1 for 6-months bills*



——— Real interest rates on state bonds
-------- 6 months treasury bills

exhibited rapidly increasing costs in terms of efficiency and decreasing returns in terms of effectiveness, as the system developed its own ways to circumvent them.[26] Following a period of internal recovery, relatively accommodating monetary policy, slightly falling nominal interest rates and persistently high budget deficits, a renewed acceleration of inflation in 1979-1980 caused another dip of real rates and evoked fears of an incipient flight from financial assets. After this episode, the move towards a new phase of monetary policy became more marked.

[26] Financial innovations and various forms of window-dressing served this purpose. On the costs of administrative controls, see Monti, Cesarini and Scognamiglio (1983), *Report on the Italian Credit and Financial System*, special issue of this *Review*.

10. The essence of this new phase[27] is the more or less explicit replacement of wider credit targets with stricter monetary targets and in particular with a stricter control on monetary base and, through bank reserves, on M2. Some may wish to observe that the Bank of Italy has, at last, become monetarist. Such is not, however, the analytical justification provided in official statements and in work by members of the Bank's research staff,[28] and it is also observed that targets are not published, so as to leave open the necessary margins of discretion and flexibility.

The analytical constructions supporting the new policy stress the importance of the *level* of *real* interest rates, especially in some versions, and of the *structure* of interest rates. The argument on the level of real rates is the less easy to pin down, both because it is difficult to perceive the underlying model and because the territory of empirical tests is as yet unchartered. The real interest rate is assigned the task of clearing the market of financial assets at the given level of nominal GDP: an increase in the supply of the former relative to the latter (due, typically, to an increase in the State borrowing requirement) would cause, if the real interest rate did not adjust, an increase in expenditure with inflationary consequences, directly or through the exchange rate; inflation would presumably restore an equilibrium ratio by raising nominal GDP. This argument rests on the existence of some stable demand function for financial assets[29] depending crucially on income and on the interest rate. What is by no means clear is whether this implies a dependence of the wealth/income ratio and hence of overall savings on the real interest rate or whether the latter should insure that changes in the supply of financial assets are reflected in corresponding changes in the shares of financial and real wealth.

The argument on the structure of interest rates rests on the fact that given levels of total credit and of the State borrowing requirement are compatible with different degrees of intermediation and hence with a different composition and a different degree of liquidity of the public's

[27] See the accounts by Cotula (1984), and Caranza and Fazio (1984).
[28] See for instance Cotula (1984), Caranza and Fazio (1984), Masera (1983). An earlier and more formal presentation of the new approach is in Padoa Schioppa (1979).
[29] See Caranza and Fazio (1984).

assets. A higher degree of intermediation, and a higher share of M2, imply a more unfavourable balance of capital movements and/or greater instability due to a potentially more rapid reaction of expenditure to changes in the supply of financial assets.[30] Whence the need to control the degree of intermediation, by keeping an adequate spread between the rate on deposits and the rate on Treasury bills, which are their near substitutes (on the assumption, which appears to hold in Italy, that the former rate is sticky with respect to changes of the latter).[31]

This is not the place to discuss the general merit of these arguments. Beside, and perhaps more than, analytical considerations, the changes of monetary policy also reflect changes in the weight assigned to different objectives; the desire by the Central Bank to preserve and defend a higher degree of autonomy, a response to new external conditions and to membership of the EMS, a quicker adaptation of the public to inflationary expectations. The implications of the new policy for the financing of the Treasury are at any rate obvious: a much lower level of monetary financing of the Treasury (see table 4), with changes such as to keep the overall growth rate of monetary base lower and more stable and tending therefore to mirror the creation of monetary base through the foreign channel; conditions such as to induce the non-banking public to absorb directly a growing share of State debt and to reduce therefore the degree of intermediation. It must finally be noted that the conditions favourable to a growing financing of the State debt by the non-banking public have also been achieved through the introduction of attractive debt instruments, such as medium-term Treasury certificates which, owing to financial indexation to short-term yields *plus* a spread, are practically immune from capital losses due to changes in interest rates; and through a

[30] See especially Padoa Schioppa (1979).

[31] The study on the demand for money in Italy by Caranza, Micossi and Villani (1983) confirms the important role of differential yields: for M1 and M2 they find that the elasticities with respect to the difference between the deposit and the Treasury bills rates are high, and become higher and more significant with time, as the role of portfolio choices becomes more relevant. Cotula (1984) observes that the diffusion of semi-liquid State debt instruments has however allowed banks to economize on their free reserves: hence the need to raise the compulsory reserve ratio to offset the resulting increase in the multiplier.

growing difference in tax treatment between State debt and other financial assets.[32]

11. The Bank's two objectives of increasing and strengthening its autonomy from the uncontrolled vagaries of fiscal policy and of placing the new debt with as little recourse as possible to banks' intermediation have been successfully achieved. The share of monetary base in total debt dropped from 34% in 1977 to 19% in 1983 (and the ratio to GDP from 18.5% to 15%). Table 5 provides striking evidence on the change in the ownership of the debt: the share in the hands of the commercial banks fell by over 33 points between 1977 and 1983.

The fall in the banks' share was accompanied by a parallel increase in the share of State debt held by households. It is therefore relevant to consider briefly the savings behaviour and the composition of financial wealth of the household sector: with the warning that here in particular serious work finds an obstacle in the scarcity and dubious quality of available data and that what follows is, at best, an impressionistic view.

Table 6 shows the ratios of total and financial savings of the households to their disposable income. Financial savings and financial assets in table 6 do not include shares and foreign assets, because of valuation problems, nor technical reserves of insurance institutions and other miscellaneous assets. In the second part of table 6 the savings ratios are corrected by subtracting from both the numerator and the denominator the inflation losses on nominal stocks (computed with the method of section II):[33] it is probably an overcorrection, as in periods of accelerating inflation the value of real assets may grow by more than the inflation rate, so that inflation losses on financial wealth may be partly offset by inflation gains on real wealth.

The unadjusted ratios, especially for total savings, are fairly stable over the period: in view of rising debt-financed deficits, this may be

[32] In particular with bank deposits, the withholding tax on which was raised several times. The Bank of Italy never showed any enthusiasm for introducing some form of taxation on State debt nor opposed the increases of the tax on deposits.

[33] Cuckierman and Mortensen's (1983) adjusted savings ratios differ from those in the table because of differences both in the aggregate and in the method of correction. There is however a fair correspondence between the two series for the fluctuations of the ratios.

considered as a *prima facie* indication that we are far away from a Barro case. Adjusted ratios are however far less stable. Their fluctuations reflect to some extent changes in the inflation rate and hence in the size of inflationary losses (as is the case if unexpected inflationary losses are considered as transitory decreases in income).[34] They also reflect however changes in the unadjusted ratios. Marked falls occur in years when, at the same time, nominal income grows faster, inflation accelerates, real interest rates are lower, and also the borrowing requirement/GDP ratio declines, monetary financing increases and debt financing decreases. Almost the reverse happens when the savings ratios rise. It may be wondered if there is a hint here of Barro effects.

It must however be observed that there has been no systematic change in the savings ratios nor in the (unadjusted) ratio of financial wealth to disposable income (see memo item in table 6), as we would expect with a mounting stock of debt if Barro's theorem held. Further, two observations seem to confirm the dominant role of inflation and of interest rates, rather than of the public's reaction to debt financing.

Table 5 – *Composition of the stock of interest bearing debt by category of owners, end of year values*

	1970	1977	1980	1981	1982	1983
Commercial Banks						
Treasury bills	96.2	68.6	47.2	37.0	39.9	26.4
Bonds	62.7	71.3	60.8	54.1	53.8	45.6
Total	69.6	69.9	53.0	43.0	45.1	36.6
Households						
Treasury bills	0.6	22.4	43.1	52.8	48.9	–
Bonds	30.0	23.9	31.7	38.4	–	–
Total	23.9	23.1	38.5	47.8	–	–
Others						
Treasury bills	3.2	9.0	9.7	10.2	11.2	–
Bonds	7.3	4.8	7.5	7.5	–	–
Total	6.5	7.0	8.5	9.2	–	–

[34] See Cuckierman and Mortensen (1983).

Table 6 – *Ratios to households disposable income*

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
						Unadjusted ratios						
Total savings	24.4	25.6	25.3	24.7	27.2	26.9	26.5	27.7	26.9	25.0	25.1	25.2
Financial savings	13.6	14.7	18.1	14.2	18.2	16.0	17.8	19.8	17.6	15.1	16.6	18.5
– Notes, coins and deposit	7.8	9.2	13.3	14.5	13.4	12.7	13.4	12.3	10.7	8.9	7.4	10.5
– Postal savings	1.8	2.1	2.0	0.6	2.0	1.7	1.6	2.0	2.0	1.4	0.5	0.7
– Treasury Bills	–	–	0.3	0.1	0.1	1.5	2.2	1.8	3.5	5.2	6.7	2.7
– MLT Bonds	3.0	2.7	2.0	-1.3	2.1	0.1	0.3	2.9	1.2	-0.6	1.5	2.8
State Bonds	0.1	–	-0.2	-0.2	1.0	0.6	0.8	2.1	1.7	-0.1	1.4	2.1
– Others	1.0	0.7	0.5	0.3	0.6	–	0.2	0.7	0.2	0.2	0.4	1.8
						Ratios adjusted for inflation						
Total savings	19.2	20.7	15.6	6.3	18.2	10.8	15.0	17.5	13.1	8.5	13.8	12.1
Financial savings	7.7	9.1	7.5	-6.8	8.1	-2.5	5.0	8.6	2.0	-3.5	1.6	4.3
– Notes, coins and deposit	4.2	5.8	7.1	2.3	6.5	0.1	4.4	4.0	-0.3	-4.1	-3.0	1.4
– Postal savings	1.2	1.5	0.9	-1.9	0.9	-0.3	0.1	0.9	0.4	-0.6	-1.1	–0.6
– Treasury Bills	–	–	0.3	–	0.1	1.6	2.2	1.5	3.1	4.5	5.6	0.4
– MLT Bonds	1.5	1.3	-0.9	-6.6	0.3	-3.1	-1.6	1.7	-0.9	-3.1	0.1	1.5
State Bonds	-0.2	-0.2	-0.8	-1.0	0.7	0.1	0.4	2.7	0.9	-1.5	0.6	1.4
– Others	0.8	0.5	0.1	-0.2	0.3	-0.8	-0.2	0.4	-0.3	-0.3	0.1	1.6
Memorandum item:												
Ratio of total stock to disposable income	98.4	102.5	104.2	97.8	100.9	99.4	102.9	107.2	107.7	103.2	102.3	106.5

Table 7 – *Determinants of the growth of state bonds and bills on the market*

Ratios to GDP	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983[d]
- State sector borrowing requirement net of interest [a]	7.1	5.9	10.5	6.2	8.1	10.6	6.2	5.6	6.6	7.6	8.0
- Monetary base net of interest paid to Bank of Italy											
A[b]	-5.8	-5.5	-3.5	-4.4	+3.0	-1.3	+0.7	-2.2	-2.8	-2.0	-0.1[e]
B[c]	-5.1	-5.2	-6.2	-4.8							
- Postal savings net of interest paid on postal savings	-1.3	-0.3	-1.3	-1.2	-1.0	-1.5	-1.8	-0.1	-0.1	-0.2	-0.4
- Other non monetary debt	-0.2	+0.1	0	0	0	-0.2	-0.3	-0.2	-0.6	-0.8	-0.8
- $(r_t - g_t)\ [b_{t-1}/(1 + g_t)]$											
A[c]	-1.7	-1.5	-0.2	-2.3	-0.7	-0.6	-2.3	-3.0	-0.1	+1.0	+2.1
B[b]	-2.4	-2.3	-0.6	-2.4							
- $\Delta\ b_t$											
A[c]	-1.8	-1.3	+5.5	-1.7	+9.4	+7.1	+2.4	+0.1	+3.1	+5.6	+8.8[f]
B[b]	-1.8	-1.8	+2.3	-2.2							

[a] It includes however that part of interest payments which cannot be attributed either to bonds and bills on the market or to the Bank of Italy or to postal savings.
[b] Until 1976, it includes T-bills held by commercial banks for compulsory reserve requirements.
[c] Until 1976, it does not include T-bills held by commercial banks for compulsory reserve requirements.
[d] Provisional data.
[e] Including the bills of note (c), table 4.
[f] Not including the bills of note (c), table 4.

First, the ratio of financial to total savings follows more or less the same pattern as that of the financial saving ratio (this would be more evident if inflationary gains on non-financial wealth were included in the correction of the total savings ratio): this is consistent with the hypothesis that changes in the inflation rate cause shifts of preferences between financial and non-financial wealth. Second, since 1975 the real accumulation of State interest-bearing debt has always been positive, reflecting more closely the difference with the interest rate on bank deposits in the case of Treasury bills and the real rate in case of longer term bonds.

The growth of State debt appears to have affected far more the composition than the size of assets held by the public. In the first half of the Seventies households, under the impact of inflation and capital losses, turned to deposits as a relatively safer outlet. The change occurred when the Treasury offered debt instruments with both higher yields and higher liquidity: the process of growing intermediation which had occurred in the first half of the decade was reversed in the years after 1977.

12. The Bank's objectives have been achieved at considerable cost for the Treasury. It is obvious that real interest rates could not and should not be kept at the negative levels prevailing in most years of the Seventies without risking hyperinflation or at least without accepting the persistence of very high inflation rates. It should be equally obvious, however, that with the new approach of monetary policy we have gone nearer to an opposite extreme: the rise and the levels of real rates on public debt (see chart 3) have been affected not only by a reduction in the monetization of the deficit, which was particularly drastic in 1983, but perhaps no less by the further objective of shifting the bulk of the ownership of State debt from banks to the non-banking public in a relatively short time. (It is often noted that real interests on Italian State bonds and bills are by no means high by international standards: such comparisons are faulted because they consider gross rates instead of yields net of taxes, thus neglecting the fact that Italy is about the only country where interests on State debt enjoy complete tax exemption.)

Several factors have concurred to a very fast growth, in the past few years, of the overall cost of debt: a more rapid growth of the more

expensive part of debt, due the relative decline not only of monetary financing but also of postal savings; real rates rising to high positive levels; the fact that real rates became positive again, to rise further, just when the average life of debt reached a minimum.

The rising cost of debt set in motion, since 1981, a mechanism of self-reproduction of the interest-bearing part of debt, other than postal savings.[35]

Consider expression (5) in paragraph 4. Let *b* be the ratio to GDP of the stock of bonds and bills. To allow for the interests paid to the Bank of Italy and on other forms of debt and for the contribution of postal savings and other forms of debt to the financing of the Treasury, let $\mu_B = (\dot{H}^T - I_B)/F$ and $\mu_S = (\dot{S}^T - I_S)/F$, where I_B are the interests paid to the Bank of Italy, $\dot{S}$ is the recourse to postal savings and other forms of debt and I_S are the interests paid on such debt. Then:

$$\dot{b} = a - (\mu_B + \mu_S) f + (r - g) b \qquad (5')$$

Table 8 gives the components of (5') for eleven years until 1983 (data for 1983 are provisional; computations are in discrete terms). The data of the table confirm not only the falling contribution of $(\mu_B + \mu_S)$ financing of the deficit; more important, they show that the term of self-reproduction, $(r - g)$, is positive and has grown considerably. True, 1982 and 1983 have been years of recession; but real rates have risen in the course of the year. It is then time to take a look ahead.

IV. Outlook and problems

13. What are the prospects for the future growth of total debt and in particular of its interest-bearing part? First, consider again expressions (3) and (5). The condition for the total debt/GDP ratio to remain constant is $f = gd$ (or, in discrete terms, $f = gd/(1 + g)$. The condition for the ratio of the stock of bonds and bills on the market to GDP to remain constant is $f = gb/(1 - \mu')$, where μ' is now the share of borrowing requirement financed by any other means but bonds and bills (i.e. $(\dot{H}^T - \dot{S})/F$; in discrete terms it

[35] Along the lines of Sargent and Wallace (1981).

will be $f = g\,b/(1 + \mu)\,(1 + g)$).

At the end of 1983, $d = 0.788$, $b = 0.524$, while during the year μ' was about 0.15. Supposing a growth rate of nominal GDP of 13% in 1984, the borrowing requirement compatible with the constancy of the total debt/GDP ratio should not exceed 9.1% of GDP. Suppose that μ' increases to 0.2: this implies that monetary financing rises from 4.5% of the borrowing requirement in 1983 to some 10%, while another 10% or so is insured, as in 1983, by other forms of financing. Then the borrowing requirement compatible with the constancy of b would be approximately 7.5% of GDP: a lower figure, because $\mu' = 0.2$ is still lower than the share of debt other than bonds and bills in the total (which is 0.33).

This exercise just shows how remote we are from conditions insuring the constancy of the debt ratio, and even more of the marketable debt ratio. A borrowing requirement of 9% would imply reducing to zero the requirement net of interest payments. Further, the Government target is a borrowing requirement of 15%, with a likely outcome of 16%. It is thus necessary to consider possible medium-term paths, with reference to alternative strategies of fiscal *and* monetary policy.

14. We know from the literature on debt[36] that if f, the ratio of deficit to GDP, is kept constant and for a given growth rate g, the total debt/GDP ratio converges to a limit, f/g; that at $d = f/g$ we have $\dot{d} = 0$ is seen by direct inspection of (3); convergence is shown by integrating out (3). We also know that if, instead of f, we keep a, the deficit net of interests, constant, the limit may not exist and, if it does exist, is much higher: the value of d at which $\dot{d} = 0$ would then be $d = a/(r - g)$, so that the process is explosive if the rate of interest exceeds the growth rate.

We must however take a step further. First, what matters most is the growth of the marketable part of the debt, b; second, the interest rate on total debt is a somewhat spurious notion, as interest payments depend on the share of interest-bearing debt on the total. Let us consider

$$\dot{B} = (1 - \mu'_t)\, f_t Y_t$$

[36] Domar (1957), first, OECD (1984), last and, in the middle, the literature on foreign debt.

If f, the total deficit, and μ' are kept constant, we shall have:

$$b_t = b_0 e^{-gT} + \frac{f}{g}(1-\mu')(1-e^{gT}) \tag{6}$$

converging to the limit $f\,(1-\mu')/g$. As b_t, and hence rb_t grow, with f constant a_t, the deficit net of interests, must fall over time: the limit will be

$$\frac{g-r(1-\mu')}{g} f$$

Alternatively, it can be assumed that a is kept constant. In this case f_t will grow over time with rb_t. The conditions for convergence depend on the assumptions on monetary financing. According to whether the latter is $\mu' f_t$ or $\mu' a$, we have

$$b_T = b_0 e^{[r(1-\mu')-gT]} + \frac{1-\mu'}{g-r(1-\mu')} a(1-e^{[r(1-\mu')-gT]}) \tag{7}$$

$$b_T = b_0 e^{(r-g)T} + \frac{1-\mu'}{g-r} a(1-e^{(r-g)T}) \tag{7'}$$

The condition for convergence in the first case, $g > r\,(1-\mu')$, is less strict than that in the second case, $g > r$. In the first case, however, the ratio of monetary financing to GDP grows over time and it is therefore implausible that the growth rate of nominal GDP remains constant.

By way of illustration, table 8 shows the values of the relevant variables at different time periods computed for given values of f (using the discrete version of (6)) and for a given value of a (using the discrete version of (7)), and under different hypotheses on monetary financing. The nominal growth rate is kept at 11% in all cases; the initial value of b is set at 0.58 (a likely value for Italy at the end of 1984). Corresponding to values of μ' of 0.15, 0.20 and 0.30, nominal interest rates are set at, respectively, 11%, 10%, 9%. This choice is quite arbitrary: it implies among other things that the inflation rate is the same in all cases and that the effect of a higher ratio of monetary financing to GDP, $\mu' f$, is offset by that of a higher value of b. The purpose of the exercise, on the other hand, is to show how inconsistencies may arise under alternative policy

assumptions.

15. We note first that, when the stock of accumulated debt is large, fiscal policy should target *f*, the overall borrowing requirement, and not *a,* the borrowing requirement net of interest payments, as is sometime suggested in policy discussions. In the latter case, even under the implausible hypothesis of a ratio of monetary financing to GDP growing with *f* (as in (7) and in the lower panel of the table), *f* soon gets out of control, as interests grow with the debt.

Second, the table shows that a combination of lax fiscal policy and tight monetary policy may spell disaster also when a given *f* is assumed. In this case, debt accumulation is very fast and this will prove incompatible with the assumptions regarding either the interest rate or the growth rate or both. Thus, suppose that monetary policy is such that the share of marketable debt in the hands of the households tends towards 60% of the total (being already now above 50%). As *b* reaches 80% and if the ratio of financial assets to disposable income of the households remains constant at the current level, the share of State bonds and bills on households' total financial assets must about double: it is difficult to think that a process of substitution of this size is without consequences on the level of the interest rate. An alternative possibility is some version of the Barro case: if, for instance, the propensity to spend on interest income is lower than for other components of disposable income, both the savings ratio and the ratio of financial assets to disposable income may rise, so that the increase of the share of bonds and bills on total assets may be lower. In this case, however, the growth rate would probably be affected.

With a large stock of outstanding debt, a precondition to avoid unstable and potentially explosive outcomes is that fiscal policy aims at a reasonably low *f*. A desirable fiscal policy program may however prove socially and politically unfeasible unless monetary policy lends some help.

The lower the value of *f* and the higher monetary policy, the greater the reduction which must be forced on *a* and hence the greater the reduction of expenditure net of interest payments and/or the rise in the tax

burden. Such results are desirable, but can only be achieved gradually: an austere fiscal policy program should be accompanied by a somewhat less austere attitude towards the monetary financing of the Treasury.

Table 8 – *Growth of interest bearing debt*

	$f = 0.14$			$f = 0.10$		
	μ'			μ'		
	0.15	0.20	0.30	0.15	0.20	0.30
T = 5						
b	83.2	80.4	74.6	69.3	67.2	63.1
rb	9.2	8.0	6.7	7.6	6.7	5.7
a	4.8	6.0	7.3	2.4	3.3	4.3
T = 10						
b	98.2	93.6	84.5	76.0	72.7	66.2
rb	10.8	9.4	7.6	8.4	7.3	6.0
a	3.2	4.6	6.4	1.6	2.7	4.0
Limit						
b	120.1	113.0	98.9	85.8	80.7	70.6
rb	13.2	11.3	8.9	9.4	8.1	6.4
a	0.8	2.7	5.1	0.6	1.9	3.6

	$a = 0.05$	
	$\mu' = 0.15$	$\mu' = 0.20$
T = 5		
b	101.2	81.4
f	16.1	13.1
T = 10		
b	116.4	91.4
f	17.8	14.4
Limit		
b	312.6	159.8
f	39.4	21.1

Assumptions: $b_0 = 0.58$; g = 0.11; for $\mu' = 0.15$, $r = 0.11$; for $\mu' = 0.20$, $r = 0.10$; for $\mu' = 0.30$, $r = 0.09$.

It will of course be objected that monetary policy would thus lose once more its autonomy and that different degrees of accommodation would imply different inflation rates. If however fiscal policy were to miss its target, because monetary policy is so tight that the required reduction of *a* is unfeasible, the damage would be greater, as the system would, as it were, shift towards the left in table 8. There would be then a

higher risk of loss of autonomy for monetary policy; and a slightly higher rate of inflation in the short run may be a price worth paying to avoid such risk and the more serious risk of future financial instability.

Failing a coordination of fiscal and monetary policy aimed at reducing and eventually stopping the growth of interest-bearing debt, some important questions posed by Thomas Sargent (1982) become pertinent. Sargent, considering as two polar cases the Barro *régime* and one in which the growth of debt leads to, and signals the inevitability of, future monetization, observes that the outcome depends on the nature of assets demands, which in turn "depends sensitively on which of these two regimes, or which of the many other imaginable regimes, agents find themselves."

It is not easy to see which of "the many imaginable regimes" may apply to Italy. Certainly, available evidence does not seem to support a presumption that we are anywhere near the Barro-Ricardo polar case. The French experience in the Twenties is an example near to the other polar case[37] and one which may become more relevant for Italy. Great efforts are made, so far successfully, to convince agents that the latter is not the relevant case and to make State debt an attractive investment proposition, in terms of yield and liquidity. Luring savers into buying growing quantities of debt, however, far from being a solution to the problem, makes the same problem more intractable in the longer run.

While the major responsibility for the solution lies with fiscal policy, monetary policy should take 'bondism' in somewhat greater consideration.[38]

---

[37] The French case is brilliantly analyzed by Nurkse, in League of Nations (1964): in spite of a steady decline of public deficits, the overhang of debt caused a progressive loss of confidence, negative net subscriptions, a steep increase of note circulation and, eventually, a flight from the currency. In Italy such symptoms, at an initial stage, have been observed more than once.

[38] "Bondism" is the expression used by Smith (1982), following an early suggestion by Milton Friedman. Skepticism on the disturbing effects of growing debt is expressed by the US Treasury (1984).

REFERENCES

ARTONI R. (1983), "Note sul debito pubblico nel periodo 1974-81", in *Effetti allocativi e distributivi dell'inflazione, Rivista Milanese di Economia*, Quaderno n. 5.

BARRO R. (1974), "Are Government Bonds Net Wealth?", *Journal of Political Economy*, December.

——— (1978), "Comment from an Unreconstructed Ricardian", *Journal of Monetary Economics*, August.

BLINDER A.S. (1982), "On the Monetization of Deficits", *NBER Working* Paper, n. 1052, December.

BUCHANAN M. (1958), *Public Principles of Public Debt*, Homewood.

BUITER W.H. (1983), "Measurement of the Public Sector Deficits and its Implications for Policy Evaluation and Design", *IMF Staff Papers*, vol. 30, n. 2, June.

CARANZA C. and FAZIO A. (1983), "L'evoluzione dei metodi di controllo monetario in Italia", *Bancaria*, September.

CARANZA C., MICOSSI S. and VILLANI M. (1983), "La domanda di moneta in Italia: 1963-1981", in *Ricerche sui modelli per la politica economica*, Rome: Banca d'Italia.

CENTRO EUROPA RICERCHE (1983), *Conti pubblici, inflazione e politica monetaria*, Rapporto, n. 2.

COTULA F. (1984), "Innovazione finanziaria e controllo monetario", *Moneta e Credito*, March.

COTULA F. and MASERA R.S. (1980), "Private Savings, Public Deficit and the Inflation Tax", *Review of Economic Conditions in Italy*, n. 3.

COTULA F., MASERA R.S. and MORCALDO G. (1983), "Il bilancio del settore pubblico e gli effetti di spiazzamento: un esame dell'esperienza italiana", in *Spesa pubblica e sviluppo dell'economia,* Milan.

CUKIERMAN A. and MORTENSEN J. (1983), "Monetary Assets and Inflation Induced Distortions of the National Accounts – Conceptual Issues and Corrections of Sectoral Income Flows in 5 EEC Countries", Commission of the European Communities, *Economic Papers*, n. 15, June.

DEMOPOULOS G., KATSIMBRIS G. and MILLER S. (1983), "Central-Bank Policy and the Financing of Government Budget Deficits: A Cross-Country Comparison", Commission of the European Communities, *Economic Papers*, n. 19, September.

DE VITI DE MARCO A. ([1953] 1961), *Principi di economia finanziaria*, reprint of the 3rd edition, Turin.

DOMAR E. (1957), "The 'Burden of Debt' and the National Income" , in (id.), *Essays in the Theory of Economic Growth*, New York.

EISNER R. and PIEPER P.J. (1984), "Measurement and Effects of Government Debt and Deficits", presented at the International Seminar in Public Economics, Conference on Public Debt, February.

GIAVAZZI F. (1984), "A Note on the Italian Public Debt", *Banca Nazionale del Lavoro Quarterly Review,* june.

HAMBURGER M. and ZWICK B. (1981), "Deficits, Money and Inflation", *Journal of Monetary Economics*, January.

IZZO L. and SPAVENTA L. (1981), "Macroeconomic Policies in Western European Countries: 1973-1977", in Giersch H. (ed.), *Macroeconomic Policies for Growth*

and Stability, Tübingen.
LEAGUE OF NATIONS (1946), "The Floating Debt Problem", in (id.) *The Course and Control of Inflation. A Review of Monetary Experience in Europe after World War I*, Genève.
MASERA R.S. (1983), "Paper presented to a Seminar on economic forecasts 1984-86", December, Turin.
MILLER M. (1982), "Inflation Adjusting the Public Sector Financial Deficit: Measurement and Implications for Policy", *Warwick Economic Research Papers*, n. 209, May.
MILLER M. and BABBS S. (1983), "The True Cost of Debt Service and the Public Sector Financial Deficit", *SSRC Money Study Group Seminar*.
MONTI M., CESARINI F. and SCOGNAMIGLIO C. (1983), "Report on the Italian Credit and Financial System", *Banca Nazionale del lavoro Quarterly Review*, June.
NISKANEN W.A. (1978), "Deficits, Government Spending and Inflation: What is the Evidence?", *Journal of Monetary Economics*, August.
OECD (1983), "Les déficits du secteur public: problèmes et implications en matière de politique économique", *Études spéciales*, Juin.
——— (1984), "Working Party I of the Economic Policy Committee, Public Sector, Inflation and the Stance of Fiscal Policy", *Note by the Secretariat*, March.
PADOA SCHIOPPA T. (1979), "Aspetti istituzionali e strumenti della politica monetaria", in Banca d'Italia (ed.), *Modello econometrico dell'economia italiana: settore monetario e finanziario*,.
REATI A. (1984), "Actifs financiers et distortions des flux sectoriels dues à l'inflation: le cas de l'Italie", Commission of the European Communities, *Economic Papers*, n. 26, Janvier.
SALVEMINI G. (1984), "Interest Payments Distribution on Public Debt and the Pattern of the Borrowing Requirement in Inflationary Conditions", paper presented to the conference on *Economic Policy and National Accounting in Inflationary Conditions*, Dorga, January.
SARGENT T. (1982), "Beyond Demand and Supply Curves in Macroeconomics", *American Economic Review*, May.
SARGENT T. and WALLACE N. (1981), "Some Unpleasant Monetarist Arithmetic", *Federal Reserve of Minneapolis Quarterly Review*, Autumn.
SMITH G. (1982), "Monetarism, Bondism, and Inflation", *Journal of Money, Credit and Banking*, vol. 14, May.
SPAVENTA L. (1983), "Two Letters of Intent: External Crises and Stabilization Policy in Italy, 1973-77", in Williamson J. (ed.), *IMF Conditionality*, Washington.
U.S. TREASURY (1984), "The Effects of Deficits on Prices of Financial Assets: Theory and Evidence", January.
WILLET T.D. and LANEY L.O. (1978), "Monetarism, Budget Deficits and Wage Push Inflation. The Cases of Italy and the UK", *Banca Nazionale del Lavoro Quarterly Review*, December.